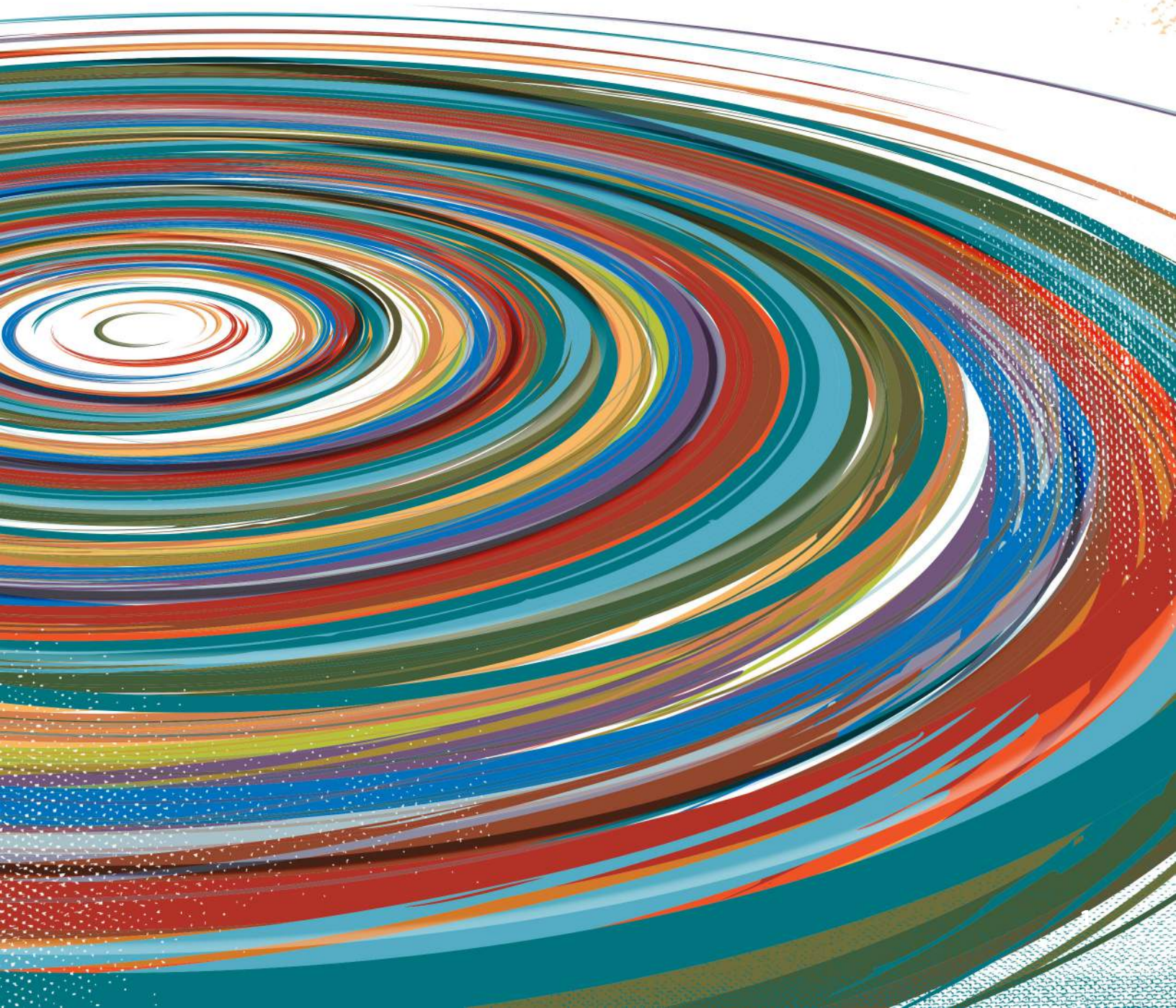


ESSENTIAL SKILLS AND DISPOSITIONS

Developmental Frameworks for Collaboration,
Communication, Creativity, and Self-Direction



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We are expecting a great deal from our learners and their teachers these days. For the right reasons, we have in place higher expectations for our public schools and the students themselves—that every student should graduate with the knowledge and skills in mathematics, English language arts and science that enable them to transition successfully to higher education and rewarding careers. And, we have efforts underway to upgrade learning expectations in social studies and the arts. Few doubt the value of these efforts.

But not all of what makes one successful, and enables those who enter next phases of learning and work to persist and thrive, can be captured in terms of knowledge and academic skills. There is another critical dimension of learning—known as essential skills and dispositions, success skills, work and study skills, and similar terms—that is increasingly being called for by parents, employers, and higher education. Few dispute the value of helping students develop this broader range of capacities associated with success, yet education rarely moves beyond lip service.

Students and teachers need tools to help them understand in deeper and richer ways the multiple dimensions of these skills and dispositions; they need ways to assess, reflect, and advance developmentally; and they need strategies to co-design personalized learning experiences that will advance each toward mastery. Finally, we all need to think deeply about what it will take to bring these skills and dispositions to life for every student and teacher throughout the education system.

To help address these needs, we've created a set of frameworks to describe the development of creativity, collaboration, communication, and self-direction. The frameworks are research-based and co-designed with educators from across the country. They aren't the total turnkey solution, but we hope they will help educators and policymakers think differently and more deeply about how we support students' essential skills and dispositions.

We intend for this work to lead to further refinement and purposeful learning about what shapes a successful person in this dynamic and exciting world. We believe that these frameworks will help educators do something significantly better for students in terms of readiness and agency than we've been able to do before. We are excited about this work and invite your engagement.

A handwritten signature in black ink, appearing to read "Gene Wilhoit". The signature is written in a cursive style with a vertical line to its left.

Gene Wilhoit

INTRODUCTION

The moment children enter the world they begin a journey, learning about themselves and how to engage the world around them. Children bring several years of experience to school that inform their beliefs, habits, skills, and expectations. School systems are tasked with meeting students wherever they are on their journey and supporting students' growth toward readiness beyond secondary education. With the fast pace of technological advancement and global influences on day-to-day life, the meaning of "readiness" can no longer be defined by the needs of the current job market or the extent of students' knowledge acquisition.

In 2012, member states of the Innovation Lab Network (ILN) identified definitional elements for college, career, and citizenship readiness. The ILN is a group of states committed to identifying, testing, and implementing student-centered learning approaches to help transform the public education system. Their definition of readiness stresses the interrelationship between knowledge, skills, and dispositions—behavioral capacities such as persistence and adaptability.

Researchers have stressed the importance of these three elements and their dependence on each other and the context of learning. However, many educators are looking for clear and accessible definitions and an understanding of how to recognize skill development and growth. In states that have prioritized skills and dispositions on a par with academic content knowledge, educators are in need of tools to see where these elements of postsecondary readiness are already integrated into student learning opportunities and where there is a need to enhance educational practices and environments. To address these needs, the Center for Innovation in Education (CIE) and the Educational Policy Improvement Center (EPIC) worked with teacher-leaders from ILN states to create the developmental frameworks for collaboration, communication, creativity, and self-direction in learning.



KEY DESIGN FEATURES

The developmental frameworks provide a conceptual structure to support understanding of each skill through five distinctive features:

Components to Elaborate on Skill Definitions

Definitions of each skill are enhanced through five components. Each component plays an essential role; without any one component, the skill is not truly expressed. Likewise, learners may be more advanced with some components than others. Though components could be viewed as stand-alone skills, each provides a unique contribution tailored specifically to the essential skill. As an example, communication plays a key role in all interactions, yet specific approaches are critical to successful negotiation and group decision making. Without communication, true collaboration does not occur.

Interpersonal and Intrapersonal Elements

Interpersonal behaviors are represented in the progressions as well as intrapersonal dispositions and metacognitive processes, such as self-regulation. A table summarizing intra- and interpersonal elements of each component is provided following the progressions for each skill.

Metacognition as a Driving Force

The role of metacognition is further emphasized by the inclusion of the components “Monitoring & Adapting” and “Self Awareness” within each framework. Research suggests that even young learners engage in metacognitive activities¹. Metacognition allows for the intentional use of skills and fosters the ability to learn from past experiences and transfer skills and knowledge.

Developmental Progressions as a Learning Journey

Developmental progressions for each component describe behaviors that become more complex along the journey from beginner toward emerging expert. Skill development often begins by observing others, but progress and

refinement of skills requires active engagement through exploration, trial and error, purposeful investigation, and learning from setbacks and failures along the way. Growth can be accelerated through intentional reflection on challenges and failures in order to inform better approaches in the future. Progress is enhanced by modeling and support from others who have a greater degree of expertise. The necessity for these opportunities raises a need to consider the environments and conditions that foster progress. Figure 1 was informed by research on developing expertise and highlights some of the key ways learners differ based on their cumulative experiences and familiarity to a context.

Active Engagement at All Levels of Expertise

Active descriptions of learning are incorporated at every level of expertise, including for beginners. A beginner is anyone learning a skill, whether an adult, teenager, or young child. Regardless of age, beginners can be active explorers, capable of observing, mimicking, and learning from others, IF given the right support within a conducive environment.

	BEGINNER	ADVANCED BEGINNER	STRATEGIC LEARNER	EMERGING EXPERT
EXPERIENCE	Is new to task and context.	Is familiar with specific task and context.	Completes different forms of task in related contexts.	Experiences wide variations of task in different contexts.
APPROACH	Follows directions.	Understands and follows rules.	Analyzes situations to plan an approach.	Acts on intuition, but turns to analysis in unfamiliar contexts.
ENGAGEMENT	Tinkers with and mimics modeled behaviors.	Purposefully explores through trial and error.	Refines approach by testing in unfamiliar situations.	Seeks connections to other contexts to broaden abilities in own field.
ROLE OF OTHERS	Responds to guidance.	Looks to others for support.	Selectively draws on the expertise of others.	Organizes collaborative engagements to enhance approach and outcomes.
TRANSFER	Learns to use skills within a controlled context.	Uses known steps to complete similar tasks.	Identifies familiar aspects of tasks in unfamiliar contexts to draw on relevant strategies.	Looks for connections in other areas and tailors application of skills.
PERCEPTION	Considers what is presented.	Discovers patterns.	Identifies relationships.	Anticipates consequences, noticing antecedents and what is missing.

Figure 1. Changes in behavior through active engagement and learning from challenges

METHOD

The literature that informed the development of these frameworks was drawn from research, theory, assessments, and models specific to each skill as well as research on the development of expertise. Several research-based perspectives guided the literature review and the overall approach to the frameworks.

- Some talents and abilities viewed as inherent and fixed can be cultivated as fluid skills.²
- Skill development is a product of exposure and strategic experience, with noticeable behaviors indicating degrees of expertise.³
- Skill performance is context, discipline, and experience dependent.³
- Metacognition plays a critical role in skill development and distinguishing degrees of expertise.⁴
- Demonstrations of a skill include both intrapersonal and interpersonal elements.⁵

Researchers applied these perspectives to identify literature specific to each of the four skills and prioritized research, theories, and models that decomposed the skill, suggested embedded aspects, or described a process of skill use. Greater emphasis was placed on work that framed skill development over time. Each skill-specific knowledge base was then analyzed for common elements that informed the framework components.

In collaboration with the Center for Innovation in Education, EPIC incorporated practitioner feedback during three stages of development. Early discussions with an Implementation Advisory Board of state and district leaders informed the component approach and highlighted a need to address both individual behaviors and interpersonal actions. During the second phase of development, a Teacher Advisory Group, representing four states and the K–12 spectrum, provided feedback on an early draft based on their content-area expertise and knowledge of their student population and contexts. Finally, teachers and local administrators at two design workshops engaged in scaffolded activities to connect a final draft framework to current instructional practice. Drawing on their challenges and insights during these activities, educators provided feedback on the utility of the frameworks and key aspects of professional development that would support teachers' explicit attention to these skills at a larger scale.

² E.g., Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2012.

³ E.g., Conley, 2014; Dreyfus & Dreyfus, 1980, 2005; Klein & Hoffman, 1992; Bransford, Brown, & Cocking, 2000.

⁴ E.g., Flavell 1979; Kaufman & Beghetto, 2013; Koenig, 2011; Pellegrino & Hilton (Eds.), 2013.

⁵ E.g., Koenig NRC, 2011; Pellegrino & Hilton (Eds.), 2013.

USING THE FRAMEWORKS

Understanding Dynamic Development

Each framework paints a picture of skill development over years of active engagement. Changes in experience, approach, engagement, perception, the role of others, and the extent of skill transfer from Figure 1 are visually represented through sets of expanding circles and are detailed through progression language at each level of expertise. Like the nature of these ripple-like images, the skillset of learners and their ability to transfer their skills grows with every challenge they face and every lesson learned, allowing learners to have a greater effect on the world around them.



Supporting a Shared Vision to Foster Growth

Movement across the progressions requires supportive guides who respect the level of skill development students currently possess, balance support with chances to tinker and explore, and help learners seize opportunities for goal setting and growth that come from challenges and failure. Fostering progress along a developmental progression may require elements of a developmental approach, with implications for learning environments and equitable accesses to opportunities for all students.⁶

Development reflected in the progressions assumes that learners are actively engaged in their learning for many years. Yet, unlike learning progressions, which typically describe a sequence of knowledge and skills specific to a discipline, the frameworks convey broader overarching development inherent to the skill itself. For these reasons, the frameworks are not intended to serve as rubrics and are not conducive to such an application. The frameworks do serve as a strong starting point for challenging but necessary conversations across disciplines and grade levels around the following questions. While reading the frameworks, please consider:

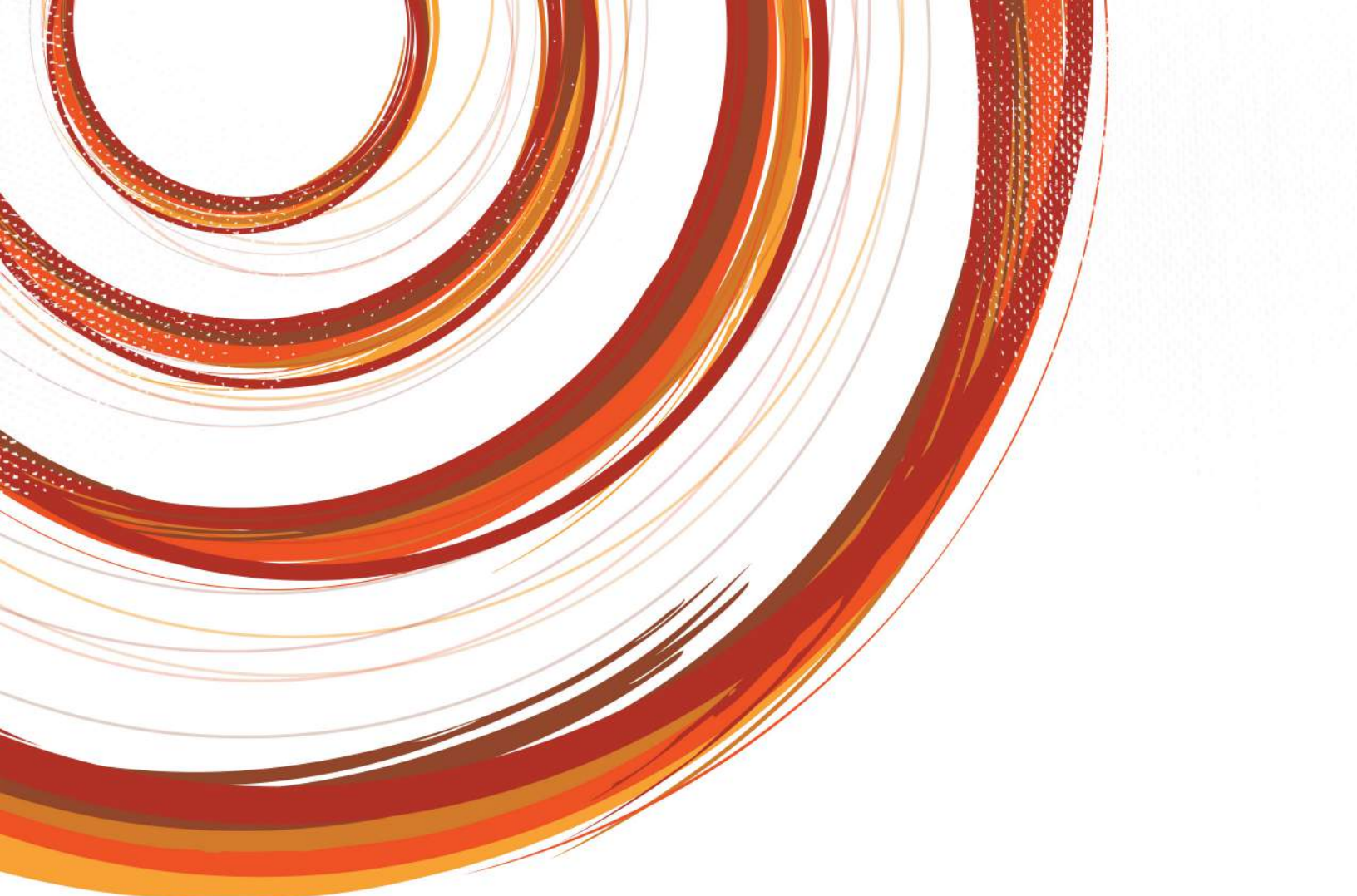
- How do the frameworks challenge your understanding of these skills?
- What do these skills look like in specific disciplines?
- What structures and support will educators at different levels need to foster students' development of these skills?

⁶See Nagaoka, J. et al (2015) for more on contexts and equitable opportunities.



COLLABORATION





An individual's capacity to work with other people in a process that requires interdependence to solve a problem, achieve a goal, or complete a task

COLLABORATION

Collaboration is a critical skill that requires the ability to balance mutual interdependence with personal ambitions. Developing this skill prepares students for the demands of many postsecondary pursuits. This skill framework emerges from recent research and the increasing need to balance development of content knowledge with the development of skills and dispositions critical to applying knowledge effectively. Collaboration incorporates the ability to work across cultural and language differences as well as the ability to navigate ever-changing virtual spaces that provide continuous opportunities for innovation and adaptation. Schools are laboratories for innovative collaboration. A shared understanding of what this skill fully entails will help enrich collaborative learning and foster individual growth over time.

Purpose of the Framework

This framework serves to support educators as they interpret skills such as collaboration into learning contexts and opportunities. Researchers define collaboration in many ways, yet areas of common ground are presented here as a set of components and described at four of many milestones toward expertise. Context-neutral language can foster a shared understanding across content areas and grade levels of what truly collaborative endeavors require. From these mental models, learning communities can consider the contexts, conditions, resources, and opportunities needed for growth and demonstration of collaborative skills within unique domains and across an articulated system of support.

From Beginner to Emerging Expert

From childhood through adulthood, an individual may fall along different points of a developmental continuum for each component of collaboration. Learners navigate challenges through active tinkering and targeted engagement, leading to more intuitive expression in familiar situations. Similar indicators below describe the active approaches of beginners through emerging experts to collaborative tasks.

BEGINNERS show respect for different perspectives with some support and modeling, care about how others feel, and defer to the group for decision making and task assignment.

ADVANCED BEGINNERS remain open to competing ideas from others, avoid conflict, cooperate to keep group work moving forward, and take turns with tasks to be fair.

STRATEGIC LEARNERS value all group members' perspectives, initiate compromise to move work forward, and build consensus to define roles and tasks that match group members' strengths.

EMERGING EXPERTS synthesize a group's best thinking, voice and address power imbalances in a group's dynamic, and anticipate conflicts in order to strengthen group cohesion.

EMERGING
EXPERTS

STRATEGIC
LEARNERS

ADVANCED
BEGINNERS

BEGINNERS

5 Components of Collaboration

Drawing on existing research and theory, the following five components can be interpreted into a variety of learning contexts and settings. Beyond process aspects of collaboration, this framework highlights self-awareness and monitoring and adapting behaviors as components that guide an individual's contributions to group dynamics and outcomes. The components listed below describe how individuals demonstrate collaboration through intrapersonal thinking processes, like reflection, as well as interpersonal engagement with others. Through deeper understanding of the multiple components, individuals can focus on essential parts that make up the skill as a whole.

SELF-AWARENESS

Thinking through tasks, applying prior experience, understanding how one's own strengths fit into the group dynamic, and taking personal responsibility.

COMMUNICATING

Speaking purposefully, listening actively, contributing to group dialogue, and encouraging the participation of others.

NEGOTIATING & DECISION-MAKING

Understanding and valuing multiple perspectives, managing conflict and one's own emotional response, and advocating for group equity.

CONTRIBUTING & SUPPORTING

Owning task assignments and work quality, sharing ideas, and providing feedback on the work and ideas of others.

MONITORING & ADAPTING

Reflecting on progress, overcoming obstacles, adjusting emotional reactions, supporting others through challenges, and modifying approaches to benefit the group.

5 Components in Action

Collaboration is the synergy between the growth of the individual and the success of the whole, where each person brings strengths that compensate for the gaps in skills and knowledge of others.

In a collaborative task, such as a classroom newsletter, a student at the strategic learner stage of self-awareness asks the following questions: What experience do I have to draw on? What are my applicable skills? How can I use this project to grow? Where can I contribute?

Self-Awareness

As the newsletter evolves, the strategic learner communicates across multiple modes (e.g., by email, in person, or by phone) as the task and context demand. She includes all team members in the dialogue and supports her own opinions with evidence.

Communicating

To develop a class newsletter effectively, the individual clarifies their own ideas and those of others to build consensus and define the common purpose that the newsletter must serve. Comfortable with conflict and compromise, the strategic learner initiates negotiation.

Negotiating & Decision-Making

When the blog feature of the newsletter requires more time and moderation than a single student can manage, the strategic learner helps to redefine the roles to manage the workload through collective effort.

Monitoring & Adapting

Throughout the development of the newsletter project, the strategic learner models high-quality planning and execution for other members to work toward. She supports the growth of her team members' skills and contributions with thoughtful feedback. She confidently contributes new ideas for content and circulation. She consistently produces high-quality work. From the beginning to the end of the group's work, the strategic learner demonstrates her collaborative skills by sharing responsibility for continuous improvement.

Contributing & Supporting

When faced with obstacles or failure she nimbly adapts her own strategy and the overall course of the group's work. When the group completes the first issue of the newsletter, she acknowledges the milestone and ensures that all members take pride in their contributions.

Monitoring & Adapting

This example introduces the five components of collaboration detailed within this framework and illustrates how each component allows for attribution at the individual level as well as observation of the overall synergy of the group as a whole.

BEGINNER

- Understands the group process, norms, and roles, with guidance.
- Looks for connections between personal experience and the task, when prompted.
- Thinks of personal strengths and limitations and how they relate to group work, when modeled.
- Keeps a positive attitude and stays attentive to the group process, when supported.

ADVANCED BEGINNER

- Notices group strategies, norms and approaches modeled by others.
- Remembers a familiar process to guide own contributions to group work in a meaningful way.
- Is aware of own place within the group process and acts conscientiously.
- Arrives to task prepared to meet the expectations of others and stays open to new approaches.

SELF-AWARENESS

Thinking through tasks, applying prior experience, understanding how one's own strengths fit into the group dynamic, and taking personal responsibility.

STRATEGIC LEARNER

- Analyzes group processes to improve strategies, norms, and overall approach.
- Considers the collaborative task at hand and draws on approaches acquired through tinkering in different domains.
- Pursues an active role that draws on personal strengths and also challenges areas in need of growth.
- Assumes responsibility for own behavior, work quality, and the design of the group process, drawing on past experience.

EMERGING EXPERT

- Anticipates challenges and opportunities and formulates strategies and sets norms to maximize group potential.
- Transfers relevant knowledge and experience from familiar domains across complexities of the task at hand.
- Imparts strengths and defines personal learning goals within the context of group work.
- Shows heightened awareness of power dynamics within the group.
- Takes responsibility to enhance equity within group dynamics.

BEGINNER

- Shares personal perspective and responds to requests to elaborate own point, when prompted.
- Takes turns to speak and listens to the input of all group members.
- Follows accepted group discussion norms, when modeled.
- Gives suggestions to others, with support.

ADVANCED BEGINNER

- Clarifies own points and pursues clarification from others.
- Tries to include others in discussions and shows interest in new perspectives.
- Understands and follows accepted communication norms and helps others do the same.
- Looks for and provides helpful feedback, when prompted.

COMMUNICATING

Speaking purposefully, listening actively, contributing to group dialogue, and encouraging participation of others.

STRATEGIC LEARNER

- Justifies own opinions with evidence, with confidence.
- Poses questions to garner elaboration on ideas and perspectives.
- Emphasizes inclusion of all members and encourages participation during group dialogue.
- Initiates a process to establish norms and sets an example for others.
- Asks for specific feedback and evaluates own positions with new perspective.

EMERGING EXPERT

- Contributes clearly with well-supported ideas.
- Facilitates discussion with direct follow-up questions.
- Listens actively and uses effective communication to establish a climate that invites participation of all members.
- Acknowledges and validates each team members' contributions.
- Monitors and modifies group communication norms across different modes to optimize the group dynamic.
- Models constructive feedback through positive reinforcement and clear suggestions.

BEGINNER

- Understands commonalities and differences among perspectives, when guided.
- Shows respect for different perspectives, when modeled by others.
- Restates personal position and defers to others to resolve issues and make decisions.
- Recognizes how others feel and tries to work out differences, with guidance.
- Accepts role designated by the group.

ADVANCED BEGINNER

- Uses awareness of different perspectives to develop an understanding of other members' approaches.
- Remains open to competing ideas and tries out the ideas of others.
- Aligns own position with that of others and avoids conflict or redirects to common ground.
- Respects group consensus, with guidance.
- Advocates for own desired role and task assignments.
- Contributes to planning, taking turns to be fair with tasks.

NEGOTIATING & DECISION-MAKING

Understanding and valuing multiple perspectives, managing conflict and one's own emotional response, and advocating for group equity.

STRATEGIC LEARNER

- Identifies and clarifies commonalities and differences among group members' unique definitions of problem or task and proposed ideas for solutions and approach.
- Values group members' perspectives and communicates this appreciation clearly.
- Initiates compromise to resolve conflict.
- Demonstrates tolerance for views contrary to own, ensuring all members have a voice.
- Builds consensus to define clear roles and designates according to the strengths of members.
- Strategizes toward shared goals and plan.

EMERGING EXPERT

- Draws out and restates different viewpoints for the benefit of all group members.
- Articulates merits and trade-offs of others' ideas to advance group work and honor contributions of group members.
- Synthesizes group's best thinking, intuitively.
- Anticipates and addresses decision-making conflicts to strengthen group cohesion and effectiveness.
- Voices and addresses power imbalances to propel dialogue toward more equitable and successful outcomes.
- Advocates for the interests of each member in role and task assignment.
- Facilitates group goal setting.

BEGINNER

- Gives effort to complete tasks, with support.
- Understands expected work quality and effort, when defined by others.
- Meets quality expectations and timeline, with support.
- Shares own ideas, when prompted.
- Responds to the ideas of others with personal opinion and informational questions.

ADVANCED BEGINNER

- Manages work to meet expected timeline.
- Follows through on commitments to group, with support.
- Follows the example set by others to meet quality standards.
- Owns ideas and contributes to overall direction of group work.
- Gives and receives feedback based on expected standards.
- Affirms the effort and ideas of others.

CONTRIBUTING & SUPPORTING

Owning task assignments and work quality, sharing ideas, and providing feedback on the work and ideas of others.

STRATEGIC LEARNER

- Looks for and accepts task assignments that optimize personal growth.
- Models effective task planning and execution.
- Owns responsibility for individual and group contributions, consistently producing strong results.
- Contributes and justifies ideas, aware of how they address the specific task or group needs.
- Praises others for contributions and gives constructive feedback, recognizing specific strengths and growth areas of group members.

EMERGING EXPERT

- Accepts and excels at task assignments that meet group needs and strategizes to make task assignments a valuable learning experience.
- Sets exemplar standard for work quality, timeliness, effort, and personal ownership.
- Applies innovative approaches and ideas to advance group work.
- Provides task-specific feedback that promotes group enthusiasm and quality of work.
- Sets and sustains pace and organizational structure to meet personal and group goals, building momentum toward completion.

BEGINNER

- Reflects on own progress through work, when prompted.
- Follows guidance when problems arise, redirecting to meet individual work goals.
- Reacts to disappointment appropriately and addresses the cause, with support.
- Encourages and helps others when comfortable with the task.
- Relies on feedback to adapt to changing norms.
- Follows changes to group's approach.

ADVANCED BEGINNER

- Works hard and monitors progress of own tasks and contributions.
- Reacts to barriers and finds short-term solutions with group support.
- Tries to work through own challenges, engaging others for help when needed.
- Shares responsibility with others, reassures struggling members, and offers help.
- Contributes ideas to group course correction.
- Builds on suggestions as the group adjusts norms, strategies, and plans.

MONITORING & ADAPTING

Reflecting on progress, overcoming obstacles, adjusting emotional reaction, supporting others through challenges, and modifying approach to benefit the group.

STRATEGIC LEARNER

- Facilitates group reflection throughout work.
- Analyzes problems, identifies need for different strategies, and adjusts approach accordingly to meet own needs.
- Accepts and builds off failure, using familiar approaches to address own frustration.
- Owns responsibility for individual and group products.
- Reaches out to others to provide support and models familiar strategies to address challenges.
- Identifies need for group course correction.
- Evaluates group needs, seeks solutions, and delegates responsibility to troubleshoot problems.

EMERGING EXPERT

- Anticipates the need to adapt own approach and strategies and adjusts plans accordingly.
- Notices gaps in pooled knowledge and skills and acquires necessary resources.
- Maintains a safe and supportive environment for all members.
- Transforms group mistakes into opportunities.
- Evaluates and applies feedback to individual and group work, critically.
- Optimizes group members' contributions to maximize collective effort.
- Adapts group norms, roles, and strategies to fit needs of the group's dynamic.
- Celebrates milestones, regularly, to reinforce group effort and make work enjoyable.

Collaboration Indicators The preceding progressions describe markers along a 10,000-hour journey through uncharted waters. Along the way, learners try out new forms of interpersonal actions, mediating differing viewpoints. They engage in intrapersonal thoughts and behaviors, accepting personal responsibility for group decisions. Navigating one challenge after another, learners grow to balance personal contributions with group success. They gain expertise by addressing similar types of problems across different scenarios, noticing exceptions to anticipated outcomes.

Many important milestones surround the four levels described here. Educators can draw on their expertise to consider markers of development within a single year or throughout a long-term project. A sample of verbs below reflects a range of complexity whether over 10 years or 10 weeks of engagement. When interpreted into developmental milestones, the intra- and interpersonal aspects of collaboration could foster student contributions to group success at any milestone along their journey.

- How has collaboration helped in your career?
- Which components of collaboration or precursor skills do you see in your students?
- What opportunities could help your students continue to grow?

Asks questions
Attempts
Follows
Listens
Responds to
Shares
Takes turns
Thinks
Tries
Understands

Adds to
Clarifies
Cooperates
Grasps
Knows
Pursues
Redirects
Respects
Remains open
Works

Applies
Builds
Compromises
Encourages
Initiates
Justifies
Models
Praises
Reaches out
Strategizes

Adapts
Anticipates
Articulates
Confronts
Facilitates
Formulates
Optimizes
Synthesizes
Transfers
Validates

INTRAPERSONAL



INTERPERSONAL

Thinking through tasks, reflecting on own strengths and limitations, applying prior knowledge, and identifying skills that fit the group work at hand.

SELF-AWARENESS

Working with others to define personal responsibilities to the group's success. Drawing on familiar ways to help optimize group strategies, norms, and processes to reach task goals.

Actively listening to all members, attending to nonverbal signals. Recognizing and understanding group communication norms. Monitoring group conversation, aware of need for clarification.

COMMUNICATING

Asking questions to verify or clarify understanding. Helping others to understand group norms. Expressing and justifying own perspective. Including and encouraging participation of others in group dialogue.

Understanding commonalities and differences in defining the task. Remaining open to competing ideas. Recognizing differences and power imbalances. Compromising own interests for the shared goals of the group.

NEGOTIATING & DECISION-MAKING

Helping to steer a course for group work, building consensus or acting alone. Mediating different viewpoints, noting the value of others' ideas. Cooperating to define and assign roles equitably.

Exhibiting a high standard for work quality. Accepting responsibility for group decisions and outcomes. Considering feedback openly. Managing time and tasks while monitoring group progress toward completion.

CONTRIBUTING & SUPPORTING

Determining and distributing tasks. Providing constructive feedback and innovative ideas to advance the work of others. Modeling work quality, task planning, and execution. Praising and supporting others.

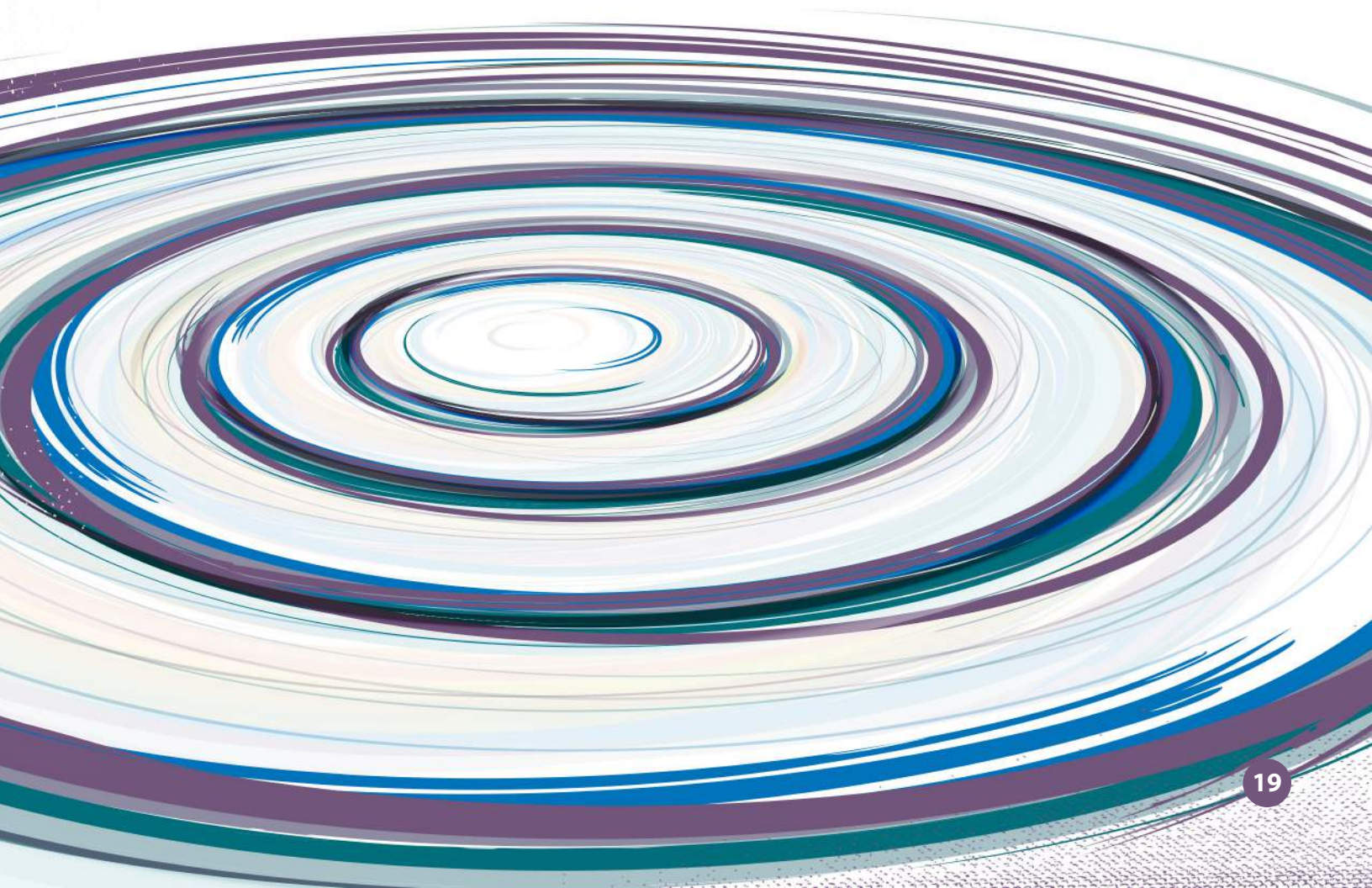
Tracking progress of own tasks and success toward milestones. Addressing obstacles when they arise. Viewing challenges as opportunities to improve performance. Using feedback effectively.

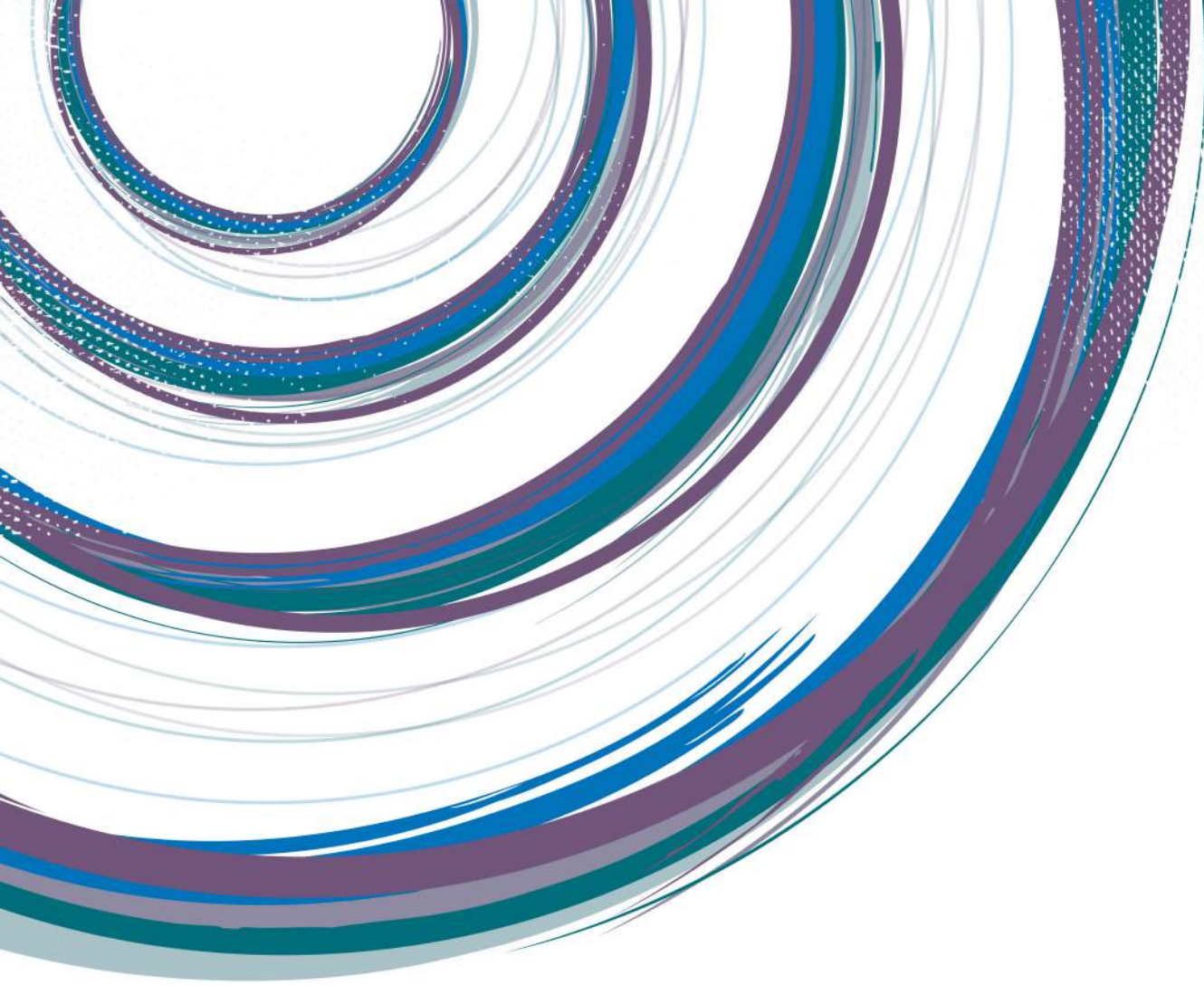
MONITORING & ADAPTING

Contributing to ongoing evaluation of group task distribution, resources, and progress, modifying goals accordingly. Troubleshooting the group strategy. Engaging in collective reflection and celebrating overall success.



COMMUNICATION





An individual's ability to leverage venue, mode, and audience to effectively convey meaning, discern and interpret messages, and signify understanding.

COMMUNICATION

Communication has never been more complex and critical across sectors. Ongoing technological advances require adapting to new modes of communication in school, work, and everyday life. As these new advances continue, face-to-face communication becomes less relevant to task completion but no less critical to successful citizenship. The ability to communicate effectively relates to every discipline and content area in education; the skill is critical across college and career pathways. Meaningful engagement in a community, both within a classroom and outside of school, depends on strong communication through the development of each component of the skill over time. To commit attention to the growth of this skill for students, we must recognize how components are demonstrated and how each maps onto continuously evolving methods of sharing and interpreting ideas effectively.

Purpose of the Framework

This framework serves to support educators as they interpret skills such as communication into learning contexts and opportunities. Researchers define communication in many ways, yet areas of common ground are presented here as a set of components and described at four of many milestones toward expertise. Context-neutral language can foster a shared understanding across content areas and grade levels of what communication endeavors require. From these mental models, learning communities can consider the contexts, conditions, resources, and opportunities needed for growth and demonstration of communication skills within unique domains and across an articulated system of support.

From Beginner to Emerging Expert

A wide range of skill development exists between the basic ability to construct and comprehend everyday messages and the capacity to anticipate and shape an audience's reaction and discern implicit meaning. Development toward expertise is shaped by context-specific challenges that learners overcome through active tinkering and targeted engagement, acquiring vocabulary, understanding norms, and interpreting cultural undertones.

BEGINNERS explore various modes of communication, attend to messages, understand and convey explicit meaning, imitate observed conventions, and try different approaches with support.

ADVANCED BEGINNERS distinguish between formal and informal contexts, are aware of their verbal and nonverbal cues, comprehend implicit meaning with support, and monitor their engagement.

STRATEGIC LEARNERS are aware of their tendencies, reflect on unintended effect on others, use context-specific language fluidly, evaluate how they interpret messages, nurture a personal style, and regulate and adjust their approach.

EMERGING EXPERTS leverage experience to refine their approach; develop an interpretive lens to infer meaning given the context; tailor content, format, and delivery to the audience; and optimize emotions to elicit an intended response.



**EMERGING
EXPERTS**

**STRATEGIC
LEARNERS**

**ADVANCED
BEGINNERS**

BEGINNERS

5 Components of Communication

Drawing on existing research and theory, this framework describes communication as a set of components. In addition to commonly perceived aspects of communication, this framework emphasizes context as the filter for communication choices and highlights metacognitive skills such as self-awareness and monitoring and adapting behaviors. The components listed on the following page are illustrated in terms of how individuals demonstrate communication skills through intrapersonal thinking processes, like reflection, as well as interpersonal engagement.

SELF-AWARENESS

Reflecting on strengths and challenges with conveying and interpreting meaning. Understanding how communication choices affect others.

CONTEXT & MESSAGE

Analyzing context as the basis for interpreting and planning messages, content, and framing. Code-switching to enhance clarity and effect in various contexts.

ESTABLISHING MEANING

Evaluating sources, using compelling examples, choosing effective formats to establish credibility. Receiving information and perspectives, drawing on one's own experience and knowledge to interpret effectively.

DELIVERY & EXPRESSION

Choosing best mode for purpose, conveying clearly, and affecting audience through style. Using and interpreting tone, emphasis, and verbal and nonverbal signals as means of expression.

MONITORING & ADAPTING

Initiating and maintaining engagement, regulating emotional response, and adjusting approach or perspective to enhance understanding.

5 Components in Action

Communication combines self-awareness, delivery, precision of meaning and evidence, and ongoing adaptation.

Within tasks that demand adept communication, such as a school project about family trees, a student at the strategic learner stage of self-awareness asks the following questions: How will my interviews be conducted differently for different family members? Will my questions need to be more formal for my great-grandmother? What presentation type suits the task best and builds off my strengths? How will I practice my presentation to speak slowly and avoid saying “um...” during every pause? Knowing that he gets nervous presenting in person, the strategic learner knows he will need to take time to learn how to make a voice-over slide presentation.

Out of respect, he prepares a different set of more formal questions to interview his grandmother about his family’s traditions and values. To engage his sisters and cousins and elicit heartfelt responses about the topic, the strategic learner uses more informal conversation.

When he plans the delivery of the presentation, the strategic learner organizes the central message around a “roots” metaphor to express the connections his family maintains to the traditions of their homeland as well as to their local community.

He incorporates imagery, pictures, and memorabilia to reinforce the double meaning of his metaphor and to clarify the values and beliefs passed on through the generations of his family. The strategic learner uses quotations from his interviews that provide clear evidence of close ties to the local community as well as connection to traditions from his family’s native homeland.

Based on feedback from peers who viewed the first draft of his presentation online, the strategic learner adjusts certain slides and records new voice-overs where he spoke too quickly. During the review of his final draft, he makes small adjustments of word choice and tone to ensure that the double meaning of “roots” is reinforced consistently.

Detailed at four stages of development in the following pages, the components listed below provide foundational attributes required to develop strong communication across grade levels and learning contexts.

Self-Awareness

Context & Message

Delivery & Expression

Establishing Meaning

Monitoring & Adapting

BEGINNER

- Explores strengths and challenges in different modes and forms of communication, with support.
- Follows patterns in own communication, unaware.
- Recognizes how tone, delivery, and expression affect audiences differently, when modeled and identified by others.
- Reflects on experiences when messages from others were influential, with guidance.

ADVANCED BEGINNER

- Identifies own communication strengths and challenges.
- Reflects on prior experience to plan and prepare across different modes of communication.
- Understands personal tendencies in communication when acknowledged by others.
- Grasps the importance of context, audience, formality, and cultural differences in communication, with guidance from others.

SELF-AWARENESS

Reflecting on strengths and challenges with regard to conveying and interpreting meaning. Understanding how communication choices affect others.

STRATEGIC LEARNER

- Considers how own communication strengths and challenges relate to purpose, goal, and chosen approach.
- Identifies personal needs for different levels of planning and preparation depending on familiarity with content, context, and form of communication.
- Is aware of own tendencies across modes and forms of communication.
- Reflects on unintended consequences of past communication choices given a specific audience, venue, or mode and considers alternative approaches.

EMERGING EXPERT

- Perceives which forms of communication best complement personal preferences and strengths.
- Leverages experience across venues, modes, and audience to refine own communication goals and plan tasks toward more effective results.
- Breaks up own communication patterns with practice and transfers awareness to new tasks.
- Draws on patterns in past experiences to anticipate unintended consequences of communication choices.

BEGINNER

- Observes various forms of communication, modeled by others.
- Looks for messages in communication from others, with guidance.
- Plays with different modes of communication to explore possibilities.
- Recognizes formal and informal contexts with support.
- Plans and prepares for communication tasks, with guidance.
- Attempts to use domain knowledge to convey messages, following examples set by others.

ADVANCED BEGINNER

- Notices similarities and differences in language, framing, and conventions across venues and forms of communication.
- Tries to connect messages from others to own experience.
- Mimics observed patterns when constructing own messages, differentiating for formal and informal communication, with help.
- Enhances preparation and seeks feedback when constructing formal messages.
- Understands and incorporates some domain-specific language effectively.

CONTEXT & MESSAGE

Analyzing context as the basis for interpreting and planning messages, content, and framing.
Code-switching to enhance clarity and effect in various contexts.

STRATEGIC LEARNER

- Draws on experience and analyzes venue, context, and source of communication to interpret messages from others.
- Considers purpose, audience, distinct cultural norms, and formality of context when planning content, mode, delivery, and expression.
- Establishes and works toward personal goals and goals for the communication task.
- Illustrates a message through intentional word choice, demonstrating familiarity with context-specific, domain-specific, and technical knowledge.

EMERGING EXPERT

- Integrates experience and knowledge to develop interpretive lenses for messages, given specific contexts.
- Synthesizes purpose with understanding of cultural norms, context, and audience to optimize decisions about form of communication, delivery, and expression.
- Combines intuition with understanding to execute communication tasks effectively.
- Composes fluid messages tailored to the audience, demonstrating domain-specific or technical knowledge, when appropriate.

BEGINNER

- Understands and conveys explicit meaning of the message, with support.
- Recognizes gaps in understanding, when identified by others.
- Responds to opportunities to ask questions.
- Describes personally meaningful experiences to support the meaning of own messages.
- Uses sources provided by others, with support.
- Restates evidence without considering the intended effect.

ADVANCED BEGINNER

- Comprehends implicit meaning within content and message, with support.
- Identifies where meaning is supported within received messages, with support.
- Explores ways to convey meaning through content and language choices.
- Selects relevant sources from among those suggested or made available by others.
- Draws on relevant and familiar sources of information and personal experience to support meaning.

ESTABLISHING MEANING

Evaluating sources, using compelling examples, and choosing effective formats to establish credibility.
Receiving information and perspectives, drawing on one's own experience and knowledge to interpret effectively.

STRATEGIC LEARNER

- Analyzes messages from others for implicit and explicit meaning.
- Evaluates own interpretation and seeks appropriate resources to enhance understanding.
- Chooses an effective format to establish meaning for a specific audience.
- Evaluates the quality of information sources and the effectiveness of examples, justifying use for a specific audience, venue, and purpose.
- Reinforces meaning by repeating relevant and accurate information.
- Incorporates related references to capture nuances and make the message memorable to a diverse audience.

EMERGING EXPERT

- Infers both intended and unintended meaning from received messages by diagnosing nuances in language and presentation choices.
- Tailors format, approach, and a variety of examples to enhance presentation of own ideas, to engage different audience members, to respond to cultural norms, and to clarify message effectively.
- Discerns credible and relevant sources and identifies the limitations of current work within a domain.
- Synthesizes supporting evidence using coherent organization that optimizes the message and evokes a desired response from the audience.

BEGINNER

- Notices overt tone and verbal and/or nonverbal forms of expression of others.
- Follows expectations and attempts to convey the purpose of communication using basic conventions.
- Imitates how others convey ideas.
- Relies on observations and feedback from others to signal engagement and confidence or adjust techniques.
- Tinkers with new forms of expression and techniques.

ADVANCED BEGINNER

- Considers meaning within the expressions of others.
- Understands how different modes of communication require different skills and are appropriate for different occasions.
- Grasps appropriate use of different forms of communication and domain-specific conventions, with guidance.
- Notices the effect of own techniques and visual, auditory, or language cues on others.
- Develops patterns in own expression.

DELIVERY & EXPRESSION

Choosing the best mode for purpose, conveying clearly, and affecting audience through style. Using and interpreting tone, emphasis, verbal, and/or nonverbal signals as means of expression.

STRATEGIC LEARNER

- Intentionally attends to the verbal and nonverbal language, tone, and style of others for added meaning, and to inform own approach.
- Organizes presentation of ideas to engage others.
- Chooses an effective mode of presentation, use of genre, and formal and informal conventions to convey ideas or purpose.
- Draws on own patterns of success, recognizing effective approaches to delivery, and effective forms of expression.
- Speaks, writes, responds, or performs expressively with clear and effective style.

EMERGING EXPERT

- Perceives tendencies in style of familiar speakers, influencing own interpretation.
- Optimizes format and presentation of ideas stylistically to capture and maintain audience's attention.
- Applies understanding of conventions and techniques across modes and domains to express purpose.
- Enhances message and conveys confidence through tone and unexpected yet effective forms of emphasis.
- Expresses ideas fluidly, through use of distinctive verbal or nonverbal signals.

BEGINNER

- Follows feedback to improve engagement and understanding.
- Recognizes own emotional response, when identified by others.
- Shares personal perspective, given opportunity.
- Tries different approaches when delivery is ineffective, using guidance from others.
- Responds to guidance and attempts improvements in technique.

ADVANCED BEGINNER

- Monitors engagement and considers ways to increase involvement.
- Learns strategies to deal with own emotional responses, with guidance.
- Recognizes different viewpoints from others and connects to own.
- Notices changes in the demeanor of others.
- Tries new approach when audience appears disengaged or misses meaning and message.
- Follows example set by others to continue improving effectiveness.

MONITORING & ADAPTING

Initiating and maintaining engagement, regulating emotional response, and adjusting approach or perspective to enhance understanding.

STRATEGIC LEARNER

- Evaluates and adjusts own level of active engagement and degree of participation.
- Regulates own emotional response to a situation by applying previously successful approaches.
- Monitors own understanding for gaps and pursues an appropriate course of action, given context.
- Identifies and responds to nonverbal cues of others.
- Initiates engagement with others to enhance clarity of message and overall interaction.
- Analyzes patterns among successes and challenges, discovering signs of personal style and opportunities for growth.

EMERGING EXPERT

- Enhances own engagement and the engagement of others across different modes of communication.
- Optimizes own emotions to persuade audience or elicit a desired response, in the moment.
- Synthesizes alternative perspectives with own.
- Anticipates others' emotional responses and makes adjustments in presentation.
- Adapts approach and presentation of ideas stylistically to capture and maintain attention of audience.
- Draws on reflective insights to nurture style and refine technique.

Communication Indicators The preceding progressions describe markers along a 10,000-hour journey through uncharted waters. Along the way, learners try out new forms of interpersonal actions, engaging different audiences across new contexts. They draw on intrapersonal thoughts and behaviors, interpreting meaning from the context of a message. Navigating one challenge after another, learners enhance their contextual awareness as a filter for communication. They gain expertise by addressing similar types of problems across different scenarios, noticing exceptions to anticipated outcomes.

Many important milestones surround the four levels described here. Educators can draw on their expertise to consider markers of development within a single year or throughout a long-term project. A sample of verbs below reflects a range of complexity whether over 10 years or 10 weeks of engagement. When interpreted into developmental milestones, the intra- and interpersonal aspects of communication could foster students' interactions with the world around them at any milestone along their journey.

- What forms of communication do you engage in as part of your career?
- What are the primary challenges students face in terms of appropriate and effective communication?
- What opportunities could help support students address these challenges?

Describes
Explores
Follows
Grasps
Imitates
Listens
Observes
Plans
Responds to
Shares

Comprehends
Considers
Develops
Follows
Identifies
Is aware
Mimics
Monitors
Tries
Understands

Analyzes
Chooses
Draws on
Establishes
Evaluates
Illustrates
Incorporates
Initiates
Organizes
Reinforces

Composes
Discerns
Improvises
Infers
Leverages
Optimizes
Perceives
Refines
Synthesizes
Tailors

INTRAPERSONAL



INTERPERSONAL

Reflecting on past experience to recognize own communication strengths and growth areas with distinct modes, venues, and audiences.

SELF-AWARENESS

Understanding the inadvertent and intentional effect on others as a result of own communication choices including content, language, tone, delivery, and mode.

Interpreting messages within context, considering source, language, venue, and mode of communication. Understanding domain- and/or context-specific terminology.

CONTEXT & MESSAGE

Tailoring own messages to the audience, venue, and mode of communication. Approaching word choice intentionally and code-switching to enhance clarity and effect.

Analyzing received messages for implicit and explicit meaning. Evaluating the quality of support used to convey meaning. Assessing accuracy of own interpretation given the context.

ESTABLISHING MEANING

Drawing on compelling examples, anecdotes, analogies, or other forms of support to clarify meaning, strengthen message, and evoke intended responses, specific to audience and context.

Considering language, tone, delivery, and nonverbal signals when interpreting messages. Nurturing personal style and technique. Taking risks to convey perspective with ownership and courage.

DELIVERY & EXPRESSION

Organizing format and ideas to engage others effectively. Expressing own clear and effective style. Consciously using language, delivery, tone, and nonverbal signals to convey and enhance meaning.

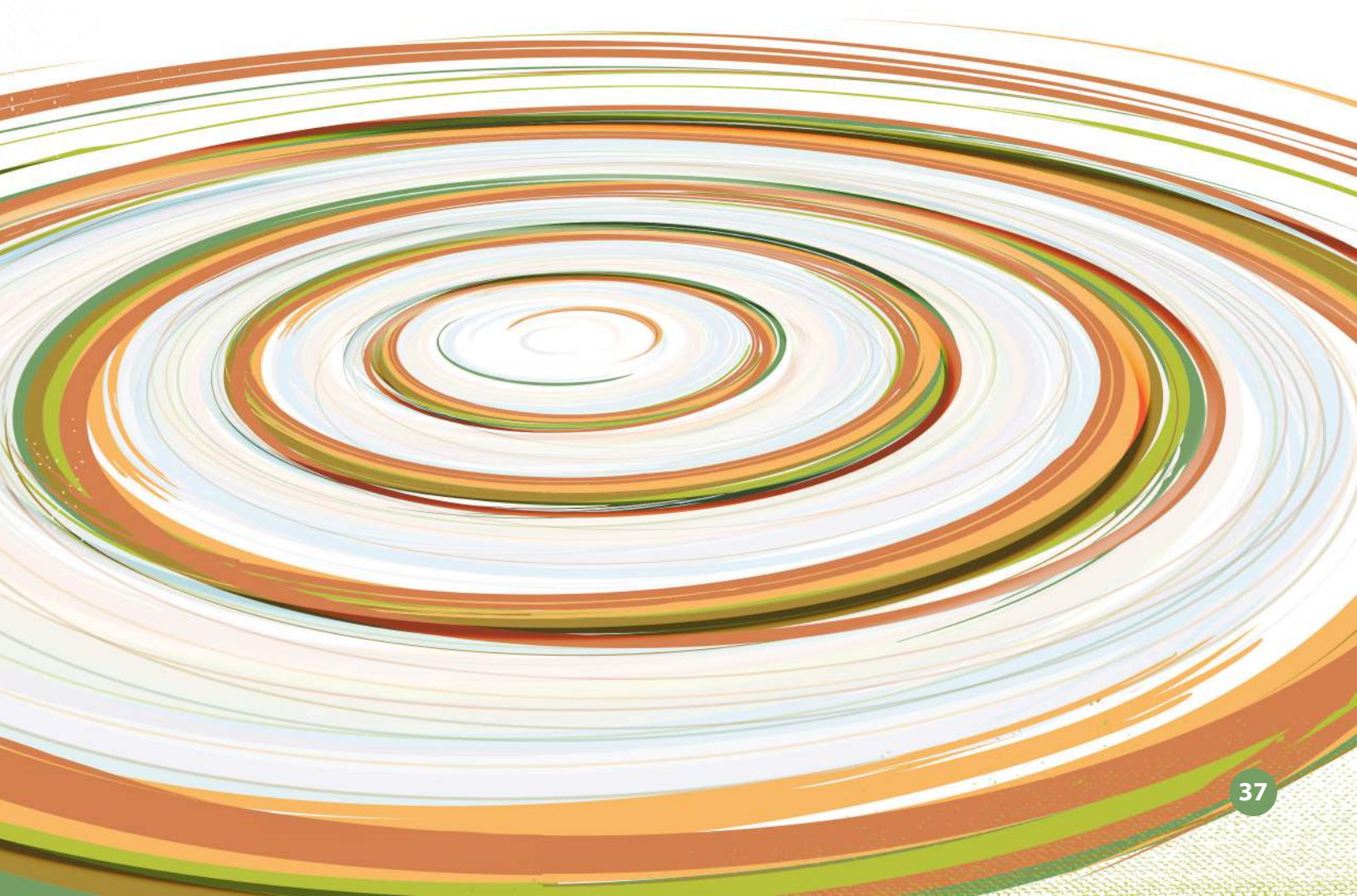
Evaluating own active engagement, participation, and understanding. Regulating emotional response. Revising and refining approach and practicing techniques to learn and use new conventions.

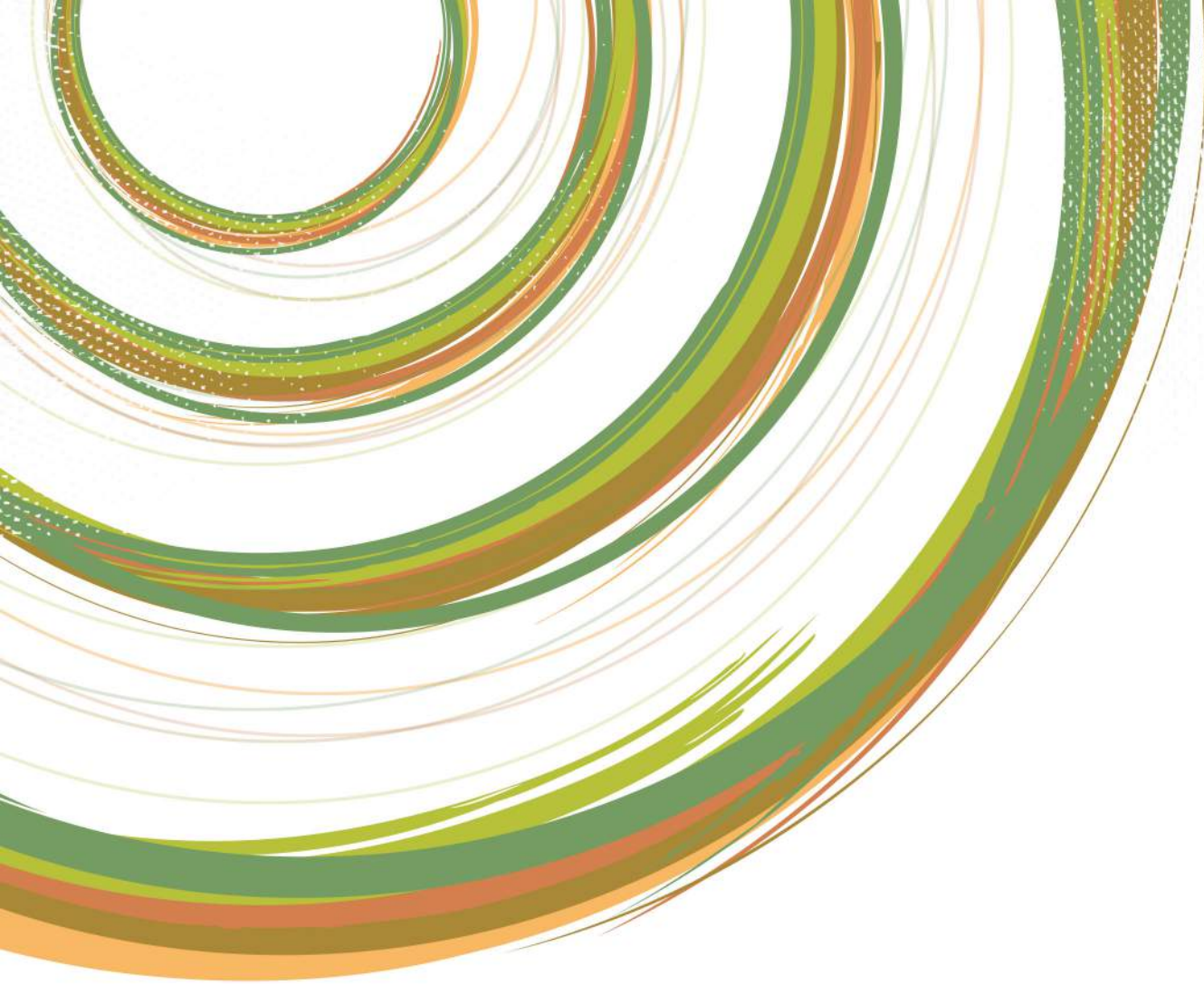
MONITORING & ADAPTING

Identifying and responding to nonverbal cues and the emotional response of audience. Seeking feedback and adjusting perspective. Initiating engagement with others to enhance interaction.



CREATIVITY





An individual's ability to personally interpret experiences, imagine and play with new possibilities, and create approaches that are novel, useful, and valued by the world around them.

CREATIVITY

Creativity is prized across disciplines. Creative insights are the seeds of many innovations, whether in school, work, or everyday life. Though the arts have long been viewed as the venue for transforming creative possibilities into creative acts, individuals regularly find innovative solutions to their own everyday problems. Employers want innovative problem solvers. They seek out candidates who can contribute ideas, both novel and useful, and apply them in functional ways. Now more than ever, research suggests that creativity is a learnable skill. With effort and feedback, individuals make unique connections and meaningful insights, experiment with possibilities, reflect on the learning process, and grow more confident to take risks. This growth requires awareness of strengths and experience. The ability to apply knowledge and experience to challenges and capitalize on insights is a defining feature of creativity development. When detailed as a set of components, creativity can be more clearly understood and carefully nurtured.

Purpose of the Framework

This framework serves to support educators as they interpret skills such as creativity into learning contexts and opportunities. Researchers define creativity in many ways, yet areas of common ground are presented here as a set of components and described at four of many milestones toward expertise. Context-neutral language can foster a shared understanding across content areas and grade levels of what truly creative endeavors require. From these mental models, learning communities can consider the contexts, conditions, resources, and opportunities needed for growth and demonstration of creativity skills within unique domains and across an articulated system of support.

From Beginner to Emerging Expert

Between everyday insights and significant contributions in the world, a wide developmental range exists for creativity. To approach the expert level, creativity, like other skills, requires the dedication of thousands of hours navigating discipline-specific challenges through active tinkering and targeted engagement, advancing insights and approaches to innovation toward a level of intuition.

BEGINNERS approach provided problems with support, discover “ah ha” connections to past experience, begin to develop confidence to take risks, learn when ideas are impractical, and produce work that is new to them.

ADVANCED BEGINNERS notice opportunities for small changes to accepted norms, try to persist when ideas are unpopular or unusual, tolerate less structure in their learning, and consider new perspectives shared by others.

STRATEGIC LEARNERS tolerate ambiguity in their learning, evaluate the context and boundaries, and navigate between what is personally meaningful and valued by others.

EMERGING EXPERTS redefine and situate problems within social contexts, interpret insights from experience with different domains, question accepted approaches, and challenge conventions to carry work in new directions.



**EMERGING
EXPERTS**

**STRATEGIC
LEARNERS**

**ADVANCED
BEGINNERS**

BEGINNERS

5 Components of Creativity

Drawing on existing research and theory, this framework defines creativity in terms of five components that can map onto a variety of learning contexts and modes of exploration and expression. Among elements of creativity, this framework highlights self-awareness as well as monitoring and adapting behaviors to clarify the interconnectedness between creative thinking and doing. The components listed on the following page are illustrated in terms of how individuals demonstrate creativity through intrapersonal thinking processes, like reflection, as well as interpersonal engagement with others.

SELF-AWARENESS

Thinking about personal interests, strengths, inhibitions, and past experience throughout the creative process. Drawing on prior understanding to discover and interpret meaningful challenges.

CULTIVATING & EVALUATING IDEAS

Seizing personally meaningful insights and connections to imagine new possibilities, evaluating ideas for both novelty and effectiveness, testing boundaries, and identifying constraints.

TOLERATING RISK & AMBIGUITY

Dealing with uncertainty, taking risks, and balancing novel possibilities with limitations and norms, throughout the creative process.

EXPERIMENTING & VALIDATING

Exploring and creating to test the relevance and effectiveness of an idea. Overcoming setbacks, innovating through an iterative cycle, and communicating ideas to understand the perspective of others.

MONITORING & ADAPTING

Recognizing patterns and growth in one's own work and ideas, integrating feedback and ideas of others, continuing to seek out new experiences, and developing a driving purpose.

5 Components in Action

Creativity is the combination of skill, knowledge, intuition, insightful interpretation of observations in the world, and self-confidence to take risks and pursue new possibilities.

In creative endeavors, such as the use of solar power to make a model car drive, a student at the strategic learner stage of self-awareness might ask herself some of the following questions: How does this challenge relate to others I have worked through? What are the current approaches and their limitations? How can I formulate a unique, personally meaningful problem from this challenge? Who will give me feedback to help shape the problem and develop possible ideas? What am I not seeing and what is stopping me from seeing it?

Self-Awareness

At the idea generation stage of the project, the strategic learner redefines the problem in meaningful terms that relate the engineering design task to the environmental concerns of pollution and the effect of global warming. The strategic learner imagines many possible design ideas that range from outlandish and impractical to those that imitate the sample designs that her teacher provided.

Cultivating & Evaluating Ideas

Throughout the creative process, the strategic learner plays with possibilities to learn about both the limitations of the materials and context and the unique innovations that emerge from her idea.

Tolerating Risk & Ambiguity

When the time comes to produce results and validate her ideas through the feedback of others, the strategic learner plays with all the different possible combinations for the positioning of the battery pack and solar panel to minimize windage and maximize stability. Though her first few attempts fail, the mistakes motivate her to find another path. She commits the time needed and prepares a realistic plan to create an effective prototype. Throughout the creative process, she accepts suggestions from the visiting electrical engineer and adapts her approach.

Experimenting & Validating

She reflects on her values and aims for a solution that balances aesthetics with utility. Upon completing the prototype, she recognizes her newfound confidence and deeper knowledge and already sees a new design for the solar panels.

Monitoring & Adapting

Detailed at four stages of development in the following pages, the components listed below provide the foundational attributes of creativity, which are flexible across many contexts.

BEGINNER

- Discovers personally meaningful connections and develops interests and strengths, given opportunity.
- Restates a challenge suggested by others that relates to interests or strengths.
- Thinks about the challenge in different ways, with guidance.
- Recognizes moments of self-doubt and moments of confidence, when identified by others.
- Considers how new information about the challenge relates to own understanding.

ADVANCED BEGINNER

- Values personally meaningful insights, recognizes strengths, and pursues interests.
- Chooses a challenge of interest, given options.
- Recognizes how imitation of familiar approaches helps to discover opportunities to innovate.
- Notices when self-doubt limits the creative process, turns to others for support.
- Sorts and retrieves information about the challenge, with guidance.

SELF-AWARENESS

Thinking about personal interests, strengths, inhibitions, and past experiences throughout the creative process. Drawing on prior understanding to discover and interpret meaningful challenges.

STRATEGIC LEARNER

- Embraces interests, aware of different degrees of motivation, knowledge, and skill development across different domains.
- Interprets a challenge of personal value connected to experience and familiar contexts.
- Sees opportunities in the environment for original ideas.
- Nurtures confidence and acts on opportunities to apply personal insights.
- Surmounts personal inhibitions to creative growth.
- Looks for ways to apply ideas and approaches from different contexts.

EMERGING EXPERT

- Perceives where interests and strengths complement each other best.
- Redefines a challenge and situates it within a social context.
- Acts on the responsibility to affect others with own ideas and work.
- Knows own preferences and features of environments that are personally conducive to interpreting insights.
- Evaluates contexts to identify norms, limitations, and cultural boundaries, assessing opportunities to apply personal insights.
- Connects relevant knowledge and strategies from one domain to another.

BEGINNER

- Wonders about past experiences, thinking back with prompting and support.
- Imagines new ideas and interprets them in personally unique ways, with support.
- Recognizes what makes ideas or perspectives contradictory, with guidance.
- Chooses an idea that reflects interests and shares, with support.

ADVANCED BEGINNER

- Explores connections between the challenge and familiar experiences.
- Recognizes opportunities for small changes to accepted norms, with support.
- Plays with possibilities, defers judgment on ideas, and keeps an open mind, with guidance.
- Considers ideas of others and incorporates some that challenge own, with guidance.
- Eliminates ideas that are not appropriate for the context or task.
- Identifies a personally meaningful and appropriate approach to pursue and conveys ideas independently.

CULTIVATING & EVALUATING IDEAS

Seizing personally meaningful insights and connections to imagine new possibilities, evaluating ideas for both novelty and effectiveness, testing boundaries, and identifying constraints.

STRATEGIC LEARNER

- Seizes “ah ha” connections to past experience as sources of potential approaches.
- Takes advantage of untested possibilities.
- Questions assumptions to shift perspective, making room for personally novel ideas.
- Identifies multiple directions, examines possible combinations, and considers alternatives.
- Evaluates novelty and effectiveness of ideas against constraints and possibilities within the context.
- Refines and elaborates most innovative and effective choice.
- Gains acceptance of ideas through persuasion, while open to feedback.

EMERGING EXPERT

- Intuitively reflects on experience across contexts for meaningful connections to the challenge at hand.
- Questions standard approaches to consider alternatives.
- Applies a range of strategies to generate new insights.
- Looks for inspiration across domains and synthesizes contrasting pieces of information to evolve ideas.
- Breaks boundaries by choosing untested ideas that respect but challenge social conventions, constraints of a medium, or the work of others.
- Adopts and shares ideas with targeted audiences, seeking insights on specific aspects.
- Tailors approach to effectively convey personal insights and interpretations in different contexts.

BEGINNER

- Tries to keep an open mind and deal with uncertainty throughout the learning process, when supported.
- Works through unfamiliar challenges, with encouragement.
- Takes risks, when supported.
- Incorporates input from others with guidance.
- Understands the limited practicality and relevance of some ideas, given appropriate feedback.
- Acknowledges when experimenting with new approaches helps or hinders the process.

ADVANCED BEGINNER

- Manages less structure and delayed gratification in the learning process, with guidance.
- Moves on to a new idea, when appropriate.
- Tries to persist when ideas are unpopular or meet an obstacle.
- Considers new information and perspectives throughout the learning process.
- Understands the need to balance imaginative possibilities with real-world constraints.
- Grasps that thinking innovatively is not optimal in some contexts and at some stages of the learning process.

TOLERATING RISK & AMBIGUITY

Dealing with uncertainty, taking risks, and balancing novel possibilities with limitations and norms throughout the creative process.

STRATEGIC LEARNER

- Tolerates ambiguity and uncertainty at different stages of the learning process.
- Draws on and learns from mistakes and the unintended consequences of ideas and creations.
- Evaluates contexts and boundaries to pursue a sensible level of risk.
- Navigates between what is personally meaningful versus valued by others.
- Negotiates between originality of ideas, limitations of skill, and constraints of the medium and context.
- Contributes to a climate where risk taking and innovation thrives for others.
- Recognizes when taking a new approach is appropriate.

EMERGING EXPERT

- Seeks out open-ended challenges without easy or obvious solutions.
- Innovates from failure and bridges learning across domains.
- Takes risks, drawing on strengths and untested ideas.
- Vets and mindfully integrates perspectives that compete with own experience.
- Applies a synthesis of perspectives to challenge cultural, social, and artistic norms.
- Draws on opportunities to use constraints of skill or medium to test new directions.
- Anticipates when pursuing innovative ideas will be beneficial and when it will be detrimental.

BEGINNER

- Considers how existing resources, skills, and familiar techniques apply to tasks.
- Walks through a timeline established by others and understands, with support.
- Follows steps to develop an idea and communicate the concept, with scaffolding.
- Learns from trying to reproduce an exemplar, with modeling.
- Uses feedback from others to make improvements.
- Finds personal satisfaction in work that is original to them, with encouragement.

ADVANCED BEGINNER

- Discovers new resources, skills, and techniques needed to experiment with and communicate an idea.
- Thinks through a familiar process for developing an idea into a solution.
- Commits time and effort to bring work toward completion.
- Adapts an exemplar to reflect own idea and interpretation.
- Evaluates fit and relevance of approach, with guidance.
- Develops confidence and intention through practice in work.

EXPERIMENTING & VALIDATING

Exploring and creating to test the relevance and effectiveness of an idea. Overcoming setbacks, innovating through an iterative cycle, and communicating ideas to understand the perspective of others.

STRATEGIC LEARNER

- Selects settings that foster curiosity, conceptualization, and routes toward a solution.
- Plans out and illustrates an approach to represent the evolution of ideas.
- Experiments and considers ways to expand the idea further, motivated by successes and setbacks.
- Creates a prototype or draft to make the idea tangible.
- Tests out prototype with a planned process for getting feedback.
- Demonstrates originality and personal style in work.

EMERGING EXPERT

- Shapes or seeks an environment most conducive to own creative process and product development.
- Anticipates an iterative cycle of tinkering with ideas, aware of the most useful feedback to seek from others.
- Intuitively applies and adjusts strategies to meet demands unique to the innovative idea.
- Achieves innovation and high standard of quality in work and products.
- Balances precision with surprise in communicating an idea.
- Elaborates an idea fully to foster rich feedback from others.
- Blends personal style and technical knowledge and skills to establish a unique, meaningful narrative in work.

BEGINNER

- Notices “ah ha” connections made throughout the process, with guidance.
- Listens to feedback from others and applies, with support.
- Develops new skills and knowledge to foster future ideas.
- Takes pride in the final product, recognizes personal growth, and sets goals with guidance.
- Is curious about chances to grow from initial success.

ADVANCED BEGINNER

- Monitors progress toward personal goals, with support.
- Seeks out and uses feedback to think about the next stage of the creative process.
- Considers how ideas and solutions affect others.
- Develops a personal purpose throughout stages of the work, when nurtured by others.
- Pursues new opportunities to innovate, provided by others.

MONITORING & ADAPTING

Recognizing patterns and growth in one’s own work and ideas, integrating feedback and ideas of others, continuing to seek out new experiences, and developing a driving purpose.

STRATEGIC LEARNER

- Prioritizes choices during the creative process based on personal goals and own criteria for success.
- Looks for specific feedback to help work through issues in cultivating and applying personal insights.
- Perceives how own ideas and work affect progress for self and others.
- Draws on intrinsic motivation to drive work and evaluates growth of personal expression.
- Seeks challenges that relate to personal goals and growing interests.

EMERGING EXPERT

- Situates patterns in own work both within and beyond the specific domain, intuitively.
- Collaborates with others to enhance resources, knowledge, and skills, and to integrate new ideas into own work.
- Anticipates and acts on the effect of ideas and approach on others.
- Personalizes processes and owns final products.
- Adopts and adapts themes and style through ideas and work.
- Looks to build on prior innovations, improving, enhancing, and finding new applications over time.
- Notices unaddressed problems in a field of interest, sees opportunities for collaborative solutions, and begins to explore new possibilities.

Creativity Indicators The preceding progressions describe markers along a 10,000-hour journey through uncharted waters. Along the way, learners try out new forms of interpersonal actions, testing existing norms. They engage in intrapersonal thoughts and behaviors, recognizing the potential of “ah ha!” moments. Navigating one challenge after another, learners interpret, apply, and experiment with personally novel ideas. They gain expertise by addressing similar types of problems across different scenarios, noticing exceptions to anticipated outcomes.

Many important milestones surround the four levels described here. Educators can draw on their expertise to consider markers of development within a single year or throughout a long-term project. A sample of verbs below reflects a range of complexity whether over 10 years or 10 weeks of engagement. When interpreted into developmental milestones, the intra- and interpersonal aspects of creativity could foster application of insights at any milestone along their journey.

- How have you applied personally meaningful connections or insights within your career?
- In what context have you witnessed a student’s “ah ha!” moment, their personally meaningful connection or interpretation?
- What types of opportunities to apply these insights would your students benefit from?

Considers
Follows steps
Imagines
Imitates
Is curious
Learns
Takes pride
Tries to
Wonders
Works through

Chooses
Commits time
Develops
Discovers
Explores
Grasps
Notices
Plays with
Seeks out
Thinks through

Embraces
Experiments
Gains acceptance
Interprets
Navigates
Negotiates
Nurtures
Perceives
Questions
Surmounts

Balances
Breaks boundaries
Innovates
Integrates
Personalizes
Shapes
Situates
Tailors
Takes risks
Vets

INTRAPERSONAL



INTERPERSONAL

Recognizing and valuing personally meaningful interpretations and insights. Discovering and developing interests. Noticing sources of motivation and strategies that nurture insights.

SELF-AWARENESS

Finding room for original ideas in the environment or work of others. Uncovering constraints to assess opportunities; acting on own responsibility to affect others.

Drawing on experience to interpret a problem or challenge. Playing with possibilities, deferring judgment. Evaluating novelty and effectiveness of ideas, elaborating and refining best choice.

CULTIVATING & EVALUATING IDEAS

Strategically incorporating ideas different from own. Breaking boundaries, gaining acceptance for untested possibilities through effective persuasion.

Dealing with uncertainty and pursuing sensible level of risk. Learning from mistakes. Negotiating between originality of ideas, limitations of personal skill, and the constraints of the medium.

TOLERATING RISK & AMBIGUITY

Navigating between personal meaning and the values of others. Evaluating context, determining boundaries to push. Knowing when to persist or change approach, when challenged by social norms.

Creating a prototype of the idea. Testing effectiveness and refining solution. Committing time and effort toward completion. Developing confidence and originality through practice.

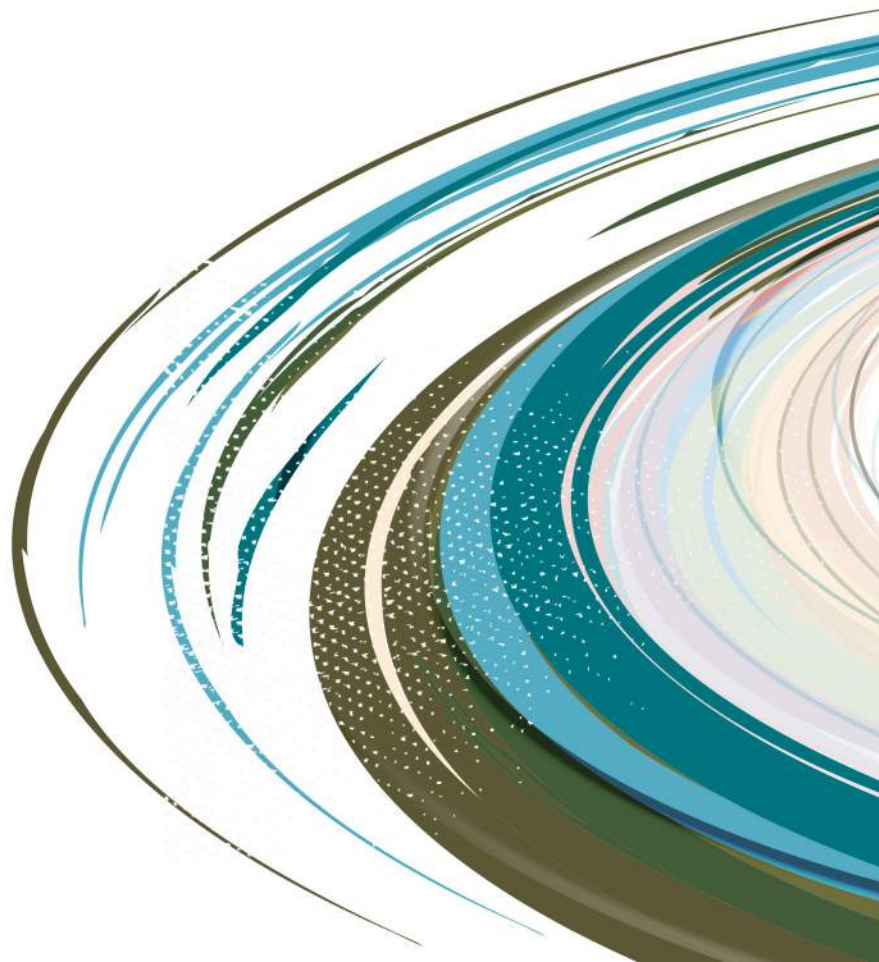
EXPERIMENTING & VALIDATING

Seeking environments that foster experimentation. Discovering resources to test and validate ideas. Seeking specific feedback to enhance approach. Conveying results and evolution of ideas.

Surmounting inhibitions, learning and persisting through mistakes. Analyzing own work, finding meaning, and refining ideas. Remaining alert to new opportunities. Evaluating personal growth.

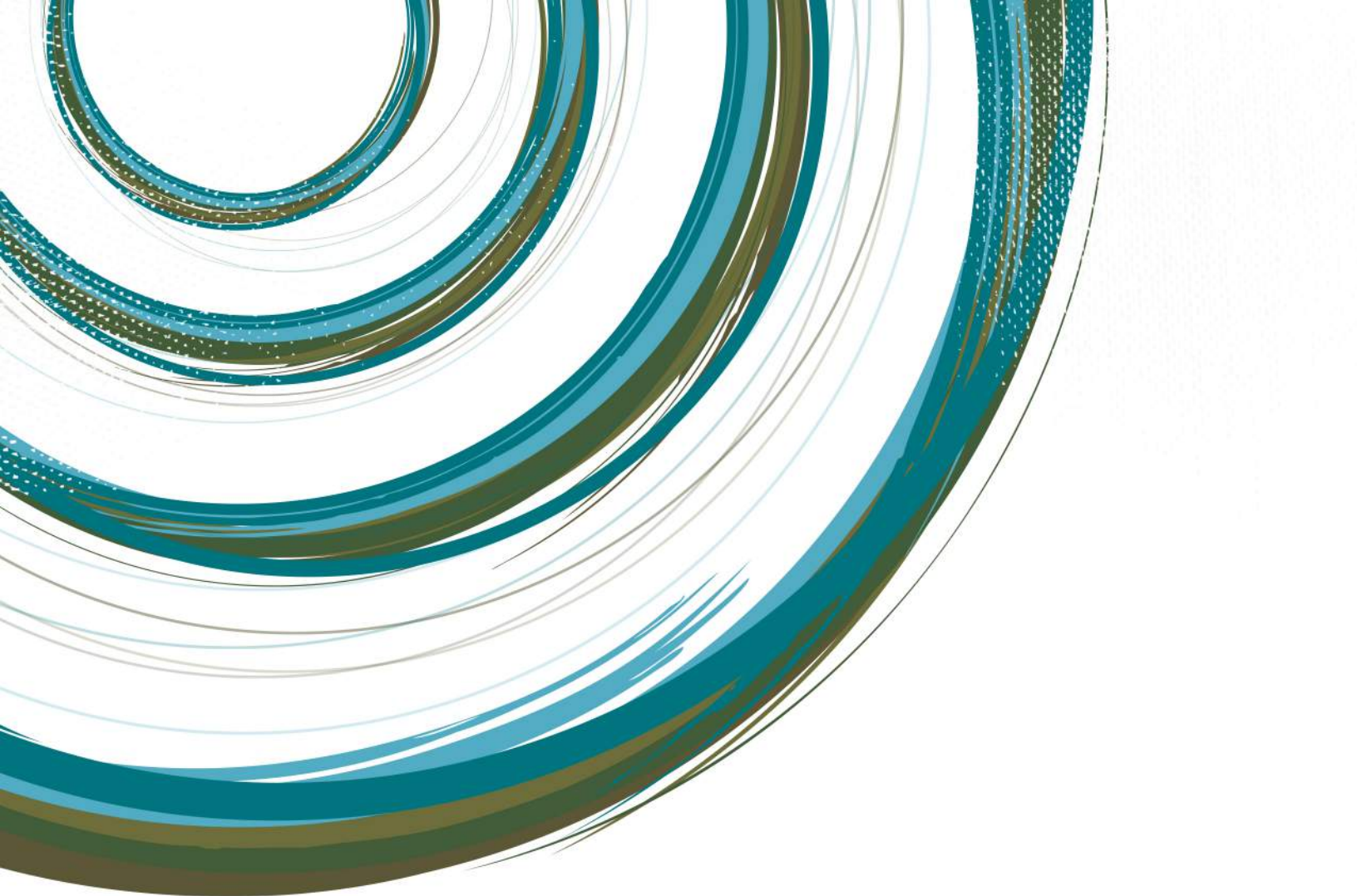
MONITORING & ADAPTING

Shifting work patterns to changing parameters. Collaborating to enhance resources, knowledge, and skills and to integrate new ideas. Seeking new challenges to pursue.



SELF-DIRECTION





An individual's ability to self-regulate, find value in structured and self-initiated tasks, and capitalize on failure; evaluating and collaboratively steering learning toward long-term goals and aspirations.

SELF-DIRECTION

Self-Direction in learning is a growing expectation of day-to-day life and a necessary skill sought by employers as a result of ongoing advancements in information technology. The Internet provides quick access to interactive research, video tutorials, online courses, and real-time communication with fellow learners or experts across the globe. Yet, information is only as useful as it is thoughtfully considered and applied. Formal education, once the primary venue for disseminating information, increasingly serves to build student capacity to purposefully and successfully navigate the modern information age. Recognizing the components of self-direction in action opens the door to fostering students' independent evaluation and application of information. Self-direction incorporates task management, emotional self-regulation, and strategic selection and direction of learning pursuits. Over time, skillful self-direction steadily deepens interests and develops personal goals.

Purpose of the Framework

This framework serves to support educators as they interpret skills such as self-direction into learning contexts and opportunities. Researchers define self-directed learning in many ways, yet areas of common ground are presented here as a set of components and described at four of many milestones toward expertise. Context-neutral language can foster a shared understanding across content areas and grade levels of what truly collaborative endeavors require. From these mental models, learning communities can consider the contexts, conditions, resources, and opportunities needed for growth and demonstration of self-directed skills within unique domains and across an articulated system of support.

From Beginner to Emerging Expert

The spectrum of development between beginner and emerging expert reflects active tinkering and targeted engagement, leading to fluid oversight and direction of learning tasks. In addition to self-regulated behaviors, self-directed learners vary in their initiative and self-awareness, both of which foster pursuit of learning in purposeful and personally meaningful ways.

BEGINNERS are motivated by opportunities that pique their interests, and they explore other possibilities, with support. They work with others to distinguish learning goals from performance goals, establish a plan, and monitor their progress.

ADVANCED BEGINNERS seek opportunities aligned with interests. They develop project-specific learning goals; plan and regulate, with help; and tinker with learning strategies, seeking support when needed.

STRATEGIC LEARNERS draw on learning strategies to plan, monitor, and adjust the learning process, while looking for ways to meet personally meaningful goals. They attribute success and failure to effort, effectiveness, or motivation.

EMERGING EXPERTS draw on experience, long-term goals, and aspirations to analyze learning opportunities and initiate collaborative approaches, in order to optimize processes and maximize their learning and development.

EMERGING
EXPERTS

STRATEGIC
LEARNERS

ADVANCED
BEGINNERS

BEGINNERS

5 Components of Self-Direction

Drawing on existing research and theory, this framework describes self-direction as a set of components. In addition to initiative, planning, and goal setting, this framework emphasizes critical metacognitive skills. Learners' awareness of their interests and aspirations provides motivation and direction to seek learning opportunities. Additionally, their ability to monitor progress and adapt learning strategies deepens their understanding and success. The components listed below are illustrated in terms of how individuals demonstrate self-directed learning skills through intrapersonal thinking processes, like reflection, as well as interpersonal engagement.

SELF-AWARENESS

Reflecting on past experiences to evaluate one's own strengths, limitations, motivation, interests, and aspirations within different learning contexts.

INITIATIVE & OWNERSHIP

Taking responsibility for learning, finding purposeful driving questions, shaping opportunities to fit personal interests and learning style, and seeking input from others.

GOAL-SETTING & PLANNING

Developing long-term goals, establishing meaningful learning targets, identifying effective strategies, and planning out steps.

ENGAGING & MANAGING

Seeking out relevant resources and information to support learning goals and refining strategies. Maintaining effective pace, reaching short-term benchmarks and long-term goals.

MONITORING & ADAPTING

Evaluating progress, adapting strategies, seizing failure in order to grow from mistakes, and attributing success to effort and motivation.

5 Components in Action

Though planning, goal setting, and initiative are perhaps the most commonly considered attributes of self-direction, self-awareness and the ability to monitor and adapt are also pivotal pieces that give behavior purpose and the potential for success. A strategic, self-directed learner knows his or her strengths, interests, and aspirations throughout the learning process and recognizes new directions that their learning can take.

Tasked with researching and writing about a historic event that has affected today's world, a self-directed learner begins by looking for ways to relate the assignment to his own life, culture, and interests. He asks himself: What strategies can I use to interpret and manage this assignment? How can I make it personally meaningful to help stay motivated? What do I know and what don't I know? What do I hope to get out of this assignment and how will I know if I have met my own expectations?

Self-Awareness

As he approaches the assignment, he pursues a driving question or challenge to create a meaningful starting point. He takes initiative to seek out new experiences and competing perspectives to help ground his own.

Initiative & Ownership

Before he starts, he measures what resources he has available to him against what he thinks he may need to be successful. After choosing the Million Man March in 1995 as his event, he thinks of any relatives he could interview who may have witnessed it. He sets short-term goals for completing the research and long-term goals for a complete first draft. He makes a plan and compares what he is thinking with a classmate's plan.

Goal-Setting & Planning

As he starts researching, he has trouble finding an important book but finds a website with important excerpts that he can draw on. He learns more about the website to find out if he can trust it as a resource. When his teacher bumps up the due date for peer review of a first draft, he adjusts his plan and puts in a few long evenings at home to build momentum in his writing. Reflecting on his past work, he knows his first drafts are pretty rough around the edges so he sets aside a time cushion to get some early feedback.

Engaging & Managing

From the beginning of the learning task to the end, he monitors his work quality and pace. He figures out what strategies were not as effective as he thought they would be and puts effort into adapting his own learning patterns in order to redirect. The strategic, self-directed learner sees and acknowledges the outcomes of his hard work and effort and carries this motivation to the next task.

Monitoring & Adapting

BEGINNER

- Describes prior learning experiences with current context, when prompted.
- Identifies preferences, given choice of tasks.
- Is aware of strengths and areas for growth, with feedback from others.
- Expresses motivation in terms of interest or disinterest in learning tasks.
- Understands constraints, resources, and expectations of others, with support.

ADVANCED BEGINNER

- Discovers how new experiences relate to prior experience and strategies.
- Recognizes growing areas of personal interest.
- Understands strengths and potential for growth, with guidance.
- Notices when motivated by own interests or expectations set by others.
- Recognizes limitations, familiar resources, and externally set expectations.

SELF-AWARENESS

Reflecting on past experiences to evaluate one's own strengths, limitations, motivation, interests, and aspirations within different learning contexts.

STRATEGIC LEARNER

- Reflects on prior experiences to identify successful learning strategies.
- Considers a need to apply strategies differently given the setting.
- Notices patterns in interests, considers various aspirations.
- Analyzes own expectations for learning and fits these expectations into the context, appropriately.
- Evaluates internal and external sources of motivation.
- Analyzes constraints related to external expectations, the environment, and existing resources and norms.

EMERGING EXPERT

- Draws on relevant prior knowledge and learning strategies within and beyond the task domain.
- Hones aspirations, aware of key personal learning targets and timeline.
- Situates learning opportunity and own goals within previous successes and unexplored interests.
- Optimizes motivation by identifying value within or outside of own interests and long-term goals.
- Evaluates own degree of autonomy provided by the learning context and environment.
- Examines barriers and considers additional venues to expand learning opportunities.

BEGINNER

- Willing to engage in new experiences, with support.
- Explores personal interests through learning opportunities provided by others.
- Chooses a learning opportunity from options provided by others.
- Develops curiosity through observations and discoveries.
- Responds to opportunities to ask relevant questions.

ADVANCED BEGINNER

- Seizes opportunities that engage interests, willing to learn from others' experience.
- Recognizes own role in learning opportunities and outcomes.
- Finds problems of interest with support and insights from others.
- Follows own curiosity to steer learning with little guidance.
- Seeks help proactively and asks questions when needed.

INITIATIVE & OWNERSHIP

Taking responsibility for learning, finding purposeful driving questions, shaping opportunities to fit personal interests and learning style, and seeking input from others.

STRATEGIC LEARNER

- Purposefully pursues opportunities aligned to interests, exploring aspirations.
- Finds value in learning opportunities different from own interests and goals.
- Takes responsibility for own learning objectives.
- Establishes and pursues driving questions to guide development and growth.
- Draws on experience and observations to push learning in new directions.
- Cooperates with others to share control of learning directions when appropriate.

EMERGING EXPERT

- Owns independent pursuit of learning.
- Engages others to create opportunities aligned with own goals and aspirations.
- Redefines challenges to propel own development forward in personally meaningful directions.
- Analyzes content and then context of learning and applies experience and curiosity to direct own growth.
- Challenges constraints and pushes boundaries to enhance learning opportunities.
- Validates a collaborative approach to learning through own efforts, outreach, and motivation.

BEGINNER

- Identifies a task-specific learning goal and distinguishes it from performance goals, with guidance.
- Works with others to set learning targets to meet goals.
- Considers strategies suggested by others.
- Looks to an approach set by others.

ADVANCED BEGINNER

- Develops a project-specific learning goal, modeled after examples from others.
- Establishes short-term targets to approach learning, given support.
- Remembers learning strategies used before.
- Aims at long-term goals though a familiar process of planned steps.

GOAL-SETTING & PLANNING

Developing long-term goals, establishing meaningful learning targets, identifying effective strategies, and planning out steps.

STRATEGIC LEARNER

- Embraces opportunities to identify personally meaningful learning goals.
- Analyzes the learning opportunity to define challenging long-term objectives and short-term learning targets.
- Identifies familiar learning strategies suited to the opportunity.
- Assesses needs and resources to formulate a plan toward outcome expectations, identifying key incremental steps.
- Confirms the value of goals and plans by observing and getting feedback from others.

EMERGING EXPERT

- Optimizes approach by setting long-term learning goals that support aspirations, thinking within and beyond constraints of the provided opportunity.
- Challenges norms to make long-term objectives meaningful.
- Diagnoses the task, setting learning targets within and beyond constraints.
- Looks for opportunities to refine strategies and develop variations tuned to the demands of the task.
- Anticipates challenges and considers alternative directions at different stages of the plan.
- Models successful goal setting and planning to emphasize the value of methods and steps for others.

BEGINNER

- Uses provided sources of information.
- Attempts self-directed behaviors and explores learning strategies modeled by others.
- Restates acquired information and comprehends with support.
- Follows guidance to continue forward progress.
- Attempts to meet goals and expectations set by others.

ADVANCED BEGINNER

- Follows a process identified by others, selecting resources based on suggested criteria.
- Uses familiar learning strategies and plays with new approaches to achieve outcome expectations.
- Demonstrates new learning and summarizes growth and development.
- Uses external benchmarks to help focus on plan and learning targets.
- Seeks feedback on meeting progress markers and outcome success.

ENGAGING & MANAGING

Seeking out relevant resources and information to support learning goals and refining strategies. Maintaining effective pace, reaching short-term benchmarks and long-term goals.

STRATEGIC LEARNER

- Applies context-specific criteria to select reliable sources that answer driving questions.
- Refines familiar learning strategies and acquires new approaches to analyze complex information.
- Integrates new learning with prior understanding, negotiating differences.
- Avoids procrastination and keeps appropriate pace to meet learning targets.
- Meets own work quality expectations.

EMERGING EXPERT

- Synthesizes and evaluates experiences and information across relevant sources to establish new pathways in learning.
- Adapts learning strategies from different domains and experiences, repurposing to innovate approaches to learning.
- Enhances learning experience through the involvement and insights of others.
- Optimizes process, pace, and plan to improve efficiency and maintain focus on outcome success.
- Sets high standard of work quality and timeliness for others to follow.

BEGINNER

- Applies time management suggestions to make adjustments.
- Applies time management
Recognizes gaps in understanding, identified by others, and addresses with support.
- Applies time management
Responds to prompts and suggestions to adjust pace, work quality, and/or approach.
- Applies time management
Remains engaged in learning with encouragement from others.
- Finds joy in a progress validated by others.

ADVANCED BEGINNER

- Uses external benchmarks and guidance to monitor progress.
- Notices gaps in understanding and asks questions to clarify.
- Monitors time, effort, needs, and progress with little support.
- Uses benchmarks to help refocus on plan and learning targets.
- Takes pride in meeting learning objectives.
- Reflects on approach, identifying helpful strategies with support.

MONITORING & ADAPTING

Evaluating progress, adapting strategies, seizing failure in order to grow from mistakes, and attributing success to effort and motivation.

STRATEGIC LEARNER

- Evaluates progress based on short-term goals.
- Assesses understanding and identifies strategies to modify.
- Adapts strategies and approach to increase effectiveness.
- Notices changes in interest or engagement and analyzes possible causes.
- Finds satisfaction in continued development.
- Reflects on unanticipated outcomes, refines methods, and considers alternative approaches.

EMERGING EXPERT

- Monitors success in reaching objectives, learning goals, and markers of personal growth.
- Diagnoses need for additional information or perspectives and pursues quality sources.
- Refines approach regularly based on personal observation.
- Adapts approach regularly to enhance personal motivation and interest in the learning context or content.
- Celebrates progress toward personal aspirations.
- Transforms mistakes and failures into learning opportunities.

Self-Direction Indicators

The preceding progressions describe markers along a 10,000-hour journey through uncharted waters. Along the way, learners try out new forms of interpersonal actions, seeking the involvement of others to enhance learning. They engage in intrapersonal thoughts and behaviors, developing aspirations. Navigating one challenge after another, learners self-assess, reflect, and set personally meaningful goals. They gain expertise by addressing similar types of problems across different scenarios, noticing exceptions to anticipated outcomes.

Many important milestones surround the four levels described here. Educators can draw on their expertise to consider markers of development within a single year or throughout a long-term project. A sample of verbs below reflects a range of complexity whether over 10 years or 10 weeks of engagement. When interpreted into developmental milestones, the intra- and interpersonal aspects of self-direction could foster students' goal setting at any milestone along their journey.

- How have you pursued learning within and beyond your career?
- What opportunities and support do your students have to discover their interests, strengths, and aspirations?
- Where could opportunities for student choice and oversight be embedded within some existing projects and tasks?

Attempts
Chooses
Develops
Explores
Follows
Finds joy
Is curious
Is willing
Looks to
Works with

Aims at
Demonstrates
Discovers
Notices
Recognizes
Reflects
Remembers
Seeks
Seizes
Understands

Adapts
Analyzes
Assesses
Embraces
Evaluates
Integrates
Notices
Pursues
Refines
Takes responsibility

Anticipates
Celebrates
Challenges
Diagnoses
Hones
Optimizes
Redefines
Situates
Transforms
Validates

INTRAPERSONAL



INTERPERSONAL

Considering own experience, strengths, learning strategies, areas for growth, interests, aspirations, and sources of motivation.

SELF-AWARENESS

Uncovering and recognizing contextual norms, resources, and the roles and expectations of others. Evaluating own learning expectations and optimal application of strategies in relation to context.

Owning learning objectives. Drawing on experience and observation to direct learning in new directions and to pursue driving questions to focus understanding.

INITIATIVE & OWNERSHIP

Valuing learning opportunities that differ from own interests and goals. Cooperating with others to share oversight of learning direction, when appropriate.

Embracing opportunities for personally meaningful learning goals. Identifying challenging short- and long-term objectives, relevant strategies, and alternate steps to outcome expectations.

GOAL-SETTING & PLANNING

Determining and selecting available and appropriate resources, based on assessment of needs. Confirming value of goals and plans through feedback and observation of others.

Analyzing and applying new information, managing time to avoid frustration and procrastination, and adjusting pace to meet learning targets and quality standards.

ENGAGING & MANAGING

Seeking appropriate high-quality resources to pursue driving questions, solve problems, validate conclusions, and investigate new opportunities. Pursuing help when needed.

Evaluating progress to goals. Assessing and adapting strategies to enhance effects. Attributing success and failure to approach and motivation, not innate ability or talent.

MONITORING & ADAPTING

Strategically applying suggestions from others, improving effectiveness of approach. Seeking feedback to validate milestones and learning outcomes.

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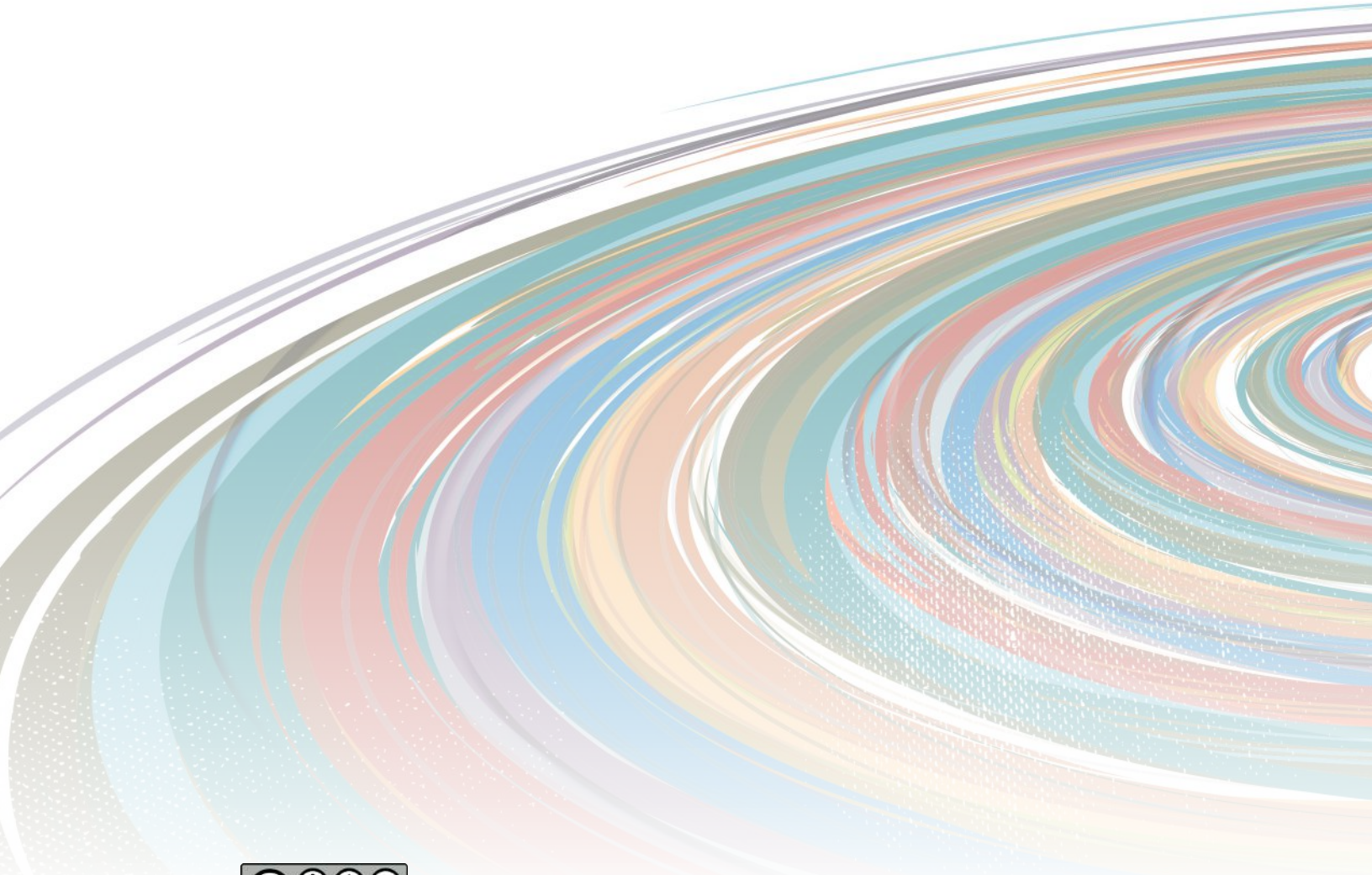
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