

## **A Mutualistic Model of Creativity: Establishing Creative Flow in Classrooms**

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My name is Susan Sobehrad. I'm an educator, a researcher, and most importantly, a creativity champion. My current research revolves around creative ecosystems in classrooms, focusing on teacher moves and their impact on student perceptions of their own creativity. Today I'd like to share with you a model that makes sense to me in terms of crafting a successful creative ecosystem in the classroom.

I've been a teacher for a long time. And in all that time, creativity is still commonly equated with getting out the art supplies to create an end product. This narrow view of creativity is persistent, and evident in even the most recent survey. The 2022 PISA Creative Thinking Assessment results indicate that students with "artistic interests" have a high creative self-efficacy. This is not surprising. But does this mean that students who don't consider themselves to be artistic do not? I don't believe so. What it means is that the creative potential of students goes largely unrecognized and underdeveloped because our—and by our I mean teachers, students, administrators, researchers and the general public—our definition of creativity is too narrow, and school time is too structured.

Creativity remains high on the list of desirable attributes for employees. However, time spent on developing creative practice is not always high on the list of skill-based instruction in public schools. In a series of wide-ranging interviews, Hopkins (2019) found that imagination and creativity are declining as the use of structured curricula and standardized testing are on the rise. How can that trend be reversed? Conner et al. (2018) suggests that pursuing creative tasks everyday is one way to cultivate positive psychological functioning. With a positive mindset, self-determination theory tells us that students are more likely to be willing to overcome challenges and therefore develop greater self-efficacy.

Why does it matter? With AI rapidly evolving to a place of great significance in the workforce, the future of jobs for the humans in the room is currently unknown. What IS known is that humans will need to be able to create new solutions in order to meet

these unknown challenges. “Unclear goals, uncertain feedback, the possibility of unexpected innovations will be challenges in this uncertain future. Spontaneity, imagination and original thinking are hallmarks of someone who will be able to combat these challenges (Sobehrad, 2025, p. 183).” While I don’t believe these processes are descriptors of AI, they certainly are creative habits that will be required of a future workforce in a world where change is constant. “It all boils down to the fact that humans are going to have to be what a machine can’t be. Empathetic, intuitive, imaginative, insightful, compassionate, creative (Sobehrad, 2025, p. 185). And it is up to teachers to ensure that students are prepared to do so.

I wanted to ferret out a way to gain access to this hidden creative potential in students. My initial research involved taking a look at the data from the 2022 PISA Creative Thinking Assessment. I wanted to investigate the relationship between what happens in schools and students' creative self-efficacy. Here are some key findings:

1. There are high creative self-efficacy scores for students who consider themselves to be artistic. This suggests that the narrow definition of creativity exists even for students, although I believe that creative potential exists in every person, whether the student can paint or not.
2. The classroom environment has a stronger relationship to students' belief in their creativity than whole-school structure. To me, this indicates that teachers have an opportunity to harness students' creative potential and bolster creative self-efficacy.
3. Students' willingness to try new things is related to teacher support. There is a strong positive relationship to high creative self-efficacy for students when a teacher values students' creativity and gives them time to immerse themselves in creative work.
4. The study also shows a strong relationship between creative self-efficacy and having good friends. Having good friends implies that strong relationships are present; because collaboration can build relationships, it seems to me that this indicates that teaching collaborative skills can also build creative self-efficacy.

On finding that teacher moves do matter to students, I decided to explore whether or not giving students opportunities to participate in simple creative challenges enhanced their ability to utilize creative habits of mind, thus enhancing their creative self-efficacy and their willingness to engage in creative problem-solving. Student teams were asked to complete a series of short, unstructured tasks. The intention was to inspire creativity and enhance creative responses over time. To gauge perception changes, I administered a pre- and post-survey. Here's what I noticed:

- Before participation, students had overall high perceptions of their own creative self-efficacy. They were confident in their ability to solve problems, but had less confidence in their ability to access their creative habits of mind— such as noticing, perspective-taking, ideation, synthesizing, embodied thinking (Mishra et al., 2011).
- The post-survey revealed some interesting findings. Students' belief in their creative self-efficacy didn't waver—they all still believed they were highly creative. As expected, post-survey results did indeed show higher student perceptions of their ability to engage their creative habits of mind, and their divergent thinking task scores went up.

There were also some unexpected findings. Students' perceived level of stress when faced with creative challenges was lower in the post-survey. Lower stress levels is obviously a good result, and it makes sense that exposure, or rather practice, in tackling creative challenges reduces the anxiety of having to “be creative.” However, paradoxically, students' belief that they could solve problems creatively went down. A lower belief in their ability to creatively solve problems seemed discouraging until I remembered the PISA study, and the implied narrow definition of creativity. It is my belief that prior to the intervention, students participating in the study thought about creativity in terms of paint and product. However, when given creative mini-tasks that involved technology and engineering, they were less assured that a creative response was appropriate, and responding to unstructured tasks became more difficult. Perhaps, with the evolution of a greater level of ideation, choices became more plentiful and decisions became more difficult. Or, more likely, they did not see that solving an engineering problem was a creative effort.

However, what that low score implied and what I observed were contradictory. Based on my nonparticipatory observations, their creative responses were not diminished. Observed team conversations became more animated, and participation increased. Wild ideas were accepted and expanded upon. Students were able to generate ideas, challenge each other on the efficaciousness of those ideas, defend their ideas, and build on the ideas of others. Creative problem-solving was obviously in play.

These findings reinforced my thinking that even though creative potential exists in all students, students are not aware that their very thoughts are a creative enterprise, nor are they aware that engaging in activities that do not have a single right answer can lead to surprising discoveries and enlightenment which are also creative responses. They don't seem to know that collaboration cultivates creativity.

Support for these ideas may be found in Glaveanu's Perspective-Affordance Sociocultural Theory of Creativity (Glaveanu, 2020), nicely summed up with this quote: "In evaluating creativity. . .we would have to consider the person as a whole, within his or her context, co-developing over time, to have a proper contextual understanding of how, when, and why someone expresses him or herself creatively (or not)(Glaveanu, 2020, p. 350)."

As opposed to common theories that focus on personal and product attributes, Glaveanu's theory suggests that creativity is grounded in the difference between perspectives exposed and explored during conversations with team members; it is this dialogue that allows students to uncover unexpected ways to solve problems. This thinking lays the groundwork for educators to design classroom systems that stimulate creative flow.

In the aftermath of this study, I conceptualized a model (see Figure 1) with the intent to explain the symbiotic nature of three aspects of classroom ecology that I observed. It was evident that, when supported by teacher action, the presence of these three factors can enhance the occurrence of creative flow in schools. In this model, self refers to students' beliefs about their own creative mien, which can be nurtured by affirmation and dialogue; habits are those cognitive processes that lead to successful problem-solving, and tasks are what students are asked to do; students are given a task with a goal but no other guidelines, where success is assessed on the process rather

than the product. These aspects are reciprocal—each reinforcing the other when students are engaged in creative work.

In surveying students and observing student participation over time, this reciprocity was evident, and creative flow poured forth. What I observed matched Valsiner et al.'s (2015, p. xvii) view of creative flow, which states that creative flow occurs when “something new emerges from the flow of something familiar—a sudden error gives rise to another that, by this moment in time, is already not an error but act of improvisation which, later on, becomes considered as a creative (Valsiner et al., 2015, p. xvii).” With looming failure removed from the equation, students were able to access the joy of playing with ideas and creative flow emerged; when time was up, students were disappointed that they could not continue. This exemplifies Csikszentmihalyi's (2014) description of flow as a situation in which participants are so involved in an activity that nothing else seems to matter; the experience so enjoyable that participants will do it for the sheer sake of doing it.

Educators have the ultimate responsibility for cultivating these three aspects of creative flow in the classroom, and can set the stage to do so in three ways:

1. 1. Interact with students in ways that encourage creative habits of mind
2. 2. Configure the physical classroom setting to facilitate creative habits like team work and dialogue
3. 3. Subvert the curriculum with low stakes creative moments to foster creative habits

Let's look more closely at the model. The first of the three factors of the model, self, is most directly related to teacher interaction. Self-efficacy increases when educators recognize and reward small moments of creativity—the surprising use of a word in a new context, for example—and make those moments visible to others. Affirmation is one key to instilling confidence in students. Another key teacher interaction is asking relevant, open-ended questions. Open-ended questions require a p to pause, think, and reflect. The control of the conversation switches from the person asking the question to the person being asked the question, giving students the opportunity to expand on their thinking and ideas.

The second of the three factors, creative habits, are enhanced when educators teach students the art of noticing. Asking students to examine a natural object from multiple perspectives—close up, far away, inverted, inside-out—while voicing what they notice helps students find wonder which stimulates curiosity. Kashdan et al. (2018) advocate for curiosity as a critical component in education because it motivates students to engage deeply, explore subjects thoroughly, and retain information. In a joint study with Lin & Kaufman (2024), curiosity was a predictor of creative achievement. Intriguing problems lead to curious engagement, while feedback from peers during collaboration can lead to the serendipitous discovery of new ways to act in solving the problem.

The third factor, tasks, are successfully orchestrated when students have enough domain knowledge to come up with a solution, and adequate resources to execute that solution. Ambiguous and unconventional tasks such as inventing a new organism from found objects or imagining stories based on random images encourage curiosity, and incites engagement and divergent thinking. Collaboration allows for idea-sharing from different perspectives, and students begin to expand their view of what an acceptable solution might be.

Rather than focusing on outcomes and resource-consuming end products, when educators embed creative micro-practices into their existing classroom routines, students are empowered to recognize creativity in everyday thinking and doing. In conclusion, a creative classroom ecosystem fosters creative flow:

1. When students practice responding to open-ended tasks frequently over time
2. When teachers nurture creative self-efficacy by accepting and affirming students' creative moments, asking the right questions, and modeling
3. When collaboration with others supports and encourages use of creative habits
4. When tasks are ambiguous and failure-free

The Mutualistic Model of Creativity emphasizes that creativity cannot be taught as product; rather, creative flow flourishes in an environment that nurtures multiple,

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interlocking strategies centered on creative thought, student agency and low-stakes risk-taking.

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