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How Mindsets Impact Learning

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Literature Review Presented

in Partial Fulfillment of the Requirements

For the Degree of Master of Education

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Abstract

Students who believe that their abilities and intelligence can grow and change are able to shift their mindset (fixed vs growth). This literature review evaluates how mindsets impact both teaching and student learning. A teacher's role in providing feedback and implementing strategies to help build a growth mindset classroom culture plays a significant part to this review. Many studies have taken place over the years that bring about some opposing viewpoints, but after significant review, most of the data from studies has indicated positive profound impacts on how mindsets impact learning. Future research suggests to continue studies on how teachers provide feedback, the group size, and teaching practices.

How Mindsets Impact Learning

Mindset is a concept that recently has been increasingly visible in classrooms all over the world. More specifically, the concept of growth mindset has taken the education world by storm. Student and teacher mindsets impact learning (Dweck, 2006). There are two types of mindsets that everyone experiences. The first type is a growth mindset, when you believe that your skills and intelligence can grow and change (Dweck, 2006). The second type is a fixed mindset, when you believe that there is no room for growth and your skills and intelligence are set (Dweck, 2006).

Before the terms growth mindset and fixed mindset were coined, the mindset concept was once known as the implicit theories of intelligence; entity versus incremental theory (Davis, Burnette, Allison, & Stone, 2010). The entity theory or what is now referred to as the fixed mindset, is the belief that a person's ability, skills, and intelligence are fixed traits. The incremental theory, or better known today as the growth mindset, is the belief that a person's ability, skills, and intelligence can be improved.

Dweck (2006), a distinguished Stanford University psychologist, spent decades researching the achievement and success of people, which led to her clever idea of mindsets. This idea has led schools to take on this concept and instill the growth mindset in classrooms. Dweck's research has proven how powerful the mindset is for success and achievement (2006). She -also took on a special interest on how mindsets impact learning.

It is important for teachers and students to understand the various mindsets and how they can impact both teaching and learning within the classroom. According to Dweck (2006), learning behaviors are influenced when students understand their mindsets. As educators, it is critical to help students understand that their brains are malleable and can be stretched. That is,

students understand that they have the ability to change and grow.

Teachers can build a growth mindset culture in their classroom that helps students develop and approach learning that will lead to achievement and success (Robinson, 2017). Teaching about brain development and neuroplasticity, creating study tools that incorporate active learning methods, normalizing mistakes and failure, reframing language when communicating expectations and feedback, practicing positive self-talk, using data and reflection to set growth-oriented goals, and involving students in setting goals and tracking progress in order to invest them in their own learning process are all growth mindset strategies that teachers can implement in their classrooms (Robinson, 2017).

The concept of growth mindset has been around for decades. Over recent years though, teachers and schools have taken on this trend within the world of education. The growth mindset provides teachers and students with the skills to grow as learners (Dweck, 2006). The purpose of this literature review is to show how mindsets impact learning. The research will address the power of the growth mindset, how critical it is for students and teachers to understand their mindsets, how educators can influence student mindset, and suggestions for teachers in their classroom.

Review of the Literature

Mindset is not a new concept in education. In fact, decades ago, it was known as implicit theories of intelligence (Davis et al., 2010). Two different mindsets that came about through the implicit theories of intelligence were the entity theory and the incremental theory. The entity theory can be described as the belief that your skills and intelligence cannot change or grow (Guthsall, 2013). The incremental theory is the opposite with beliefs that skills and intelligence can develop and improve (Guthsall, 2013).

Leading researcher on this trend, Dweck, developed the terms that are more familiar in education today as the fixed and growth mindset. Dweck describes these mindsets as two different worlds. The first world is a world of traits that are fixed (Dweck, 2006). The world of a fixed mindset can lead to many different thoughts. When someone is in a fixed mindset, they focus more on what people think and how they look. When mistakes or failures happen, people with a fixed mindset do not see that as an opportunity, they see that as a setback (Dweck, 2006). Similar to failure and mistakes, within a fixed mindset effort is seen as a negative thing. People often think they are not as smart when more effort is needed.

The second world that Dweck describes is a world of traits that are changing qualities (Dweck, 2006). That is, people with a growth mindset, believe that their qualities can be stretched. It's the belief that there is always something new that can be learned. When in a growth mindset, failures and mistakes are used as a learning opportunity. Effort is looked at as a way to improve or get better. The power behind the mindsets, is that they can be changed.

Mindset studies have shown how the fixed mindset versus the growth mindset has had an impact on learning throughout the years (Davis et al., 2010; Dweck, 2006; Dweck & Yeager, 2019; Hochanadel & Finamore, 2013). Dweck (2019) mentions that even after 45 years of

research on the growth mindset, there is still too little known about how to best develop a growth mindset in people. Many studies have examined how learning is impacted by feedback/praise, performance goals, motivation, mistakes, effort, challenges, and failures.

Feedback and praise. Educators often do not realize the impact that feedback and praise can have on student mindsets. Dweck's research and study demonstrated the difference in student mindset based on praise and feedback students received. She and Claudia Mueller studied a group of 5th grade students by giving them a puzzle task (Mueller & Dweck, 1998). They divided the students into two groups. After finishing a task successfully, group one received praise and feedback based on their intelligence and ability (Dweck, 2006). While the praise and feedback motivated them to do well, they would choose an easier task to continue receiving that same praise and feedback. This played a role on their view of their intelligence and abilities, and their main focus was on looking good.

The second group also succeeded with their first task in the puzzle, but their feedback and praise focused on their effort (Mueller & Dweck, 1998). What Mueller and Dweck (1998) noticed was the difference between the group's reactions to the tasks. The second group chose more challenging tasks because of their effort-praised feedback. This study showed that when students are given praise and feedback based on their effort, their learning and motivation is impacted.

Not only are students' mindsets impacted by praise and feedback, but so are teachers' mindsets. Rattan, Good, and Dweck (2012) studied educators that held a fixed mindset (entity theory) and how they responded to their abilities versus those that held a growth mindset (incremental theory). Data indicated that in some situations, teachers with a fixed mindset provide praise and feedback that does more harm than good for students and their growth. In

these situations, teachers were not intentionally trying to have a negative impact on student outcomes, but because of the lack of understanding of their own fixed mindsets, feedback and praise provided often had characteristics of what one would expect with a fixed mindset. An example from their study found that teachers with good intentions on providing feedback and praise often discouraged their students by providing comforting feedback that let their students to believe they could not grow in their skills and abilities (Rattan et al., 2012). Comforting feedback can be provided; however, it needs to be provided in a way that encourages students to improve.

When receiving praise or feedback, students can react differently based on their mindset (Mueller & Dweck, 1998). When students are in a fixed mindset and receive feedback or praise, they often get defensive. Students have also shown to take feedback and praise personal when in a fixed mindset. While in a growth mindset, students will look at praise and feedback as something positive. Students will use that praise and feedback as a learning opportunity and as a way to grow in their learning. The way in which feedback is given is critical and impacts teaching and learning.

Performance goals. Goal setting can have a profound effect on mindsets. When students with a growth mindset engage in setting their own performance goals, their main concern is about improving their learning and attaining their goals (Smith et al., 2018). Because they want to reach their goals and show improvement, they focus on the process of getting better and reaching their performance goal. Students in a fixed mindset often also want to reach their goals, however, their mindset is more focused on how close they are performing to the end goal. They become performance driven and not focused on the process of getting better.

Teachers that hold a growth mindset, are more likely to be goal oriented which creates a classroom environment set up for optimal teaching and learning (Smith et al., 2018). Research

has shown through the years that students that perform low academically typically continue to perform below grade level when their teacher has a fixed mindset about their student(s) abilities and skills. Teachers that have a growth mindset often see students that perform below grade level show more progress towards their performance goals (Smith et al., 2018).

Though some students might not be able to outperform their peers, they can outperform their previous performance goals (Martin, 2012). When attention is focused on performance goals and progress monitoring, there is success with academic achievement. The beauty behind growth-oriented goals is that it holds a level of individual competition or challenge for students to outperform their previous performance (Martin, 2012). Growth is especially seen when students take the lead in their goal setting to understand what it is that they are striving to achieve. They take on more responsibility of their own learning and growth.

Motivation. Based on the mindset that is present, motivation becomes an important factor of academic success. Motivation is extremely important when it comes to learning and obtaining information (Ng, 2017). The concept of motivation is very similar to the approach of the growth mindset. Our brains are malleable which means they can stretch and grow throughout our lives (Ng, 2017). When students understand this while learning about their mindsets, motivation is positively impacted.

Research has shown that motivation is affected based on the mindset that students hold whether it be a fixed mindset or a growth mindset (Hochanadel & Finamore, 2015). In 2013, a seventh-grade math teacher by the name of Duckworth was noticing some trends in her classroom. She noticed that her higher achieving IQ students did not have the top grades in her class compared to her lower IQ students. She expected those with higher intelligence to be the top performers in the classroom, however, the students with lower IQ scores were some of her

best performers (Hochanadel & Finamore, 2015). She decided she wanted to explore this more from a motivational perspective. One of the common indicators of success with her lower achieving students was grit (Hochanadel & Finamore, 2015). Duckworth (2013) describes grit as individual long-term goals and passions that are maintained through hard work and effort.

Educators can teach students how to develop a growth mindset along with grit by internalizing motivation so that they maintain their long-term goals and passions (Hoachanadel & Finamore, 2015). Through Duckworth's (2013) research, data indicated that educators cannot focus on the grades, but rather they should shift their focus to grit which creates that internal motivation within students to continue to engage in personal goals and passions.

Mistakes. Mistakes are often viewed in society as something negative. When in a fixed mindset, students dislike making mistakes and will do anything to avoid making a mistake (Schroder, et al., 2017). Students with a growth mindset will use their mistakes as a learning opportunity. In a study that looked at neural evidence for enhanced attention to mistakes among school-aged children with a growth mindset, data indicated that teachers can hinder the learning process by trying to comfort them when they make mistakes (Schroder et al., 2017). Although it is not intentional when trying to comfort students after making mistakes, this process can distract students from understanding their mistakes and learning from their error.

Having a growth mindset when a mistake happens, shows greater brain activity and growth (Moser et al., 2011). Students begin to shift their mindsets when they understand how mistakes benefit their learning. Students then become more willing to struggle and take on challenges when this learning occurs (Moser et al., 2011). Improved academic performance has also been shown to increase when mistakes have been made (Tirri & Kujala, 2016).

One common theme that Dweck (2019) took to notice to in her research is how students respond to mistakes. High achieving students are praised so often, making mistakes is something they try to avoid. Their motivation is then set back because they try so hard to not make a mistake. Teachers need to focus their praise and feedback on the students' effort. Dweck's (2006) work around the growth mindset empowers students to embrace mistakes through their process and effort.

Effort. Similar to motivation, effort also plays an important role on mindsets and has a big impact on learning. Students believe that effort is something that is important to their learning when in a growth mindset (Martin, 2012). Opposite to that, students look at effort as something you must do more of when you are not good at something. Putting in more effort is viewed negatively. Effort and performance goals can often go hand in hand. A student's effort and attention impact their self-competition with their previous goals (Martin, 2012).

Not only can students hold a fixed mindset on effort, but teachers can as well. Teachers can often believe that their effort cannot help their student(s) make progress when in a fixed mindset (Smith et al., 2018). Duckworth (2013) created a formula for achievement within her classroom study. Talent times effort equals skill, which leads to skill times effort to equal achievement. Effort appears twice in her formula, which signifies the importance that effort has in reaching full potential for achievement. When students have a purpose for their efforts, they are more likely to adhere to them (Duckworth, 2013).

Challenges. Challenges can be addressed in two differing ways when it comes to mindsets. When in a fixed mindset, challenges are difficult. Those with a fixed mindset often back down to a challenge because they do not want to make a mistake, fail, or even put in the effort to complete the challenge. People who display a growth mindset, see those challenges of

opportunities to overcome an obstacle (Fitzgerald & Lauren-Fitzgerald, 2016). It is an important note that growth mindsets and fixed mindsets are not permanent states of mind. Individuals fluctuate between the two multiple times a day. However, when in a growth mindset, individuals are more likely to not give up on a task when feeling the pressure of a challenge. Those with a growth mindset will confront challenges head on and persist through the task (Dweck, 2006).

Students with grit overcome their challenges by believing that they can learn more and not give up (Duckworth, 2013). Through Dweck's (2006) research, she has found that students that hold a growth mindset in the classroom are engaged and motivated when presented with challenges. They appreciate challenges and look forward to solving them. On the other side of the spectrum, students with a fixed mindset will view those same challenges as a roadblock that reflects their intelligence and talent. Dweck (2006) noticed that students in a fixed mindset will avoid those challenges and stay within their comfort zone.

Failures. Failure is a difficult concept for anyone, whether in a growth or fixed mindset. In the world of fixed mindset, failure is looked as not growing to one's fullest potential (Dweck, 2006). When having a fixed mindset, failure can be viewed as not being smart or talented. Growth minded people will look at failure as a problem to face head on, deal with, and learn from it even though it is difficult (Dweck, 2006). When faced with failure, the important thing is to process what did not work and to figure out what needs to change in order to move forward.

Dweck (2006) conducted a study with seventh grade students to understand how they respond to academic failure. Students who held a growth mindset mentioned that they would study harder if they failed, whereas students with a fixed mindset that said they would not put any more effort in studying harder for the next test. Their thoughts focused on not having the

ability to perform, so they were not going to waste any time putting forth more effort into a lost cause. Even more surprising, this study indicated that students with a fixed mindset would consider cheating or finding other students who performed at their level or worse to boost their self-esteem (Dweck, 2006).

Failures can be hard to cope with at any age. As educators it is important to help students understand that failures do not define them. In the classroom, when working in cooperative groups, students are more likely to cope with their failures and develop their grit with the help of their peers (Duckworth, 2013). Teaching children about the growth mindset and fixed mindset not only empowers them, but it can in turn help students to learn to try new things, even if they fail (Couros, 2015).

Ripley (2013) explores how other countries have gotten radically smarter throughout the years. One area she touches on throughout her book is failures. In Poland, she found that failure happened often, though students worked through the failure to learn. Failure in American schools is found to be demoralizing to students, and it is something they strive to avoid (Ripley, 2013). In Korea and Finland, Ripley (2013) found that students had the freedom to fail and that they simply could not do the work without failure. Educators worldwide could benefit from taking note of the successful data from these countries. This data shows how meaningful a classroom set up with such freedoms from failure for students can help them to learn how to work through failures and to turn these situations into learning opportunities.

Academic achievement. Growth mindset intervention has been proven that mindsets can be changed, and students' academic achievement can be improved (Zhang, Kuusisto, Tirri, 2017). A student's mindset can predict so many features to their achievement, including academic, effort, and motivational (Zhang et al., 2017).

Student's effort and ability that is valued are more likely to succeed (Hochanadel & Finamore, 2015). Duckworth, a researcher of motivation and growth mindset, developed the term grit, which means perseverance and passion for long-term goals (Hochanadel & Finamore, 2015). When teachers show students how to persevere, a growth mindset begins to develop, which improves their grit to overcome the struggle (Hochanadel & Finamore, 2015).

According to Dweck, Cohen, and Lin-Siegler (2016), motivation takes place throughout the entire learning and academic achievement process. Many questions that students ask themselves before investing in their learning are: "Do I belong here? Does my teacher respect and understand me? Can I trust my teacher? Can I be myself in this setting?" (Dweck et al., 2016). Once students understand the answers to these questions, their beliefs about their abilities is impacted along with their motivation.

Growth Mindset in the Classroom. Teachers that build a culture around the growth mindset, will see a drastic change in their students' approach to learning, as well as, a change in their work habits (Robinson, 2017). According to Dweck (2006), when students believe that their skills and abilities can change and grow, they will more than likely put in more effort into their learning.

Growth mindset implementation not only impacts a teacher's classroom but will benefit the entire school. It improves student problem solving skills and collaboration skills among peers (Kiger, 2017). Understanding the growth mindset takes practice and it is not something that happens overnight.

The key for teachers to create an engaging classroom is by utilizing growth mindset strategies that will enrich students learning experiences (Barankin, 2015). Adopting a growth mindset in the classroom can be achieved through instructional practice and reinforced through

assessment and feedback (Masters, 2014). An online program called, Brainology (Mindset works, 2009), provides teachers with explicit instruction around the growth mindset. Another way for teachers to foster the growth mindset in their classroom is through indirect teaching (Barankin, 2015). This is where a teacher's feedback on the student's process impacts their learning.

Brain development and malleability. Robinson (2017) provides great tips for teachers to help foster a growth mindset culture in their classrooms. It is important for students to understand their brain development and neuroplasticity (Robinson, 2017). Teachers can explicitly teach how the brain changes while learning. When students understand that their brain can grow and rewire, they are more likely to become more interested in learning (Robinson, 2017). An important start when teaching students about their mindsets is helping them understand that it starts with their brain development and malleability (Robinson, 2017). The brain can stretch and grow which is important for students to understand when learning about the growth mindset. By teaching students about the brain's ability to grow and change, motivation can be enhanced. This motivation can increase as students begin to take more interest in their learning as they understand that their own individual skills and abilities can improve (Robinson, 2017).

Moser, Schroder, Heeter, Moran, and Lee (2011) conducted a study to research neural mechanism linking growth mindset to mistakes. They found that when a person makes a mistake, synapses fire that sends signals to parts of the brain where learning occurs (Moser et al., 2011). This neural evidence is important for students and teachers to pay attention to when mistakes are made and how to rebound from those mistakes (Moser et al., 2011).

Mistakes and failures. Taking risks, stepping outside of comfort zones, making mistakes, and failing is difficult for students of any age. A great strategy for educators is to be open with their own mistakes and failure in the classroom. Teachers that have a growth mindset, will not only openly address their own mistakes and failures to students, but also will model for students how these situations can turn into great learning opportunities (Robinson, 2017). In one instance, a classroom created a bulletin board of failures that the teacher also contributed to during the year (Robinson, 2017). This assured students that they were in a safe learning environment and that mistakes or failures were not seen as bad, but instead as opportunities to learn and grow the brain. This bulletin board helped students to feel comfortable with taking risk within the classroom. The internet is also a resourceful tool for teachers to use to share videos about failures and mistakes in order to help students understand that it is a part of growing and learning from experiences.

Reframe language. The way in which teachers address students in their classroom helps develop a growth mindset (Robinson, 2017). It is important for teachers to set high expectations in their classroom. When students are learning, they should understand the teacher's expectations on what effective learning looks like each and every day. Students should understand how to ask questions, how to use study tools and resources effectively, how to be productive, and how to be accountable for their personal learning on a daily basis (Robinson, 2017). Responding and providing feedback should be focused on the process so students understand that through hard work and effort, they can achieve the desired outcome.

Growth mindset talk. Educators need to allow time for students to practice growth mindset talk. This allows students to understand that they have the ability to shift their mindset from fixed to growth. Putting up a poster with mindset statements is a great reminder for students

when they are stuck in a fixed mindset (Robinson, 2017). The following are common phrases that can be replaced with growth mindset statements. Students often find themselves thinking they are not good at something. Encourage them to look for what they might be missing. When a student gives up, shift their focus to using strategies to figure it out. Making mistakes is hard for students. When they mention they are afraid to make a mistake, help them understand what they can learn from the mistake by failing. Rigorous learning can be hard and challenging. When students express they do not know how to do it, have them replace that statement with, yet. For example, if a student says, “I cannot add two-digit numbers”, replace that statement with “You cannot add two-digit numbers, YET.”

Data and progress monitoring. Students can become motivated when they are given opportunities to track their own progress (Robinson, 2017). Tracking personal progress allows students to see their growth overtime, which in turn, helps them to understand that it is through their effort and hard work that they are making gains. Goal setting is another great strategy to use in classrooms to promote growth mindsets. Goal setting allows students to evaluate and reflect on their progress. Showing students their previous scores will guide them in the setting new goals of where they want to be which increases their motivation and effort.

According to Smith et al. (2018), when it comes to teacher and student mindsets, a teacher must communicate expectations through directions and feedback that is goal oriented. Teacher comments can influence the student’s ability while setting goals and progress monitoring. The feedback that students receive from teachers and shapes a student’s mindset regarding their progress (Smith et al., 2018).

As educators, it is important to help students understand where they are at now, where they have to get to, and the steps they need to take to get to their goal (Dweck, 2016).

Teachers need to help their students understand their goal(s) and what is required of them. Assisting students while they develop their mindsets and practices will help them on their pathway to academic achievement (Dweck, 2016). An important part of the journey is helping students understand that their abilities can change.

Assessing growth overtime. Masters (2014) describes a growth mindset approach to assessing learning overtime and providing feedback to those outcomes of learning. This approach takes time, support, and effort by both teachers and students (Masters, 2014). Assessing growth overtime helps set learning targets which makes the learning individualized, realistic, and challenging. When learning targets are set, progress monitoring can take place to show students and teachers growth over time. Masters (2014) then states that under a growth mindset, the progress that each student makes defines their success.

When teachers are assessing under a growth mindset, their beliefs are not about their year-end level expectations, but rather the focus is on the individual growth that took place throughout the year. A teacher with a growth mindset will look at the capabilities of all the learners and how each student is at a different point in their learning (Masters, 2014). Progress monitoring and assessing growth overtime helps students to better understand the effort that goes into their learning. Students gain confidence and motivation as they make progress toward their learning targets, especially when they overcome challenges along the way.

Assessment plays an important role in learning. Masters (2014) believes that the ways in which success and failures are reported send powerful messages to students about their learning. It is important that there is a balance between too easy and too challenging (Barankin, 2015). When assessments are more authentic and based on individual student progress, motivation and engagement increase in students.

Teachers' mindsets. Differing mindsets amongst teachers and their students plays such an important role in determining their instruction, expectations, and relationships with their students (Brooks & Goldstein, 2008). Effective educators believe that their students want to be successful, and if they are struggling, teachers need to question how they can change their instruction to meet the needs of their students (Brooks & Goldstein, 2008). Teachers need to understand that one of the biggest hurdles to student learning is the fear of making mistakes, feeling embarrassed, or humiliated (Brooks & Goldstein, 2008).

An example of how a teachers' mindset affects student learning can be understood by the following scenario (Brooks & Goldstein, 2008). Jimmy, a student in the seventh grade, struggles in school. There is one teacher that would describe Jimmy as a lazy student and unmotivated. Another teacher had a differing view of Jimmy's behavior. She believes that he struggles with his learning and does not feel safe at school. Both mindsets play a huge impact on Jimmy's learning. His mindset and academic achievement are different in each of their classrooms due to their mindset about him. The judgements and mindsets that teachers hold on themselves and their students influences teaching practices, relationships with students, and classroom or school culture (Brooks & Goldstein, 2008).

Teachers have a lifelong effect on their students and their mindsets (Brooks & Goldstein, 2008). It is critical that teachers understand the unique situation they are in and the lifelong impact they have on students' lives. Even when students seem unmotivated or off task, they want to learn and succeed in the classroom. The mindset of an effective teacher would believe students have a desire to learn and figure out the best way to teach them through the growth mindset.

At the beginning of the school year, a simple exercise that teachers can do to foster a growth mindset in the classroom is to meet with each individual student and as the following

questions: “What are you interested in? What do you like to do? What do you think you do well?” (Brooks & Goldstein, 2008). Also, the fear of failing or making mistakes must be addressed at the beginning of the school year. Teachers can be the first to share about fears, failures, and mistakes to show students that people of all ages can be affected by obstacles, but they can be used as learning experiences. This openness invites students to begin to share and open up about their thoughts and feelings about fears and mistakes. Taking risks and challenging themselves in the classroom will begin to happen when students become more motivated to learn (Brooks & Goldstein, 2008).

When teachers have a fixed mindset about ability, they tend to point out a student’s performance over the process (Smith et al., 2018). Most often when teachers hold that mindset about their student, they also hold that mindset about themselves, and their teaching practices are negatively impacted. Teachers then believe they cannot help their students improve and will then direct their attention to higher-achieving students (Smith et al., 2018). Research has shown that low performing students continue to struggle when their teacher holds a fixed mindset about their ability (Smith et al., 2018). When a teacher holds a growth mindset with lower achieving students, they are more likely to grow as learners.

Gutshall (2013) researched teachers’ mindsets for students with and without disabilities. When students have a learning disability label on themselves, teachers’ mindsets are impacted. When a teacher believes that ability can grow or change, they are likely to look at the student in the same manner, learning disability or not.

Opposing viewpoints. In a study conducted by Li and Bates (2019), they set out to test the relationship of mindset in response to failure and grades. In all four studies that they conducted, they found little to no evidence that growth mindsets are beneficial when students

respond to failure or school grades. Limitations of this study did suggest the subjects played a factor in their studies. The subjects of this study were Chinese, which can be argued that Chinese students already hold growth-oriented mindsets due to their culture (Li & Bates, 2019).

New research suggests that parents and teachers who hold a growth mindset, often struggle to instill their mindset in their children and students (Haimovitz & Dweck, 2009). It has been found that adult mindsets do not predict the mindsets of their students or children (Haimovitz & Dweck, 2009). After reviewing many studies, a common theme of conflicting growth mindset viewpoints is how the growth mindset is taught and how it often becomes ingenuine. It is considered that adults should be taught how to instill the growth mindset through motivational theories (Haimovitz and Dweck, 2017).

Impact on student learning and teaching. The growth mindset is intended to close achievement gaps (Dweck, 2015). When teachers understand the growth mindset, they will do anything they can to break down any learning barriers. When trying to foster a growth mindset mentality, districts need to provide professional learning for teachers as well. The growth mindset can be used incorrectly, so as educators, it is important to be equipped in this area of learning to help students move forward.

Teachers are preparing students for jobs that do not even yet exist in today's world, and Dweck recognizes that now more than ever, students need to embrace challenges (Dweck, 2016). Teaching students how to apply the growth mindset to their schoolwork has led to an increase in student motivation and achievement. To teach students this mindset, educators must first understand that all people have both mindsets and that everyone can develop their abilities (Dweck, 2016). A growth mindset can motivate students to take on more rigorous learning (Yeager et al, 2019).

Teacher's beliefs about a student's ability can impact student learning. Feedback and teacher comments can directly influence a student's mindset and academic achievement (Smith et al., 2018). Overall, the data is convincing that through mindset interventions, students can change their beliefs about their ability to improve their learning (Brougham & Kashubeck-West, 2018).

When Dweck was a young researcher, she found a passion for learning how people cope with failures (Dweck, 2006). She was then led to study students and watch how they tackled challenges. The data from her study led her to understand how mindset is not permanent and can shift. With educators continuing to learn more about the growth mindset, it has already and will continue to change the area and framework for 21st century learning.

Another part of Dweck's framework and area for 21st century learning is incorporating these findings into teaching and learning. Helping students understand that their brains are malleable, which means they have the ability to grow, change, and reorganize, is essential in promoting a growth mindset (Dweck, 2006). Designing our classrooms to give growth mindset feedback is part of that framework. It's important as educators to praise the process students are engaged in instead of only focusing on the outcome. According to Dweck (2016), every student who wants to succeed, needs to be able to step outside their comfort zone to improve their own abilities.

The research that has been studied on the growth mindset has changed education drastically (Dweck, 2006). Dweck's (2006) theory on feedback and praise encourages students to take on challenges and increase achievement. When students understand that they have the ability to grow their intelligence, they will begin to put in more time and effort, which then leads

to higher achievement. Teacher's practice with growth mindset has shown to have a big impact on students' mindset.

Professional development. There are many strategies that schools can use to implement the growth mindset in classrooms. Through professional development or in-service, the school can have a speaker come to share about the growth mindset (Kiger, 2017). A speaker can help teachers understand what the growth mindset is, how it works, and why it matters. This person would be able to share teacher practices and interventions for teachers to implement in their classrooms and how to ensure students continue practicing the strategies (Kiger, 2017).

Areas for future research. Haimovitz and Dweck's (2017) future work will focus on adult responses to children's setbacks. Their work will make connections on how motivation and adult beliefs are extremely important. Future research should take a look at strategies that adults can use to show children how struggling and failing is part of growing and the learning process. Li and Bates (2019) believe that additional independent studies are needed in the area of growth mindset. Instead of focusing on the learning to change basic ability, they will zone in on the teaching practices such as praise and feedback during testing (Li & Bates, 2019).

Brougham and Kashubeck-West (2018) conducted a study in an urban high school to help students change their beliefs about their abilities. The issue with this urban high school was poor grades, attendance, and graduation rates. Although they saw an increase in mindset shift to more growth oriented, the group of students did not improve in academic grade point average (Brougham & Kashubeck-West, 2018). Brougham and Kashubeck-West (2018) would like to replicate this study but with a larger sample size to determine if the growth mindset can impact grade point average and attendance.

In the study conducted by Smith et al. (2018), they examined a group of undergraduate students and how the teaching of mindset language impacted their performance. Teachers used either growth or fixed mindset comments that either led the groups toward a growth or fixed mindset belief. The results did show the impact of teacher's language on student beliefs; however, they would like to examine this study further. Instead of the teachers being told what feedback to provide, they would like to observe classrooms for mindset language that is currently being used and classify what the comments or feedback sends to students (Smith et al., 2018).

A national experiment revealed that a growth mindset improves achievement (Yeager, et al, 2019). The studies conducted during their experiment showed that growth mindset interventions improved grades in lower-academic achieving students (Yeager et al, 2019). New growth mindset interventions will be areas of future research to continue reviewing how the growth mindset improves academic achievement.

Dweck, Cohen, and Lin-Siegler (2016) have determined that smaller interventions have been validated on the growth mindset scale. Future research needs to focus on a much larger scale of growth mindset interventions to enhance motivation and achievement (Dweck et al., 2016). This seems to be a common theme across studies (Yeager et al, 2019; Dweck et al., 2016; Li & Bates, 2019).

Future research needs to also focus on how teachers convey their mindset beliefs to students based on praise, feedback and assessment practices (Gutshall, 2016). With that, future research should also focus on how students' views of their teachers' mindsets influence their learning and motivation (Gutshall, 2016). Current research is done with smaller groups. Mindset beliefs should continue to be studied among a larger group of teachers. The studies can explore

the impact of a teacher mindset on the same student amongst different teachers and classroom settings (Gutshall, 2016).

Future studies are also needed to examine the effectiveness of teacher mindsets on whether it makes a difference in the real world (Smith et al., 2018). Smith et al. (2018) suggest that rather than dictating the mindset language for teachers, researchers could observe existing language being used in classroom settings to determine the types of mindset messages being sent. This type of research would need to be done on a much larger scale to provide convincing evidence of the type of comments being communicated that is either helpful or hurtful for students (Smith et al., 2018).

Gutshall (2013) had determined that future research is needed to examine teachers' mindsets and the impacts it has on classroom practice, student mindsets, how teacher mindsets impact student mindsets, and how a teacher's mindset can impact student learning. Gutshall (2013) also mentions that it would be valuable to consider the educational practice of special education students and a teacher mindset. Intervention practices should be explored with how it relates to the mindsets (Gutshall, 2013).

Conclusion

Mindsets have impacted learning for many years. Before the growth mindset and the fixed mindset became terms, the concept was more formally known as the implicit theories of intelligence. Several studies have proven that the growth mindset has a positive impact on student academic achievement and success. When students begin to make connections between their abilities, beliefs, and motivation, they will grow as learners.

There has been a tremendous amount of research on this topic and trend in education, however, there are still areas of future work that need to continue. Teacher practice is one area that needs to be researched more when it comes to the growth mindset and how teacher's practices can impact student learning. Teacher practices also look different across various grade levels, so more research across group samples need to be done to show the difference among grade levels and ages of students. In order to continue having positive impacts on student learning through a growth mindset approach, teachers must continue implementing research-based strategies to create a mindset classroom culture.

Future research also needs to focus on how student mindsets can impact academic achievement. A common theme suggests continuing studies on how teachers provide feedback. Group size also impacted the studies which was an indicator to many researchers that could be an area to adjust in future studies.

Students' beliefs about themselves influences their motivation and academic achievement. Every student has the ability to grow and succeed. Student effort and motivation directs them on a positive pathway to learning. Teachers also have the capacity to grow their intelligence for classroom instruction so that student needs are consistently being met.

Challenges and setbacks are encouraged in classrooms because that is what provides an area for growth. Teaching with these concepts in mind takes practice, determination, and commitment.

Dweck's (2006) research on the growth mindset has spread like wildfire in classrooms all over the country. It has helped teachers take a deeper look into student performance and how that relates to their academic achievement. Teaching is most successful when they believe that all students have the capacity to grow and learn. Understanding mindsets, how it works, and why it matters makes a tremendous impact on teaching and learning.

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