

# An Insight Methodology to Guide Creation and Validation of Discoveries

Cy Leise<sup>1</sup>, George W. Dombi<sup>2</sup>, Daniel K. Apple<sup>3</sup>

## Abstract

*Insights have been a source of fascination throughout history and have been acclaimed as important knowledge that suddenly connects disparate observations, past insights, and experiential contexts into a new synthesis. Scientific, philosophical, and psychological researchers agree that the most highly esteemed insights, referred to as “Aha!” experiences are contingent on a combination of subconscious and conscious processes. Two other kinds of insights are consciously created from learning achievements and gestalt reinterpretations of experiences. All three types of insight are of interest within the Process Education (PE) framework as it has evolved over a 30-year history to its contemporary focus on enhancing self-growth through insights from assessment and reflection. The development of a new resource, the Insight Methodology (IM), supports the PE goal of capturing and deepening insights as consciously elaborated hypotheses or propositions clear enough to be acted upon. The IM is a seven-step guide that efficiently leads users to produce such outcomes when an observation has potential future value. Specific criteria are suggested for each of the seven steps of the methodology to move attention to increasingly clear propositions ending with a “tip” or guiding concept for application by individuals as well as mentors and coaches. By helping PE practitioners take control of elaborating insights related to observations from formal learning as well as other experiences, the methodology can lead to major conceptual breakthroughs with potential for strengthening learners, practitioners, and researchers.*

## Introduction

The experience of having a sudden insight, an “Aha!” experience, seems almost magical yet totally believable (Leicester, 2016). Insight has played a role in scientific discoveries, has been a significant topic of philosophical analysis, and has been studied by psychologists for its role in creativity (Csikszentmihalyi, 1996). Chuderski and Jastrzębski (2018) describe problems for which insight is an essential element. These “puzzle” problems, which have been studied since the 1930s by psychologists, are characterized as having equivocal meaning that strongly influences mistaken assumptions that block initial attempts at solution. Once the key is discovered or provided, the solution is obvious. Positive psychology (Seligman & Csikszentmihalyi, 2000), however, emphasizes development of preventive and progressive skills and personal characteristics (Peterson & Seligman, 2004) that promote an affirmative attitude about discovering insights to enhance quality of life (QoL). In contrast to this focus on problems characterized by a sudden key insight, insight can be extracted from a wide range of problem states that occur in daily life and have multiple possibilities for satisfactory solutions.

The accumulated theory and resources of Process Education (PE) (Apple et al., 2016) have been created with the goal of supporting transformative change even when well-

established habits, attitudes, and traits hamper growth development. The first step along the growth path is to become an observant participant (Fowler-Amato, 2017) who captures something memorable and generates insights from reflecting on each experience (Desjarlais & Smith, 2011; Apple et al., 2016). A significant barrier is the traditional assumption that insights are rare and so surprising that they spark a spontaneous “Aha!” or “Eureka” exclamation. Although these characteristics are true for some insights, the assumption explored in this paper is that insight generation is much more common and can become a generalized capability if guided by the Insight Methodology (IM), an innovative PE resource. Observations, especially in learning, performance, reflective practice, and research contexts, can be enhanced through a series of seven steps comprising the insight methodology previewed in Table 1.

Step 1 of the IM is to state a unique observation based on an experience in a situation that was important for a personal or professional goal. Personal experience memories are called episodic (Tulving, 1972) to distinguish them from more general types such as semantic (verbal) and procedural (psychomotor). Unlike other types of memory, which require special attention to become stable and retrievable, episodic memories form without effort and have a seamless quality that prompts a belief that they reflect reality accurately and therefore seem intuitively true. It is

<sup>1</sup> Professor Emeritus, Clinical Counseling & Psychology, Bellevue University

<sup>2</sup> Chemistry Dept., University of Rhode Island

<sup>3</sup> Pacific Crest

**Table 1** The Insight Methodology

Steps	Description
<b>Step 1:</b> Observation	Unique detection that varies significantly from expectations or norms
<b>Step 2:</b> Intuition	The “Aha”/hypothesis (Insight) that is strongly believed to be true
<b>Step 3:</b> Implications	Inquiry about truthfulness of the intuition using various contexts
<b>Step 4:</b> Significance	Scanning of all possible uses to evaluate future potential value
<b>Step 5:</b> Solidification	Summarize the value of the insight for potential stakeholders
<b>Step 6:</b> Expanded Impact	Use creativity to push limits to open even more opportunities
<b>Step 7:</b> Articulation	Restructure communication to convey the importance of the insight

important to note that efforts to apply learning to learn principles to strengthen knowledge are also represented in episodic memory separately from the learning process.

Step 2, identifying an intuitive interpretation or hypothesis about the experience observed in Step 1, typically arises quickly from the initial observation (Kahneman, 2011) by answering the question “so what?” Heuristics, intuitive shortcuts, are used for making routine daily choices that are validated based on practical outcomes. In the IM, the difference is that the intent is to validate an intuition through analysis and reflection. The first two steps of the IM represent an essential starting combination because they are connected closely to lived experience as represented in episodic memories. The remaining steps direct attention to careful reflective assessment of the validity of subjectively generated intuitive hypotheses. Observation is always the gateway for intuitive insight generation but must be subjected to thoughtful reflection.

Implications are considered in Step 3 and is the first test of the validity of an intuitive hypothesis. Considering whether examples from varied circumstances and contexts could be relevant and effective in the way suggested by the intuition indicates that the idea holds up and works. Step 4, Significance, takes validation by example still further by asking three questions: how broadly the intuitive hypothesis may be applied, what potential value that it might produce, and what is its overall impact? Step 5, Solidification, directs attention to the potential of the generalized idea for varied users and contexts. Step 6, Expanded Impact, focuses validation on the creative potential of the hypothesis for prediction of new opportunities that include motives to increase capability to meet new challenges. Finally, Step 7, Articulation, is a restatement of the idea as a guide that provides action planning criteria and communicates the insight as a practice worth considering by a public audience.

Before exploring the seven steps of the IM in more detail, some background about insight as a construct will clarify

why the IM is a creative new practice for increasing the frequency and power of insights. A more effective focusing of attention can lead to stronger intuitive hypotheses from observations and deeper reflection on generalized potential. The IM provides a process and structure for increasing conscious attention to the potential of each opportunity whether planned or unplanned. Widening one’s range of perception and responding to the potential of experiences with flexible mindsets will support generation and clarification of more and varied insights for QoL and for movement toward one’s ideal self during one’s life journey.

## Background

### Types of Insights

The following specifications of insights are paraphrased from Lonergan’s (1957/1992) classic epistemological treatment of insight.

1. A challenging or problematic situation stimulates the tension of inquiry that leads a questioning mind to find out “Is it so?”
2. The tension of inquiry is resolved by an insight that may be reported as an “Aha!” experience.
3. The insight represents a hypothesis about something, i.e., a new meaning articulated.
4. The insight as hypothesis is examined through reflection as something less than universal knowledge—it must be verified as true after skeptical evaluation of alternative possibilities.
5. The validating process involves acquired expertise, a truth-seeking mindset, and a self-correcting strategy of stepping back to avoid either being convinced too quickly or hesitating unreasonably.

The sense of “tension” Lonergan describes is a recognition that a general human motive exists that directs attention to inquire when uncertainty exists about the validity or

meaning of knowledge under consideration—if and only if its use will be relevant.

The seven steps of the IM can readily be inferred from Lonergan's model. The IM parallels and extends Lonergan's (1957/1992) insight characteristics by providing reflection steps for clarifying and articulating the meaning of an insight related to a situational observation. Insights arise quickly as intuitions that prompt conviction that they are correct (Leicester, 2016). Kahneman's (2011) distinction between System 1 and System 2, fast and slow forms of reaction to stimulus situations respectively, explains why initial belief should be tempered by skepticism. Leicester (2016), for example, recommends due skepticism about the feelings of conviction that accompany intuitions, that is, heuristic insights that provide a big-picture perspective or a possible interpretation but cannot account for all important details. IM steps 1 and 2 correspond to System 1 which is based on fast heuristics that stem from many daily situations requiring quick choices under time constraints. IM steps 3 through 7 require System 2 slow thinking to complete a fuller and more complex analysis. The IM guides users to appreciate the value of quick intuitions but also to apply reasoning steps for further validation. The IM concludes with an articulation of a full proposition that others can use in Step 7.

Many intuitions are triggered by something interesting that has happened that was at least partially brought into perceptual attention (Williford, 2005). Insights are also seen in cases of simple, one trial learning that produce intuitions that arise immediately, or they will fail to be sensed (Postman, 1963). Assessment of performances, meeting unexpected new challenges, and growth opportunities often stimulate intuitive insights experienced as new conceptualizations of how to explain an event or performance.

Three types of insights have special relevance for PE practitioners. Learning insights which are derived from formal learning. Gestalt insights stemming from creative composition changes of the meaning perceived from experiences. Finally, "Aha!" insights that fit the revelation moment when a solution arises suddenly from a combination of conscious and unconscious efforts and sources often with an incubation time added. In what follows, these three types of insights are discussed in further detail.

### **Learning Insights**

Learning as a constructive process (McDaniel et al., 2021) involves the grasping of how to create knowledge models to meet current and future needs. Piaget (Hunt, 1963) observed children as they responded to his special setups designed to challenge their age-related capacities. Each small step in learning involves an insight that bridges the gap be-

tween what is currently understood and knowledge that is needed for new challenges. As Lonergan (1957/1992) emphasizes, all insights are motivated by the desire to know and can be applied even to very common learning experiences such as grasping the meaning of a chemistry or physics concept that links multiple sources of knowledge and application.

In support of learning insights, PE practitioners use the steps of the Learning Process Methodology (LPM) (Watts, 2018). For example, the purpose of using a reading log (Hurd et al., 2018) is to produce insights important for the reader's purpose, learning objectives, and performance expectations. The Learning Journal within the *Student Success Toolbox* (Pacific Crest, 2009) can be complemented by consciously using the IM steps to increase articulation of new insights from formal learning experiences. Further, within team roles, the Recorder's Report and the Reflector's Report each have a section asking the role performer to produce an insight. The recorder produces an insight on the content while the reflector produces an insight on the process.

### **Gestalt Insights**

Gestalt psychology (Brownell, 2016) examines how perceptual elements become unified in new configurations. Williford (2005) emphasizes the value of gestalt insights, which are a good fit for many performance situations and have contributed importantly to the design of the IM. Selecting significant observations leads to intuitions that may have great promise for producing value that then can be applied in future situations. Observations typically include attention not only to a main focus but also to marginal or extraneous objects, talk, and actions, which can mistakenly be given more importance than they deserve. Thus, gestalt reinterpretation, based on reflection or assessment, is important for gaining the central meaning from an experience such as a performance. The PE framework includes tools and processes such as assessment, mentoring, and reflection to guide individuals to capture important information from experiences. With the focus of understanding directed to the central issues in what was observed, more useful insights become available for performance improvement.

During assessment, individuals are especially likely to experience insights from observations of others as well as themselves. Small changes that are meaningful are often missed if attention fails to be focused. Using criteria to focus on the behavior and characteristics of a situation that is continuously operating helps to identify either impediments or positive progress. These features may be nuanced or variable enough to elude detection without reliability of measurement, assessment, and criteria. When a learner or performer recognizes why and how to improve interpretation of what occurred versus what was intended, it be-

comes easier to improve knowledge, learning, and performance in all related situational challenges.

## “Aha!” Insights

Problem solving has been the most common context in which sudden insight formation has been prominent. For example, a person doing a puzzle problem may struggle without making progress until the key insight comes to mind and the puzzle’s solution becomes obvious. Famous examples of sudden insights include Archimedes’ “Eureka!” reaction as he sprang from his bath after realizing that the volume of irregularly shaped objects, such as the crown he was charged to evaluate for purity of its gold, could be measured by creating a ratio of the weight of a pure-gold object with the weight of fake crowns that included other metals weighed in the same amount of immersion water. Another example from science is German chemist August Kekulé’s dream about a snake biting its own tail. This dream triggered the insight that the structure of the carbon atoms in benzene must be a closed hexagon ring (Robinson, 2010). These examples show the link between observation and intuition. They suggest that incubation, the combination of conscious and unconscious mental processing, is significant when deeper integration of facts and intuitions leads to valid insights. The examples from the lives of Archimedes and Kekulé occurred within the expertise and experience of these eminent thinkers. Their insights were not of a random nature but were backed by many years of life experience.

## Process

### The Insight Methodology

The key to implementing the Insight Methodology (IM) is to become adept at noticing when learning moments, growth experiences, or impediments have been experienced because insights often are triggered by an intuition that something significant has occurred. Without additional attention, these moments are quickly lost. The IM was developed to support closer examination of observations that seem important or engaging, and intuitively persuasive as a representation of the active components in a context. Working through the seven steps of the IM increases the potential value of an observation due to the substantial meaning added at each step. The implications of an initial observation must be checked against various perspectives to guide exploration and articulation of why an observation could be expected to have value and significance. If the observation and associated intuitions survive an assessment test based on one’s personal (broad) criteria and/or that of a skeptical critical thinking analysis, it is more likely to be valid for future applied contexts with similar characteristics and dynamics.

With an understanding of different types of insights, the succinct descriptions of the seven steps of the IM presented in Table 1 are fully elaborated in this section. The purpose of each step of the IM is identified, criteria for the step is delineated, and a discussion of the step is presented.

### Step 1: Observation

#### Purpose

Capture observations that seem most relevant for understanding the what, why, and how of an experience or performance.

#### Criteria

- The relevant observation is detected during an important activity
- The observation is clearly and precisely described by creating a discovery statement.
- What is conveyed can be thought about to elevate consciousness of what has happened

The aim of observation is to capture features of experiences that are likely to be of value for further development of specific capabilities. Can one practice to become more observant? Perhaps mindfulness training would be helpful as well as further development and use of the learning skill of self-monitoring. Mindfulness is an internal synthesis of attention and memory that uses all sensing, feeling, and perceptual abilities to expand awareness of self and reality (Nhât Hahn, 2014). Practitioners can also extend mindfulness to their experiences with students or mentees to deepen understanding of how to expand strengths and overcome impediments. Hülshager et al. (2012), in a study of mindfulness effects on self-regulation at work, found that mindfulness supported nonjudgmental attending to emotional self-regulation during experiences which increased awareness of what was happening. Asking questions such as “Did you hear what you just said?” can return attention to episodic (personal experience) memories (Tulving, 1972) to extract more relevant details that clarify what happened.

### Step 2: Intuition

#### Purpose

Rephrase the meaning of the Step One observation to accentuate its value. Put it into context from both a personal and a situational perspective by answering the question “So What?”

#### Criteria

- The intuition arises as a clear and complete thought
- Strong conviction that the intuition is true so there is no immediate skepticism

- c. The intuition can be imagined and reinforced by multiple senses, e.g., sights and sounds are associated

As discussed earlier, in addition to “Aha!” insights, learning and gestalt insights are related to perceptual attention during experiences. By helping to clarify “marginal” memories (Williford, 2005), the IM, especially with mentoring support, can guide conscious attention to the more important details from an experience. Much of the PE work related to facilitation, assessment, and reflection shapes the conscious focus of individuals on how to strengthen specific responses in learning, performance, and growth contexts. Initial intuitions are highly important as starting points but require critical thinking analysis to establish their validity and value.

### Step 3: Implications

#### Purpose

What makes the intuited insight important for any opportunity similar to the situation where the observation was originally made? What will change in the future and how will the change occur if the intuited insight is used in these contexts?

#### Criteria

- Pick contexts that are familiar or similar to the situation producing the observation.
- Consider what may be missing in the intuition statement.
- Consider how to plan and prepare for incorporating intuited insight into performance.
- Clarify “subjective” (affective) impediments, e.g., lack of openness to assessment from others.

Examples from scholarship in many fields of inquiry (Leicester, 2016) indicate that it is possible, but not always easy, to discover the difference between unfounded intuitive convictions and valid insights. Scientists, for example, must formulate reasoned hypotheses for experiments to test the validity of current theory. Firestein (2015) proposes that failures are the life source of scientific discoveries because a well-designed and implemented study that produces ambiguous results leads to many questions. The pursuit of alternative insights requires the affective skills to be open to shifts in methods or paradigms. He argues that science progresses based on insights from these “successful failures.” Newton’s theory of gravity, for example, still leads to accurate results for many classic problems from an earth-bound perspective, but Einstein discerned that Newton’s theory failed to account for larger characteristics of space-time. He successfully proposed a valid alternative that better accounts for gravity and other phenomena. New insights are implicated in every research advancement.

### Step 4: Significance

#### Purpose

Identify what makes the intuited insight important for additional opportunities associated with this type of situation? What additional changes might be possible in the future and what will support the evolution of such changes in individuals, e.g., will external facilitation be required? What is the most important reason(s) the intuited action has potential for the future for the specified performance, experience, or product? What is the potential value and impact for learners, performers, and growers?

#### Criteria

- Pick contexts that are different or unfamiliar to the situation that produced the observation.
- Describe the most relevant characteristics of the typical user(s) or audience.
- Identify the top aspirational outcomes/value needed for desired impact of these users.
- Distinguish “objective” features from “subjective” preferences.

Insights emerge from flexibly incorporating many possible elements through attention processes and divergent thinking (Yeh, Y-C, 2011; Gallate & Keen, 2011). Insights can be considered beliefs that seem convincing because they incorporate the elements of a situation into an approach that puts both positive and countering evidence into a new, holistic, gestalt perspective. An insight, therefore, can be conceptualized as a conviction that what one believes will successfully bear the brunt of further evaluation, even from a skeptical viewpoint.

Brady (2013) argues that emotional reactions are an important source for estimating the importance and value of beliefs in daily, common-sense reactions and decision making. A significant caveat is that information from emotions is not of the same caliber as that from the perceptual system. Nevertheless, increased awareness of one’s degree of affective conviction about a belief is useful to stimulate further exploration of evidence, pro and con, that may result in validation of the insight.

### Step 5: Solidification

#### Purpose

Reflect on the broader meaning beyond the current observation to synthesize with the implications and significance generated from the contexts in Steps 3 and 4. Clarify the level of broad-based meaning and value that this insight can have on the future for the possible audiences considered.

## Criteria

- a. Ask key questions about what it will take to strengthen the application for the contexts explored and audiences considered.
- b. Generalize strategies or prototypes that are relevant for planning change of the type under consideration for the audience being addressed.
- c. Identify mindsets, e.g., openness, needed for future success in these types of situations.
- d. Integrate multiple levels of consciousness to capture diverse meanings and applications that will support growth.

An insight should provide enlightenment not only about its truth but about what investigative steps are reasonable for how to move forward to expand the formulation of the insight to other domains or situations. Davidson and Sternberg (1995) present a diverse set of approaches to insight generation for problem-solving. An assumption shared across these approaches is that a distinctive problem must be recognized or identified so the right configuration of elements can become obvious. For example, an “Aha!” insight will eventually emerge if the right elements are available. Schooler et al. (1995) distinguished between insight as an introspective process of understanding and as an experience of sudden conscious awareness of the solution to the problem at hand. They favor a perceptual interpretation, that is, insights are like the improvement of perceptions from distorted or hazy to clear. Stuyck et al. (2022) report a carefully controlled laboratory experiment in which insights were found to “pop up” from the unconsciousness as “Aha!” moments. Whatever the source of an insight, its value depends upon understanding how it brings together elements that are significant in multiple types of situational opportunities.

### Step 6: Expanded Impact

#### Purpose

Think of other examples from new aspects of life that illustrate why growth will be increased by taking this action. Step back and rethink and capture the full meaning, essence, and significance of the insight: what, when, where, why, and how. Consider the 2019 CLS cognitive classification at its higher levels of innovating, creating, and researching.

#### Criteria

- a. Identify expansion of values expected from incorporating the insight into novel experiences.
- b. Recognize how self-awareness of the situation has potential to strengthen personal potential.

- c. Recognize relevance for empowering one’s life journey, self-growth journey, and movement toward ideal self.
- d. Incorporate learning skills from one or more advanced (higher) process levels in the 2019 CLS.

Csikszentmihalyi (1996), in a qualitative research study of many individuals whose creative insights have had cultural impact, observed three individual types: *brilliant* individuals who have many intriguing and stimulating ideas; *personally creative* individuals whose ideas are perceptive and fresh but remain as subjective insights; and *publicly creative* individuals whose insights make a difference in a wider, cultural sense. Making a public contribution through one’s creative accomplishments did not mean that these individuals were brilliant or could clearly communicate their insights. In fact, Csikszentmihalyi found them often lacking in charm and ability to fluidly discuss their creative processes. The need for the IM is supported by considering that individuals who have generated high-quality insights often cannot extend consciousness of their meaning to others.

Richards (2010) examines everyday creativity, which she suggests must meet two main criteria: originality and meaningfulness. It is important to consider the creative process a person uses as well as the creative outcome. Human capabilities to deal with the problems of life include imagination, improvisation, and innovation. Insights about “How?” (processes) are as important as “What?” (outcomes). Richards presents evidence that it is healthy to strive to be creative in present moments, referred to as “growth moments” in PE, to break out of constraining conventions and self-concern to an expanded and compassionate viewpoint. The IM provides a stimulus for expanding one’s world by gaining fuller awareness of how insights carry generalized value across situations.

### Step 7: Articulation

#### Purpose

Step back, rethink, and capture the full meaning, essence, and significance of the insight: what, when, why, how. Expand the depth and breadth of the value, impact, and significance of the insight from a sense of ownership that supports communicating one’s judgment that this insight is fully believable and should be strongly considered for application by self and others. The communication of the insight is strongly dependent upon the clarity, succinctness, and accuracy of the label representing the insight.

#### Criteria

- a. Present a coherent insight that can be rephrased for greater meaning.

- b. Direct attention by providing a label that captures the central, significant idea or process.
- c. Connect to QoL outcomes (e.g., happiness/satisfaction, meaning, and psychological enrichment).
- d. Include criteria related to aspirational outcomes for the type of opportunities desired by the audience.

Imagine a sequence of assessments related to any of the PE practices and levels of consciousness, as “steps in new snow,” a simple metaphor that makes it clear that each step should take the user of the IM to a new level. The steps have spaces between them that represent the advancement of learning as new opportunities come into view. Observations that capture these “spaces” are often fleeting; the IM guides articulation or realization that there is little future value to be gained from further articulation to discern meaning from the observation. Dewey (1938) labeled common sense insights as “ends-in-view” along a problem-solving path. It is not known ahead of time exactly how things will turn out, so it is wise to transform observations into insights about how to creatively revise expectations and to prepare for future moments that present opportunities for deeper understanding of a research theory or a common-sense end-in-view. The purpose of the IM is to help with capturing and more fully articulating the meaning of the steps in new snow that come along within the matrix of daily experiences.

### **The Insight Methodology in Practice**

As discussed, the basis for insight creation is observation. This section provides two examples of insight generation using the IM. The examples presented in Tables 2 and 3 portray the use of the IM to produce insights from an observation.

In the first example, it was observed that it seemed possible to get more done than originally expected in an important area of performance for that week. At the beginning of the week, there was concern that getting things done would suffer from personal habits and rituals that have tended to impede planning effectiveness. The steps of the IM utilized to generate an insight from this observation are delineated in Table 2. The result of processing through each step is listed in column one with an explanation of the rationale for the response to the step presented in column two.

In many situations, a single observation can lead to more than one insight. An illustration of this possibility is presented in Table 3. In a learning experience, it the observation was stated, “My team failed to achieve 50 percent of our goals because it took 25 percent of the allotted time to agree on a less than effective working plan.” From this

observation two insights were generated as listed in Table 3. The first insight, dealing with preparing for team success is presented in column 2. The second insight stemming from matching and growing learning skills, is developed in column 3.

### **PE Practices That Support Insight Generation**

The IM is an innovative tool within the PE framework that is designed for enhancing insights. It aligns with other PE resources related to creative insight generation. Insights are often enhanced through learning skills, delineated in the 2019 Classification of Learning Skills (CLS) (Leise et al., 2019). For example, incubation works well if one is patient while awaiting the emergence of a new insight configuration from subconscious cognitive processes. A significant way to produce insights from incubation is through the use of the Reflection Methodology (Desjarlais & Smith, 2011). Reflection, a process that helps to create meaning when one is stymied or stuck, is useful for stimulating greater openness to alternative perspectives that represent increased breadth or depth of understanding. Several steps of Desjarlais and Smith’s methodology suggest that users should collect observations and related insights to deepen understanding of learning and performance experiences. The inclusion of the learning skill incubation in the 2019 CLS indicates the significance of drawing insights from subconscious sources. By mindfully working on complex tasks to the highest point possible with the time and energy available it becomes more likely that the passing of time, often overnight, will result in subconscious progress. Leise (2010) emphasizes the value of careful reflection by counseling interns to capture insights for self-regulating their communication to deepen their relationships with clients.

The SII Technique (Wasserman & Beyerlein, 2007), involving capturing strengths, areas of improvement, and insights of a particular situation, is a tool frequently used by PE practitioners for assessing a performance’s processes and outcomes with the purpose of articulating an insight that can be generalized from discoveries about strengths and areas of improvement. The effectiveness of the SII technique depends upon reliably reported observations from performance situations. These reported observations align with Steps 1 and 2 of the IM. The Learning Process Methodology (LPM) (Watts, 2018) guides learners to use self-assessments, such as the SII technique, to produce insights from using the 13 steps recommended to engage learners. Insights often result in realizations that the skills used during the specific steps of a methodology to accomplish a process goal can become both learning to learn and growth insights with value across many learning and performance contexts.

**Table 2** Insight Methodology—Example One

Steps	Insight	Explanation
<b>Step 1:</b> Observation	I can do more than I thought I could do.	After reviewing results from plans for the week, it became clear that unclaimed opportunities were present.
<b>Step 2:</b> Intuition	Doing more in the same amount of time requires two things: higher expectations and change in strategies.	The immediate intuition was that the impediments to achieving more during the week resulted from not setting high enough standards and neglecting to consider what better strategies could have been used in specific situations.
<b>Step 3:</b> Implications	Self-control of wanting to do things in creative ways has to have boundaries so that higher expectations of greater productivity, quality, and effectiveness can be achieved in accomplishing tasks.	The tendency to give more weight to personal preferences in use of time often restricts productivity. The idea that I do not have to conform to my own plans must be changed so that I give priority to my plans when they are well formulated. I need to reduce the number of tangents that aren't in the plan.
<b>Step 4:</b> Significance	There must be a balance between the plan to meet a goal and the ad hoc freedom to choose actions in the moment that have special significance. It is essential to reign in the divergent actions and to avoid improvising too much when these actions deviate from the plan.	By improving plans based on assessment it will become easier to value the role of planning in the production of significant growth and productivity in daily life situations.
<b>Step 5:</b> Solidification	Growth and change require a collaboration between the planning self and the acting self because the loss of what has been traditionally done is painful, especially when the gain has not yet materialized.	Plans, especially active growth plans, are challenging because they require not only attention to new priorities but also present emotional crossroads when old ways must be given up.
<b>Step 6:</b> Expanded Impact	When a new plan is reviewed, considering what was done using the previous plan, one can keep finding nuances to leverage past successes. Then the effort of growth will not be as painful, and the previous successes encourage planning and performing in roles with even more challenging goals.	Insights often occur at the “margins” of consciousness, that is, seemingly minor changes in performing sometimes are exactly what an expert would pay attention to. Being attuned to observations that are important for growth will support further growth and make it feel satisfying.
<b>Step 7:</b> Articulation	A well thought through plan for one's life and the building of an affective skill set that addresses the rate of change allows one to handle voluntarily moving away from past practices. When roles are clearly defined and laid out between the planner self and the doer self, it allows one to increase challenges, maintain ownership, and grow the capabilities to match the increased challenges without the pain of loss but rather with the power of growth.	A final articulation of an insight brings all the elements together. The first two steps bring an observation into view as an intuition. Steps 3 through 6 engage inquiry and imagination to validate, generalize, and expand the meaning of the initial starting point. By Step 7, a person owns the meaning and can communicate it to others using labeling and description to supports their efforts to apply it.



**Table 3** Insight Methodology—Example Two (One Observation Leading to Two Insights)

Steps	Pattern # 1: Preparing for Team Success	Pattern # 2: Matching and growing learning skills
<b>Step 1:</b> Observation	My team failed to achieve 50% of our goals because it took 25% of the allotted time to agree on a less-than-effective working plan	
<b>Step 2:</b> Intuition	If I had reflected ahead of time on the personal value of achieving the goals, it is more likely that I would have identified how I needed to prepare for working within the time constraints.	If I had considered what combination of skills is needed for successful goal achievement, I could have facilitated the organization of the team within roles much more quickly.
<b>Step 3:</b> Implications	Taking the time to imagine the situation from multiple perspectives would have led to thoughtfulness about the meaning and value of the goals as well as about the practical implications of several possible ways of facilitating the team's efforts.	Realizing what learning skills are central to a project reduces the possibility of being blindsided by the complexity of a challenge and increases the likelihood of attention to what skills team members need to have success in their team role for the specific situation.
<b>Step 4:</b> Significance	Self-awareness of the importance of predicting future needs is a strategic mindset that influences preparedness based on selecting competencies to be developed to realistically meet the demands of a situation.	The available skill set of participants is a universal factor that will play a role in every situation that requires alignment of capabilities to achieve success.
<b>Step 5:</b> Solidification	The more the team members pre-think strategies prior to coming together, the quicker a single strategy can be developed that lays out the comprehensive approach.	Alternative capabilities based on multiple learning skill combinations are always available to consider, but realistic responding requires choice of one that is judged to be favorable for future growth in similar contexts
<b>Step 6:</b> Expanded Impact	Recognizing that personal values always are an integral and integrating aspect of planning will lead to setting higher expectations that will be seriously pursued in plans relevant to the values for multiple life contexts.	One's breadth and depth of learning skills, especially at the higher levels of the 2019 CLS, increases consciousness of the layers and variations of skills that comprise valuable capabilities needed to create quality in multiple life roles, i.e., both for performance and growth.
<b>Step 7:</b> Articulation	<p>The process of getting on top of a situation involves being clear about</p> <ol style="list-style-type: none"> <li>1) why you are involved</li> <li>2) what you want to achieve</li> <li>3) what you need to know</li> <li>4) what areas of competency you need to improve</li> <li>5) what are the measures of success</li> <li>6) what is the plan to achieve success given the situational constraints</li> </ol>	When project planning, identify the skill sets required for success. Any plan must include steps for ensuring that these skills are in place. A significant implication for recruiting a team is to assess team members for desired areas of skill development. Making sure that the team has or desires these skills also provides a clear growth opportunity for the members of the team.

## Discussion

Expertise from experience in a given field explains differences in the quality and speed of generating insights. When the IM is internalized through experience, the speed with which insights can be generated increases. An experienced performance mentor has worked through similar scenarios with many individuals, thus, the rapidity with which they can move from observation to articulating a generalizable insight is surprising to those with less expertise. Similarly, SII assessment insights of experienced PE educators occur more quickly and powerfully than those of novice learners. The area of performance for mentors is more predictable than those of coaches. To be an effective coach (Van Slyke et al., 2023) requires a self-referencing openness to challenges to oneself to discover flawed assumptions and responses that reduce authentic reciprocity with clients. In any situation involving uncertainty, it is those with more preparation who perceive the larger or more important patterns of response that need attention, including in themselves. Observation, step 1 of the IM, requires some degree of expertise and collective experiences to allow ready recognition of what happened in situations that have future potential value worth exploring.

Incubation is often assumed to be a lengthy, unconscious process that results in rare and highly significant insights, e.g., Archimedes' "Eureka" experience. However, Lonergan (1957/1992), a philosopher, and psychological researchers (Chuderski & Jastrzębski, 2018) define what they mean by an "insight problem" but put no restrictions on the length of time needed for success of incubation in insight production nor on what combination of conscious and unconscious is best. The important principle is to purposely set aside mental time to process an observation (Klein, 2013) and to engage in thoughtful reflection. The movement in the IM process from observation in Step 1 to intuition in Step 2 may occur rapidly, especially for those with extensive experience. It may, however, take substantial time for less expert individuals or for more difficult problem contexts. The variation in incubation time is a natural part of the insight process. Self-managing of incubation, which is a learning skill in the CLS 2019, includes additional learning skills such as self-control of emotional reactions. For example, wanting to hurry the process rather than taking time to be mentally prepared to recognize insights and to plan possible next steps.

The general validity of the IM is supported by authors such as Wallis (1926) who discusses four steps in his analysis of the "art of reasoning": preparation, incubation, illumination, and verification. He clearly addresses the insight process but was concerned with discontinuities in reasoning methods that he observed early in the twentieth century

including that industrial production of war technology was much more advanced than realistic reasoning about prevention of war. A cogent observation that remains relevant in the twenty-first century. As Wallis pointed out, changes in mindset are needed as part of becoming prepared to discover insights. East and Ang (2021) suggest that insight formulation may be increased by moving to more abstract reasoning to avoid fixedness in the specifics of a situation. Firestein (2015) argues that progress in scientific discoveries is associated with an assumption that each new experimental result will expose new areas of ignorance. The IM has been created to encourage the open mindsets discussed by Wallis and Firestein.

## Conclusion

Insight has been of intense interest since ancient times and continues as an active focus of research and practice. Although the experience of producing an insight seems instantaneous, the IM represents it as a multiple-step process that can be consciously used to expand and deepen the meaning that can be extracted as insights from the observations made in many situations and experiences. A combination of unconscious and conscious psychological processes creatively merges to produce insights. Theories about insight share common factors including preparation from previous experiences and memories as well as time for processing the input information. Lonergan (1957/1992) emphasized learning as a universal context and a characteristic of the process of insight because the motive to know is central to human nature. Learning often occurs as a sudden reconfiguration of an experience, a gestalt, which brings divergent perceptual elements of a situation into a creative synthesis that is an intuitively convincing conclusion. Lonergan emphasizes the role of both context and mental preparation in the production of new ways of knowing about problem states as these occur in contexts such as the sciences, the social sciences, and in commonsense situations of daily living. In all contexts, whether formal or informal, insights can occur in learning, gestalt, and "Aha!" types.

Insight generation can be directed consciously even though unconscious processes are involved. Mentors and coaches, as experienced practitioners, often gain insights more quickly than clients because of their experience and expertise, including the use of the insight methodology. Other reasons for differences in insight creation are correlated with mental preparation and discipline in setting aside time to allow the insight process to work. The IM has been designed to support learning insights, creation of meaning from assessments of performances, improvement of interpretation of experiences, and elevated insights from major research or development projects.

## References

- Apple, D., Ellis, W., & Hintze, D. (2016). 25 years of Process Education: Commemorating 25 years of scholarship in Process Education and the 10<sup>th</sup> anniversary of the Academy of Process Educators. *International Journal of Process Education*, 8(1), 3-147. <http://www.ijpe.online/2016/color033116sm.pdf>
- Brady, M. S. (2013). *Emotional Insight: The Epistemic Role of Emotional Experience*. New York: Oxford University Press.
- Brownell, P. (2016). Contemporary gestalt psychotherapy. In D. J. Cain, K. Keenan, & R. Shawn (Eds.). *Handbook of research and practice* (2<sup>nd</sup> ed., pp. 219-250). Washington, DC: American Psychological Association.
- Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. NY: HarperCollins.
- Chuderski, A., & Jastrzębski, J. (2018). Much ado about aha!: Insight problem solving is strongly related to working memory capacity and reasoning ability. *Journal of Experimental Psychology: General*, 147(2), 257–281. <https://doi-org.ezproxy.bellevue.edu/10.1037/xge0000378>
- Davidson, J. E. & Sternberg, R. J. (Eds.). (2005). *The Nature of Insight*. A Bradford Book.
- Desjarlais, M., & Smith, P. (2011). A Comparative analysis of reflection and self-assessment. *International Journal of Process Education*, 3(1), 3-18. <http://ijpe.online/2011/reflectionh.pdf>
- Dewey, J. (1938) *Logic: The science of inquiry*. NY: Holt, Rinehart and Winston.
- East, R and Ang, L. (2021). Insight: The Key to Faster Progress in Science. *Foundations of Science*, 26, pp. 503-514.
- Firestein, S. (2015). *Failure – Why science is so successful*, Oxford University Press.
- Fowler-Amato, M. (2017). *Taking on the role of participant observer in research studies that aim to transform teaching and learning*. Newbury Park, California: SAGE Publications Ltd.
- Gallate, J., & Keen, S. (2011). Intuition. In S. R. Pritzker & M. A. Runco. *Encyclopedia of Creativity* (Vol. 2). pp. London: Academic Press.
- Hunt, J. M. (1963). Piaget's observations as a source of hypotheses concerning motivation. *Merrill-Palmer Quarterly of Behavior and Development*, 9(4), 263-275.
- Hurd, B., Beyerlein, S., & Utschig, T. (2018). Use of reading logs to promote learning to learn in a freshman course. *International Journal of Process*, 3(1), 3-23. <http://www.ijpe.online/2018/readinglogs1.pdf>
- Hülshager, U. R., Alberts, H. J. E. M., Feinholdt, A., Lang, W. B. (2012) Benefits of mindfulness at work: The role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *Journal of Applied Psychology*, 98(2), 310-325. <https://doi.org/10.1037/a0031313>
- Klein, G. (2013). *Seeing what others don't: The remarkable ways we gain insights*. New York: Public Affairs.
- Leicester, (2016). *What beliefs are made from*. Sharjah, UAE: Bentham Science Publishers.
- Leise, C. (2010). Improving quality of reflecting on performance. *International Journal of Process Education*, 2(1), 65-74. <http://ijpe.online/2010/reflectingh.pdf>
- Leise, C., Litynski, D. M., Woodbridge, C. M., Ulbrich, I., Jain, C., Leasure, D., Horton, J., Hintze, D., El-Sayed, M., Ellis, W., Beyerlein, S., & Apple, D. (2019). Classifying learning skills for educational enrichment. *International Journal of Process Education*, 10(1), 57-104. [http://www.ijpe.online/2019/cls\\_full1.pdf](http://www.ijpe.online/2019/cls_full1.pdf)
- Lonergan, B. F. (1957/1992) (5<sup>th</sup> Ed.; F. E. Crowe & R. M. Doran, Eds.). *Insight – A Study of Human Understanding*, Toronto: University of Toronto Press.
- McDaniel, M. A., Marsh, E. J., & Gouravajhala, R. (2021). Individual differences in structure building: Impacts on comprehension and learning, theoretical underpinnings, and support for less able structure builders. *Perspectives on Psychological Science*, 17(2), 385-406. <https://doi.org/10.1177/17456916211000716>

- Nhât Hahn, T. (2014). *Mindfulness Survival Kit: Five Essential Practices*, Parallax Press, Berkeley California.
- Pacific Crest (2009). *Student success toolbox: Improving learning and performance through assessment*. Lisle, IL: Pacific Crest.
- Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. NY: Wiley.
- Postman, L. (1963). One-trial Learning. In C. N. Cofer & B. S. Musgrave (Eds.), *Verbal behavior and learning: Problems and processes* (pp. 295–335). McGraw-Hill Book Company. <https://doi.org/10.1037/11178-008>
- Richards, R. (2010). Everyday creativity process and way of life – Four key issues. In Kaufman, J. C., & Sternberg, R. J. (Eds.). (2010). *The Cambridge handbook of creativity*. Cambridge University Press. pp. 189-215.
- Robinson, A. (2010). Chemistry's Visual Origins, *Nature*, 465. 36.
- Schooler, J. W., Fallshore, M., & Fiore S. M. (1995). Epilogue: Putting insight into perspective in J. E. Davidson, & R. J. Sternberg (Eds.). *The Nature of Insight*. A Bradford Book.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14.
- Stuyck, H., Cleeremans, A., & Van den Bussche, E. (2022). Aha! under pressure: The Aha! experience is not constrained by cognitive load. *Cognition*, 219, <https://doi.org/10.1016/j.cognition.2021.104946>
- Tulving, E. (1972). Episodic and semantic memory. In E. Tulving & W. Donaldson (Eds.), *Organization of memory* (pp. 381–403). Academic Press.
- Van Slyke, A., Batchelor, G., Apple, D., Leise, C., & Ellis, W. (in process). Role of performance mentoring and self-growth coaching in performance improvement. *International Journal of Process Education*
- Wasserman, J., & Beyerlein, S. (2007). SII method for assessment reporting. In S. W. Beyerlein, C. Holmes, & D. K. Apple (Eds.). *Faculty Guidebook: A comprehensive tool for improving faculty performance* (pp. 465-466).
- Watts, M. (2018). The Learning Process Methodology: A universal model of the learning process and activity design. *International Journal of Process Education*, 9(1), 41-58. <https://www.ijpe.online/2018/lpm.pdf>
- Williford, K. (2005). The intentionality of consciousness and consciousness of intentionality. In G. Forrai & G. Kampis (Eds.). *Intentionality: Past and future*. Brill.
- Yeh, Y-C. (2011). In M. Runco & S. Pritzker (Eds.), *Encyclopedia of creativity* (Vol. 2, pp. 291-298). San Diego: Academic Press.