

Strategies for Supporting Imaginative Thinking:

These strategies were adapted from a sample of literature on imagination in STEM

Social & Physical Environments

	Encourage social engagement	Foster a welcoming climate, promote solidarity. Interact with diverse learners, collaborate. Cross traditional disciplinary boundaries.
	Attend to physical environments	Consider materials, furnishings, lighting, sound. Design implicit or explicit invitations so learners believe an experience is for them.
	Foster agency over resources	Provide intuitive tools so learners know how to readily engage. Increase agency over resources and process. Offer guidance, encouragement, opportunities for risk-taking.
	Make room	Allow learners to set their own course. Avoid too many pre-formulated meanings. Create a culture of putting imagination into practice.

Expressive Strategies & Contexts

	Leverage narrative	Use story, history, or science fiction. "Restory" by reflecting on lived experiences and reimagining alternative futures. Journal about everyday experiences.
	Invite embodied experience	Involve the body, movement, gesture, senses. Invite touch and physical interaction.
	Evoke emotion	Evoke wonder, hopes, fears, passions. Direct emotional attention by designing something beautiful, clever, unexpected. Use jokes or humor.
	Integrate the arts	Leverage art, poetry, craft. Collaborate with artists.

Supports for Possibilities Thinking

	Challenge assumptions	Upset routines, change contexts, break from the unexpected. Develop sensitivities to the complexities of others. Present ideas that conflict with common sense.
	Invite creative inquiry	Investigate topics that call for creative inquiry. Present ideas through mystery, paradox, and extremes of reality. Explore the space between knowledge & mystery.
	Scaffold awareness of alternatives	Reveal and interrogate dominant narratives. Investigate topics and problems we might confront in the future. Use "seven generations thinking."
	Highlight relationships	Use metaphor and analogy, or create your own. Make associations among apparently unconnected ideas.

Strategies were sampled from the following sources:

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Egan, K. & Judson, G. (2016). [Imagination and the Engaged Learner: Cognitive Tools for the Classroom.](#) Teachers College Press.

Hadzigeorgiou, Y. & Fotinos, N. (2007). [Imaginative thinking and the learning of science.](#) *Science Education Review*, 6(1), 15-23.

Liang, C., Hsu, Y., Huang, Y., & Chen, S. (2012). [How learning environments can stimulate student imagination.](#) *Turkish Online Journal of Educational Technology-TOJET*, 11(4), 432-441.

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Shaw, M. S., Yi, G., Zhang, Y., & Kafai, Y. B. (2021). [Promoting socio-political identification with computer science: How high school youth restore their identities through electronic textile quilts.](#) In *2021 Conference on Research in Equitable and Sustained Participation in Engineering, Computing, and Technology (RESPECT)* (pp. 1-8). IEEE.



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