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Toward a Curiosity Mindset: Reframing the Problem of Student Disengagement from Classroom Instruction

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Reduced student engagement in formal instruction is a problem that pervades classrooms across the educational spectrum. Students have been shown to commonly experience the negative emotions of boredom and inattentiveness (Bunce, Flens, & Neiles, 2010; Mann & Robinson, 2009; Young, Robinson, & Alberts, 2011) as well as vigilance decrement (Grier et al., 2003). Studies have revealed that more than 40% of high-school students usually remain disengaged from learning (Usher and Kober, 2012) and few (as little as 8%) reach a developmental level characterized by intrinsic motivation, attention, and effort (Lawson & Masyn, 2015; Scherrer & Preckel, 2018). Because student interest in the instructional topics and pedagogical activities rapidly decreases or is completely lost, students withdraw their attention from instruction in favor of off-task behaviors such as daydreaming, doodling, or inappropriate use of technology (Adams, 2006; Bugeja, 2007; Fink, 2010; Gilroy, 2004; Nworie & Haughton, 2008). Despite teachers' best efforts, maintaining high levels of student interest during class time and avoiding disengagement from the learning process constitutes a challenging pedagogical endeavor, particularly in the context of classroom discussions and lectures (Lemke, 1990; Nunn, 1996).

In previous educational research, student disengagement has been linked to a variety of factors, including length of class and absence of student motivation (Moore, Armstrong, & Pearson, 2008); lack of a sense of belonging or connection with the school setting and topics of instruction (Christenson & Thurlow, 2004); and, the mental burden typically demanded by *vigilance tasks* -- extended activities that lack variation in format such as attending to classroom lectures (Grier et al., 2003; Watson, Matthews, & Allman, 2007). Further, disengaged students commonly experience difficulties such as an inability to sustain attention or complete schoolwork, reduced classroom participation, and problems processing academic information.

In effort to address the above problem, educators have resorted to educational technology (e.g., videos, computer simulations, cartoons, puppets, book read-alouds) and pedagogical strategies such as demonstrations, humorous instruction (Watson, Matthews, & Allman, 2007), student-directed activities, and group learning (Uekawa, Borman, & Lee, 2007). Aimed at inserting positive emotions (e.g., joy, satisfaction, happiness, pleasure) and fostering student motivation, these strategies have produced variable degrees of success in combating boredom and vigilance decrement. Yet, the fact that many students remain disengaged from their school learning highlights how student disengagement is not simply a matter of pedagogical strategy. Instead, we posit, this issue should be reframed as an educational problem whose resolution requires a shift toward a curiosity mindset.

Toward a Curiosity Mindset

Curiosity is generally understood as a state or a trait where the learner recognizes a knowledge gap, believes it can be filled, and is driven to close that gap for the intrinsic benefit of acquiring knowledge (Pekrun, 2019). Curiosity can wane as the desired knowledge is acquired. Curiosity might be a more short-lived, yet intense drive, but it can be stoked within students to alert them to potential interest development. Curiosity is, or can be intertwined, at the exploratory and experiential levels and thus can fuel interest development as curiosity feeds the growth of interest (Ainley, 2019). A significant amount of research addressing curiosity attends to its definition and distinction from other characteristics like interest and wonder (Grossnickle, 2014; Pekrun, 2019; Shin & Kim, 2019; Lindholm, 2018).

Shin and Kim (2019) offer further understanding as they differentiate the construct into forward and backward curiosity both responding to unpredictability and incongruity. *Forward curiosity* is directed by the learner having a learning gap revealed that is desired to be filled where the teacher identifies a reasonable area that the student would like to pursue; enjoyment results from forward curiosity. *Backward curiosity* shares a similar outcome of wanting knowledge but spawns from the student discovering that a prediction or anticipated result is incongruous to the prior held belief; surprise results from backward curiosity (Shin & Kim, 2019).

Curiosity also constitutes an important part of students' sense of self (i.e., personal identities). Students who perceive themselves to be curious individuals tend to be more intrinsically motivated to engage in curiosity behaviors (e.g., exploring ideas, searching for answers, questioning, making connections) and to experience positive feelings (e.g., inspiration, joy, reward) when faced with knowledge gaps or disequilibrium. Students who embrace curiosity as an integral part of themselves are more inclined to feel the joy of the hunt for knowledge and understanding rather than the more intense and uncomfortable, deprivation-type feeling of "need to know" (Litman, 2005). Hence, developing a learning identity grounded in curiosity is essential for academic success and intrinsic motivation in the classroom (Cain, 2019; Lindholm, 2018; Tan & Maeda, 2021).

Shifting to a curiosity mindset fundamentally means abandoning teaching approaches concerned primarily with "tricks of trades" (practice without theory). Instead, student disengagement is re-framed as a developmental issue involving nurture of more productive student predispositions and learning identities through systematic, theory-based instructional design. Moving toward a curiosity mindset would feature teachers and students demonstrating a capacity for uncertainty, or ambiguity tolerance (Litman, 2010), and an evidenced belief that this uncertainty is the foundation of advancing understanding and growth rather than a base for the retreating feeling of becoming stuck in feelings of discomfort. At a practical level, such a shift would entail creating places of deep engagement and springboards for student development of productive epistemic predispositions.

As part of a shift toward a curiosity mindset, students would also come to know these feelings and responses to knowledge as natural and productive elements of their learning identity that should be stoked and supported.

Embedding the class with an awareness of some of the architecture of curiosity would enlighten students to be alert and conscious of it when they are in the process, thus more likely ingraining it within the students' sense of self. Making students and more aware of curiosity would empower students to cultivate a learning identity that could enable them to transform their levels of engagement in school.

Throughout these processes, teachers can support students through modeling their own curiosity, engaging with content specific mystery (Leslie, 2015), nurturing it in students through encouraging feedback, and buttressing student efforts through targeted instruction that neither leaves the learner stranded in too wide of a knowledge gap, nor bored in too narrow a space. This might dislodge the teacher from the front of the room. Students will begin crafting elements, or at least making connections to the curriculum which require the absence of "curiosity suppression" in the form of abandoning uncertainty or limiting behavior working to close a knowledge gap (Jirout et al., 2022). Supporting academic risks and avoiding hemming in adventurous thinking with dismantling criticism or deflating appeasement enacts curiosity inducing approaches and enables teachers to foster a sense in the students that in this classroom our learners are celebrated for their curiosity identities. Such a shift toward the promotion of a curiosity mindset in students is essential for achieving the lofty yet highly elusive goal of interest-sustaining education.

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