

# Drivers: Why Should Students Learn, Given AI?

Cross-Dimensional Drivers of Motivation: Identity, Agency, and Purpose

May 2024



Significant portions of this paper were taken from the book [Education for the Age of AI](#), by Charles Fadel, Alexis Black, Robbie Taylor, Janet Slesinski, and Katie Dunn (CCR, 2024)

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# Drivers

CCR designed the 4-Dimensional Competency Framework to help answer the question “*what* should students learn?” The acceleration of artificial intelligence, and the ways in which it disrupts life and work, now brings the question of “*why* should students learn?” to the forefront.

Drivers are CCR’s answer to this question.

In a world in which AI can demonstrate aspects of knowledge, skills, character, and meta-learning, it is vital that students better harness and develop their **motivation, identity, agency, and purpose**. These drivers are cross-dimensional, as they are teachable across all disciplines and through all competencies. With these drivers, students can continuously grapple with the inevitable changes they will face throughout their lifetimes. The drivers and the dimensions work in harmony with one another, and either can serve as a valuable and useful starting point for building learning experiences. A driver, such as identity, can serve as a valuable compass to lead an individual to rich learning experiences. Conversely, starting with dimensional content—resilience in history or curiosity in science, for example—can help an individual develop a better understanding of what drives them.

In either case, the drivers serve as vehicles for personalizing learning experiences, which can make them more meaningful to students.

## The Need for Personalization

Personalization<sup>1</sup> has always been important in education. Tailoring approaches to teaching and learning to address students’ individual needs, preferences, and rhythms is crucial to education for several compelling reasons. Most importantly, students are not homogenous; they come with varied backgrounds, abilities, and learning styles. Traditional “one-size-fits-all” instructional methods are insufficient because they fail to engage all students equally, potentially leading to disengagement or underachievement.<sup>2</sup>

In addition to the phenomenal performance advantages of personalized educational practices, personalization can also contribute to developing deeper connections to learning. When education resonates with a student’s interests and aspirations, it can

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<sup>1</sup> Although “differentiation” would be the more adequate word to use, CCR will use the more widespread “personalization,” while keeping in mind its negative connotations as to the importance of social and collaborative learning.

<sup>2</sup> Tomlinson, C. A. (2001). How to differentiate instruction in mixed-ability classrooms. *ASCD*.

ignite passion and intrinsic motivation, leading to more profound, lasting understanding and a greater likelihood of long-term success.<sup>3</sup>

## Why is AI Making Personalization Even More Important?

There are several AI-specific reasons why a personalized education is not only important but expected. When algorithms tailor content recommendations on platforms like Netflix, Spotify, YouTube, Instagram, and TikTok, students increasingly expect a similar level of customization in their other experiences, including those in the classroom. The pervasive nature of personalized content in entertainment and online platforms has conditioned students to seek and value individualized experiences. A “one-size-fits-all” education feels outdated and less engaging in comparison.

Additionally, as AI takes over many tasks, there's a rising importance for human-centric competencies like critical thinking. Personalized education can better cater to developing these skills based on each student's strengths and weaknesses. It can ensure students reach necessary floors for surviving in a modern world, then raise the ceiling for students to further grow in unique areas of interest and passion.

But it may be the AI-elevated question, “*why* should students learn?” that makes personalized education so relevant today. “*Why?*” is often a very personal question, which is where the student-specific cross-dimensional drivers of motivation, identity, agency, and purpose come in.

### Motivation

Integrating AI-powered tools into classrooms permits new potential for personalizing learning experiences, thereby enhancing student engagement and motivation. AI-driven platforms can analyze students' interactions, progress, and feedback in real-time to tailor content and resources specifically for them. Adaptive learning platforms, for example, identify areas where a student is struggling and provide customized resources or exercises to address those gaps. Targeted approaches such as these address individual learning needs and encourage engagement by presenting material at the right level of difficulty. This enhances student motivation as students experience more consistent success and receive immediate, personalized feedback, making their learning experiences more relevant and rewarding.

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<sup>3</sup> Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and Education: The self-determination perspective. *Educational Psychologist*, 26(3-4), 325–346.  
[https://doi.org/10.1207/s15326985ep2603&4\\_6](https://doi.org/10.1207/s15326985ep2603&4_6)

## Identity

By recognizing and adapting to individual cultural, socio-economic, or personal backgrounds, AI tools can provide content that is contextually relevant, fostering a deep sense of identity validation and belonging.<sup>4</sup> This level of personalization can enhance a student's emotional connection to the learning material, facilitating deeper engagement, understanding, and self-awareness. In a diverse classroom, such tailored approaches ensure that learning is not just a cognitive exercise but also a process of self-exploration and affirmation.

## Agency

Agency is a vital component for deep, intrinsic motivation and effective learning. Traditional education models often place students in passive roles, but AI tools can transform them into active participants by tailoring learning experiences according to their needs, preferences, and pace. For instance, an AI-driven learning platform can offer students choices in how they want to approach a topic, which resources they'd like to explore, or even which assessments they'd like to tackle, based on their past performances and future goals. This personalization empowers students to take charge of their learning, making decisions that suit their needs and interests, increasing their sense of agency. As they interact with AI systems that adapt and respond to their inputs, students begin to recognize the value of their choices and actions in shaping their educational outcomes.

## Purpose

As students embark on their educational journeys, they often have specific goals, or ambitions to which they aspire. AI tools can curate resources, tasks, and experiences that directly align with these goals. For instance, a student passionate about environmental conservation could receive AI-recommended readings, virtual field trips, and project ideas tailored to that interest, allowing them to dive deeper into the subject while also relating it to broader educational standards and objectives. Such tailored experiences not only enhance academic growth but also foster a stronger sense of purpose in learners, as they see the direct relationship between their studies and their aspirations. By dynamically

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<sup>4</sup> Warschauer, M., & Matuchniak, T. (2010). New Technology and Digital Worlds: Analyzing Evidence of Equity in Access, Use, and Outcomes. *Review of Research in Education*, 34(1), 179-225. <https://doi.org/10.3102/0091732X09349791>

aligning educational content with students' evolving purposes, AI facilitates a deeper, more meaningful engagement with learning.<sup>5</sup>

## The Relationship between Motivation, Identity, Agency, and Purpose

The following sections provide in-depth discussions of how motivation, identity, agency, and purpose are understood and deployed in current social and academic contexts and by CCR, as well as how these elements may change or could be further developed in an age of AI. Definitions and pertinent research for each of these concepts will be provided in each section. First, however, the relationship between these four concepts.

The contemporary understanding of human development recognizes the fluid and multiple nature of motivation, identity/belonging, agency/growth mindset, and purpose/passion, suggesting that individuals do not possess a single, static purpose or motivation throughout their lives. On the contrary, humans navigate and thrive within a variety of roles, experiences, and social contexts that can lead to multiple identities and purposes.<sup>6</sup> A person may identify as a parent, an artist, and an activist simultaneously, each aspect offering a different lens through which they see the world. Similarly, one's purpose as a caregiver might differ from their purpose as a professional.

Recognizing “identities” and “purposes” in the plural form acknowledges this complexity and avoids oversimplifying the tapestry of human experience. In educational settings, embracing this plurality allows educators to nurture the diverse aspirations, roles, and self-concepts of students, ensuring a more holistic and relevant approach to their development.<sup>7</sup>

This complexity demands an increased prioritization of a learner's Motivation(s), Identity(ies) (& Belonging), Agency (& Growth Mindset), and Purpose(s) (& Passion).<sup>8</sup> This additional focus is due to these human attributes becoming more important as artificial intelligence becomes more powerful and ubiquitous.

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<sup>5</sup> Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational Psychologist*, 47(4), 302–314.  
<https://doi.org/10.1080/00461520.2012.72280>

<sup>6</sup> Erikson, E. H. (1968). *Identity: Youth and Crisis*. Norton & Company.

<sup>7</sup> Yowell, C. M. (2002). Dreams of the Future: The Pursuit of Education and Career Possible Selves Among Ninth Grade Latino Youth. *Applied Developmental Science*, 6(2), 62–72.

<sup>8</sup> Individuals possess motivations, identities, and purposes in the plural; however, in many parts of the following text, the singular form of these nouns may be employed for the sake of simplicity.



# Motivation (Extrinsic and Intrinsic)

**The best time to plant a tree was 20 years ago. The second-best time is now.**

– Chinese Proverb

## What is motivation? It is why you act.

Motivation is commonly understood as the driving force that instigates, directs, and sustains human behavior toward achieving particular goals.<sup>9</sup> Human motivation is an interplay of internal and external factors that can be broadly categorized into *intrinsic motivation*, where actions are driven by internal rewards like personal satisfaction or beliefs and values, and *extrinsic motivation*, influenced by external rewards or outcomes such as money, grades, or recognition.<sup>10</sup> Motivation intertwines these extrinsic and intrinsic elements, and their *variance over time*, as well as emotional, cognitive and other subconscious elements. These elements can reinforce each other or weaken resolve, depending on the situation. Researchers such as Harvard’s Chris Dede argue that many situations are motivated by inherent intrinsic motivation, such as keeping a journal or diary or the natural curiosity of children, while others are motivated by extrinsic factors, such as grades in the traditional education system, monetary compensation or the gain of recognition, prestige, titles, or even simply social approval.<sup>11</sup>

CCR agrees with GPT4’s response:

Definition in Humans: For humans (and many animals), motivation is a complex interplay of biological drives, emotions, cognitive processes, and environmental stimuli. It’s a deeply ingrained system that has evolved over millions of years to help us survive, reproduce, and thrive.

In this sense, all motivators stem from *humanity’s original fear – for survival*. Biological drives, emotions, cognitive processes, and environmental stimuli interact in complex ways to guide behavior and decision-making, with the ultimate goal of ensuring survival and reproduction. Biological drives, such as hunger, thirst, and the need for shelter, are fundamental motivators that have evolved over millions of years. They push individuals to seek resources and conditions necessary for life, driven by homeostatic mechanisms and

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<sup>9</sup> Ryan, R. M., & Deci, E. L. (1999). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology*, 25(1), 54-67.

<sup>10</sup> Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

<sup>11</sup> Dede, C. & Cao, L. (2023). Navigating a world of generative AI: Suggestions for educators. The Next Level Lab, Harvard Graduate School of Education, pp. 5-6.

hormonal signals.<sup>12</sup> Emotions play a crucial role in motivation, acting as a feedback system that assigns values to different outcomes and stimuli based on past experiences and innate preferences. Positive emotions like joy and love encourage approach behavior, while negative emotions like fear and disgust promote avoidance.<sup>13</sup>

Cognitive processes also contribute to motivation, enabling individuals to plan, anticipate consequences, and make decisions that align with their goals and values. Humans have the capacity to take negative motivators—such as fear—and turn them into positive motivators. This capacity for foresight and deliberation allows humans to override immediate biological and emotional impulses when necessary, in service of more abstract or delayed rewards.<sup>14</sup> Social influences are also particularly powerful, as humans are innately social animals, and the need for social connection and approval can motivate behavior as strongly as basic biological drives.<sup>15</sup> Ultimately, all these motivators can be traced back to the primal fear of survival, driving individuals to seek safety, resources, and reproductive opportunities, ensuring the continuation of their genes and, by extension, the species.

## Primary Motivators Identified

Human behavior is a complex interplay of internal desires and external stimuli. At the heart of our actions lie core motivators—fundamental forces that drive us to move, to act, and to change. These motivators range from the most basic biological impulses to the highly abstract pursuits of morality and ethics. Understanding these motivators can illuminate why people behave the way they do and what ultimately moves them toward fulfillment and growth.

A brief list of core motivators, categorized according to the kinds of human needs they meet:

### Biological and Physiological Needs

- Survival: Basic needs such as food, water, shelter, and sleep.
- Health and Well-being: Seeking medical care, exercise, and a balanced diet.
- Pleasure: Engaging in activities that bring pleasure and avoid pain.

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<sup>12</sup> Berridge, K. C., & Kringelbach, M. L. (2015). *Pleasure Systems in the Brain*. *Neuron*, 86(3),

<sup>13</sup> Panksepp, J. (1998). *Affective Neuroscience: The Foundations of Human and Animal Emotions*. Oxford University Press.

<sup>14</sup> Miller E.K. & Cohen J.D. (2001). An Integrative Theory of Prefrontal Cortex Function. *Annual Review of Neuroscience*, 24,167-202.

<sup>15</sup> Baumeister, R. F., & Leary, M. R. (1995). The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation. *Psychological Bulletin*, 117(3), 497–529.

## Safety and Security<sup>16</sup>

- Physical Safety: Desire for protection from harm and threat.
- Economic Security: Stability in resources and finances.
- Health and Well-being Security: Safety in health and wellness.

## Belongingness Needs<sup>17</sup>

- Relationships: Building and maintaining social connections.
- Community: Being part of a group or community.
- Love and Affection: Seeking and giving love, care, and affection.

## Recognition<sup>18</sup>

- Self-Esteem: Building and maintaining a positive self-image and confidence.
- Achievement: Pursuing and accomplishing goals.
- Respect from Others: Gaining recognition and respect from peers.

## Intellectual Needs<sup>19</sup>

- Knowledge and Understanding: Seeking to understand the world and acquire knowledge.
- Curiosity and Exploration: A desire to explore and seek new experiences.
- Creativity and Innovation: Engaging in creative and innovative thinking.

## Self-Actualization and Personal Growth<sup>20</sup>

- Fulfilling Potential: Striving to achieve personal potential and self- fulfillment.
- Personal Growth: Engaging in activities that lead to personal development.
- Contributing to a Larger Purpose: Participating in activities that contribute to society or a cause.

## Emotional Needs<sup>21</sup>

- Emotional Expression: Expressing and managing emotions.
- Emotional Support: Seeking and providing emotional support.

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<sup>16</sup> Maslow, A. H. (1943). A Theory of Human Motivation. *Psychological Review*, 50(4), 370.

<sup>17</sup> Baumeister, R. F., & Leary, M. R. (1995). The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation. *Psychological Bulletin*, 117(3), 497–529.  
<https://doi.org/10.1037/0033-2909.117.3.497>

<sup>18</sup> Maslow, A Theory of Human Motivation, 370.

<sup>19</sup> Maslow, A. H. (1968). *Toward a Psychology of Being* (2nd ed.). D. Van Nostrand.

<sup>20</sup> Maslow, A. H. (1954). *Motivation and Personality*. Harper & Row.

<sup>21</sup> Bradburn, N. M. (1969). *The Structure of Psychological Well-being*. Aldine.

- Emotional Connection: Building emotional bonds with others.

#### Social and Cultural Influences<sup>22</sup>

- Social Norms and Values: Conforming to societal expectations and values.
- Cultural Influences: Influence of cultural background and traditions.
- Social Pressure: Influence from peers and social groups.

#### Moral and Ethical Values<sup>23</sup>

- Moral and ethical values
- Religious and spiritual beliefs
- Personal life values
- Prosocial values

From the biological imperatives to sophisticated urges that push us toward self-actualization and moral fulfillment, each motivator plays a distinct role in the human (inter)action. These motivators not only guide individual actions but also shape societal trends and norms. They influence our relationships, our work, our creativity, and our openness within the broader cultural and social framework. Understanding motivators and their connection to human needs provides valuable insights into the human condition and improves our ability to empathize with others.

## CCR’s Synthesis of Motivation Theories<sup>24</sup>

CCR Term	CCR Definition	Associated Terms and Constructs
Motivation	Why you take action	Drive, incentive, self-determination, inspiration

By combining principles from three prominent theories of motivation with CCR’s Framework of Competencies, one can create a holistic and comprehensive synthesis of motivation theories.

In the foundational stage, Maslow’s basic needs are aligned with CCR’s framework, ensuring that learners have their physiological and safety needs met, which is crucial for

<sup>22</sup> Bandura, A. (1977). *Social Learning Theory*. Prentice Hall.

<sup>23</sup> Kohlberg, L. (1981). *Essays on Moral Development, Vol. I: The Philosophy of Moral Development*. Harper & Row; Pargament, K. I. (1997). *The Psychology of Religion and Coping: Theory, Research, Practice*. Guilford Press; Schwartz, S. H. (1992). Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology*, 25, pp. 1–65). Academic Press.

<sup>24</sup> See “Motivation Theories” in the Appendix for *Education for the Age of AI* available at:

<https://curriculumredesign.org/our-work/education-for-the-age-of-ai/>

any form of motivation to take place. During this time, CCR's focus on developing resilience supports learners in navigating challenges, which contributes to their sense of safety. Vroom's Expectancy component<sup>25</sup> is also critical, as learners' beliefs in their abilities (self-efficacy) are cultivated, enhancing their competence—a key component in Self-determination Theory (SDT). This is fostered by CCR's focus on developing critical thinking and problem-solving skills.

In the intermediate stage, Maslow's social needs and esteem are integrated with CCR's focus on collaboration and communication, fostering a sense of belonging and recognition. Vroom's Instrumentality can also play a role, linking effort to performance, and performance to rewards, while SDT's need for relatedness is met through positive interactions and a supportive learning environment. The development of character qualities such as leadership and curiosity (CCR) further contribute to learners' self-esteem and intrinsic motivation (SDT).

In the advanced stage, individuals strive for self-actualization (Maslow) and intrinsic motivation (SDT), guided by CCR's focus on meta-learning capabilities such as metacognition and a growth mindset. Learners are encouraged to take charge of their learning (autonomy, SDT), understand the value and relevance of their work (valence, Vroom), and strive for mastery and excellence in their pursuits (competence, SDT). The integration of character qualities such as resilience and courage (CCR) ensures that learners are equipped to face challenges and pursue their passions relentlessly over their lifetime.

## Why is Motivation crucial in an age of AI? Because human motivations shape AI.

Human motivation is pivotal in shaping the development and deployment of AIs, directing their applications based on human passions, objectives, and ethical considerations. As AI continues to evolve, maintaining a synergy between human motivations—imbued with emotions, ethics, and cultural nuances—and AI's capabilities is crucial to responsibly harnessing AI's potential and ensuring its alignment with beneficial purposes, such as addressing global challenges and enhancing societal well-being.

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<sup>25</sup> Vroom, V. H. (1964). *Work and motivation*. New York: John Wiley & Sons.

Automation can also lead to effects like laziness and overconfidence,<sup>26</sup> especially as human brains are “lazy” by good evolutionary design.<sup>27</sup> Therefore, human motivation is key to mitigating laxity and disinterest.

The changing environment of the 21st century, with digital technologies and AI as prominent features, among other trends, needs to be answered by strengthening intrinsic motivation. Current education systems have been designed to a great extent in such ways that they rely on various forms of extrinsic motivation, such as compulsory schooling, various legal measures, the disciplinary system of schools, the authority of the teacher, assessment and examination systems, the way that schooling, credentials, and jobs are linked, and so forth. These forms of extrinsic motivation have been powerful in expanding education systems after WWII and still are powerful. But the important question will increasingly become: what will happen to them when digitalization and AI become ubiquitous? If these extrinsic motivators start to fail, will formal education systems still exist as they do today? These are good questions for an AI future, but for the time being jobs are not disappearing any time soon, so the extrinsic motivators for schooling remain.

AI will also impact intrinsic motivation, but that is a different question. It remains that it is unwise to assume that intrinsic motivation will easily compensate for the decline of extrinsic motivators. The potential risk is that, as extrinsic motivators decay, intrinsic motivation will be insufficient to compensate.

In the long run, ideally, intrinsic motivation and autonomous learning activities will flourish in an AI world. Yet, it remains unclear in which institutional environments that will happen.

## Can AI possess (internal) motivation? No, but it can have programmed goals.

According to GPT4 itself:

The concept of “motivation” in AI is not the same as it is in humans or other biological beings. Let's unpack this a bit:

- Definition in Humans: For humans (and many animals), motivation is a complex interplay of biological drives, emotions, cognitive processes,

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<sup>26</sup> Gent, E. (2023). Could having robot coworkers make us lazier? Yep, pretty much, study says. Singularity Hub. <https://singularityhub.com/2023/10/22/could-having-robot-coworkers-make-us-lazier-yup-pretty-much-study-says/>

<sup>27</sup> See “The Evolutionary Origins of Competencies” in the Appendix for *Education for the Age of AI* available at: <https://curriculumredesign.org/our-work/education-for-the-age-of-ai/>

and environmental stimuli. It's a deeply ingrained system that has evolved over millions of years to help us survive, reproduce, and thrive.

- AI's "Motivation": When we say an AI has a "motivation," what we're really referring to is its programmed objective or goal. This could be as simple as a sorting algorithm trying to order numbers or as complex as a machine learning model trying to minimize prediction errors. The AI doesn't "want" to achieve these objectives in the same way humans "want" to achieve their goals; it simply processes information in a manner that aligns with its programmed objectives.
- No Emotions or Drives: AI doesn't have feelings, consciousness, or biological drives. It doesn't experience hunger, fatigue, joy, or frustration. Without these emotional and physiological states, AI lacks the intrinsic qualities that fuel human motivation.
- Dangers of Anthropomorphizing: It's easy and sometimes intuitive for humans to ascribe human-like qualities to machines, especially as AI systems become more advanced and their outputs appear more "intelligent" or "creative." However, it's important to remember that no matter how sophisticated an AI becomes, its "actions" are always the result of algorithms and data, not genuine internal desires or feelings.
- Ethical Considerations: Misunderstanding or misrepresenting AI's capabilities can lead to ethical dilemmas. If we mistakenly believe that AI has desires, feelings, or motivations, we might make inappropriate or harmful decisions about its use, development, or regulation.

In summary, while AI systems can have objectives and can "pursue" those objectives in a manner defined by their algorithms, they do not possess motivation in the way that living organisms do. They don't "want" or "desire" anything; they simply execute code.

The authors could not have said so any better themselves.

## Conclusion: Motivation Towards Identity and Belonging

Motivation, identity, and a sense of belonging are intricately connected. Identity is a dynamic and evolving construct, shaped by an interplay of internal self-reflection and external social and environmental factors, tied to questions like "Who am I?" and "Where do I belong?" Identity serves as a foundational aspect of an individual's understanding of their place in the world.

Identity can therefore serve as a powerful motivational force, driving behavior and aspirations. As suggested by SDT discussed above, behaviors aligned with one's authentic self or identity are more intrinsically motivated and are, therefore, more sustainable and fulfilling. This intrinsic motivation, derived from identity congruence, can lead to more significant commitment, effort, and resilience in the face of challenges. Motivation in various forms is key to identity formation, which will be further explored in the following section.

## Identity (& Belonging)

**Know thyself** – Oracle of Delphi

### What is Identity? Who you are in the world, and in your relationships.

Identity refers to an individual's understanding and internalization of their role, characteristics, values, and beliefs in the context of the broader social world. It encompasses how individuals see themselves and how they believe others perceive them. Identity formation is a multifaceted process influenced by personal experiences, cultural and social contexts, and interactions with significant others. It evolves over time, often undergoing major shifts during transitional life phases, such as adolescence and midlife.

For instance, a young adult might grapple with questions like, “Who am I?” or “What do I stand for?” during college when exposed to diverse perspectives and experiences. These introspections, influenced by academic pursuits, peer interactions, and perhaps even international travels, can lead to a refined sense of self, strengthening their identity around specific values, career aspirations, or social affiliations. This process of identity exploration and consolidation continues throughout life, as individuals navigate various roles and challenges.

It is not only possible but quite common for individuals to possess multiple identities, a concept rooted in the theory of social identity.<sup>28</sup> These identities can be based on various factors such as ethnicity, profession, gender, religion, or social roles. For instance, a woman might identify herself as a mother, a scholar, an atheist, and an Asian American, each of these identities carrying its own set of norms, values, and expectations. Some of

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<sup>28</sup>Tajfel, H., & Turner, J. C. (2004). The Social Identity Theory of Intergroup Behavior. In J. T. Jost & J. Sidanius (Eds.), *Political Psychology: Key Readings* (pp. 276–293). Psychology Press.



these identities might overlap, meaning they coexist seamlessly. For instance, her practices as a scholar might influence her values and decisions in her maternal role.

There can also be situations where alternating identities come into play, especially in contexts where it might not be possible or appropriate to manifest multiple identities simultaneously. This phenomenon is often observed in “code-switching,” where bilingual individuals switch languages based on the conversational context. Similarly, someone might emphasize their professional identity in a work setting but prioritize their parental identity at home. While these identities are all integral components of the individual's self-concept, the prominence of each can shift based on context, environment, and interpersonal interactions.

Identity is often associated with personality, nonetheless, these elements serve different aspects of an individual's self-concept. Personality generally refers to enduring patterns of thinking, feeling, and behaving that distinguish one person from another, encompassing traits like extroversion, conscientiousness, or neuroticism.<sup>29</sup> Identity, as discussed above, concerns an individual's understanding of themselves in the world, encompassing aspects like roles, affiliations, and personal narratives. For instance, while being introverted might be a facet of one's personality, identifying as a “writer,” “mother,” or “activist” signifies parts of one's identity.<sup>30</sup> While personality traits can influence the roles and affiliations one gravitates towards, identity is shaped by personal choices, societal expectations, and life experiences.

While “passive” constraints such as initial conditions may have a significant role in shaping identity, CCR believes the role of education is to empower learners to proceed from those starting points, and thus takes the “active view” of the development of identity.

Research indicates that there are two schools of thought when it comes to the development of identity: either it is discovered, or it is created. While the two options may seem similar, they produce very different images of identity.

The former describes an individual waiting for their “true self” to be found. This language depicts a passive individual depending on an external event to provide their identity. It also emphasizes a predetermined nature of self as the idea of a true self does not allow for the evolution of Identity without placing a value judgment on one Identity being superior to the other, instead of just different.<sup>31</sup>

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<sup>29</sup> 464 McCrae, R. R., & Costa, P. T., Jr. (1999). A Five-Factor Theory of Personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of Personality: Theory and Research* (pp. 139–153). Guilford

<sup>30</sup> Erikson, E. H. (1968). *Identity: Youth and Crisis*. Norton & Company.

<sup>31</sup> Waterman, A. S. (1984). Identity Formation: Discovery or Creation? *The Journal of Early Adolescence*, 4(4), 329-341.

Conversely, the idea that Identity is created imagines an individual taking an active role in the construction of their identity. This depiction provides an individual with more agency in the development of their identity as it emphasizes their role and control in the process. This language also allows for the potential to craft multifaceted identities for a variety of situations and evolve each identity across a lifetime.<sup>32</sup>

CCR operates with the assumption that, while identity can be both discovered and created, the latter will be more impactful from the perspective of an instructor and an individual looking to cultivate identity. The philosophical choice to favor the agency of individuals and the efficacy of the education system will help learners acquire the tools needed along the way.

## What is Belonging? An innate desire to be part of something larger than oneself.

Belonging refers to an individual's sense of acceptance and inclusion within a group or community<sup>33</sup> and is a fundamental human need and vital component for mental and emotional well-being. When individuals feel they belong, they perceive themselves as an integral part of a larger system, experiencing validation, support, and understanding from others.

Because of the importance of belonging, “belonging indexes” and surveys have been developed to evaluate the sense of belonging or inclusion experienced by individuals within a particular environment (e.g., workplace, community, educational institution). These indexes assess various factors (depending on their application) including:

- Inclusivity: How inclusive the environment is perceived to be.
- Diversity: The extent to which diversity is represented and valued.
- Fair Treatment: Whether individuals feel they are treated fairly and with respect.
- Support and Community: The level of support and community connection individuals experience.
- Representation: How well individuals feel their identity and perspectives are represented within the group.

Current examples of these are the Belonging Initiative’s Belonging Survey<sup>34</sup> (in English and Spanish) that aims to assess individuals’ sense of belonging within their communities

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<sup>32</sup> Ibid.

<sup>33</sup> Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529.

<sup>34</sup> Belonging Initiative. (2023) Belonging survey. <https://www.surveymonkey.com/r/SVD78JN>

and the Mwah Belonging Index,<sup>35</sup> a similar tool, evaluates levels of belonging within the workplace. Similarly, the Valuegraphics Project<sup>36</sup> has developed a Belonging Index with specific applications for education, training, and library occupations in the USA. According to this index, topic indicators for belonging are:

I feel like I belong:

- when I'm a member of a group that is important to me.
- when I have varied relationships with the people I'm around.
- I feel like I belong when I am contributing to something larger than myself.

The concept of belonging is closely intertwined with identity.<sup>37</sup> Identity, as an understanding of oneself in the world, is significantly influenced by the groups or communities to which one feels a sense of belonging. Inversely, when one's identity is rejected or marginalized by a dominant group, it can result in feelings of isolation and a diminished sense of belonging, highlighting the intricate relationship between these two constructs.

## Primary Facets of Identity and Belonging

The formation of individual identity, and the need for belonging that accompanies it, is a complex process influenced by a multitude of factors. These facets can be broadly categorized into psychological, social, and cultural components. For this reason, identity and belonging are extensively studied in psychology, sociology, and anthropology. This is a vast topic that cannot be completely unpacked within this text, however, major facets identified in the literature include:

- Biology:<sup>38</sup> Genetics play a role in determining physical characteristics as well as aspects of personality and behavior, an integral foundation of personal identity.
- Family:<sup>39</sup> Central to research in developmental psychology, family environment and parenting styles play a major role in the development of self-concept and identity.

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<sup>35</sup> Mwah. (2023) The belonging index. <https://mwah.live/resources/belonging-index>

<sup>36</sup> The Valuegraphics Research Project, Inc. (2022). Valuegraphics Research Company.

<sup>37</sup> Tajfel, *The Social Identity Theory of Intergroup Behavior*. (pp. 276–293).

<sup>38</sup> Plomin, R., DeFries, J. C., Knopik, V. S., & Neiderhiser, J. M. (2016). Top 10 Replicated Findings from Behavioral Genetics. *Perspectives on Psychological Science*, 11(1), 3-23.; Polderman, T. J. C., Benyamin, B., et al. (2015). Meta-analysis of the Heritability of Human Traits Based on Fifty Years of Twin Studies. *Nature Genetics*, 47(7), 702-709.

<sup>39</sup> Bowlby, J. (1988). *A Secure Base: Parent-child Attachment and Healthy Human Development*. Basic Books; Cox, M. J., & Paley, B. (1997). Families as Systems. *Annual Review of Psychology*, 48, 243–267. <https://doi.org/10.1146/annurev.psych.48.1.243>

Family traditions, values, and dynamics are often among the first and most profound influences on identity formation.

- Society and Culture:<sup>40</sup> Sociocultural norms, traditions, and expectations shape identity by providing frameworks within which individuals understand themselves and are perceived by others (e.g., religion, ethnicity, national identity).
- Experience: Life experiences, such as education, relationships, and important life events - both positive and negative - contribute to shaping self-perception and identity.
- Social Interactions: Interactions with peers, friends, and broader social groups play a crucial role in identity formation, especially during adolescence.<sup>41</sup> This includes the influence of social roles and group membership.
- Personal Values:<sup>42</sup> An individual's values and belief system, which may evolve over time, are central to their identity. This includes moral, ethical, and political beliefs.
- Personal Interests:<sup>43</sup> Hobbies, talents, and interests are significant in shaping identity and often careers (another driver of identity). These pleasurable activities influence how individuals spend their time and often how they relate to others.
- Education and Socioeconomic Status:<sup>44</sup> An individual's economic background, social class and subsequent education are widely recognized in academic research as major factors that influence identity formation, as these factors influence individual opportunities, experiences, and the way people are perceived by others.

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<sup>40</sup> Giddens, A. (1991). *Modernity and Self-identity: Self and Society in the Late Modern Age*. Stanford University Press; Markus, H. R., & Kitayama, S. (1991). Culture and the Self: Implications for Cognition, Emotion, and Motivation. *Psychological Review*, 98(2), 224–253; Tajfel, H., & Turner, J. C. (1979). An Integrative Theory of Intergroup Conflict. *The Social Psychology of Intergroup Relations* (pp. 33-47). Brooks/Cole.

<sup>41</sup> Brown, B. B., & Larson, J. (2009). Peer Relationships in Adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of Adolescent Psychology: Contextual Influences on Adolescent Development* (pp. 74–103). John Wiley & Sons, Inc.; Steinberg, L., & Morris, A. S. (2001). Adolescent Development. *Annual Review of Psychology*, 52, 83–110.

<sup>42</sup> Hitlin, S. (2003). Values as the Core of Personal Identity: Drawing Links Between Two Theories of Self. *Social Psychology Quarterly*, 66(2), 118–137. <https://doi.org/10.2307/1519843>

<sup>43</sup> Gagné, F. (2004). Transforming Gifts into Talents: The DMGT as a Developmental Theory. *High Ability Studies*, 15(2), 119–147; Holland, J. L. (1997). *Making Vocational Choices: A Theory of Vocational Personalities and Work Environments* (3rd ed.). Psychological Assessment Resources; Iwasaki, Y. (2007). Leisure and Quality of Life in an International and Multicultural Context: What are Major Pathways Linking Leisure to Quality of Life? *Social Indicators Research*, 82(2), 233–264.

<sup>44</sup> Arnett, J. J. (2000). Emerging Adulthood: A Theory of Development from the Late Teens through the Twenties. *American Psychologist*, 55(5), 469–480 Lareau, A. (2003). *Unequal Childhoods: Class, Race, and Family Life*. University of California Press; McLoyd, V. C. (1998). Socioeconomic Disadvantage and Child Development. *American Psychologist*, 53(2), 185–204.

- Gender and Sexuality:<sup>45</sup> Gender identity and sexual orientation are fundamental aspects of an individual’s overall identity and sense of belonging, influencing personal, professional, and social experiences.
- Relationships:<sup>46</sup> An innately social animal, humans have a fundamental need to form and maintain diverse, yet consistent, interpersonal relationships, which is why belonging is a key component of identity.

## CCR’s Synthesis of Identity Theories<sup>47</sup>

CCR Term	CCR Definition	Associated Terms and Constructs
Identity	Who you are in the world and in your relationships	Belonging, self-concept, personhood

Because identities are forged by experiences, societal contexts, stories people tell about themselves, and the intersection of various group memberships, they are fluid and change as one interacts with the world, faces challenges, and matures. CCR’s synthesis of Identity theories draws upon the rich heritage of Erikson’s psychosocial development, the introspective depths of narrative identity, the communal mapping of social identity theory, and the intricate patterning of intersectionality to understand this complex construct.

## Why is Identity crucial in an age of AI? Because humans should not be boxed in by their own algorithms!

Identity is increasingly important due to the need for authentic human connection and understanding in a rapidly digitizing world. AI systems, which draw from large datasets, can inadvertently perpetuate stereotypes and biases embedded in the data, potentially leading to a homogenized or skewed representation of identities. For example, facial

<sup>45</sup> Egan, S. K., & Perry, D. G. (2001). Gender identity: A Multidimensional Analysis with Implications for Psychosocial Adjustment. *Developmental Psychology*, 37(4), 451–463; Fausto- Sterling, A. (2019) Gender/Sex, Sexual Orientation, and Identity are in the Body: How Did They Get There? *The Journal of Sex Research*, 56(4-5), 529-555.

<sup>46</sup> Baumeister, R. F., & Leary, M. R. (1995). The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation. *Psychological Bulletin*, 117(3), 497–529.

<https://doi.org/10.1037/0033-2909.117.3.497>; Rubin, K. H., Bukowski, W. M., & Parker, J. G. (2006). Peer Interactions, Relationships, and Groups. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of Child Psychology: Social, Emotional, and Personality Development* (pp. 571–645). John Wiley & Sons, Inc.

<sup>47</sup> See “Identity Theories” in the Appendix for *Education for the Age of AI* available at:

<https://curriculumredesign.org/our-work/education-for-the-age-of-ai/>

recognition technologies have faced criticism for misidentifying individuals from certain racial or ethnic groups, underscoring the challenges of ensuring AI comprehends and respects diverse identities. As AI plays a more prominent role in curating digital experiences—like content suggestions in social media—it becomes even more key, and a more active practice, for individuals to understand and assert their identities, ensuring they are not boxed in by algorithms. Emphasizing human identity in the AI era reinforces the value of individual perspectives, combats potential biases in AI systems, and stresses the importance of ethically implementing technology in ways that reinforce the nature of human identity.

## Can AI possess (extrinsic) Identity? It already does.

Current and future forms of AI do and will possess Identity. These identities are fundamentally informed by three different aspects. First, the datasets on which they are trained<sup>48</sup> include biases that reflect their corpora. Word “embeddings” (the multi-dimensional spaces of their relationships with each other) often absorb societal biases in training data<sup>49</sup> and stereotypical or biased user prompts are almost certain to generate biased responses, even responses that amplify these biased viewpoints.<sup>50</sup> Second, the behavioral expressions for which they are programmed, i.e., algorithms that allow AIs to be more “friendly” or more “professional” in their tone and responses. Third, traits associated with identity and personality will be displayed through user interfaces. For example, META is currently encouraging users to create their own chatbots, which will induce the creation of a plethora of individual agents modeled on users’ desires.

Identity and personality are intertwined concepts that serve different functions. Identity being an individual's understanding and presentation of themselves in terms of values, beliefs, roles, and affiliations, often evolving in response to life events and social contexts.<sup>51</sup> Personality pertains to consistent patterns of thought, emotion, and behavior

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<sup>48</sup> Urman, A. & Makhortykh, M. (n.d.). The Silence of LLMs: Cross-lingual Analysis of Political Bias and False Information Prevalence in ChatGPT, Google Bard and Bing Chat.

[https://www.google.com/url?q=https://link.springer.com/article/10.1007/s11127-023-01097-2&sa=D&source=docs&ust=1698958969128194&usq=AOvVaw1WveegE7xTYufvoZIB\\_U-3](https://www.google.com/url?q=https://link.springer.com/article/10.1007/s11127-023-01097-2&sa=D&source=docs&ust=1698958969128194&usq=AOvVaw1WveegE7xTYufvoZIB_U-3)

<sup>49</sup> Caliskan, A., Bryson, J. J., & Narayanan, A. (2016). Semantics Derived Automatically from Language Corpora Contain Human-like Biases. *Science* 356(6334) <https://doi.org/10.1126/science.aal4230>

<sup>50</sup> Bolukbasi, T., et al. (2016). Man is to Computer Programmer as Woman is to Homemaker? Debiasing Word Embeddings. *ArXiv: Cornell University*. <https://arxiv.org/abs/1607.06520>

<sup>51</sup> Erikson, E. H. (1968). *Identity: Youth and Crisis*. Norton & Company.

that characterize an individual across various situations and over time.<sup>52</sup> While identity speaks to “who I am” in a socio-cultural and self-reflective context, personality delineates “how I typically think, feel, and act.” And while the development of AI progresses ever more rapidly, it will continue demonstrating increased capabilities to simulate certain aspects of human behavior such as identity and personality.

According to GPT4:

The question of whether AI can possess identity is a complex and multidimensional one, blending technical, philosophical, and sociological perspectives. As of now, AI doesn't possess identity in the way humans understand and experience it. Here's a brief exploration of the topic:

From a technical standpoint, AI models, including the most advanced like GPT-4, operate based on data and algorithms. They don't have consciousness, emotions, self-awareness, or subjective experiences, all of which are key components of human identity. These models can generate responses based on their training, but they don't “know” themselves or have personal experiences (Searle, 1980).

However, from a philosophical and sociological viewpoint, things can be more nuanced. Philosophers have debated the nature of identity and consciousness for centuries. If an AI exhibits behavior indistinguishable from a conscious being, some argue it might be considered as having a form of identity, even if it's different from human identity (Dennett, 1991). Additionally, society can ascribe identities to AI. For instance, people might name their AI assistants or refer to them with pronouns, anthropomorphizing them and ascribing a form of identity, even if it's externally constructed and not inherently possessed by the AI.

That said, advancements in AI and our understanding of consciousness might reshape these views in the future. The boundary of what we consider identity may shift based on new discoveries or societal norms.

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<sup>52</sup> McCrae, R. R., & Costa, P. T. (1987). Validation of the Five-factor Model of Personality Across Instruments and Observers. *Journal of Personality and Social Psychology*, 52(1), 81–90. <https://doi.org/10.1037/0022-3514.52.1.81>



## Conclusion: Identity Towards Agency

Previous generations saw adolescents transition neatly from higher education to careers, to parenthood.<sup>53</sup> In each of these phases, identity and, to some extent, purpose, were firmly defined for individuals. Current research indicates that there has been a shift in the timing of a young person's entrance into adulthood.<sup>54</sup> Now, this pathway, this timing, and these roles are much more unstable and porous. As the University of Chicago's Consortium on School Research notes, "this delay into adulthood has led to greater role ambiguity and a greater focus on individuality in identity development."<sup>55</sup> COVID-19 further exacerbated this ambiguity, and, if the pattern holds, each generation will continue to tear down and rebuild what a meaningful life means to them as the path from adolescence to adulthood becomes increasingly more complex. Without a strong sense of identity or purpose, today's youth run the risk of feeling increasingly helpless in a volatile and unpredictable future.

It is important to note that constructs such as identity, agency and purpose are strongly tied to both an individual and to the society, culture, and surroundings in which the individual is embedded. This paper addresses the subcompetencies that best enable learners to build, sustain, and express identity, agency, and purpose. It will become clear that these subcompetencies are critical for the development and stability of these constructs. The (sub)competencies likewise support and uplift various ideals of learning: from community-building to empathy and equity.<sup>56</sup>

Identity, Agency, and Purpose are compelling examples of how subcompetencies can be pieced together depending on the desired goal. The subcompetencies noted here are not the only pieces of the 4D Framework relevant to the concept at hand. On the contrary, the 4D Framework provides a powerful inroad to these seemingly abstract and multifaceted constructs. By framing identity and purpose through the lens of specific practicable capabilities, subcompetencies can create a lever to uplift and access their development within and beyond education. As human-AI interactions become more and more frequent, the links between human identity and agency become increasingly prominent and important. Identity influences individual agency. Self-efficacy, in particular, is a facet of identity that empowers individuals to exert control over their actions and environments.<sup>57</sup>

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<sup>53</sup> Albeit, only for white, upper-middle class Americans.

<sup>54</sup> Nagaoka, J., Farrington, C. A., Ehrlich, S. B., Johnson, D. W., Dickson, S., Heath, R., & Mayo, A. (2014). A Framework for Developing Young Adult Success in the 21st Century. *University of Chicago Consortium on Chicago School Research*.

<sup>55</sup> Ibid.

<sup>56</sup> <https://curriculumredesign.org/our-work/equity-and-social-justice-in-the-ccr-framework/>

<sup>57</sup> Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84(2), 191–215. <https://doi.org/10.1037/0033-295X.84.2.191>



As AI agents perform tasks previously accomplished by humans, there is a potential for AI to influence or reshape human identity. Examples of reliance on digital technology, such as delegating decision-making to AI, can alter individuals' sense of identity and agency.<sup>58</sup> Human interaction with AI thus not only reflects but potentially influences human identity and perceptions of personal agency.

A balanced relationship between identity and agency is key for humans in a world with AI agents. It is necessary to consider the potential influence of AI on human self-perception and decision-making processes to ensure that these technologies augment rather than diminish a human sense of agency. AI tools need to be leveraged to enhance human capabilities while preserving core elements of individual human identities and agency. In the next section, agency and its relationship to AI will be further explored, demonstrating how Identity and belonging inform Agency and, eventually, purpose.

## Agency (& Growth Mindset)

**You have agency, and you are free to choose. But there is actually no free agency. Agency has its price. You have to pay the consequences of your choices.**

– Dieter F. Uchtdorf

### What is Agency? Your capacity to take action.

Agency refers to an individual's capacity to act independently, make choices, and exert control over their actions and decisions. Rooted in both psychological and sociological discourse, agency emphasizes the proactive role individuals play in shaping their lives, rather than being passive recipients of external forces.<sup>59</sup> Agency is closely tied to one's belief in their ability to influence events, known as self-efficacy. A person with high self-efficacy believes they can influence outcomes through their actions, thereby exhibiting a strong sense of agency. Conversely, those with low self-efficacy might feel that their actions have little impact on outcomes, resulting in diminished agency.<sup>60</sup>

Agency often begins with the self; in particular, with self-Agency, or the realization that an individual has control over their own actions and behaviors.<sup>61</sup> This process can begin even before the concept of self-awareness, developing as individuals observe casual

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<sup>58</sup> Turkle, S. (2015). *Reclaiming Conversation: The Power of Talk in a Digital Age*. Penguin Books.

<sup>59</sup> Bandura, A. (2006). Toward a Psychology of Human Agency. *Perspectives on Psychological Science*, 1(2), 164–180. <https://doi.org/10.1111/j.1745-6916.2006.00011.x>

<sup>60</sup> Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122–147. <https://doi.org/10.1037/0003-066X.37.2.122>

<sup>61</sup> Hansen, D. M., & Jessop, N. (2017). A Context for Self-Determination and Agency: Adolescent Developmental Theories. *Development of Self-Determination Through the Life-Course*, 27-46.

connections between their actions and changes in the environment. Also called self-regulation, self-Agency empowers an individual to exert influence over themselves and is particularly important during early childhood development.<sup>62</sup> Self-Agency allows an individual to understand what they do and do not have control over and how to work within those confines. For example, while an individual perhaps cannot control that they feel an emotion, they can control how they express and act upon that emotion. They can be in control, instead of letting their emotions control them.

This is one of the primary differences between agency and autonomy. Agency is influenced by both internal and external factors, whereas autonomy emphasizes acting based on one's own values without external compulsion, underscoring self-governance and independence from external influence. Both concepts deal with individual choice, but autonomy is more focused on independence from external influence.<sup>63</sup>

It is perhaps most apparent in Agency—though it is also true for motivation, identity, and purpose—that structural factors significantly impact how an individual can express their Agency. Socio-economic background, childhood, family experiences, and culture can all have a substantial impact on agentic orientation and agentic possibility.<sup>64</sup> All of these factors are often outside of an individual's control—particularly as an adolescent.

Understanding how these variables impact Agency can help an individual identify where they can most productively exert influence for positive impact.

Often associated with Agency is the concept of executive function. Executive function refers to a set of cognitive processes that enable individuals to engage in goal-directed behavior. These processes include working memory (holding and manipulating information), cognitive flexibility (shifting between tasks or adapting to new rules), and inhibitory control (suppressing impulses or resisting distractions). These mental skills are essential for tasks such as planning, problem-solving, organizing, and managing time effectively.<sup>65</sup>

Agency, on the other hand, is the capacity of individuals to act independently and make free choices. While executive function provides the cognitive tools necessary for goal-directed actions, agency refers to the beliefs and motivations that drive individuals to

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<sup>62</sup> Ibid.

<sup>63</sup> Ryan, R. M., & Deci, E. L. (2000). Self-determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-being. *American Psychologist*, 55(1), 68–78.  
<https://doi.org/10.1037/0003-066X.55.1.68>

<sup>64</sup> Klemencic, M. (2015). What is Student Agency? An Ontological Exploration in the Context of Research on Student Engagement.

<sup>65</sup> Diamond, A. (2013). Executive Functions. *Annual Review of Psychology*, 64, 135-168.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4084861/>

initiate and persist in such actions. In essence, executive function is about “how” people can achieve something, while agency is about the “belief” that they can achieve it and the drive to do so.

## Comparison with Growth Mindset

Agency and growth mindset are both integral concepts in educational and psychological fields as they intersect in how they influence individual behavior and learning. Growth mindset refers to the belief that abilities and intelligence can be developed through effort, training, and perseverance.<sup>66</sup> Individuals with a growth mindset tend to embrace challenges, persist in the face of setbacks, and see effort as a pathway to mastery.

The relationship between these two constructs is closely knit. A growth mindset can foster greater agency. When individuals believe they can develop their skills and intelligence, they are more likely to take proactive steps in their learning and lives, underscoring the essence of agency.<sup>67</sup> On the other hand, recognizing and exercising one's agency can lead to the cultivation of a growth mindset. When students see the results of their proactive behaviors and choices, they can develop the belief that growth is possible.

Teachers' growth mindset supportive language (GMSL)—rhetoric emphasizing that one's skills can be improved over time—has been shown to significantly reduce disparities in academic achievement and enhance students' learning outcomes. Teachers' GMSL involves the use of phrases and feedback that encourage students to believe that their abilities and intelligence can be developed through effort, persistence, and the right strategies.<sup>68</sup> However, teachers often lack effective professional development in these techniques. To mitigate this problem, researchers have begun using LLMs to provide automated, personalized coaching to support teachers' use of GMSL. This AI tool revises unsupportive utterances submitted to GMSL by “developing (i) a parallel dataset containing GMSL-trained teacher reframing of unsupportive statements with an accompanying annotation guide, (ii) a GMSL prompt framework to revise teachers' unsupportive language, and (iii) an evaluation framework grounded in psychological theory for evaluating GMSL with the help of students and teachers.”<sup>69</sup> This kind of

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<sup>66</sup> Dweck, C. S. (2006). *Mindset: The New Psychology of Success*. Random House.

<sup>67</sup> Yeager, D. S., & Dweck, C. S. (2012). Mindsets that Promote Resilience: When Students Believe that Personal Characteristics Can be Developed. *Educational Psychologist*, 47(4), 302–314. <https://doi.org/10.1080/00461520.2012.722805>

<sup>68</sup> Dweck, C. S. *Mindset: The New Psychology of Success*.

<sup>69</sup> Handa, K, Clapper, M., et al. (2023). “Mistakes Help Us Grow”: Facilitating and Evaluating Growth Mindset Supportive Language in Classrooms. *ArXiv*: Cornell University. <https://arxiv.org/pdf/2310.10637.pdf>

research provides a glimpse of the exciting complementary capabilities of AI tools for the development of agency and growth mindset.

## Primary Facets of Agency

Agency is informed by a combination of internal and external facets. These driving forces can help in comprehending how people exercise their agency at different times, in different contexts. Given the focus of this book, it is not possible to discuss all facets of agency exhaustively. Here are the primary facets of agency as identified in the literature:

- Personal Values:<sup>70</sup> Core principles, such as beliefs, often guide what individuals consider important, influencing their choices and actions.
- Goals:<sup>71</sup> Goals, both short-term and long-term, provide direction and purpose, fueling an individual's actions.
- Self-efficacy:<sup>72</sup> The belief in one's ability to be efficacious significantly impacts agency whereas confidence in one's skills and competence encourages individuals to take action and make decisions.
- Autonomy:<sup>73</sup> The degree of autonomy an individual has in their personal and professional life impacts their ability to exercise agency. This includes freedom from undue external control or influence.
- Metaemotion:<sup>74</sup> Also known as Emotional Intelligence, one's ability to understand and manage emotions and empathize with others, can influence how an individual exercises agency, especially in social contexts.
- Educational and Socioeconomic Background:<sup>75</sup> Education provides knowledge and critical thinking skills, while socioeconomic status can impact the range of choices available to an individual. These factors can expand or limit the extent of one's agency.

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<sup>70</sup> Schwartz, S. H. (1992). Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology*, Vol. 25, (pp. 1–65). Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60281-6](https://doi.org/10.1016/S0065-2601(08)60281-6)

<sup>71</sup> Eccles, J. S., & Wigfield, A. (2002). Motivational Beliefs, Values, and Goals. *Annual Review of Psychology*, 53(1), 109–132. <https://doi.org/10.1146/annurev.psych.53.100901.135153>; Locke, E. A., & Latham, G. P. (2002). Building a Practically Useful theory of Goal setting and Task Motivation: A 35-year Odyssey. *American Psychologist*, 57(9), 705–717. <https://doi.org/10.1037/0003-066X.57.9.705>

<sup>72</sup> Bandura, A. (2001). "Social Cognitive Theory: An Agentic Perspective." *Annual Review of Psychology*, 52(1), 1-26.

<sup>73</sup> Baltes, P. B., Lindenberger, U., & Staudinger, U. M. (2006). Life Span Theory in Developmental Psychology. In R. M. Lerner & W. Damon (Eds.), *Handbook of Child Psychology: Theoretical Models of Human Development* (pp. 569–664). John Wiley & Sons, Inc.

<sup>74</sup> Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in Education, Society, and Culture*. Sage; Goleman, D. (1995). *Emotional Intelligence*. Bantam Books.

<sup>75</sup> Sen, A. (1999). "Development as Freedom." Oxford: Oxford University Press.

- Cultural and Social Influence:<sup>76</sup> Sociocultural norms and expectations shape an individual’s understanding of what actions are possible or acceptable. Family, peer groups, and broader social networks all play a role in influencing decisions and actions.
- Physical and Mental Health:<sup>77</sup> Health can affect agency both directly and indirectly as physical and mental well-being influences an individual’s capacity to act and make decisions.

## CCR’s Synthesis of Agency Theories

CCR Term	CCR Definition	Associated Terms and Constructs
Agency	Your capacity to take action	Autonomy, self-efficacy, empowerment, intentionality

To create a composite theory of agency, CCR reviewed prominent and currently used theories of agency and growth mindset. CCR’s framework for competencies shares many characteristics with several influential theories of agency<sup>78</sup> and can be used to foster agency by combining key subcompetencies.

Both CCR’s framework and Bandura’s SCT emphasize the role of the learner in shaping their education. Bandura’s concept of self-efficacy aligns with CCR’s attention to mastering competencies like critical thinking. SCT’s focus on observational learning—where individuals learn by watching and imitating others—resonates with CCR’s Character domain, including traits like resilience and ethics. Finally, Bandura’s idea of self-regulation is mirrored in CCR’s “meta-learning,” highlighting the importance of self-awareness in the learning process.

The Theory of Planned Behavior (TPB) focuses on how individual intention, influenced by external factors, determines behavior. For instance, “attitude towards behavior” in TPB can be paralleled with CCR’s attention to the Character domain, particularly traits like Courage and Ethics, which influence an individual’s perspective and response to situations. The “subjective norms” from TPB, which refers to the perceived social pressure

<sup>76</sup> Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration*. University of California Press; Markus, H. R., & Kitayama, S. (1991). Culture and the Self: Implications for Cognition, Emotion, and Motivation. *Psychological Review*, 98(2), 224–253.

<sup>77</sup> Albrecht, G. L., & Devlieger, P. J. (1999). "The disability paradox: High quality of life against all odds." *Social Science & Medicine*, 48(8), 977-988; Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudemonic well-being. *Annual Review of Psychology*, 52, 141–166. <https://doi.org/10.1146/annurev.psych.52.1.141>

<sup>78</sup> See “Agency Theories” in the *Appendix for Education for the Age of AI* available at: <https://curriculumredesign.org/our-work/education-for-the-age-of-ai/>

to perform (or not) a behavior, resonates both with CCR's Character and Meta-learning domains, in terms of Courage, Ethics, and Metacognition. The element of “perceived behavioral control” in TPB, which is the perception of the ease or difficulty of performing a behavior, aligns with Skills in CCR's framework—competencies like Critical Thinking, Communication, and Collaboration which directly influence an individual's confidence in executing tasks.

Finally, Giddens' Structuration Theory shares a priority with CCR on the dynamics between individuals and the structures within which they operate. Giddens' theory posits that while social structures guide individual actions, these actions can also produce and reproduce these structures. This duality of structure emphasizes human agency's role in shaping societal constructs.

This dynamic is also present in CCR's framework. Character, which includes traits like Ethics, Resilience, and Courage, can be seen as components of individual agency that influence and are influenced by societal structures.

This aligns with Giddens' focus on agency as being embedded within structures. Skills, particularly competencies like Communication, Collaboration, and Critical Thinking, mirrors Giddens' view on “modalities” – the means through which agents draw upon structural properties. Effective communication, for instance, can serve as a modality to reinforce or change existing societal norms and institutions.

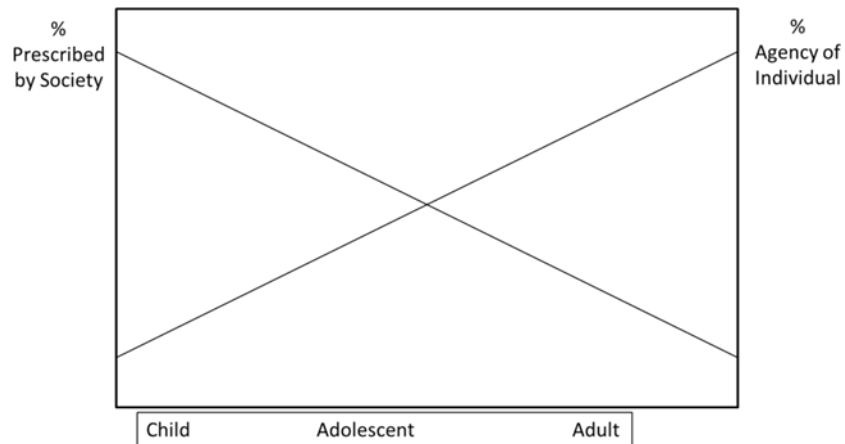
## Levels of Agency in Education

Agency is sometimes overblown in education as being absolute, with no constraints. Yet there are several layers of agentic choices, and a wise education needs to balance all these layers:

Agency Layer	Example	Comment
Discipline	Environmental science	Tracking choices in high school
Branch	Conservation biology	Depends on availability
Subject/Topic	Climate change impact on a specific ecosystem	Easy to implement
Implementation	Restoration projects	Often underappreciated, often naturally multidisciplinary

Purpose	Educational programs on conservation	Most impactful, often naturally multidisciplinary
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Furthermore, the degree of choice starts low, as young students need to master the basics (even within a Montessori-like environment) to greater and greater Agency, per the diagram below:



**Figure 1** (Source: CCR)

## Why is Agency crucial in an age of AI? Agency permits humans to use AI as a tool.

Agency has taken on paramount significance because it serves as a touchstone for human uniqueness and control amidst rapidly evolving technological landscapes. AI systems have begun to perform tasks that were traditionally within the exclusive realm of human cognition—such as diagnosing diseases, composing music, or writing prose. In this context, maintaining human agency ensures that humans remain active decision-makers, not passive recipients or bystanders in the face of technological determinism.<sup>79</sup>

Agency is integral in establishing a sense of purpose and direction, allowing individuals to harness AI as a tool rather than be overshadowed by it.<sup>80</sup> In areas such as ethics and emotional intelligence, human agency remains crucial, guiding how AI should be

<sup>79</sup> Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age*. W. Norton & Co.

<sup>80</sup> Drexler, K. E. (2019). *Reframing Superintelligence: Comprehensive AI Services as General Intelligence*. Future of Humanity Institute, University of Oxford.



designed, integrated, and regulated in society. It is through this agency that humans ensure AI technologies align with our collective values, goals, and societal norms.<sup>81</sup>

Maintaining a robust sense of human agency in the age of AI not only helps maintain the intrinsic value of human individuality but also safeguards democratic processes, ethical considerations, and personal freedoms. The balance between leveraging AI's capabilities and preserving human agency will be pivotal in steering the future course of human-AI collaboration.

## Can AI possess agency? Yes, in some limited forms.

This is currently a gray area as AIs do possess a narrow form of agency, particularly generative adversarial networks (GAN) that are programmed to independently compete against each other. The release of AutoGPT and similar autonomous AI agents, “showcases the potential for machines to handle tasks previously thought to be exclusive to humans, including content creation, problem-solving, and decision-making.”<sup>82</sup> A compelling example is NVIDIA’s release of Eureka, an AI agent that can automatically generate algorithms, using LLMs like GPT-4 and reinforcement learning, to train robots to perform complex manual tasks and rapidly acquire new skills.<sup>83</sup>

It remains that, beyond these examples where AI agents have been given limited agency, humans have not yet provided agency to most AIs, let alone full agency. However, John Von Neuman’s concept of self-reproducing automata is the tip of the research arrow.<sup>84</sup> The role of humans remains, for now, to program AIs for different levels of particular agency and direct them to human purposes.

According to GPT4, with which the authors agree:

Agency is typically understood as the capacity of an entity to act independently and to make its own free choices. When discussing AI, the concept of agency is more nuanced.

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<sup>81</sup> Dignum, V. (2019). *Responsible Artificial Intelligence*: Springer Nature.

<sup>82</sup> Takyar, A. (2023). AutoGPT: Unleashing the Power of Autonomous AI Agents. *LeewayHertz*. <https://www.leewayhertz.com/autogpt/>; *Significant-Gravitas / AutoGPT*. (2023). GitHub account. <https://github.com/Significant-Gravitas/AutoGPT>

<sup>83</sup> McKay, C. (2023). NVIDIA's Eureka Uses GPT-4 to Teach Robots New Skills. *Maginate*. <https://www.maginate.com/article/nvidias-eureka-uses-ai-to-teach-robots-new-skills/#:~:text=Crucially%2C%20Eureka%20does%20this%20without,the%20task%20and%20robot%20morphology>

<sup>84</sup> Se, K. (2023). FOD#23: The Quest for Self-reproducing Automata: Old and New Ideas. *Turing Post*. <https://www.turingpost.com/p/fod23>



AI does not have agency in the same way humans do. Human agency is rooted in consciousness, intentionality, and the ability to act based on desires, beliefs, and individual experiences. In contrast, AI systems operate based on programmed algorithms, and their “actions” are determined by code, data inputs, and specified objectives. Even when an AI system's behavior appears autonomous, it is still bounded by the parameters set by its developers.

However, AI can display a form of “functional agency.” For example, a machine learning system trained to optimize stock trades might make decisions autonomously within the scope of its programming, processing vast amounts of data faster than a human could. It “acts” on the data it's provided to achieve its optimization goal. But this decision-making process lacks true intentionality or conscious understanding.

As AI systems become more advanced and their decision-making processes more opaque, it can sometimes appear as if they have a form of agency, especially when these systems operate in unpredictable ways or when the reasoning behind their decisions is not immediately transparent. This perception can lead to ethical and philosophical debates about the responsibility and accountability of AI systems and their creators.

In summary, while AI can exhibit autonomous behaviors within the boundaries of their programming, they do not possess agency in the rich, conscious sense that humans do.

Stanford's Fei Fei Li often emphasizes caution in the development of AI. She argues that AIs should always be considered as tools to augment human capabilities, rather than autonomous agents.<sup>85</sup> For example, in the domain of AI for healthcare, which Li has worked on considerably, AI can provide timely assistance to medical practitioners in diagnosing conditions, but the final diagnostic decisions should always be overseen by well-trained human professionals.

Granting agency to AI also further complicates ethical implications. Accountability and responsibility become ambiguous if we give AIs complete agency.<sup>86</sup> Li, among others, insists that, by always understanding AI as a tool, it remains clear that humans are always ultimately responsible for the actions and outputs of AI. “It's recognizing [that] the future of AI is so profoundly impactful that the agency must remain within us. We have to make

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<sup>85</sup> Li, F.F. (2023). *The worlds I see*. Macmillan.

<sup>86</sup> As is happening in military applications...

the choices of how we want to build and use this technology. If we give up agency, it would be a freefall.”

## Conclusion: Agency in Action

Agency is intrinsically linked to the concept of purpose. Purposes and passions provide the direction and intrinsic motivation for agency, while a high degree of agency amplifies the effects of these motivations, leading to persistent and goal-directed behavior. When individuals possess a clear sense of purpose, their agency becomes directed towards fulfilling that purpose, resulting in greater satisfaction and psychological well-being.<sup>87</sup> This creates a feedback loop where agency and purpose reinforce and strengthen each other.

Conversely, a lack of agency, even with strong motivation, hinders the ability to act on desires and intentions. Therefore, optimal performance and goal achievement require both strong motivation and a robust sense of agency.<sup>88</sup> A strong sense of identity helps individuals understand themselves and their place in various groups, both internally and externally. With agency, learners can direct their identities towards personally meaningful goals, contributing to a larger purpose that matters to themselves and others.

The relationship between agency and purpose becomes more vital in a world of AI. AI technologies can inadvertently impinge on human agency by automating decision-making processes, posing a risk to the human sense of purpose. Scholars such as Noah Harari warn of a future where AI's capabilities could overshadow human decision-making, leading to a diminished sense of purpose and agency.<sup>89</sup> When AI plays a substantial role in everyday tasks, it becomes crucial to actively cultivate and maintain human agency and purpose. Doing so ensures that AI's capabilities are harnessed to augment human potential, rather than diminish human aspects of purpose and self-determination. The following sections will discuss the links between agency and purpose and focus on the importance of human purposes in an AI world.

## Purpose (Including Passion)

**Education is not the filling of a bucket, but the lighting of a fire.** – W.B. Yeats

### What is Purpose? Your sense of significance

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<sup>87</sup> Deci, E. L., & Ryan, R. M. (2000). The “What” and “Why” of Goal Pursuits: Human Needs and the Self-determination of Behavior. *Psychological Inquiry*, 11(4), 227–268.

<sup>88</sup> Bandura, A. (2001). Social Cognitive Theory: An Agentic Perspective. *Annual Review of Psychology*, 52, 1-26. <https://www.annualreviews.org/doi/abs/10.1146/annurev.psych.52.1.1>

<sup>89</sup> Harari, Y. N. (2016). *Homo Deus: A Brief History of Tomorrow*. Harper.

Purpose can be described as a central, self-organizing life aim that drives an individual's thoughts, actions, and behaviors, providing a sense of direction and meaning. It often emerges from a blend of personal passions, strengths, values, and a desire to make a positive impact in the world or to contribute to something greater than oneself.<sup>90</sup> Purpose is not only about setting goals; it involves an enduring intent that provides coherence to one's life. The existential psychologist Viktor Frankl<sup>91</sup> emphasized the fundamental human need for purpose, proposing that a meaningful life is anchored in the pursuit of purpose, even in the face of adversity. Having a clear purpose has been linked with a variety of positive outcomes, from improved well-being and health to increased resilience and longevity.<sup>92</sup>

By and large, there are two types of purpose: self-interested and self-transcendent. The first refers to a purpose that largely benefits the self (e.g., an enjoyable task or activity), while the second is rooted in benefiting others or working towards something larger than oneself. Though both can be considered purposes, self-transcendent motivations are often more effective in motivating people.<sup>93</sup>

That said, the road to self-transcendent motivation can be paved by self-interest. As individuals are often interested in experiencing self-transcendent purposes, leveraging curiosity can help target both motivations simultaneously. Seeking to understand deeply is a powerful tool in helping determine interests and passions—a spark that may lead toward a self-transcendent purpose.<sup>94</sup>

Like Identity, researchers and philosophers remain split on whether individual purpose is discovered or created.<sup>95</sup> Researcher John Coleman describes this first conception well: “On social media, I often see an inspiring quotation attributed to Mark Twain: ‘The two most important days in your life are the day you are born and the day you find out why.’ It neatly articulates what I’ll call the ‘Hollywood version’ of purpose. Like Neo in *The Matrix* or Rey in *Star Wars*, we’re all just moving through life waiting until fate delivers a higher calling to us.”<sup>96</sup> Coleman accurately describes the pervasive perception that individuals play a passive role in the development of their purpose—that purpose finds them, not the

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<sup>90</sup> Bronk, K. C. (2014). *Purpose in Life: A Critical Component of Optimal Youth Development*. Springer.

<sup>91</sup> Frankl, V. E. (1963). *Man's Search for Meaning: An Introduction to Logotherapy*. Beacon Press.

<sup>92</sup> Kashdan, T. B., & McKnight, P. E. (2009). Origins of Purpose in Life: Refining Our Understanding of a Life Well Lived. *Psi Chi Journal of Undergraduate Research*, 14(1), 22-30.

<sup>93</sup> Yeager, D. S., Henderson, et al (n.d.). Boring but Important: A Self-transcendent Purpose for Learning Fosters Academic Self-regulation. *Journal of Personality and Social Psychology*, 107(4), 559-580.

<sup>94</sup> CUR4: Actively pursuing one's own interests and passions

<sup>95</sup> Coleman, J. (2017). You Don't Find Purpose - You Build It. *Harvard Business Review*.

<https://hbr.org/2017/10/you-dont-find-your-purpose-you-build-it>

<sup>96</sup> Ibid.

other way around. It is therefore crucial that individuals explore interests and eventual purposes to contribute to the creation of their purpose.

The depiction that individuals create purpose places them in an active role. Coleman stresses that purpose is actively constructed through our actions and choices, and research and popular wisdom, such as the Ikigai model,<sup>97</sup> echo this priority. People who frame their lives as a “hero’s journey” lead more meaningful and satisfying lives. Contrary to popular belief, there isn’t just one overarching purpose to be found; rather, people draw meaning from various aspects of our lives such as work, family, faith, and community. This approach to purpose allows for a richer, more diverse experience of life where different sources of meaning take precedence at different times. Our sense of purpose can evolve, reflecting the different stages of our lives and professional paths. Thus, as with identity, this discussion will proceed under the assumption that agency allows purpose to be both created and multifaceted.

## What is passion? Your enthusiasm for your actions

**Choose a job you love and you'll never have to work a day in your life.** – anonymous (often falsely attributed to Confucius)

Passion, in psychological and sociological contexts, is often understood as a strong inclination or desire toward an activity or object that individuals deeply value, find personally meaningful, and in which they invest significant time and energy.<sup>98</sup> It is a driving or enthusiastic feeling or sentiment.

Passion can serve as a motivating force, guiding individuals towards pursuits that provide them with a sense of purpose and meaning in life.

The relationship between passion and purpose is intricate. While purpose relates to a broader life goal that provides direction and meaning to one’s actions,<sup>99</sup> passion can be seen as the fuel that drives individuals towards the realization of this purpose. A person may have a purpose to contribute to environmental sustainability, and their passion for gardening or wildlife conservation can be the avenue through which they actualize this

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<sup>97</sup> See “The Ikigai Model” in the Appendix for *Education for the Age of AI* available at: <https://curriculumredesign.org/our-work/education-for-the-age-of-ai/>

<sup>98</sup> Vallerand, R. J., Blanchard, C., et al. (2003). Les Passions de l’âme: On Obsessive and harmonious Passion. *Journal of Personality and Social Psychology*, 85(4), 756–767.

<sup>99</sup> Damon, W., Menon, J., & Bronk, K. C. (2003). The Development of Purpose During Adolescence. *Applied Developmental Science*, 7(3), 119–128.

purpose. In essence, while purpose offers the “why” behind our actions, passion provides the vigor and enthusiasm for the “how” of pursuing it.

## Major Facets of Purpose and Passion

The concepts of purpose and passion are widely studied in psychology, particularly in the fields of positive psychology and developmental psychology. This is a vast and nuanced topic, for which this section will not provide an exhaustive list of facets. However, it is important to note that many of the facets of purpose and passion overlap with those for identity and agency and are often issued from motivations:

- **Enjoyment:**<sup>100</sup> When an individual finds something they inherently enjoy, they are more likely to be motivated and develop a passion for that activity, project, or cause. These intrinsic interests, when nurtured, can become passions and purposes.
- **Values:**<sup>101</sup> Because values and beliefs often guide people’s choices and behaviors, when activities align with one’s values or beliefs, a person is more likely to feel a strong(er) sense of purpose and passion.
- **Self-Efficacy and Competence:**<sup>102</sup> A key topic in psychological research, individual belief in the ability to succeed and in their competence in the skills needed to succeed can feed passions and purposes. When a person feels competent, they are more engaged and enthusiastic about activities and projects.
- **Autonomy:**<sup>103</sup> The freedom to choose and control one’s actions is critical to passions and purposes. Autonomy permits people to pursue personally meaningful interests and goals.

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<sup>100</sup> Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-determination in Human Behavior*. Plenum; Silvia, P. J. (2006). *Exploring the Psychology of Interest*. Oxford University Press; Vallerand, R. J. (2008). On the Psychology of Passion: In Search of what Makes People’s Lives Most Worth Living. *Canadian Psychology/Psychologie Canadienne*, 49(1), 1–13.

<sup>101</sup> Dweck, C. S. (2006). *Mindset: The New Psychology of Success*. Random House; Steger, M. F., Kashdan, T. B., Sullivan, B. A. et al. (2008). Understanding the Search for Meaning in Life: Personality, Cognitive Style, and the Dynamic between Seeking and Experiencing Meaning. *Journal of Personality*, 76(2), 199–228. <https://doi.org/10.1111/j.1467-6494.2007.00484.x>

<sup>102</sup> Pajares, F., & Schunk, D. H. (2001). Self-beliefs and School Success: Self-efficacy, Self-concept, and School Achievement. In R. Riding & S. Rayner (Eds.), *Perception* (pp. 239-266). Ablex Publishing; Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and Work-related Performance: A Meta-analysis. *Psychological Bulletin*, 124(2), 240–261. <https://doi.org/10.1037/0033-2909.124.2.240>

<sup>103</sup> Deci, E. L., & Ryan, R. M. (2008). Self-determination Theory: A Macrotheory of Human Motivation, Development, and Health. *Canadian Psychology/Psychologie Canadienne*, 49(3), 182–185.

<https://doi.org/10.1037/a0012801>; Gagné, M., & Deci, E. L. (2005). Self-determination Theory and Work Motivation. *Journal of Organizational Behavior*, 26(4), 331–362.

- Belonging:<sup>104</sup> Relationships and social interactions inspire and nurture passion. Support from others can affirm and encourage pursuits, contributing to a sense of purpose.
- Experiences:<sup>105</sup> Exposure to different activities and experiences can spark interest, passions, and purposes, as people often discover passions by trying new things and exploring different places, communities, or fields. This idea is explored in several fields, including developmental psychology, educational psychology, and career counseling.
- Self-Discovery:<sup>106</sup> Reflecting on life experiences, strengths, and interests can lead to a clearer understanding of what drives personal passion and purpose.
- Ambition:<sup>107</sup> The role of ambition and achievements as drivers of purposes and passion is well-established, particularly in the fields of motivation, personality psychology, and organizational behavior. Setting and working towards goals can foster a sense of purpose and the process of striving for and achieving goals can be a powerful driver of passion.
- Inspiration:<sup>108</sup> Inspiration from others, such as mentors, role models, or influential figures, can play a significant role in igniting passion and shaping a sense of purpose.

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<sup>104</sup> Cohen, S. (2004). Social Relationships and Health. *American Psychologist*, 59(8), 676–684.

<https://doi.org/10.1037/0003-066X.59.8.676>; Helliwell, J. F., & Putnam, R. D. (2004). The Social Context of Well-being. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, 359(1449), 1435-1446.

<sup>105</sup> Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Prentice-Hall.

<sup>106</sup> Brown, K. W., & Ryan, R. M. (2003). The Benefits of Being Present: Mindfulness and its Role in Psychological Well-being. *Journal of Personality and Social Psychology*, 84(4), 822–848.

<https://doi.org/10.1037/0022-3514.84.4.822>; Marcia, J. E. (1966). Development and Validation of Ego-Identity Status. *Journal of Personality and Social Psychology*, 3(5), 551–558.

<https://doi.org/10.1037/h0023281>

<sup>107</sup> Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and Passion for Long-term Goals. *Journal of Personality and Social Psychology*, 92(6), 1087– 1101.

<https://doi.org/10.1037/0022-3514.92.6.1087>; Judge, T. A., & Kammeyer-Mueller, J. D. (2012). On the Value of Aiming High: The Causes and Consequences of Ambition. *Journal of Applied Psychology*, 97(4), 758–775.

<https://doi.org/10.1037/a0028084>

<sup>108</sup> Morgenroth, T., Ryan, M. K., & Peters, K. (2015). The Motivational Theory of Role Modeling: How Role Models Influence Role Aspirants' Goals. *Review of General Psychology*, 19(4), 465–483.

<https://doi.org/10.1037/qpr0000059>; Thrash, T. M., & Elliot, A. J. (2003). Inspiration as a Psychological Construct. *Journal of Personality and Social Psychology*, 84(4), 871–889.

## CCR's Synthesis of Purpose Theories

CCR Term	CCR Definition	Associated Terms and Constructs
Purpose	Your sense of significance	Passion, interests, intentions, ambition

Because purposes are evolving constructs that are cultivated over time, driven by individual competencies and societal contexts, they are not static end-goals but reshaped as individuals interact with the world, accumulate experiences, and gain knowledge. Drawing from the strengths of major research frameworks addressing purpose,<sup>109</sup> and supplementing them with the CCR framework, one can define a composite theory of purpose consisting of:

**Foundational Layer (0-12 years):** Aligning with Erikson's early stages, purpose here is tied to basic trust, autonomy, and initiative. Children's initial sense of purpose comes from safety, exploration, and basic task accomplishments. Within the CCR framework, this aligns with the competencies of Curiosity, Communication, and Courage and as children question the world and construct their understanding of its responses. This can be considered the pre-full consciousness stage.

The following stages are all full-consciousness:

**Identity Formation Layer (13-24 years):** Aligning with Erikson's adolescence stage and insights from PIL, purpose during these years is about exploration, seeking identity, and understanding one's role in the larger societal context. This corresponds with CCR's attention to Meta- Learning (particularly MET2: Reflecting on processes, learning, and identity) and competencies such as Creativity, Curiosity, and Ethics. Here, students should be encouraged to ask big questions about life, reflect on their values, and develop a sense of direction.

**Societal Interaction Layer (25-50 years):** Aligning with Erikson's young and middle adulthood stages, purpose here is about deep connections, contributions, and legacy creation. People start to seek meaning in their jobs, relationships, and societal roles. CCR's competencies of Collaboration, Communication, and Ethics play pivotal roles. Additionally, the Meaning Maintenance Model asserts that when people perceive anomalies in their worldviews, they strive to resolve them. Therefore, when adults face challenges to their sense of purpose, competencies such as Resilience, Courage, and

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<sup>109</sup> See "Purpose Theories" in the Appendix for *Education for the Age of AI* available at: <https://curriculumredesign.org/our-work/education-for-the-age-of-ai/>



Curiosity will encourage them to seek new avenues or adapt their views to restore meaning.

**Reflective Layer (50+ years):** Rooted in Erikson's late adulthood stage, purpose revolves around reflection, life review, and acceptance. People ask: Did I live a meaningful life? Did I contribute positively? CCR's Meta-Learning is crucial here, allowing individuals to learn from their experiences, adjust their sense of purpose, and impart wisdom to younger generations.

## Why is purpose (or purposes) crucial in an age of AI? Because AI cannot think for itself (yet...)

Human purpose is becoming increasingly essential for several reasons. As automation and AI systems take over routine tasks and jobs, individuals need to find meaning and direction in activities that machines cannot easily replicate. Human qualities such as empathy, ethics, and a sense of purpose differentiate us from machines. While AI tools can surpass human doctors in analyzing data and often in generating diagnoses, for example, a human doctor's purpose lies in empathetic care, understanding a patient's unique situation, and making decisions that resonate with ethical and humanistic values.<sup>110</sup> Similarly, educators whose purpose is to inspire and foster growth in students can adapt to using AI tools in classrooms, not as replacements, but as enhancements to their teaching methods, ensuring that the human touch remains central.

Clear purpose also provides a compass with which individuals can navigate uncertainties and challenges. When people possess well-defined purpose(s), they are more likely to be resilient, adapt to change, and find satisfaction, even when facing disruptions. Finally, with the ethical implications of AI coming to the fore, a collective sense of purpose is vital in guiding the development and application of AI technologies. Purpose-driven objectives ensure that AI advances are directed toward the greater good, benefiting humanity at large rather than a select few. AI used in sustainable energy solutions demonstrates how purpose-driven tech can address global challenges like climate change.<sup>111</sup>

## Does AI have purpose? Intrinsically, no!

Purpose remains human, for the time being. Current forms of AI cannot be argued to possess purpose, as their processing and actions depend on a human taskmaster. Were

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<sup>110</sup> Davenport, T. H., & Kirby, J. (2016). *Only Humans Need Apply*. Harper Business.

<sup>111</sup> Russell, S., Dewey, D., & Tegmark, M. (2015). Research Priorities for Robust and Beneficial Artificial Intelligence. *AI Magazine*, 36(4), 105-114. <https://arxiv.org/abs/1602.03506>



AI to be given agency, it might be possible—yet quite debatable—that advanced forms of AI would define their purposes.<sup>112</sup>

Speculation aside, it is not improbable to imagine future AIs with the capacity to independently define their purposes, even if only within particular programmed frameworks. AI agents such as AutoGPT are already capable of defining objectives within the parameters of their programming.

Purpose and objectives, though related concepts, remain distinct. Purpose provides the “why” behind an endeavor, while objectives provide the “what” and “how” to achieve it. Objectives are specific, measurable, and (often) time-bound goals that delineate the steps necessary to achieve or move towards a purpose.<sup>113</sup> Therefore, though AI can currently define objectives, it is not possible, yet, to attribute purpose to their actions.

According to GPT4 itself, which we fully agree with:

AI does not possess purpose in the same intrinsic and deeply personal way that humans do. Humans derive purpose based on a complex interplay of experiences, emotions, values, beliefs, and sociocultural influences. In contrast, AI operates based on programmed objectives, instructions, or goals set by its developers or users.

However, AI can be designed to have a “purpose” in a functional sense. For example, a self-driving car’s AI is designed with the purpose of navigating the road safely and efficiently. A chatbot might have the purpose of answering user questions or providing information. But it’s important to distinguish between this kind of operational directive and the rich, multifaceted sense of purpose that humans can experience. AI doesn’t have emotions, consciousness, or self-awareness, so while it can perform tasks aligned with a specified goal, it doesn’t “feel” or “understand” purpose in a human sense.

In the age of advanced AI, questions about machine purpose, autonomy, and rights have been brought up in philosophical discussions.<sup>114</sup> As AI systems become more integrated into human society and exhibit behaviors that

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<sup>112</sup> Anderson, M., & Anderson, S. L. (Eds.). (2011). *Machine Ethics*. Cambridge University Press; Tegmark, M. (2017). *Life 3.0: Being Human in the Age of Artificial Intelligence*. Knopf; Tononi, et al. (2016). Integrated Information Theory: From Consciousness to its Physical Substrate. *Nature Reviews Neuroscience*, 17(7), 450–461.

<sup>113</sup> Locke, E. A., & Latham, G. P. (2002). Building a Practically Useful Theory of Goal Setting and Task Motivation: A 35-year Odyssey. *American Psychologist*, 57(9), 705–717.

<sup>114</sup> Bryson, J. J. (2010). Robots Should Be Slaves. In Y. Wilks (Ed.), *Close Engagements with Artificial Companions: Key Social, Psychological, Ethical and Design Issues* (pp. 63-74). John Benjamins Publishing Company.

mimic human-like intelligence, it becomes increasingly important to define and understand the bounds of AI “purpose.”

## Conclusion: Purpose + Motivation, Identity and Agency - Core to the Human Experience

Human motivation, identity, agency, and purpose are deeply interconnected and form the core of the human experience. Motivation drives us to act, influenced by our identities, which in turn inform agency. In turn, our purpose gives direction to our agency, guiding our actions toward meaningful goals. These elements are key to psychological well-being, as they enable individuals to lead autonomous, self-regulated lives.

In an AI-driven world, these constructs gain greater significance. As AI systems become more integrated into daily life, they influence how decisions are made, often with efficiency and logic as primary drivers. This integration risks marginalizing human aspects like motivation, identity, agency, and purpose. In a world increasingly influenced by AI, it is crucial to actively cultivate these human constructs.

What can educators do to ensure that these constructs are central to their teaching and being fostered in their classrooms? Our book, [\*Education for the Age of AI\*](#), discusses strategies and frameworks for fostering motivation, identity, agency, and purpose in the classroom, featuring the use of AI tools to make these experiences more relevant to learners’ futures.

## Subcompetencies Supporting Motivation, Identity, Agency, and Purpose

The Drivers (Motivation, Identity, Agency, and Purpose) are not competencies in themselves, as these are personal positionings that cannot be taught as content. Nonetheless, CCR competencies and subcompetencies encourage the discovery, development, appreciation, and maintenance of these drivers in a variety of ways. Below are examples, but not a comprehensive list, of specific subcompetencies that can be employed to foster each of these drivers. Again, this is not an exhaustive list, but a series of suggestions to demonstrate the ways the Competencies and Subcompetencies can be deployed to foster other traits in learners.

### Subcompetencies Supporting Motivation

**CUR4: Envisioning and prioritizing one's interests and passions**

Envisioning and prioritizing interests and passions serve as foundational elements in fueling motivation. By visualizing personal passions and placing them at the forefront of one's goals, individuals can cultivate intrinsic motivation.<sup>115</sup> Envisioning a future where one's passions play a central role can act as a motivational compass, guiding efforts and fostering perseverance in the face of challenges. When individuals imagine a clear path between their present actions and a desired future that aligns with their core interests, research demonstrates that they are more likely to remain motivated and committed to their pursuits.<sup>116</sup>

### **COU5: Believing in oneself and one's agency and self-efficacy**

Self-efficacy, or belief in one's own capabilities, is crucial for maintaining motivation and taking action. Research shows that individuals with high self-efficacy are more likely to engage in challenging tasks and put in greater effort in the face of adversity.<sup>117</sup> For instance, a student who believes they can master a complex math problem is more likely to invest time and effort into solving it compared to a peer who doubts their own abilities. Confidence in one's skills not only drives initial motivation but also enhances resilience in the face of setbacks. Additionally, recognizing and trusting one's agency to act independently and make choices can greatly boost motivation. When individuals view themselves as the masters of their own destiny, they are more inclined to set meaningful goals and pursue them vigorously, knowing that their actions can shape outcomes.<sup>118</sup> Ultimately, believing in oneself acts as a powerful source of motivation, driving individuals to take on challenges, overcome obstacles, and achieve their goals.

### **MET5: Determining goals, plans to achieve those goals, and reviewing one's progress**

Setting clear goals and crafting actionable plans to achieve them serves as a roadmap for motivation. According to Goal Setting Theory, explicit, challenging goals paired with appropriate feedback motivate individuals more effectively than vague or easy objectives.<sup>119</sup> For instance, a student aiming to achieve an "A" in a course, rather than just "doing well," is likely to be more motivated because the goal is both specific and challenging.

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<sup>115</sup> Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, 11(4), 227–268.

<sup>116</sup> Locke, E. A., & Latham, G. P. (2002). Building a Practically Useful Theory of Goal Setting and Task Motivation: A 35-year Odyssey. *American Psychologist*, 57(9), 705–717. <https://doi.org/10.1037/0003-066X.57.9.705>

<sup>117</sup> Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84(2), 191–215. <https://doi.org/10.1037/0033-295X.84.2.191>

<sup>118</sup> Zimmerman, B. J. (2000). Self-efficacy: An Essential Motive to Learn. *Contemporary Educational Psychology*, 25(1), 82–91. <https://doi.org/10.1006/ceps.1999.1016>

<sup>119</sup> Locke, E. A., & Latham, G. P. (1990). *A Theory of Goal Setting & Task Performance*. Prentice-Hall, Inc.

Delineating a detailed plan reinforces the perception of a clear path toward achieving a set objective, breaking it into manageable steps and further boosting motivation. As the individual progresses, periodic reviews of their progress allow for adjustments and recalibrations. Such reviews can offer positive reinforcement when goals are being met or can serve as a nudge, indicating areas needing more focus, thereby continually fueling motivational drive.

## Subcompetencies Supporting Identity and Belonging

### CRE1: Developing personal tastes, aesthetics, and style

The process of developing one's tastes, aesthetics, and style is crucial in shaping an individual's sense of self. Research emphasizes the importance of an exploration phase, which allows individuals to expand their exposure to different influences and experiences.<sup>120</sup> This exposure broadens their choices and informs their personal identity. Additionally, the desire to belong is deeply ingrained in human nature, leading individuals to seek out and shift between various group affiliations throughout their lives. Through exploration, both in terms of personal style and group belonging, individuals can continuously adapt and grow in response to changing contexts and new opportunities.<sup>121</sup>

### COU4: Acknowledging one's strengths and weaknesses

It takes courage to express some facets of identity, and to commit to that expression even in spaces that are uncomfortable—or even violent—towards that expression.<sup>122</sup> Recognizing personal strengths and weaknesses can contribute towards developing an authentic lens through which individuals can evaluate and integrate various aspects of their identity and helps individuals navigate a related tripwire of identity: the feeling of too many possible identities.<sup>123</sup> An honest self-assessment acts as a compass, guiding individuals towards roles or environments where their strengths can flourish, and away from contexts where their weaknesses may be exacerbated. With time, this self-awareness helps individuals prioritize and integrate identities that resonate with them, allowing them to craft a cohesive sense of self amidst a sea of potential personas.<sup>124</sup>

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<sup>120</sup> Quinn, B. P., Heckes, S. L., & Shea, M. L. (2019). Classroom Practices that Support the Development of Purpose. *Journal of Character Education*, 15(2), 71+.

<sup>121</sup> CUR2: Seeking out novelty and trying new things

<sup>122</sup> COU1: Pursuing ambitious goals despite social, financial, physical or emotional risk to self

<sup>123</sup> Waterman, A. S. (1984). Identity Formation: Discovery or Creation? *The Journal of Early Adolescence*, 4(4), 329-341.

<sup>124</sup> Schwartz, S. J., Côté, J. E., & Arnett, J. J. (2005). Identity and Agency in Emerging Adulthood: Two Developmental Routes in the Individualization Process. *Youth & Society*, 37(2), 201–229.

<https://doi.org/10.1177/0044118X05275965>

## **MET2: Reflecting on processes, learning, and identity**

Unsurprisingly, metacognition provides an effective inroad to the creation of identity by helping individuals navigate the multifaceted aspects of self-presentation, often known as performativity.<sup>125</sup> This concept underscores how individuals adapt their identity based on the audience, such as code-switching between family and friends or between professional and personal settings. Through introspection and understanding of one's thought processes and learning, individuals can adeptly modulate their identities across various contexts,<sup>126</sup> ensuring they align with internal beliefs while also fitting the demands of specific environments.<sup>127</sup>

## **Subcompetencies Supporting Agency**

### **RES1: Persevering through challenges but seeking help when needed**

Resilience and agency are closely intertwined, with perseverance serving as a key component of individual agency. By persisting in the face of challenges, individuals can reinforce their belief in their ability to effect change and achieve their goals, leading to personal growth and self-reliance.<sup>128</sup> However, recognizing the importance of seeking help when needed is also crucial, demonstrating a mature understanding of limitations and utilizing available resources. Engaging with others fosters collective intelligence and collaborative competencies necessary in an interconnected world.<sup>129</sup>

### **COL1: Taking and sharing responsibility with others**

Taking responsibility and sharing it with others can strengthen individual agency. Assuming responsibility demonstrates commitment and boosts self-confidence. It also fosters a sense of ownership and encourages active engagement. Sharing responsibility promotes collaboration, teaching individuals the value of interdependence and collective effort. It also exposes them to diverse perspectives, enhancing problem-solving and decision-making. Through mutual collaboration, success becomes more likely, and participants feel more included, motivated, and empowered.<sup>130</sup>

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<sup>125</sup> Greenhow, C., & Robelia, B. (2009). Informal Learning and Identity Formation in Online Social Networks. *Learning, Media and Technology*, (34), 119-140.

<sup>126</sup> MET7: Thinking and adapting flexibly

<sup>127</sup> MET6: Practicing awareness and regulation of internal state; MET1: Reflecting on processes, achievements, learning and/or identity

<sup>128</sup> Bandura, A. (1997). *Self-efficacy: The Exercise of Control*. W H Freeman/Times Books/Henry Holt & Co.

<sup>129</sup> Zimmerman, B. J. (2000). Self-efficacy: An Essential Motive to Learn. *Contemporary Educational Psychology*, 25(1), 82–91. <https://doi.org/10.1006/ceps.1999.1016>

<sup>130</sup> Deci, E. L., & Ryan, R. M. The “What” and “Why” of goal pursuits: Human Needs and the Self-Determination of Behavior. 227–268.

## COU1: Believing in oneself and one's agency and self-efficacy

The possession of agency does not guarantee its use; it requires courage. When individuals perceive themselves as competent and capable, they are more likely to be courageous and take on challenging tasks. This self-belief drives action and enables individuals to persevere in the face of obstacles. Over time, this recursive relationship between self-belief and action strengthens an individual's sense of agency, as past achievements reinforce the belief in one's ability to influence outcomes.<sup>131</sup> A case study on the development of agency in the classroom found that students' growing confidence and bravery in expressing their beliefs enabled them to speak up without fear.<sup>132</sup> This demonstrates the importance of courage as a necessary tool,<sup>133</sup> although resilience is also needed to sustain agency.

## Subcompetencies Supporting Purpose and Passion

### CUR1: Seeking to understand deeply

Deep understanding, a pursuit fueled by intense curiosity, serves as a bridge to purpose. When individuals dive deeply into subjects or concepts, driven by a desire to understand them thoroughly, they can uncover or crystallize a sense of purpose. This comprehension, born out of genuine curiosity, enables individuals to discern what aligns with their values and passions. By seeking a deep understanding of the world around them, people are led to discover their purpose, embedding their lives with richer meaning and direction.<sup>134</sup>

### RES5: Motivating oneself via meaning or purpose

While having a purpose can increase the effectiveness of an activity or pursuit, it does not necessarily increase an individual's enjoyment of that pursuit.<sup>135</sup> It is a common misconception that a purpose in life will make every aspect of their work or life enjoyable—and if it is not enjoyable, it must not be their purpose. Unfortunately, this is not always the case. Instead, a purpose—particularly one that transcends the individual

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<sup>131</sup> Bandura, A., & National Inst of Mental Health. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Prentice-Hall, Inc.

<sup>132</sup> Mitra, D. (2004). The Significance of Students: Can Increasing "Student Voice" in Schools Lead to Gains in Youth Development? *Teachers College Record - TEACH COLL REC*, 106.

<sup>133</sup> COU2: Standing up for one's values

<sup>134</sup> Bronk, K. C. (2012). A Grounded Theory of the Development of Noble Youth Purpose. *Journal of Adolescent Research*, 27(1), 78–109. <https://doi.org/10.1177/0743558411412958>; Kashdan, T. B., & Steger, M. F. (2007). Curiosity and Pathways to Well-being and Meaning in Life: Traits, States, and Everyday Behaviors. *Motivation and Emotion*, 31(3), 159–173.

<sup>135</sup> Yeager, D. S., Henderson, M. D., et al (n.d.). Boring but Important: A Self-transcendent Purpose for Learning Fosters Academic Self-regulation. *Journal of Personality and Social Psychology*, 107(4), 559-580.

–serves only to make those less enjoyable tasks more effective and/or bearable.<sup>136</sup> In this way, resilience is crucial to the sustainability of a purpose—whether that be persevering through the less enjoyable parts of life to reap the rewards later,<sup>137</sup> or finding that guiding star to look to when times are tough (or boring!).<sup>138</sup>

### **MET5: Determining goals, plans to achieve those goals, and reviewing one's progress**

Our purpose(s) evolve and expand over a lifetime.<sup>139</sup> Metacognition allows an individual to recognize shifting priorities and assess their permanence or impermanence (e.g., is this an interest to me because of its novelty, or does it have the potential to drive my life?). Making plans and reviewing progress also equip an individual with the skills to adapt to ever-evolving and pivotal purposes.<sup>140</sup>

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<sup>136</sup> Ibid.

<sup>137</sup> RES5: Preserving through challenges but seeking help when needed

<sup>138</sup> RES4: Orienting to a meaning or purpose

<sup>139</sup> Coleman, J. *You Don't Find Purpose - You Build It*.

<sup>140</sup> MET7: Thinking and adapting flexibly