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Getting Students to Think Critically and Visibly

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Students can sometimes find the classroom to be an uncomfortable environment; hence, it can be difficult to persuade them to voice their thinking in front of their peers. Students' fear of accidentally recalling incorrect answers in a classroom setting may set a domino effect of instant ridicule from their classmates, which can consequentially inhibit many of them from participating in future classroom discourse. To reduce fears, educators should foster an environment of support that encourages students to think visibly and more critically. The purpose of this article is to explore the literature, which suggests an environment that promotes creative learning and visible thinking inherently develops students' critical thinking skills resulting in them becoming better problem solvers.

Keywords: classroom culture; visible thinking; creative thinking; critical thinking; higher-order thinking; problem-solving

Introduction

Educators face a myriad of issues in the classroom; one such issue is the ability to assist students to think critically without the need for continual teacher support. Salmon (2008) describes how cultivating a culture of independent thinkers by respecting and building on students' interests can progress their thinking routine. A thinking routine develops when educators document their students' progress and encourage them to show how they are constructing their knowledge. Sfard (2008), renowned for her research on thinking and communication, determined that thinking is an interpersonal form of communication and is not necessarily a self-sustained separate act (Sfard, 2008). The integration of these theories implies that thinking is communicative and attainable through encouragement. The review of literature explored in this article describes how building a positive classroom fosters an environment for students to think more visibly which will intuitively increase critical thinking and problem-solving skills.

Literature

Creating a classroom culture of thinking

A positive classroom culture is important for a student's socio-emotional development (Jones, Bailey, Brion-Meisels, & Partee, 2016). Promoting a sense of belonging and security builds relationships between students and teachers (Hughes, Luo, Kwok, & Loyd, 2008; Jones, Bailey, Brion-Meisels, & Partee, 2016). In classrooms where a socio-emotional learning model is established, students' feel supported to engage in problem-solving activities and collaborative classroom practices (Jones, Bailey, Brion-Meisels, & Partee, 2016).

Ideally, a commonly shared ownership of intolerance for inappropriate behavior will build students' trust in the classroom (Freiberg & Lamb, 2009). Shared leadership empowers the

students to feel secure enough to impart their ideas, reveal their curiosities, and demonstrate higher-level thinking (Cornelius-White, 2007; Freiberg & Lamb, 2009). A classroom climate that supports students' academic successes and failures as well as their emotional wellness, sets the course for student connectedness and a productive classroom environment (Freiberg & Lamb, 2009). Building a culture of wonder and thinking permits students to seek their own answers to questions that would usually be disseminated by the teacher. Students begin to make personal connections with the content and explore additional pathways for solutions (Dweck, 2007; McNair, 2017).

Making thinking more visible

Wolfe (2007) declares that the student growing the dendrites is the one who is doing the work. Visible thinking ensues when students are actively participating in discussions, writing, or demonstrating a skill in a creative manner permitting the teacher to assess the learning objective.

Additionally, asking questions that require students to explain their answers and thinking encourages students to think more visibly (Medina, 2017). Informal feedback provided by both teachers and peers permit the learner to evaluate and self-assess his/her thinking (McNair, 2017). A classroom environment that fosters encouragement, respect, and a culture of thinking invariantly launches the process of visible thinking. In essence, visible thinking is no longer hidden but evident when students are actively participating in learning experiences, which extend to solving puzzles, designing artwork, writing, connecting ideas, and conducting productive discourse (Ritchhart & Perkins, 2008).

Creative play and critical thinking

Over 60 years ago, *The Taxonomy of Educational Objectives* was published identifying six categories of cognitive development. Known as Bloom's taxonomy, the original design was created using nouns to describe each category of development. In 2001, editors Anderson and Krathwohl, along with six coauthors, revised the original version of Bloom's taxonomy changing the noun categories to verb tenses. Much like the original version, the six-step hierarchy categorizes each level for higher- order learning with *Create* listed as the top tier for knowledge acquisition. Bloom's taxonomy has long been the pulse in regulating higher-order thinking in education (Agarwal, 2018).

In 2010, Gruenfeld determined that the process of acquiring higher-order thinking oftentimes is associated with the students engaging in creative play or learning. Acknowledging that if a student is creatively playing, then the student is also critically thinking because active participation in creative play is equivalent to critical thinking (Gruenfeld, 2010).

Tomlinson (2017) asserts that fostering an environment to develop creative thinking is a process that is centered around four stages – preparation, incubation, illumination, and verification (pg. 91). The preparation stage is spent reading, analyzing and collecting information. During the incubation stage the students are reflecting on their acquired learning and reevaluating their ideas. The illumination stage is the moment of sheer revelation that a possible solution is forthcoming; thereby, leading to the final stage classified as verification or where the solution is tested for confirmation and affirmation. Tomlinson acknowledges that these practices are evolving and they are not developed overnight. However, once the trial and error implementation stage is over, these practices are favorable in developing a problem solving mindset that begins to intuitively seek creative solutions (Tomlinson, 2017).

Building problem solving skills

Beghetto (2017) states that the journey to incorporate creative learning into the classroom can be a place of uncertainty for some educators. The thought of resigning old habits of authority to designing activities to increase student interest is to conduct a classroom of chaos. To eliminate some of these feelings of anxiety, teachers have to expose students to ill-defined problems and instruct them according on the best way to productively respond. The process of unrestrictive teaching is a gradual one. Teachers can transform a restrictive exercise to a problem solving activity by simply removing a pre-determined requirement. In a mathematics class, for example, the teacher could ask students to create and find the area of a quadrilateral using a selected set of dimensions rather than giving them a worksheet of quadrilaterals with the repeated task of finding the area of each figure. This will encourage students to seek multiple solutions, challenge ideas, and persevere through setbacks (Beghetto, 2017).

Spencer (2017) notes that unrestrictive methods of learning can help students to think differently or more openly suddenly questioning standard solutions and common ideas. Simple teaching adjustments and encouragement can push students to think beyond their usual limits. Moreover, Milner (2017) suggests that teachers should not focus solely on developing students' academic skills applicable to their pedagogy, but to the societal norms surrounding them. The transfer of knowledge from academics to society is essential in cultivating students' ability to think creatively.

Conclusion

Although the mindset of both educators and students have transformed from the teacher being the disseminator of knowledge to more of a facilitator, the classroom culture has not advanced as successfully. Unfortunately, isolation and fear is a reality for many students in today's classrooms. These students' voices are oftentimes muted and learning can be uneventful.

To reverse this course, educators can develop a classroom culture of self-regulated learners who will regard the classroom as safe place. The process of creating a safe and productive classroom does not develop overnight. However, with frequent incremental changes the environment will become more acceptable.

The development of unrestrictive lessons, respectable discourse, and valuing differences is fundamentally the initial checkpoint towards progressing to a productive learning environment. Once in place, students should feel relaxed to make their thinking more visible.

Visible thinking promotes students to openly contribute to classroom discussions, which can inevitably help themselves and their peers to frame ideas. Hopefully, these same ideas and practices will extend beyond the classroom. But it is the steady progression of encouraging visible thinking that inspires creativity in the classroom. The journey, which sets the path for students to think more creatively and critically, is one that also develops students' independence to self-regulate their learning and increase their ability to become better problem-solvers.

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