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Fostering a growth mindset in higher education for inclusive learning for all

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Abstract

This article aims to encourage educators and universities to explore interventions and practices that cultivate a growth mindset to reduce inequality in the academic success of students from disadvantaged socioeconomic backgrounds and ethnic or other minorities, especially in STEM. Universities invest significantly in closing the achievement gap, particularly for such students. Disadvantaged students who have excelled academically are often labelled ‘gifted’. However, this label may emphasise the importance of students’ innate abilities over cognitive ones. Furthermore, it may foster fear of failure and lead to avoidance of challenges and lack of efforts, concealing the lack of understanding to retain the ‘gifted’ image, and create significant barriers to learning. As student diversity increases, pedagogical approaches must evolve accordingly. This article investigates ways to inspire students to remain motivated about their STEM subject and discusses ways to cultivate a growth mindset, factors influencing students’ mindsets, recent criticisms of the growth mindset approach, and the role of learning development in fostering a growth mindset. When faculty and students embrace the idea that intellectual abilities can grow through diligence, determination, and correct strategies, they can transform how educators approach learning and help shift the focus away from content delivery to active and transformative learning.

Keywords: growth mindset; equality; diversity and inclusion; STEM; higher education.

Introduction

Students' beliefs about their competence, intelligence, and skills play an important role in their learning experiences, engagement, performance, and reactions to setbacks. Therefore, understanding how students develop their mindsets, particularly during university studies, is important. Additionally, students must be supported in realising the power in perceiving challenges as opportunities for future growth and that intelligence is malleable and skills can be developed.

A growth mindset refers to the belief that intellectual ability can be developed (Dweck, 2017; Dweck and Yeager, 2019). Today, universities make significant resource investments that help close the achievement gap, especially for students from disadvantaged socioeconomic backgrounds and ethnic minorities who often face challenges when pursuing a career in STEM (Science and Technology Committee, 2023). These students are required by their circumstances to adopt a fixed mindset, that is, believing themselves to be unable to achieve their aims and succeed (Claro, Paunesku and Dweck, 2016). However, as Dweck highlights, 'the view you adopt for yourself profoundly affects the way you lead your life. It can determine whether you become the person you want to be and whether you accomplish the things you value' (2017, p.11). Simultaneously, developing a growth mindset helps students cope with setbacks and embrace and develop success strategies, perseverance, and resilience. Hence, higher education (HE) must prioritise the development of a growth mindset among students.

Growth mindset and attainment gaps in higher education

Universities and policymakers are exploring ways to reduce the inequality in academic success between advantaged and disadvantaged students. Certain UK universities (Office for Students, 2022) are exploring interventions focused on closing the attainment gap for Black and ethnic minority students and students from low socioeconomic backgrounds. Universities must commit to changing, motivating, empowering, and supporting educators and students to overcome these biases. Considering the concept of a growth mindset in institutional plans, universities can develop research-supported principles and interventions and tailor them according to institutional and departmental needs and cultures.

Researchers such as Campbell (2020) argue that growth mindset interventions must focus on developing collective mindsets in learning environments instead of developing individual students. By creating learning environments that support and sustain growth mindset beliefs and behaviours, the same can be further developed for students.

The results of a large-scale study involving more than 90% of incoming first-year students at a large Midwestern public university in the US suggested that a growth mindset and interventions for belonging can improve disadvantaged students' academic outcomes (Broda et al., 2018). Light-touch interventions, such as 'a series of eight weekly sessions in which students learned about the function of the brain and how the brain could become stronger by taking on challenges' (Broda et al., 2018, p.319), demonstrate positive results for racial and ethnic minorities and first-generation students from low-income families; however, they offer unique implementation challenges (for example, careful customisation to institutional context). Further interventions may include workshops (for example, on neuroplasticity and self-efficacy, task value, and self-regulation), self-administered online modules (on neuroplasticity, trying new strategies, and seeking help from experts), and brief interventions in the form of classroom writing assignments (Casad et al., 2018; Bedford, 2017).

Further, Bedford (2017) suggests that the impact of prior attainment on students' motivation for learning science could be overcome through effective strategies and a suitable learning environment to enhance a growth mindset. To motivate students in STEM, educators and universities must show them the value of the content and skills being learnt and their relevance in everyday life. Hence, careful consideration of curriculum design and delivery plays an important role.

Developing interventions and inclusive teaching practices that normalise failure could build positive relationships and an effective learning environment where all students feel a sense of community and belonging. To produce graduates with successful careers in STEM, students must understand that failure is a productive part of the learning process. Open communication about failure can reduce negative stigma. Promoting collaboration among students, instead of competition, could reduce anxiety, provide an inclusive and supportive environment, and foster a sense of community in classrooms. Creating opportunities for students to explore, experiment, and take risks during their learning journey would help them normalise failures, cope with uncertainty, and become successful

in STEM careers. Processing failure together with students transforms fear into a learning opportunity in a safe environment. The results of a randomised trial of a growth mindset and belonging intervention at a large public university (in the US) indicated that light-touch interventions may be a minimally invasive approach to improving academic outcomes for disadvantaged students while offering unique implementation challenges (Broda et al., 2018).

Disadvantaged students and mindsets

Disadvantaged students, when they excel and manage to secure a place at university despite all the barriers and challenges they have faced (see Clarke and Thévenon, 2022, for examples), are often praised as ‘gifted’ by society or by their communities; and this is supported by government policy's terminology. However, ‘gifted’ implies effortless achievement, which is inextricably linked to the view that intelligence is not malleable and, hence, that people who make an extra effort are deficient. Such labels emphasise the importance of innate over cognitive ability in students and foster a fear of failure. Consequently, students often avoid challenges (Campbell, Craig and Collier-Reed, 2020) and cease making efforts to conceal a lack of understanding and retain their ‘gifted’ image, further creating significant learning barriers.

Research, using a nationwide sample of high school students from Chile, found that students from low-income families were less likely to have a growth mindset than their peers from high-income families (Claro, Paunesku and Dweck, 2016). This suggests that students’ mindsets may aggravate the effects of economic disadvantages at a systemic level. Hence, interventions to increase growth mindsets are most beneficial for students from low socioeconomic backgrounds and minorities.

Factors influencing students’ mindsets

Institutional, departmental, and educator teaching approaches are key to promoting a growth-oriented mindset. Educators’ approaches and teaching practices are influenced by their understanding of how learning occurs. If students believe that STEM subjects are difficult, they may not be able to develop autonomy in learning, self-efficacy, or the belief

that they can progress and further their intelligence. Instead, task value must be emphasised in classes so that students feel that the content and syllabus are significant and relevant to them. The current emphasis on achievement in formal education and students' abilities creates a culture that significantly emphasises success, in which students do not want to take risks because of fear of failure (Cetin, Ilhan and Yilmaz 2014; Heyd-Metzuyanim, 2015; Dweck, 2017; Simpson and Maltese, 2017).

Results (Canning et al., 2019) from a longitudinal US university-wide sample (150 STEM professors and more than 15,000 students) revealed that the racial achievement gaps in modules taught by educators who leaned toward a fixed mindset were twice as large as the gaps in modules taught by educators who leaned toward a growth mindset. Educators' mindset beliefs predicted student achievement and motivation beyond any other educator characteristics, including ethnicity, race, gender, age, teaching experience, and tenure status. These findings suggest that educators' growth mindset beliefs have significant implications for the student experience and achievement of underrepresented minority STEM students. If more educators create growth mindset cultures in their classes, students' motivation and engagement in STEM could increase, possibly inspiring more underrepresented ethnic/racial minority students to pursue careers in STEM. Canning et al. (2019) argued that even a small increase in STEM module grades could mean a difference between completing the module, continuing to receive funding, and/or advancing toward a STEM degree. This occurs when learning development plays an important role. Mason, Weeden and Bogaard (2022) argue that an effective starting point for educators is learning about a growth mindset and focusing on actively generating their own knowledge toward an all-encompassing goal of applying such mindset concepts in their module assessment while mentoring students. Ensuring that learning development plays an active role in this is crucial (for example, by providing practical resources or examples of good practice and support).

In classroom contexts, students rely on lecturers' feedback regarding their performance and competence. STEM classrooms are often perceived as difficult and competitive learning environments and, in these environments, students may be extra vigilant to lecturer's cues that may suggest that 'students might not have what it takes' (Muenks et al., 2020, p. 2120) to succeed in a specific module or course. Muenks et al. (2020) examined how students' perceptions of their professors' mindsets predicted their performance, engagement, and experiences in STEM classes. They found that students

who perceive that their professor upheld fixed-mindset beliefs anticipated and experienced more psychological vulnerability in those classes. Students reported less belonging in class, greater concerns about their evaluation, greater feelings of being an imposter, and greater negative effects.

Learning development could use such findings to support and educate university faculty about how faculty mindset beliefs and behaviours affect students' learning experiences.

Flanigan et al. (2017) studied how students' academic motivation and engagement may influence the development of their beliefs. Their study suggested that students' motivational traits influenced their mindsets. Researchers (Limeri et al., 2020) have identified five factors that may influence upper-level STEM undergraduate students' mindsets: a) prior academic experiences, b) observing their peers overcome academic struggles, c) logical deductions (reasoning from scientific principles), d) societal cues (common misconceptions about intelligence and IQ), and e) formal learning. Educators can leverage these factors to design and evaluate interventions for student success.

Recent criticism of the growth mindset approach

Recent criticisms of the growth mindset approach question whether such interventions work and whether mindsets predict student outcomes. Yeager and Dweck (2020) explained that mindset is a theory about responses to challenges or setbacks rather than academic achievement. It proposes that situational attributions and goals are fostered by more situation-general mindset beliefs about intelligence instead of being isolated ideas.

Mindset associations with outcomes are often stronger among individuals who face academic setbacks or challenges. However, the association between mindset and achievement cannot be condensed into a single effect size. There is also unexplained heterogeneity across and within cultures (Yeager and Dweck, 2020). These details are crucial for the effectiveness of growth mindset interventions. Such interventions can be well or poorly crafted. Further research on growth mindset can help us understand classroom contexts and how they may be changed so that interventions can be more effective (Yeager and Dweck, 2020).

The role of learning development in fostering a growth mindset

The controversy that teacher-focused growth mindset interventions have not yet been effective offers an opportunity to explore the crucial role of learning development in guiding, supporting, and enhancing educators' practices in ways that affect student perceptions and outcomes. New research is necessary to explore this while building on recent studies reporting on the role of teachers' mindsets and respective practices in student achievement (Yeager and Dweck, 2020). Such research will illuminate how best to design and implement academic professional development that focuses on supporting educators to help students develop a belonging and growth mindset and improve outcomes and student experiences.

Researchers (for example, Boyd, 2015; Baldwin et al., 2020) argue that the growth mindset approach is a powerful concept in learning and educational development. Educators and HE institutions play an important role in creating a culture that supports and promotes a growth mindset and sense of belonging. To achieve this, learning development can prepare and equip faculty and help in fostering a growth mindset culture (including how they provide feedback to students). When faculty and students embrace the idea that intellectual abilities can grow through diligence, determination, and correct strategies, they can transform how educators approach learning and help shift the focus away from content delivery to active and transformative learning.

Conclusion

This study discusses the cultivation of a growth mindset to reduce inequality in academic success among students from disadvantaged backgrounds and ethnic or other minorities in HE, particularly in STEM subjects. By focusing on improving the current environment and considering factors that influence students' mindsets, educators can foster a growth mindset that may reduce the inequality in academic success between advantaged and disadvantaged students. Developing interventions and inclusive teaching practices that normalise failure could build positive relationships and create effective learning environments where all students feel a sense of belonging. Learning development plays a central role in achieving this.

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