

Insights and Development of Non-cognitive Skills



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Introduction

A substantial body of research indicates that non-cognitive skills predict a wide range of life outcomes, including academic and educational achievement, labor market outcomes, health, and criminality (Kautz, Heckman, Diris, Ter Weel, & Borghans, 2014). For several outcomes, the predictive significance of non-cognitive skills on the quality of peoples' lives rivals that of the measures of their cognitive ability. The intent of this chapter is to establish a foundation and purpose for consideration in investigating and applying non-cognitive skills in all aspects of learning, teaching, and instructional design.

Non-cognitive Skills

Defining non-cognitive skills is complicated and is often disputed. Gutman and Schoon (2013) suggest there is little agreement even on whether non-cognitive skills is the appropriate term to describe the behaviors such as character skills, personality traits, twenty-first-century skills, and social skills. Within any given concept of a particular non-cognitive skill, such as work ethic, there is a historical recount of theory and measurement and competing definitions of what is being discussed and measured. As a means to define non-cognitive skills, the terms cognitive, non-cognitive, and skills will be distinguished.

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Distinguishing the Terms Cognitive, Non-cognitive, and Skills

Although a distinction between cognitive skills and non-cognitive skills is being made in this chapter, it is not implied that these skills work in isolation from each other. All non-cognitive skills involve cognition, and some portion of performance on cognitive tasks is attributed to the use of non-cognitive skills (Schanzenbach, Nunn, Bauer, Mumford, & Breitwieser, 2016).

In economics literature, non-cognitive skills are often described as soft skills and elsewhere as social and emotional learning, social skills, or behavioral skills, including specific qualities associated with leadership ability (Duckworth & Yeager, 2015; Jones et al., 2017). In attempt to account for all educational and industry sectors, the term “non-cognitive” will be defined in this chapter as patterns of thoughts, feelings, and behaviors (Borghans, Duckworth, Heckman, & Ter Weel, 2008) such as personality traits, attitudes, and motivations. In contrast, the term “cognitive” will be defined as the ability to understand complex ideas, adapt effectively to the environment, and overcome obstacles by taking thought (Pierre, Sanchez, Maria, Valerio, & Rajadel, 2014).

The term “skill” is often considered a key variable that contributes toward the sustainable development of nations and an individual’s well-being (Zhou, 2016). From an economic perspective, “skill” is a form of human capital that produces value and has a significant impact on income distribution. In sociology, “skill” is assessed by the extent of complexity of the task that requires that particular skill (Attewell, 1990). In this chapter, we will define “skill” as a personal quality that meets three criteria: (1) socially determined, (2) capable of producing value, and (3) improvable by training and development (Green, 2011).

Non-cognitive Skills Defined

For the purposes of this chapter, the term “non-cognitive skills” will be broadly defined as patterns of thoughts, feelings, and behaviors such as personality traits, attitudes, and motivations that are socially determined, capable of producing value, and improvable through training and development throughout one’s life.

Non-cognitive Skills in the Workforce

In a survey conducted on behalf of the Association of American Colleges and Universities (Hart Research Associates, 2015), employers agreed that students entering the workforce should be able to solve problems with people who have varying points of view different than their own (96%), orally communicate effectively (85%), communicate effectively through proficient writing skills (82%), work effectively with others as a team member (83%), possess critical thinking and

analytical reasoning skills (81%), and apply knowledge and skills to real-world settings (80%). Furthermore, Bronstein and Fitzpatrick (2015) indicated the need for students to learn non-cognitive skills such as critical thinking, collaboration, and communicating with others to be successful in their careers. For those entering the workforce, being effective at these non-cognitive skills can lead to promotion and provide a long-term competitive advantage (Hopkins, Raymond, & Carlson, 2011; Windels, Mallia, & Broyles, 2013).

Studies suggest that increased profits in the labor market correlated to non-cognitive skills have been producing a positive trend over time (Deming, 2015; Weinberger, 2014). In particular, the non-cognitive skills of leadership, teamwork, personality factors, relationship management, and the ability to assimilate information are shown to be highly predictive of success in the labor market (Bassi, Nansamba, & Liberia, 2017; Borghans et al., 2008; Deming, 2015; Groh, McKenzie, & Vishwanath, 2015; Guerra, Modecki, & Cunningham, 2014; Heckman & Kautz, 2012; Montalvao, Frese, Goldstein, & Kilic, 2017). Survey data from employers around the world suggest that non-cognitive skills are in great demand and that there are increasing difficulties finding employees that possess these skills at a higher level (Cunningham & Villasenor, 2016). The foregoing information provides insight into the economic impact of non-cognitive skills in the workforce.

Economic Impact

Historically, we are continuing to see the impact of non-cognitive skills on economic growth and development. A study of non-cognitive skills provided by Heckman and Rubinstein (2001) investigated the General Educational Development (GED) program in the United States. Results indicated that, once controlling for the impact of cognitive skills, job training, and the number of years attended school, GED recipients have lower wages than high school dropouts without a GED degree. They find that the former group is much more likely to exhibit delinquent behavior during adolescence such as skipping school, getting into fights, or engaging in crime and less likely to hold a job when adults than either high school graduates or high school dropouts without a GED. Brunello and Schlotter (2011) suggest these results indicate that recipients of GEDs are relatively intelligent individuals but that these individuals lack non-cognitive skills such as discipline or motivation and, as a result, are penalized in the workforce.

Further, data from the National Longitudinal Survey of Youth suggest there is a significant increase of wages associated with non-cognitive skills. Results indicate that if a person excels from the 25% lowest performer category in non-cognitive skill development to the 25% highest performer category, wages at age 30 improve by approximately 10% for males and by more than 30% for females. Moreover, for those at age 30, employment probabilities increase substantially. Increases in non-cognitive skills for a male raise the probability of employment by close to 15 percentage points and close to 40 percentage points for females (Heckman, Stixrud, & Urzua, 2006).

This trend of positive effects on non-cognitive skills and economics continues today. In the past 30 years, job tasks in the United States have moved sharply toward tasks requiring non-cognitive skills. Job actions and responsibilities associated with working collaboratively with others are substantially more important and needed today than they were in prior decades (Schanzenbach et al., 2016). Deming (2015) suggests that the reason for this need is based on the fact that computer technologies are still poor at simulating human interactions. Human interactions in the workplace involve employees working and playing off each other's ideas and strengths while adapting to changing circumstances. It is these nonroutine human interactions that provide an advantage in the workplace over current technologies.

The correlation between the use of both cognitive and non-cognitive skills among employees has become increasingly profitable. Raised earnings from possessing high levels of both non-cognitive and cognitive skills have increased by approximately 6 percentage points per decade (Weinberger, 2014). In addition, the increased probability of full-time employment associated with a one standard deviation increase in non-cognitive skills has risen from 0.5 percentage points in the 1980s and 1990s to 2.6 percentage points in the late 2000s and the early 2010s (Deming, 2015; Weinberger, 2014).

For those in the workforce or just entering the workforce, employers are communicating strongly on the need for both cognitive and non-cognitive skills, ranking many of the non-cognitive skills as a higher priority. Results from a survey of over 400 employers in the United States indicated that the four most important skills are oral communication, teamwork/collaboration, professionalism/work ethic, and critical thinking/problem-solving juxtaposed to writing, mathematics, science, and history ranked 6th, 15th, 16th, and 19th, respectively, out of 20 skills. More than 90% of employers surveyed declared these skills to be "very important" (Garcia, 2014).

Heckman and Kautz (2012) suggest that non-cognitive skills predict success during one's lifetime and that programs that teach and instill these skills have an important role in public policies. Increased emphasis on the need for non-cognitive skills in the workforce and the value it provides for economic growth brings to the forefront the need of inclusion and emphasis on these skills when considering educational design and deliveries. In the foregoing section, implications for inclusion of non-cognitive skills in educational settings are discussed.

Educational Implications

Empirical evidence indicates that non-cognitive skills can be developed with proper instruction and experiences and that those in occupational positions including, not limited to, educators, instructional designers, and training experts can play a pivotal role in this development by improving learning environments, designs, and deliveries to enhance these skills (Almlund, Duckworth, Heckman, & Kautz, 2011). The succeeding sections describe human development of non-cognitive skills and the impact of formal educational environments on this development.

Nature and Nurture

To some degree, the ability to acquire non-cognitive skills is inheritable. Researchers suggest that inherently, it is easier for some people to develop non-cognitive skills, such as getting along with others, than it is for others, just as it is easier for some to acquire cognitive skills more so than others (Knudsen, Heckman, Cameron, & Shonkoff, 2006).

Added to the complexity of acquiring these types of skills are the learner's environmental surroundings and conditions. Segal (2008) suggests that through several correlational studies, we understand that students' personality and incentives provided by their environment are important in explaining disruptive, inattentive, and tardy behaviors. Research in parental nurturing and education is indicating a significant impact on children's development of non-cognitive and cognitive skills. Children of parents who did not complete high school score almost 20 percentiles lower on a measure of non-cognitive skills and nearly 40 percentiles lower on a measure of cognitive skills when compared with children of at least one parent with some postsecondary education (Schanzenbach et al., 2016).

Researchers have debated whether non-cognitive traits formed earlier in life become more difficult to change and adapt to needed non-cognitive skills later in life. While evidence suggests that heredity, parental nurturing, and environmental factors can play a role in the development or lack of development of non-cognitive skills, additional research in understanding brain development has indicated that like cognitive skills, non-cognitive skills can be developed, nurtured, and taught (Heckman & Kautz, 2013). Moreover, social psychologists argue that these skills are malleable and can be developed at any age (Boyatzis, 2008; Goleman, 2000).

A range of literature supports the belief that some of the most cost-effective interventions for instilling these skills begin at an early point in the lifecycle (Kautz et al., 2014). Evidence from longitudinal studies suggests that interventions in non-cognitive skill development at an early age are successful in changing the economics and life outcomes of people including a decrease in arrests and an increase in employment, in particularly with males (Heckman et al., 2013). Formal educational environments are becoming acutely aware of the need to intentionally include these skills within their instructional designs and deliveries. The succeeding section investigates these types of environments.

Formal Educational Environments

Studies suggest that those with fewer non-cognitive skills struggle more to complete degrees than do those with more non-cognitive skills. People who have weaker non-cognitive skills are less likely to complete high school and less likely to complete a postsecondary degree of any kind. Juxtaposed are those who are in the top 25% of

possessing non-cognitive skills. The majority of these students complete high school, and more than half complete a postsecondary degree (Heckman & Rubinstein, 2001).

Increased pressures on formal educational systems and institutions are being made to increase the inclusion of non-cognitive skills into the curriculum and for good reason. Results from meta-analyses of evaluations of social and emotional learning programs (Schanzenbach et al., 2016) indicated that non-cognitive skills can be taught, leading to improved student outcomes. The analyses summarized the findings of hundreds of studies of school-based non-cognitive skill development interventions. “Although the effect sizes differed in magnitude across the types of intervention, the impact on students’ development of non-cognitive skills was considerable. Each non-cognitive skill intervention resulted in improved academic achievement and positive social behaviors as well as reductions in conduct problems and emotional distress” (Schanzenbach et al., 2016, p. 5).

These studies indicate that several facets of non-cognitive skills are malleable and teachable. Celio, Durlak, and Dymnicki (2011) found that service-learning interventions that integrated community service into the school’s academic programs showed improvement in student achievement and social skills. Zenner, Herrnleben-Kurz, and Walach (2014) determined that mindfulness interventions increased students’ awareness, causing increased improvements in student achievement and lower cases of emotional distress. Losel and Beilmann (2003) found social skill development programs contributed toward the growth in social skills and reductions in conduct problems. Garcia (2014) suggests that these results indicate the significance of non-cognitive skills in K–12 academics and how non-cognitive skills support cognitive development and demonstrate that these skills are interdependent and cannot be isolated from one another.

Not only are early childhood development systems and elementary and secondary schools being pressured to integrate these skills, but higher educational institutions are also finding greater need and pressure to build non-cognitive skills into the curriculum. Colleges and universities are implicitly being held responsible for student development of non-cognitive skills aligned with workforce needs (Cleary, Kerrigan, & Van Noy, 2017). This view on higher education’s role in the workforce and in society has become one of the most influential discussions currently shaping global postsecondary policy and practices (Clarke, 2018; Tomlinson, 2017).

Educators and Non-cognitive Skills

Much of this responsibility is assumed by the educators themselves and their ability to improve non-cognitive skills. Typically, social science research has estimated a teacher’s value toward a student’s growth and progress in academics by using standardized test scores (Schanzenbach et al., 2016). Chetty, Friedman, and Rockoff (2014) suggest that students having access to teachers who add value by this metric have important positive effects on later-life outcomes, raising their annual earnings by 1.3%, increasing college attendance, and increasing retirement savings.

However, this metric excludes non-cognitive skills and its effects on student growth. As Jackson (2016) indicates, teachers who improve their students' non-cognitive skills make large gains and benefits on their students' development and outcomes. Jackson (2016) investigates both cognitive skills, measured in terms of test scores, and non-cognitive skills, defined as a student's grade point average, absences, suspensions, and on-time grade progression. When considering only the effect of a teacher on students' test scores, Jackson finds that higher-quality teachers provide an increased value of 0.14 percentage points to high school graduation rates. When Jackson considers the effect of teachers on both test scores and non-cognitive skill factors, the increased value is higher, raising high school graduation rates by 0.74 percentage points (Schanzenbach et al., 2016).

Interestingly, Schanzenbach et al. (2016) suggest that teachers who are proficient at increasing test scores and teachers who are exemplary in teaching non-cognitive skills are often not the same people. A recent study (Jackson, 2016) comparing the fraction of teachers who excel in instilling both non-cognitive and cognitive skills with the fraction of teachers who would be expected to excel along only a single dimension indicated that the correlation between the two abilities is low. "Because the correlation between the two abilities is quite low, there are relatively few teachers who are adept at both cognitive and non-cognitive skill development. Under some accountability policies, teachers are judged based on their impacts on test scores. These results suggest that there are many teachers who are adept at developing students' non-cognitive skills who are not also skilled at raising student achievement; these teachers will be identified as low-impact teachers under such policies, despite the value they provide to students" (Schanzenbach et al., 2016, p. 7). These findings suggest the need for support in helping educational instructors infuse non-cognitive skills into their curriculum and deliveries, providing them with the tools and know-how to effectively create an environment and learning experience needed for learner development and growth.

Implications for Instructional Design

The integration of non-cognitive skills in any curriculum requires thoughtful analysis and critical processes that assure the instruction is meeting the needs of the learner. The identification of the non-cognitive skills within the context of the intended learning environment whether in K-12, higher education, or workforce training should be taken into consideration in the broader constructs of curriculum development and design.

The succeeding sections provide an instructional foundation and considerations to support the intended designs and instructional processes for development in non-cognitive and cognitive skills. It is important to note that there are several aspects concerning the design and deliveries of instruction in supporting the development of non-cognitive skills, far more than what is described in this section. For the purposes of this chapter, a focus of four primary key areas is discussed based upon neuroscientific research on how humans think, learn, remember, control, and

develop their thoughts and actions (Wolfe, 2010; Medina, 2008; Goleman, 1995; Hart, 1998). The intent of these succeeding sections is to communicate a basic foundation of instructional practice that maximizes the opportunities in supporting the development of non-cognitive skills and cognitive skills. It is worthy to state that the use and integration of these four key areas, as a whole, provide a platform where non-cognitive and cognitive skills can be nurtured for successful development. It is suggested here that a specific non-cognitive or cognitive skill is not correlated to only one key area of this foundation. Rather, it is the design and use of all of these key areas that provide a learning experience to foster any of the desired skills to be obtained. These key areas include meaningful and active experiences, collaboration, emotion, and feedback.

Meaningful and Active Experiences

When planning learning opportunities for others with the intent to incorporate non-cognitive skills as a developmental objective, designers and instructors must take into consideration the need to provide meaningful and active experiences. Wolfe (2006) suggests that learning is the positive change in what the learner knows, does, or feels because of experience. When the learner is actively involved in the learning process, three areas of learning (cognitive: thinking/knowledge; psychomotor: doing; and affective: feeling (Bloom, 1956)) are more likely influenced.

Wolfe (2006, p. 24) states that “when an experience enters the brain, it is deconstructed and distributed throughout the cortex. The affect is stored in the amygdala, visual images in the occipital lobes, source memory in the frontal lobes and where you were during the experience is stored in the parietal lobes. When you recall information, your brain reconstructs the learning paths or connections. Because memories are reconstructed, the more ways students have the information represented in the brain through experiences and use of the senses, the more pathways they have for reconstructing and the richer the memory.”

Designing these types of experiences for the learner requires the integration of active engagement where students participate in meaningful learning activities that include non-cognitive skills. This engagement involves providing opportunities for students to meaningfully talk and listen, write, read, experience, and reflect on the content, ideas, issues, and concerns of a particular subject that is relevant and meaningful to the learner (Meyers & Jones, 1993). Providing experience such as service-learning projects within the community or situational experiences using problem-based learning gives these types of learning experiences where students can practice, relay, and reflect on their non-cognitive skill development. These experiences lead to a deeper understanding of concepts, enhanced critical thinking and problem-solving skills, and higher levels of intellectual development and metacognition all associated with non-cognitive skill development (Bush, Haygood, & Vincent, 2017). Additionally, engaging in meaningful content and exercises helps students acquire real-life experience, improves their attitudes toward learning and

the academic discipline, and improves general satisfaction with the learning experience (Johnson, Johnson, & Smith, 1998; Springer, Stanne, & Donovan, 1999).

From a design and implementation perspective, instructional challenges are emanating. Instructors must engage with risk, primarily encountered through the loss of control in a more student-centered classroom (Wurdinger & Carlson, 2010). Furthermore, experiential learning opportunities designed for the learner rely on the ability of the instructor to facilitate a challenging learning environment where participants feel a sense of control over their education, work collaboratively with others, and receive quality feedback. In short, educators are part of the community of learners and not limited solely to planning and assessment activities; they are consciously part of the experiential activity (Fenwick, 2007).

Other considerations when creating meaningful and active experiences include attention to quality support systems. Previous research has shown the importance and requirement of implementing learning activities with quality supports in authentic contexts. Doing so allows the learners the opportunity to identify and solve problems in a more concrete manner, simulating how to effectively problem-solve in real-world contexts (Burden & Kearney, 2016). In creating this type of learning environment, educators begin the process of leadership distribution whereby students are given further autonomy to incorporate their own supports, such as new technologies that associate and combine real and virtual learning resources to enhancing their learning engagement and interactions during the learning process.

The value of engaging learners in meaningful and active learning experiences cannot be understated. Harvard psychologist Daniel Schacter writes, “For better or for worse, our recollections are largely at the mercy of our elaborations; only those aspects of experience that are targets of elaborative encoding processes have a high likelihood of being remembered subsequently” (Wolfe, 2006, p. 5).

Collaboration

Northey et al. (2017) suggest that collaborative learning may exceed higher benefits than what an individual might achieve on their own. Because of this, collaborative learning has been described as a “social imperative” (DuFour & Marzano, 2016) that produces a positive effect on one’s learning behaviors and academic outcomes. According to social constructivist learning theory, social interaction is a key principle in active learning (Vygotsky, 1978). Non-cognitive development in areas of managing conflicts, making timely decisions, effective communication, and trust building are among the social/interpersonal skills promoted by actively engaged learning (Nealy, 2005).

The need for collaborative learning has become an important factor in instructional design (Northey et al., 2017). This is increasingly so given the advancements in technologies and the increase of educational needs in the global market. Learning is no longer held to time and physical space. Instead, limitless boundaries that allow

“here and now” learning (Martin & Ertzberger, 2013) are shifting the focus of control to a student-centered environment and are redefining a new type of active learner.

Group work, when structured properly, leads to improved interpersonal relationships, social support systems, and increased self-esteem (Johnson & Johnson, 1994; Panitz, 1999). When students work together interdependently toward a common goal, they tend to work harder and develop more social competencies. During this type of engaged learning, students build trust and effectively resolve conflicts in addition to becoming more psychologically healthy (Johnson & Johnson, 1994).

Pedagogically, key concerns of collaborative learning and design are to facilitate students’ development of cognitive and social skills (Seitamaa-Hakkarainen, Lahti, & Hakkarainen, 2004) and to support and manage their cooperation and communication (Cumming & Akar, 2005). When learners are deeply involved and actively participating to resolve problems, it is anticipated that sociocultural skills and values, such as trust building, integrity, competence, empathy, and openness, are developed (Mitchell & Zigurs, 2009). These types of collaborative structures can be as simple as group circles where learners and facilitators share information with each other while respecting each other’s points of view, learning clubs where learners are grouped into small groups of four to six people to process information, or processing structures where the learners go through a set of procedures to communicate with other learners in different ways.

However, developing a collaborative environment can be difficult. Simoff and Maher (2000) suggest that creating a sense of place and community among students is a great challenge for instructors. This is so especially in the design of online collaborative environments. For these types of interactions to be successful, the facilitator must be deliberate in setting the behavioral expectations and goals of the structures. In infusing non-cognitive skills in the curriculum through the use of collaborative learning, considerations must be made directly and indirectly on building inclusion, values, and sociocultural skills among students to foster an environment that is safe, inviting, and conducive for learning.

Emotion

Hart (1998, p. 196) states, “Emotion cannot be separated from cognitive thinking and development. One feels fear because a situation has been recognized as calling for fear. To be angry at an insult, we must first recognize that we have been insulted.”

Over the last decade, research has focused on the effects of emotions on a number of educational outcomes, including non-cognitive skills, motivation, self-regulation, and academic achievement, indicating that emotions are significantly important during the learning process (Frenzel, Goetz, Lüdtke, Pekrun, & Sutton, 2009; Scrimin, Altoe, Moscardino, Pastore, & Mason, 2016; Valiente, Swanson, & Eisenberg, 2012).

In both social and biological sciences, the roles of emotion in learning have a long historical significance in human development (Immordino-Yang & Gottlieb,

2017). Early educators and instructional developers intuitively recognized the power of emotion in learning. Emphasis of the use of emotion in the learning process has increased, in large part, due to the expansion of neuroscientific research and new discoveries about the brain (Farah, 2010).

These advancements in neuroscience suggest that attention and memory, two important cognitive components of learning, are profoundly affected by emotion (Immordino-Yang & Damasio, 2007), and considerable research supports how different levels of arousal and valence affect attention and memory (Staus & Falk, 2017).

In creating memory, information must be encoded. This information is selected, in part, by an orienting response that is triggered by emotion through an unexpected stimulus (Ohman, 1997). Emotionally arousing stimuli may also be linked directly to the processing and storage of information into long-term memory (Bradley, Greenwald, Petry, & Lang, 1992). Molecular biologist John Medina (2008) suggests that the more attention the brain pays to a given stimulus, the more elaborately the information will be encoded and retained. This has significant implications for instructional design and deliveries. The use of emotion to gain and maintain attention can greatly affect how the information will be stored into memory.

In academic settings, research indicates a negative relationship between low-valence emotions, such as anxiety or shame and academic outcomes, juxtaposed to positive relationship outcomes between high-valence emotions, such as enjoyment and pride and creative thinking and engagement (Pekrun, Elliot, & Maier, 2009; Staus & Falk, 2017; Valiente et al., 2012).

Medina (2008) indicates that the amygdala, the part of our brain that helps create and maintain emotions, releases dopamine into the system when the brain detects an emotionally charged event. This dopamine greatly aids memory and information processing by connecting the piece of information with the dopamine causing a more robust processing neural wiring connection in our brains. These robust connections provide a higher probability that the information being learned is retained for further retrieval and use.

To engage learners, Medina (2008) suggests to engage the amygdala in a positive way. One way to accomplish this is to trigger an emotion using a specific “hook” such as laughter or happiness and to be sure the hook used is relevant to the learner and meaningful. A learner’s brain is good at detecting disorganization and can become upset if they felt they were treated in a condescending or disdained manner. Providing a hook that is emotional and intentionally connected to the instructional topic moves the learner from feeling entertained to feeling engaged.

Assessment and Feedback

Feedback can be one of the most powerful instructional strategies for improving a learner’s performance (Hattie, 2012). The use of assessment and feedback, from a design perspective, is based, in large part, upon the intent of what the learner is to gain through the learning process and its long-term effects. How we teach and

assess the learner has important implications for whether the learner will retain content or skills for the short- or long-term (Hardiman & Whitman, 2014).

Tokuhama-Esinosa (2010) suggests that while some students manage to keep enough dates, facts, and formulas in their head to pass the test, this knowledge never makes it to long-term declarative memory. Furthermore, it is never truly learned at all, only memorized for a limited period of time, enough time for short-term recall. From a perspective of instructional design and delivery, this has significant implications in how to approach non-cognitive skills in terms of positive long-term effects.

Assessment and feedback, when viewed as an integral part of the instructional process, become a vital component to the success of the learner's development in non-cognitive skills. Hattie (2012) indicates that feedback should help the learner answer three questions during this process: Where am I going? What progress am I making toward those goals? And where do I need to go next? By keeping these questions in mind and providing different kinds of feedback depending on what the learner needs at the time, instructors can ensure that their feedback is meaningful. To help facilitate this process, there are several areas of design presented here, not limited to, for consideration.

Building Trust

Brookfield (1990) suggests that underlying all significant learning is the element of trust and that the trust between teachers and students is the glue binding educational relationships together. Effective feedback is greatly dependent upon the relationship and trust that is built between the teacher and learner. It is trust that brings out the best in people and literally changes the dynamics of interactions.

Although there are several opinions on how to build trust, Brookfield (1990) suggests there are two characteristics that make teachers more trustworthy through student's eyes: teacher credibility and teacher authenticity.

Teacher credibility is described as the ability of teachers to present themselves as a person who has something to offer students. This is a valued perception where students see their teachers as knowledgeable and skillful based upon their life experiences. Students strive to be in the presence of teachers who possess these qualities to help them understand the complexities and dilemmas they are experiencing during the learning process.

Teacher authenticity represents how a student sees the teacher as a person. Students are more apt to trust their teacher if they appear more human with emotions, feelings, and passion rather than creating an emotionless barrier.

Brookfield (1990) states, "students see four behaviors as evidence of authenticity: (1) teachers' words and actions are congruent; (2) teachers admit to error, acknowledge fallibility, and make mistakes in full public view of learners; (3) teachers allow aspects of their personhood outside their role as teachers to be revealed to students; and (4) teachers respect learners by listening carefully to students' expressions of concern, by taking care to create opportunities for students' voices to be heard, and by being open to changing their practice as a result of students' suggestions."

Learning Intentions and Success Criteria

When learners are aware of what they're expected to learn, they are more likely to learn it (Hattie, 2012). When they do not fully understand the expectations of what they are supposed to learn, they disengage and/or agreeably complete the performance tasks, only to forget the information upon completion (Fisher & Frey, 2016). Fisher and Frey (2016) provide three questions pertaining to the learning intention to help support the mindset of both the instructional facilitator and learner: What am I learning today? Why am I learning this? And how will I know that I learned it? "When only some learners infer what they were supposed to learn, understand why they were supposed to learn it, and know whether or not they learned it, inequity begins to take root" (Fisher & Frey, 2016, p. 529).

Guiding this process of learning intention is the creation of success criteria defined here as determining what will be accepted as evidence of learning from your learners. These are the artifacts of the learning processes. Fisher and Frey (2016, p. 529) state that "the success criteria changes as the unit progresses and that the assessment results are derived from your learner's performance toward daily success criteria. As such, this allows the instructor to provide actionable feedback to the learner, identify learners who need additional or differentiated instruction, and determine the continued pacing of the learning process."

To make the most of feedback, instructors must know how to effectively communicate the expectations, and learners must clearly understand these expectations, when developing for both non-cognitive and cognitive skills. When the learner is able to evaluate their task with a clear understanding of what is expected, they are more likely to accept and value an instructor's feedback (Hattie, Fisher, & Frey, 2016).

The Intent of the Feedback

The intent of the feedback has a significant impact on the effect of the outcomes. Frey, Fisher, and Hattie (2018) suggest that if the feedback provided is only corrective (John, stop talking in the hallway), but doesn't provide an opportunity to consider the processes used or the task itself (Let's revisit our hallway procedures that we created together. What did we decide would be the most appropriate behaviors when walking in our school hallways? And what were our reasons for this?), then the effects are muted. How the feedback is presented in terms of depth and breadth of what is expected from the learner has a significant impact on the learners' outcomes. Attention and time used to foster the learners' critical thinking skills toward self-regulation and metacognitive understanding lead to a more effective feedback that supports the learners' development.

With effective feedback, learners become more accepting of the instructors' comments and are more apt to monitor their own progress. As the learners begin to develop these habits of self-regulation and deepen their knowledge or skills, such as in developing non-cognitive skills, they become more open to feedback that

challenges them to reflect on their metacognitive processes used to learn the intended knowledge or skills (Hattie & Timperley, 2007).

The Learner's Willingness to Receive Feedback

Feedback is effective if it supports the learners in improving their cognitive and non-cognitive development. Whether or not feedback is effective also depends on what the learners need to hear. Learning is active. In order for students to improve and achieve, they must be able to internalize the concepts through effective feedback processes (Brookhart, 2011).

However, for some, the ability to receive feedback can be complicated. Hattie et al. (2016) suggest that one problem is bias. Some students seek feedback that increases their self-image. If feedback is vague and personal, the learner may selectively accept only positive comments and reject negative comments that were made with constructive intent but lacked clarity.

Indeed, it is the responsibility of the instructor to provide clear and constructive feedback that is actionable. Feedback that is left for interpretation, especially for those types of learners who struggle to receive feedback, can have a negative impact in supporting the learner in their growth and development.

Timeliness

Effective feedback is timely. Timely feedback has been shown to deepen one's memory of the learned materials (Pashler, Cepeda, Wixted, & Rohrer, 2005). In a study comparing immediate versus delayed feedback, students who knew that they would get immediate feedback performed better on a task than those who were told that feedback would be delayed (Kettle & Haubl, 2010). Researchers have found a complex relationship of three factors that influence the effectiveness of feedback: the length of post-feedback intervals, the frequency of feedback itself, and the nature of the intervening activity between the behaviors and the feedback (Iigen, Fisher, & Taylor, 1979). Brookhart (2011) suggests that for recall tasks like learning facts, immediate feedback is best. For more complex work, feedback should also be timely. The longer the delay in providing feedback to the learner, the less likely the feedback provided will have a significant impact on the learner's task and performance.

Conclusion

Messaging from workforce development indicates a significant need in equipping our current and future employees in the application of non-cognitive skills. Research has indicated that these skills, such as problem-solving, communication,

cooperation, critical thinking, and the ability to get along with others, have a significant impact upon society. This chapter has outlined the economic impacts and educational implications of non-cognitive skill development, although they are subject to change and expand as the workforce and educational demands continue to change. This chapter also has provided a foundation of instructional design principles aligned with non-cognitive and cognitive development to be taken into consideration when tasked with the inclusion and integration of non-cognitive skills into educational curriculum and practices.

Non-cognitive skills are no longer an educational subset that can be overlooked in importance when attributed toward success in the workplace. The need for these skills to be developed starts at an early age and continues throughout adulthood based upon the needs, changing climates, and environments in which societies operate.

Those responsible for instilling these skills in formal educational settings as part of human development are tasked with significant challenges. It is the effectiveness of the design and instructional deliveries, the learning environments, and curriculum created that, in large part, will determine the outcomes of success. Although this chapter outlined four key components of design consideration, active and engaging experiences, collaboration, emotion, and feedback, there is considerable room for expansion in both depth and breadth in how one approaches instructional design for non-cognitive skill development.

Indeed, it is worthy to reiterate that the term “non-cognitive skills” continues to be debated in both scholarly contexts and global workforce environments. In this chapter, non-cognitive skills were broadly defined; however, it is imperative in meeting the needs of human development and workforce demands to look upon non-cognitive skills within the contexts in which it is being served including, not limited to, workforce sectors, educational environments, global communities, and ethnic/cultural contexts.

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