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Chapter 15

Leap and the Net Will Appear: Risk-Taking and Creative Flexibility in the Face of the Unknown

Raymond Veon

Risk-taking is a leap into a space that has not been mapped. Who knows where or how you will land? Consider the following:

- A student completes a portrait drawing, then cuts it into strips and weaves it into another drawing. The result is an intricate yet beautiful image that addresses the complexity of identity that viewers can reassemble in multiple ways, beyond the control of the artist. The art student had never attempted such a work before.
- A wall of torn-out book pages that are pinned and collaged together. Most of the words on the pages are redacted by marker, paint strokes, ink marks, or by imagery drawn on top. Some are burnt and mangled. The remaining words can interact with each other in complex ways and with imagery drawn on the pages. Altogether, the work addresses human fears and greed. The art student has never attempted such a work before.
- An installation of suspended life body casts, all made of plaster from female and transgender volunteers. Suspended by each body cast is a letter written by each volunteer discussing their relationship to their body. The letters explore feelings of fear, shame, powerlessness, acceptance, pride, and strength. The art student has never worked with nude models nor attempted such a work before.

Each of these descriptions represent types of artwork that students have turned in to me as projects for grades. Each represents a student taking a risk in pushing the boundaries of what they know and can do. Each took a risk as to what constitutes artwork and in what comprises an expressive use of materials. Across nearly four decades of teaching, in both public schools and the university, a constant theme students express to me is that they never expected to create the kinds of work they end up creating. In most cases, students feel like they have taken a risk but have increased confidence in their skills and in applying them to new, uncertain contexts. It is noteworthy that I have had these results despite long-term decreases in national creativity measures and findings that Generation Z, while highly educated and pragmatic, is more risk-averse than previous generations (Kim, 2011; Parker & Igielnik, 2020; Reisenwitz, 2021).

This chapter provides answers to the question, How do we make risk-taking and creative flexibility an explicit part of the educational process? Before answering the how, it is important to consider the why—Why would we want to make risk-taking an educational outcome?

Why is Risk-Taking Important?

Critical and creative thought begin with the unknown and unfamiliar, often entailing risk (Ludvigsen, 1980; Veon, 2014). We do not feel the need to think creatively or to risk when confronting the familiar. In her book on the neuroscience of aesthetic experience, Gabrielle Starr writes that art

makes possible the unexpected valuation of objects, ideas, and perceptions and enables new configurations of what is known, new frameworks for interpretation, and perhaps

even a new willingness to entertain what is strange or to let the familiar and the novel live side by side. (Starr, 2015)

Fostering risk-taking as an outcome has personal and professional benefits for students. Risk-taking allows us to expand our intellectual, aesthetic, and emotional horizons. When we take risks, we attend more closely and are ready to respond to the unexpected. When the unexpected happens, we are ready to respond with the skills we have and improvise if needed. Risk-taking is a quality connected to originality and creative thinking (Scheffer et al., 2017). Risk teaches us to be resilient and courageous without a preconceived plan or guarantee of success.

I have developed an approach for cultivating risk-taking and creative flexibility that has applicability for content areas outside the arts. This approach for developing risk-taking as a Habit of Mind is based on my experience as an artist, educator, and administrator, but also on my work in creativity theory, open-ended assessment, and as a primary investigator (PI) in large-scale professional-development studies. It is an approach based on a set of core instructional objectives.

Whether working with in-service arts teachers, preparing new teachers, or teaching future artists, my objectives as an instructor remain the same. Risk-taking is embedded in these objectives as a mental disposition or Habit of Mind. My instructional objectives for students are:

- risk and reframe by developing imaginative ideas, regardless of medium, by producing innovative imagery and exploring the many meanings such images might have;
- question and connect by constructing a framework of strategies for enlarging student ideas through questioning existing hierarchies of thinking and seeing (Boden, 1994; Radford, 2004); and
- develop students' artistic voices and visions through a creative stance, or an approach to art making that results in a collection of purposeful, related endeavors (Boden, 1994; Radford, 2004; Dasgupta, 2008; Veon, 2014).

The entry point that is easiest for students to grasp is the risk and reframe stage, the first entry point into creativity. The idea is to present students with challenges that position them to reconsider their assumptions, to reframe their ideas from different perspectives, and to jump into new ways of working when they are uncertain of the outcome. Over the course of a semester, my goal is to move students from the risk and reframe stage toward the other objectives described above. This translates into moving students from more structured and defined assignments to those that are ill-structured and require increased risk and ownership during the creative process.

Where and When Does Risk-Taking Occur in the Learning Process?

What is at risk in the learning process? In general, when a student feels fear or uncertainty, there is often the perception of risk. While not an exhaustive list, some areas where we might expect students to encounter risk include:

1. Personal expression: Students can be afraid to reveal their values, opinions, and interests to those around them, and they might also be leery of exploring sensitive themes and issues in their coursework for personal, family, or cultural reasons.
2. Use of materials, tools, and processes: For some students developing and improving their skills takes them out of their comfort zones. For example, in my discipline, I have seen students feel threatened by making a drawing from

observation. Drawing from observation entails reframing our perceptions and methods of problem solving to correspond to what the eye sees, not how the brain mentally represents the objects of perception. Each discipline has its own materials, tools, and processes, each of which can feel threatening to students.

3. **Self-concept and social status:** Another source of risk in the learning process comes from the thought, “What will others think?” Students take pride in exhibiting their skills regardless of discipline because it makes them feel unique or because others find value in what they can produce. In my field, exploring new imagery or trying new approaches and media can make a student’s social standing seem uncertain. Displaying artwork that does not reflect familial or community standards but that aspires to alternate standards a student has come to value as an individual artist can lead to unpredictable responses from peers and adults. In such cases, a student decides whether the risk is worth the uncertain outcome.
4. **Working at the edge of competencies:** Engaging students with challenges that test the limits of their abilities to apply knowledge and skill, with appropriate guidance, helps students stretch and explore (Hetland et al., 2007). The goal is for students to become independent practitioners who can employ their expertise outside the context of the classroom. For a generation raised on the clearly defined parameters of high-stakes testing, exploring the outside contours of their own competencies can feel threatening (Gardner, 2007).

In my discipline, making art is closely associated with human development, individual psychology, and cultural meaning (Hetland et al., 2007). We make art to celebrate, to identify something as significant, to acquire status, to map ourselves in space and time, to carve out an identity, to play, and to develop our capacities to communicate, conceptualize, and feel. Risk can occur throughout the art-making process—whether it is avoided or embraced affects the art that is made. Likewise, whether students avoid or embrace appropriate risk-taking affects their learning in other disciplines, especially for students who are uncomfortable with applying their knowledge and skills in unfamiliar contexts.

Developing Appropriate Risk-Taking

There are three key strategies that I recommend for university instructors to nurture risk-taking: a) conducting a personal risk-taking inventory; b) making small changes to your teaching, such as making risk a valued class behavior or trying dialogic and visual thinking strategies; and c) installing risk-taking as a core part of your curriculum. These strategies are not meant as a recipe to follow, and they will not work for everyone. I have nevertheless mentored teachers who have found these strategies useful and who have used them as a springboard for their own strategies for nurturing risk-taking.

Conduct a Personal Risk-Taking Inventory

If appropriate risk-taking is a Habit of Mind you would like to see in students, start by conducting your own personal risk-taking inventory. By reflecting on your own experiences with risk-taking, you clarify how this Habit of Mind looks and feels to you. This prepares you to guide your students in taking appropriate risks.

To start a personal risk-taking inventory, recall times when you took a risk. Use the 5Ws and 1H model: who was there, what was happening, when and where did it happen, why did you take the risk, and how did it feel? Consider your responses at the time you made the risky choice. What did you see, hear, and smell? What clothes were you wearing? What did your body feel

like? By remembering specific details of your experiences, you will have empathy with your students and be prepared to respond to the variety of emotions and concerns they express when confronting a risk.

The goal is not for you to complete a deep self-analysis but to simply recall and register the feelings and circumstances that surrounded the times you took risks. Use your awareness of these feelings and circumstances as guides to understand your students.

Small Changes to Teaching #1: Tips and Strategies for Helping Students Take Appropriate Risks

I have taught classes in which asking students to take a risk is about as easy as bathing a cat. Even adolescents, who are biologically predisposed to take risks, avoid risk-taking in classrooms in front of peers (Steinberg, 2007). Nurturing students who take appropriate risks involves both teaching and coaching. The following tips can develop risk-taking and are easy to implement:

1. Give permission by making risk a value: It is important to tell students they have permission to be risk-takers—that it is valued in your classroom. For instance, students think they know what “Bravo!” means, so tell them the real story of how it was first used in the English-speaking theater. We use the word “Bravo!” as a way of saying something is excellent and well-done, but originally it was shouted when an actor took a risk by doing something daring on stage to enhance their performance. Making risk-taking a value can be as easy as saying “Bravo!” or “Brava!” whenever a student takes a chance or tries something new. Even small changes to your pedagogy celebrating risk can change the character of a classroom for the better.
2. Model risk-taking: When demonstrating a process or skill, try something new and tell students you have not done it before. If it works, everyone has learned something new; if not, you have shown students that risk-taking is acceptable by normalizing it. When students see your willingness to take risks, they will feel safer and more confident that they can take risks, too.
3. Remind and reinforce: Once is not enough. Actively support and discuss the mindset that you want to cultivate. Let the vocabulary of risk-taking become part of how you interact with students every day. Examples include saying, “That’s a bold move” or “Consider taking a chance as you are working.”
4. Connect risk-taking to intrinsic motivators: Internal motivations include autonomy, belonging, curiosity, mastery, and personal meaning; external motivations include public recognition, points, fear of failure, and grades. Students engage in activities for intrinsic reasons because they are enjoyable and personally satisfying. Creative behavior that leads to exploration, sustained engagement, extended problem solving, and risk is driven by internal motivations, whereas external rewards have been shown to decrease these behaviors (Kim, 2011; Veon, 2014). Pay attention to what motivates each group of students and look for strategies to connect risk-taking to internal motivators. Tracking risk-taking can help you reflect on your teaching practice and help your students understand their growth in this Habit of Mind.
5. Encourage play: Find opportunities for students to play with ideas, processes, materials, skills, and strategies within your discipline. Play can be seen as a form of risk-taking without serious consequence, where it is acceptable for an

unpredictable or unfamiliar consequence to take place. Play is a primary means of learning from an early age and remains an effective means for new learning (Ostroff, 2012; Kimbell et al., 2004; Stables & Kimbell, 2000). Opportunities to play are often natural consequences of the materials that we use or new ideas we acquire (Stables & Kimbell, 2000).

Small Changes to Teaching #2: Try Dialogic Inquiry and Visual Thinking Strategies

For some students, offering their own ideas and observations in class can feel risky. Students might wonder whether their comments will be corrected by the instructor or ridiculed by their peers. An instructor who wants to nurture risk-taking as a Habit of Mind can build confidence by creating small, frequent activities where the consequences of risk-taking are both minimal and supported. It is a bigger win for the instructor if these small, low-consequence activities also build and strengthen disciplinary knowledge and skills.

I work to establish an egalitarian atmosphere that levels, to the greatest extent possible, hierarchies of power and status so that all voices are heard, respected, and considered—and, perhaps more importantly, so that individuals feel empowered to take risks, to question the hierarchies of logic, value, and power that often define our professional and personal lives. Dialogic learning takes place through dialogue in which people provide arguments based on validity claims, not on power claims. Wells (1999) defines inquiry as a predisposition for questioning, pointing out that dialogic inquiry depends on learning environments being supportive of collaborative action and interaction. Freire (1970) asserts that human nature is dialogic. By interacting with others, we create—and recreate—ourselves. Educators must therefore create the conditions for dialogue to encourage the curiosity of learners. To these ends, I model behaviors of curiosity, collaboration, uncertainty, and inquiry between equals in my classes. I also model appropriate risk-taking through the open and honest questioning of hierarchies. I guide students in practicing these behaviors, and I create opportunities for students to apply these skills in unprompted, personal, and creative ways.

One way for students to practice and internalize such skills is through Visual Thinking Strategies (VTS). VTS is a form of student-centered inquiry based on the constructivist theory of learning. It was developed from cognitive research exploring how people create knowledge and make meaning from new experiences in museums and classrooms (Housen, 2002). Most constructivists support the need to foster interactions between a student's existing knowledge and new experiences. It is at this juncture where VTS is useful. Since individuals make their own meaning from their beliefs and experiences, personal knowledge is often tentative and subjective. Knowledge in this context can be viewed as a set of “working hypotheses.” While constructivism is an epistemology and not a specific pedagogy, instructional approaches are derived from such epistemologies. VTS is one such approach. The VTS protocol focuses on the construction of meaning as a set of provisional working hypotheses that are made by students as they respond to a new or unusual visual situation.

In VTS, teachers support student growth and risk-taking by facilitating discussions of works of art and visual culture (Housen & DeSantis, 2003). While this protocol comes from research in art education, it can be used across disciplines, from STEM, history, and English courses to medical training. Regardless of discipline, the VTS protocol follows a standardized, researched-based strategy.

Instructors repeatedly ask the same three questions and use the same three teaching behaviors throughout a VTS session while students respond. Remarkably, by repeating these questions and behaviors, diverse, in-depth conversations, led by students and their ideas, take place. In VTS, students

- look carefully at each work, object, or item presented, speculating and posing questions about the work as they talk about what they observe;
- back up their observations and ideas with evidence;
- listen to and consider the views of others; and
- discuss multiple interpretations as the teacher-facilitator summarizes using discipline-specific language while connecting or framing student responses in a non-judgmental, neutral manner.

VTS is deceptively simple since profound changes can occur by using its basic and easy protocol. Existing research, conducted over 40 years, strongly suggests VTS's effectiveness in promoting aesthetic development and critical thinking and in developing social-emotional learning skills. VTS helps students learn to tolerate ambiguity, self-regulate, and learn collaboratively, and it is effective across cultures, socioeconomic levels, and settings (Curva et. al., 2005; Housen, 2002; Tishman & Palmer, 2006). Research also suggests that VTS improves observational, speculative, and evidentiary reasoning skills, including with university medical students to improve diagnoses (Klugman, et. al., 2011; Naghshineh et al., 2008).

As indicated above, instructors only ask three questions and engage in three behaviors during the VTS process. The instructor starts by giving the direction, "Take a minute to look at this picture (object, item, etc.)." The instructor then asks the following questions, remaining neutral and nonjudgmental:

1. What is going on in this picture?
2. What do you see that makes you say that?
3. What more can we find?

As part of the VTS protocol, after listening to each response, the instructor engages in the following three behaviors:

1. *Pointing* to what the student is discussing while they are responding
2. *Paraphrasing* each response
 - a. Instructors are encouraged to change the wording but not the meaning of what is said.
3. *Linking* answers that relate, even when there are disagreements, by simply noting where such disagreements occur
 - a. By linking student responses, instructors show how the students' thinking evolves, how some observations and ideas stimulate others, and how opinions change and build on one another.

It is by answering these questions and listening to the responses of others that students build confidence and learn to take small risks. Because the instructor remains neutral, students are free to take a risk because the consequence for offering an idea is low. Nevertheless, some students need prompting to offer their ideas. When I notice a student not participating, I call on them and ask, "What is going on in this picture?" I am frequently impressed by the contributions that silent students make to the conversation. I am also surprised at how, once they are invited, low-participation students start offering more ideas, both in VTS sessions and in other class discussions as the semester unfolds.

The VTS protocol is a process that emphasizes useful patterns of thinking, not right answers. Students learn to make detailed observations in this process, thereby sorting out and applying what they know on their own and as a group. Students who are uncomfortable talking in class can gain confidence in this process, while other students can explore risk-taking by offering ideas that are tentative, provisional, or unconventional. Critically, the instructor remains neutral throughout this process. Because the instructor only uses the questions and behaviors described above, students are given the opportunity to reflect on their ability to make meaning and to draw inferences and support them with evidence. Further, students are encouraged to listen and respond to the ideas of others, and they often revise their initial ideas by considering new perspectives offered by their peers. It should be noted that publicly revising one's ideas in light of new information or other perspectives might seem risky or embarrassing to some students. But by using a classroom discussion protocol such as VTS, students learn that they can take risks with their ideas and gain confidence in a nonjudgmental context (Housen, 2002).

Make it Part of Your Curriculum: Design Your Course for Appropriate Risk-Taking

Ironically, sometimes making small changes to one's teaching practice is harder than making global changes. Simply remembering to enact smaller changes within the overwhelming whirl of class activities, complex lectures, student queries, and limited time can feel daunting. Another approach to developing risk-taking—or any Habit of Mind—is to embed it into the structure of your course.

I embed risk-taking into my curriculum in a traditional way: I start the semester with more structured, instructor-directed lessons, and I move to less structured, student-centered assignments by the end of the semester. Table 15.1 provides a succinct way to conceive of this curricular arc. This table identifies the components of an assignment as consisting of a problem, a process, and a product. The assignment poses a problem or challenge, and the student's job is to enact a process (or strategy) that will lead to a product or outcome that satisfies the initial problem. Leaving any of the three components of an assignment indeterminate or open to interpretation introduces opportunities for risk-taking and tests students' ability to apply what they know.

In this model, the instructor starts the course by explicitly stating what the problem is, what processes students will use, and what product or outcome students will produce for evaluation. Nevertheless, risk-taking can still be embedded at this stage. For instance, in my first assignment, I tell students what they will draw, thus determining the problem they face—an 18" x 24" drawing. I also specify the process they will use to complete the drawing. I insist that they use charcoal pencils for their drawings, knowing that charcoal is a medium most have never used. This poses an immediate concern for students rooted in uncertainty. Unlike the sharp point of a No. 2 graphite pencil, charcoal pencils have blunt ends that constantly change as you use them. Students can no longer get the precise lines or shade areas like they do with precisely sharpened pencils. From the first day of class, my students are introduced to risk-taking as an important value.

By the middle of the semester, instructors should help students become independent learners by leaving two of the three assignment components indeterminate or open-ended. For instance, the instructor might determine the process that all students will use in the assignment while providing minimal guidance for a) how students should interpret the problem and b) for how students should make decisions about what the final product will look like.

An example of this approach is my "Image vs. Text" assignment, which requires students to reverse a common expectation. Students grow up with textbooks that have pictures and captions, with each caption telling the reader how to interpret the picture on the page. But in the

Image vs. Text assignment, I challenge students to reverse this protocol. I instruct students to produce an artwork where the text is embedded in the picture as a visual element of the artwork itself and where the connection between the text and image is ambiguous. The viewer might make meaning out of the artwork by connecting the text to the image in one way, but then realize the connection is so ambiguous that there are multiple possibilities to consider.

A famous example of this strategy in art is Rene Magritte's painting, "The Treachery of Images." In the artwork, there is a painting of a pipe under which the artist has painted the sentence "*Ceci n'est pas une pipe*" ("This is not a pipe"). At first, the painting does not make sense. But then we realize that picture itself is not a real pipe but rather a representation of a pipe, just as the sentence itself is a linguistic representation of the fact that the painting is an artwork, not a real pipe.

The Image vs. Text assignment is an example of an ill-structured problem, where students are given an ambiguous problem. It is partially up to the student to interpret what the problem is and then decide on a course of action. Students must rethink how viewers make connections between imagery and text. Then they must decide how to develop an artwork that gives viewers a new experience. They are put in a position of questioning relationships between text and images and thereby challenged to make new connections.

Finally, as students master sufficient skill and knowledge, the instructor tests their ability to work independently by providing minimal support and guidance near the end of the semester. It becomes the students' responsibility to demonstrate their skills and knowledge by defining a question or problem largely on their own, as well as a) identifying the appropriate processes or strategies to use in solving the problem, b) determining the appropriate criteria a product or outcome needs to meet, and c) presenting the final product, outcome, or end state for evaluation. The examples of artwork described at the beginning of this chapter all resulted from students posing their own problem, choosing their own processes to answer the problem, and determining all aspects of the final product.

Landmarks of Risk-Taking Behavior

Risk-taking is not going to look the same in every student. Nor will it look the same in every class. What counts as a risk depends on an individual's personality, background, and state of mind when the risk is taken (Llewellyn, 2008). Given this variability, is there a way of determining what risk-taking looks like? Table 15.2 provides a continuum of risk-taking indicators.

It is important to note that the risk-taking rubric in Table 2 is used for assessment and not grading. We use assessment to inform students of their progress and development. It is meant as an aid in determining whether changes an instructor makes to their teaching results in students taking appropriate risks.

The risk-taking rubric is built around the idea that we start by guiding students and then help them become independent by reducing the amount of scaffolding as their skills grow. Accordingly, the risk-taking rubric ranges from not seeing a behavior (Level 1) to when we see it happening independently and spontaneously (Level 4). Ultimately, the purpose of this rubric is to give instructors another tool for nurturing appropriate risk-taking and for carrying these skills into other areas of life.

Conclusion

Perhaps the most important factor in nurturing risk-taking as a Habit of Mind is what you share of yourself with your students. The examples drawn from your personal risk-taking

inventory help you know how to nurture risk-taking in your classes. A quote from a colleague, Eric Booth, sums up what is perhaps the most important thing we leave our students:

Eighty percent of what you teach is who you are. I made up this number, but that invented percentage captures the actual truth that whatever the teaching techniques, whatever the words or activities, it is the understandings and the spirit of the individual teacher that sparks the potential to transform others. If you doubt that number, just recall the great teachers in your own life. It was not the quality of their handouts or presentations, nor the cleverness of their curriculum, that inspired you to change the direction of your life. It was the quality of who they were as people, their artistry as humans, that had such an impact on you.

Whether you choose to nurture risk-taking or another Habit of Mind, your ability to positively impact students' lives extends beyond your assignments and lessons.

Table 15.1*Rubric for Analyzing Lessons to Encourage Risk-Taking*

Assignment	Closed	Limited scaffolding	Open-ended
1. Problem, question, or task students will solve	Provided by instructor	Guidance provided to student	Determined by student
2. Process, strategies, and skills students will use to solve the problem	Provided by instructor	Guidance provided to student	Determined by student
3. Solution, product, or end state that will result from the process used to solve the problem	Provided by instructor	Guidance provided to student	Determined by student
4. Degree of risk-taking involved	Little risk-taking involved	Some degree of risk-taking	Higher degree of risk-taking

Table 15.2*Risk-Taking Rubric*

Criteria	Level 4	Level 3	Level 2	Level 1
Students risk by:	Independent	Emerging independence	Beginning/ cautious	Minimal (not attempted or observed)

Goal setting	<p>The student self-generates a goal and a course of action, providing justifications based on:</p> <ul style="list-style-type: none"> • an analysis of the problem; and/or • other criteria the student identifies as relevant; and/or • goal setting for growth just beyond their level of competence, but within reach 	<p>The student self-generates a goal and a course of action with:</p> <ul style="list-style-type: none"> • goals within or at their level of competence; and/or • a general justification 	<p>The student decides between two or more alternatives provided by the instructor, relying on the instructor's justification for the goal with challenges within easy reach of their competency level</p>	<p>The student requires extensive assistance to choose between two instructor-provided alternatives, cannot set a goal independently, with tasks set at a minimum competency level</p>
Improvisation: Responding to obstacles	<p>The student responds to obstacles by trying alternate approaches beyond the procedures and exemplars provided by the instructor, may question the assumptions built into the assignment, and might complete the task in an unanticipated way but nevertheless demonstrates skill and learning as a result</p>	<p>The student responds to obstacles by trying alternate approaches regardless of whether they resemble the recommended procedures but nevertheless attempts to complete the outcome/task as assigned</p>	<p>The student attempts to overcome obstacles through procedures and exemplars provided by the instructor and only to complete the assigned outcome/task as accurately as possible</p>	<p>The student seeks guidance, help, or direction when obstacles are encountered; requires help following directions; and does not independently explore, play, or question assumptions</p>
Improvisation: Departing from established plan of action	<p>The student actively seeks out and pursues untested and potentially risky directions or approaches to solving a problem; reframes and questions the problem itself; or discovers and follows</p>	<p>After instructor prompting, the student tries a new approach to solve the problem and does so in a self-directed way</p>	<p>With constant guidance, the student can try a new approach to solving a problem</p>	<p>The student does not seek alternative approaches, OR, with help, the student can identify a new approach, but does not try it</p>

	a new goal while working			
Departing from classroom or cultural norms	The student independently (without prompting) tries something related to class that is “weird,” “different,” or “strange,” seeing it as fun and rewarding for its own sake; and/or attempts to use learning and personal experiences that are unrelated to the assignment to enhance their work; and/or tends not to seek approval from teacher or peers when trying something different	After prompting, the student tries something “weird,” “different,” or “strange” and sees it as fun but seeks occasional approval and support from teacher or peers in order to continue such attempts	With constant guidance, the student is willing to try something “weird,” “different,” or “strange” but seeks approval from teacher or peers for doing so	The student does not or will not entertain departing from classroom or cultural norms
Reflecting & monitoring work	The student reviews the results of their risk-taking, determines their significance for future courses of action, and then revises plans for the future accordingly	After prompting, the student reviews the results of their risk-taking and identifies areas of benefit	With guidance, the student reviews the results of risk-taking but with little consideration of how they might be used in the future	The student does not or only superficially reviews the results of their risk-taking
Learning from mistakes	The student independently considers personal change by reflecting on past experiences in depth, specifying what they have learned from it, and identifying how their perspective has	After prompting, the student reflects on past experiences and can specify what they learned from a particular situation	The student connects a related past experience to a present situation but cannot identify what they have learned from it	The student does not make a personal connection to past, in-class experiences

	changed from the experience			
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References

- Boden, M. (Ed). (1994). *Dimensions of creativity*. MIT Press.
- Curva, F., Milton, S., Wood, S., Palmer, D., Nahmias, C., Radcliffe, B., Fogartie, E., & Youngblood, T. (2005). *Program evaluation report artful citizenship project year 3 project: Executive summary*. Curva and Associates.
<http://www.vtshome.org/system/resources/0000/0003/Miami-FL-VTS-Study.pdf>
- Dasgupta, S. (2008). Shedding computational light on human creativity. *Perspectives on Science, 16*(2), 121–136.
- Freire, P. (1970). *Pedagogy of the oppressed*. Continuum Books.
- Gardner, H. (2007). *Five minds for the future*. Harvard Business School Press.
- Hetland, L., Winner, E., Veenema, S., & Sheridan, K. (2007). *Studio thinking: The real benefits of visual arts education*. Teachers College Press.
- Housen, A. (2002). Aesthetic thought, critical thinking and transfer. *Arts and Learning Journal, 18*(1), 99–132.
- Housen, A., & DeSantis, K. (2003). *Selected directory of studies*. Visual Thinking Strategies.
<https://vtshome.org/wp-content/uploads/2016/08/6Directory-of-Studies.pdf>
- Kim, K. H. (2011). The creativity crisis: The decrease in creative thinking scores on the Torrance Tests of Creative Thinking. *Creativity Research Journal, 23*, 285–295.
- Kimbell, R., Miller, C., Bain, J., Wright, R., Wheeler, T., & Stables, K. (2004). *Assessing design innovation: A research and development project for the department for education and skills and the qualification and curriculum authority*. Technology Education Research Unit, Goldsmiths University of London.
- Klugman, C., Peel, J., Beckmann-Mendez, D. (2011). Art rounds: Teaching interprofessional students visual thinking strategies at one school. *Academic Medicine, 86*(10), 1266–1271.
- Llewellyn, D. (2008). The psychology of risk taking: Toward the integration of psychometric and neuropsychological paradigms. *The American Journal of Psychology, 121*(3), 363–376.
- Ludvigsen, A. (1980). *Confrontationalism: A foundation of intellect in art, education, and art*

- education* [Unpublished dissertation]. Ohio State University.
- Naghshineh, S., Hafler, J. P., Miller, A. R., Blanco, M. A., Lipsitz, S. R., Dubroff, R. P.
- Khoshbin, S., & Katz, J. T. (2008, July). Formal art observation training improves medical students' visual diagnostic skills. *Journal of General Internal Medicine*, 23(7), 991–997. <https://doi.org/10.1007/s11606-008-0667-0>
- Ostroff, W. (2012). *Understanding how young children learn*. Association for Supervision & Curriculum Development.
- Parker, K., & Igielnik, R. (2020, May 14). *On the cusp of adulthood and facing an uncertain future: What we know about gen Z so far*. Pew Research Center. <https://www.pewresearch.org/social-trends/2020/05/14/on-the-cusp-of-adulthood-and-facing-an-uncertain-future-what-we-know-about-gen-z-so-far-2/>
- Radford, M. (2004). Emotion and creativity. *Journal of Aesthetic Education* 38(1), 53-64.
- Reisenwitz, T. H. (2021). Differences in generation Y and generation Z: Implications for marketers. *Marketing Management Journal*, 31(2), 78–92.
- Scheffer, M., Baas, M., & Bjordam, T. K. (2017). Teaching originality? Common habits behind creative production in science and arts. *Ecology and Society*, 22(2), 29. <https://doi.org/10.5751/ES-09258-220229>
- Stables, K., & Kimbell, R. (2000). The unpickled portfolio: Pioneering performance assessment in design and technology. In R. Kimbell (Ed.) *Design and Technology International Millennium Conference DATA*. Wellesbourne.
- Starr, G. G. (2015). *Feeling beauty: The neuroscience of aesthetic experience*. MIT Press.
- Steinberg, L. (2007). Risk taking in adolescence: New perspectives from brain and behavioral science. *Current Directions in Psychological Science*, 16(2), 55–59.
- Tishman, S., & Palmer, P. (2006). *Artful thinking final report*. Project Zero. <http://www.pz.harvard.edu/Research/ArtfulThinkingFinalReport.pdf>
- Veon, R. (2014). Leading change: The art administrators' role in promoting creativity. *Art Education*, 67(1), 20–26.
- Wells, G. (1999). *Dialogic inquiry: Towards a sociocultural practice and theory of education*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511605895>