Relationship Between Mindset and Self-Efficacy Among Special Education Teachers

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ABSTRACT

This study investigated the relationship between mindset and self-efficacy among special education teachers in Region 2 of Texas. While approximately 500,000 students are provided special education services in Texas public schools, special education students perform significantly lower on state assessments in reading and math than their non-disabled peers. Between 70-85% of special education students in the 3rd and 8th grades in Texas perform below their non-disabled peers on state assessments. Special education teachers must persevere to meet the demands of the special education population. The literature revealed a positive correlation between teachers' mindset, self-efficacy, and student achievement. The purpose of this study was to examine the extent of the relationship between growth mindset and overall self-efficacy, self-efficacy in student engagement, self-efficacy in instructional strategies, and self-efficacy in classroom management among special education teachers in Texas Region 2. The concept of mindset framed this study. Mindset is a coalescence of two theories, social cognition theory and self-efficacy theory. An analysis of the relationship between special education teacher mindset and self-efficacy was conducted. The bivariate Spearman Rho was used to analyze data. The results of this study revealed that there is no statistically significant correlation between mindset and overall self-efficacy, self-efficacy in student engagement, self-efficacy in instructional strategies, and self-efficacy in classroom management among special education teachers in Texas Region 2. However, this study also indicated that positive interventions, mindset changes, and teacher self-efficacy correlate with improvements in student learning because the statistical analysis results show these variables all move in the same direction. These results can assist districts, principals, regional education service centers, and other staff responsible for ensuring successful learning outcomes for special education students.

Keywords: special education teachers, mindset, self-efficacy, south Texas, student achievement

INTRODUCTION

Throughout the State of Texas, special education students in public schools perform low on state assessments. The Texas Education Agency (TEA), in conjunction with the National Center of Intensive Intervention (NCII), indicates that in 2018-2019 on the State Assessment of Academic Readiness (STAAR), special education students averaged between 12%-23% at grade level on the reading assessments in grades 3 through 8. TEA has dedicated a Results-Driven Accountability (RDA) system to monitor school districts' percentages of special education students not meeting grade level on state assessments. The RDA means districts are now held accountable for how their special education populations perform on state assessments (NCII, 2021).

Districts need to provide teachers with professional development that is researched based and can help student achievement for special education students. The potential change that may occur based on this study results is that the district would be able to provide effective mindset and self-efficacy training to teachers. This chapter explains the background for this quantitative study, the problem, the study's purpose, the research questions and hypotheses, theoretical framework, nature of the study, assumptions, scope, and limitations.

PROBLEM AND PURPOSE OF THE STUDY

In 2019, The National Center for Learning Disabilities listed strong sense of self-efficacy in teachers and growth mindset as two of their critical mentalities for general education teachers that can influence students with learning disabilities. Glos (2018) said that teachers must believe that they have the mindset to teach students effectively and showed a significant relationship between self-efficacy student engagement and mindset. Kang (2017) revealed that teachers who scored higher in self-efficacy are more effective in their teaching practices. Vongkulluksn et al. (2021) provided evidence of growth mindset models that, when given to students, showed highly improved mindset in student learning and better achievement scores.

Unknown is the relationship between special education teachers' self-efficacy and mindset in Texas Region 2. Although special education teacher mindset and self-efficacy positively affect student achievement, no study has been conducted in Region 2 of Texas, where special education students perform significantly lower on state assessments in reading and math than their non-disabled peers (Benz, 2019). The purpose of this quantitative, descriptive study was to examine the extent of the relationship between growth mindset and overall self-efficacy, self-efficacy in student engagement, self-efficacy in instructional strategies, and self-efficacy in classroom management among special education teachers in Texas Region 2.

RESEARCH QUESTIONS

To examine the relationship, the following research questions were studied:

RQ_1: Is there a significant relationship between growth mindset and overall self-efficacy among special education teachers in Texas Region 2?

RQ_2: Is there a significant relationship between growth mindset and self-efficacy in student engagement among special education teachers in Texas Region 2?

RQ_3: Is there a significant relationship between mindset and self-efficacy in instructional strategies among special education teachers in Texas Region 2?

RQ_4: Is there a significant relationship between mindset and self-efficacy in classroom management among special education teachers in Texas Region 2?

What is known from previous research is that a common link exists between mindset student engagement and student achievement among high school teachers and general education teachers. What is not known is if the same link exists in the special education realm. With decreasing state student achievement scores, schools across the state are looking to find solutions for growing student achievement in the special education population. Special education teachers face different obstacles than general education teachers. The link between special education teacher's mindset and self-efficacy needs to be studied to fill the gap of research to help districts make impactful decisions that could positively affect the special education population. This study is important in the special education field because of its focus and value to the often-overlooked special education community, use of an easily replicable methodology to apply accepted teacher professional development practice to the overarching mission of Texas educators and provides a special education perspective to improve teaching in special education departments across Texas. The COVID-19 pandemic and lost in-person classroom time further exacerbated gaps in students' academic and social learning. The special education student population, the decrease in student achievement, and the challenges of teaching these unique students will continue to be a critical topic in Texas schools.

This study provides guidance for school districts about effective ways to assist special education teachers. The literature review uncovered a study that examined the predictive relationship between teacher self-efficacy and teacher mindset of high school teachers (Glos, 2018). Bai et al. (2021) found that successful student writers had a growth mindset. Vongkulluksn et al. (2021) found that establishing a growth mindset model course could cause improvements and sustainability in students' growth mindsets. NCLD (2019) and Jaffe (2020) suggested that teachers needed a growth mindset in effective teaching strategies and elevated self-efficacy to be successful. Through the research, what is known is that among high school teacher's student engagement had a signification relationship with teacher mindset. As well as the student and teacher growth mindsets' impact on student achievement.

POPULATION AND SAMPLE

The target population for this study was special education teachers within the 215 districts in the state of Texas. A multi-phase sampling strategy was used. Convenience sampling was used to select one region in the state of Texas, Region 2. A census of 376 special education teachers employed by 46 districts in Region 2 of Texas was included in the sample. Excluded were teachers of subjects other than special education. Special education teachers represent 8.7% of all teachers in Region 2.

According to Morgan (2020), the strength of the relationship (effect size) for Spearman rho is $\geq \left| 0.70 \right|$ for a much larger than typical effect size, $\left| .50 \right|$ for a large or larger than typical effect size, $\left| .30 \right|$ for a medium to typical effect size, and $\left| .10 \right|$ for a small or smaller than typical effect size.

Using *G*Power* for a bivariate correlation using two distributions which are normally distributed, the researcher found that a Power of .70 was reached based on the calculation in *G*Power* (Faul et al., 2009) At .3 correlation, 0.05 alpha, and .70 power 67 participants were needed. At a .5 correlation, 0.05 alpha, and .70 power, 23 in sample were needed (Faul et al.,

2009). Of the approximate 376 special education teachers employed in Region 2, 76 teachers in Region 2 participated in this research study.

INSTRUMENTATION

The following two instruments were used in the study: 1. Teacher Self-Efficacy Scale and 2. Teacher Mindset Survey.

Instrument 1: Teacher Self-Efficacy Scale

Tschannen-Moran et al. (1998) developed the Teacher Self-efficacy Scale and subsequently developed the short-form in 2001. The purpose of using this instrument was to gain insight into teachers' sense of self-efficacy. Permission to use the short form of the TSES was requested from Anita Woolfolk Hoy and provided via a signed letter from the Ohio State University. The instrument's author provided free use and open access via a pre-filled letter. The original form consists of 24 items. In this study the short form of 12 items was used. Tschannen-Moran et al. (1998) discovered a strong positive correlation in the TSES. An exploratory factor approach has been used in many studies to test the structural validity of the TSES. Efficacy measures were shown as ($r > .39$ and $r < .64$).

The positive correlation shows structural validity in line with the following three variables: student engagement, classroom management, and instructional practices (De Paul, 2012). The findings from Tschannen-Moran et al. (1998) show that the TSES does, in fact, measure the concepts of teacher self-efficacy that it is intended to measure, which provides evidence of validity for the TSES. Reliability of the TSES from, Tschannen-Moran et al. (1998) and Woolfolk Hoy and Murphy (2001) showed strong scores for student engagement ($\alpha = .86$), classroom management ($\alpha = .86$), instructional practices ($\alpha = .86$), and overall reliability of ($\alpha = .90$). De Paul (2012), Fives and Buehl (2009), and Karbasi and Samani (2016) also provided the same findings that have replicated these constructs illustrating that the TSES is a reliable instrument as a measure of teacher self-efficacy.

Instrument 2: Teacher Mindset Survey

Even though Gero (2013) created the TMS from a construct of the Implicit Theory of Intelligence which grew out of the work of Dweck's Growth Mindset Instrument, from its original form, the ITIS had strong positive correlations with intelligences and motivation. This instrument is free to use, and the researcher found no information online for needing to obtain permission. The ITIS has weak correlation with non-motivational measures ($r < .10$) and strong with motivational measures of ($r > .34$ and $r < .72$). TMS was developed from ITIS for teachers' mindset (Gero, 2013).

Gero (2013) took the TMS and similar self-theory instruments and created a factor analysis for the validity of the TMS. He found sufficient convergent validity showing that the TMS measures the notion it is intended to measure. Internal reliability for the ITIS was found by Blackwell et al. (2007) to be strong ($\alpha = .78$), and test-retest reliability was also strong at ($r = .77$). Gero (2013) found strong inter-item reliability with the correlation measure of ($\alpha = .79$). The reliability for the ITIS and the TMS is strongly correlated shown by Gero (2013) thereby reinforcing that the TMS is a reliable measurement of growth mindset.

RESULTS

There were 4 questions that were asked by each respondent before they started the survey questions. First participants were asked to click yes or no if they would give consent to participate in the study. The results were that 78 participants opened the link to survey, 76 clicked *yes* for consent while 2 clicked *no*. The second question asked, "*Are you a special education teacher in a district located in Region 2 of Texas?"*. The results showed that 76 of the participants clicked *yes*. This shows that 100% of the participants were special education teachers. The third question asked, "*What is your current employment status?"*. The results showed that all 76 participants were full-time teachers, and none were long-term substitutes. The last question before the survey was "*Please provide the number of years of employment"*. The results show that of the 76 participants" 19 participants had 1 to 5 years of experiences, 16 participants had 6 to 10 years of experiences, 7 participants had 11 to 15 years of experience, 13 participants had 16 to 20 years of experience, 10 participants had 21 to 25 years of experience, and 11 had 26 years or more of experiences. The average years of experience of the participants in Region 2 was 14.1 years. This revealed that special education teachers in Region 2 have a significant amount of teaching experience. The highest amount of experience among participants was 42 years.

The Self-Efficacy Questions were numbered from 5 to 16, a total of 12 questions. Table 3 displays results from all TSES questions. Questions of this survey were categorized. Questions 5-16, which included questions regarding student engagement, instructional strategies, and classroom management were summed to reveal overall self-efficacy. The highest possible score for overall self-efficacy was 27, the average score for overall self-efficacy was 20.81. Questions 1, 6, 7, and 8 were questions regarding classroom management. The respondents answered from 1 to 9, 1= nothing, 3=very little, 5=some influence, 7=quite a bit and 9=a great deal. The average of the scores for questions 1, 6, 7, and 8 were calculated to reveal the teacher's self-efficacy in classroom management. The highest score a participant could get in this section was nine (9). Of the survey data collected, the mean score for classroom management was 7.07, which indicated that participants have high self-efficacy in classroom management.

The teacher mindset questions were numbered from 17 to 23. These questions were not categorized. The respondents answered from 1 to 6, 1=strongly disagree, 2=disagree, 3=mostly disagree, 4=mostly agree, 5=agree, and 6=strongly agree. The higher the sum the higher the growth mindset of the teacher (Gero, 2013). The range for teacher mindset was 17; minimum 18, maximum 35, mean 25.80. and the standard deviation for teacher mindset was 3.077. The results of the descriptive statistics for teacher mindset show that special education teachers in Region 2 have low growth mindset with a mean average of 25.80, when the highest score for the instrument was 42.

Questions 2, 3, 4 and 11 were questions regarding student engagement. The respondents answered from 1 to 9, 1= nothing, 3=very little, 5=some influence, 7=quite a bit and 9=a great deal. The sum of scores for questions 2, 3, 4, and 11 were calculated to reveal the teacher's self-efficacy in student engagement. The highest score possible per participant in the section was 9. Of the survey data collected, the average score for student engagement was 7.15, which indicates high self-efficacy in student engagement, slightly below the classroom management score of 7.07. Questions 5, 9, 10, and 12 were questions regarding instructional strategies. The respondents answered from 1 to 9, 1= nothing, 3=very little, 5=some influence, 7=quite a bit and 9=a great deal. The sum of the scores for questions 5, 9, 10, and 12 were calculated to reveal the

teacher's self-efficacy in instructional strategies. The highest score possible per participant in this section was nine (9). Of the survey data collected, the average score for instructional strategies was 6.5559, which indicates that participants have lowest self-efficacy in instructional strategies.

There were 76 survey responses collected and put into the IBM SPSS software. The assumptions of Spearman's rho were met. The variables that were paired and continuous variables. These by design met the first two assumptions. A monotonic relationship existed between the variables outlined in the research questions. After inspecting all scatterplots for a monotonic relationship, it was determined that as the value of one variable increases, so did the other variable or the other variable decreases (Laerd Statistics, 2018). Table 1 displays the Spearman's rho correlations coefficient.

Table 1

SPSS Output from Spearman's rho

Correlations[b]

		Teacher Mindset	Student Engagement	Instructional Strategies	Classroom Management	Total Self Efficacy
Teacher Mindset	Correlation Coefficient	1.000	.035	.035	-.151	-.051
	Sig. (2-tailed)	.	.763	.764	.194	.662

**. Correlation is significant at the 0.01 level (2-tailed).

b. Listwise N=76

The Spearman's *r* is represented by the correlation coefficient row (Laerd Statistics, 2018). There was a positive correlation between the teacher mindset and student engagement self-efficacy (r_s = .035) as well as instructional strategies self-efficacy (r_s = 0.35). This does not represent the strength of the relationship, it just shows that as teacher mindset increases, so does student engagement self-efficacy and instructional strategies self-efficacy. However, there was negative correlation between teacher mindset and classroom management (r_s = -.151) as well as total self-efficacy (r_s= -.051). Laerd Statistics (2018) states that the sign of the Spearman correlation is positive it can be concluded that there is a positive correlation between the variables. A Spearman's rank-order correlation was calculated to assess the relationship between teacher mindset and student engagement, instructional strategies, classroom management, and overall self-efficacy. Primary analysis of the data showed the relationship between the variables to be monotonic, as interpreted by a visual inspection of four scatterplots. The study illustrated a correlation between teacher mindset and self-efficacy, both in a positive and negative direction.

The following null hypotheses were tested.

H_{01}: There is no significant relationship between growth mindset and overall self-efficacy among special education teachers in Texas Region 2. The correlation between teacher growth mindset and overall self-efficacy resulted in $r_s(76) = -.051$, $p > .662$, therefore the research failed to reject the null hypotheses for Research Question 1.

H_{02}: There is no significant relationship between growth mindset and self-efficacy in student engagement among special education teachers in Texas Region 2. The correlation

between teacher growth mindset and student engagement, $r_s(76) = .035$, $p > .763$, therefore the research failed to reject the null hypotheses for Research Question 2.

H_{03}: There is no significant relationship between mindset and self-efficacy in instructional strategies among special education teachers in Texas Region 2. The correlation between teacher growth mindset and overall self-efficacy resulted in r_s instructional strategies, $r_s(76) = 035$, $p > .764$, therefore the research failed to reject the null hypotheses for Research Question 3.

H_{04}: There is no significant relationship between mindset and self-efficacy in classroom management among special education teachers in Texas Region 2. The correlation between teacher growth mindset and overall self-efficacy resulted in r_s classroom management, $r_s(76) = -.151$, $p > .194$, therefore the research failed to reject the null hypotheses for Research Question 4.

The researchers failed to reject the null hypothesis in all four research questions. There was no statistically significant correlation between teacher mindset and instructional strategies, $r_s(76) = 0.35$, $p > .764$, classroom management, $r_s(76) = -.151$, $p > .194$, or overall self-efficacy $r_s(76) = -0.51$, $p > .662$.

INTERPRETATION OF THE FINDINGS

Nestor (2017) found a strong link between growth mindsets and teaching and learning and suggested there was a need for practical training and professional development to help teachers. The development of appropriate self-efficacy models does affect teacher performance as shown by Coates et al.'s (2020) study that provided self-efficacy and mindset training to teachers. At the end of the training, teachers demonstrated a significant positive impact on self-efficacy, improved knowledge, and displayed more confidence in teaching all students (Coates et al., 2020). The study found that teachers began to shift their way of thinking about the inclusion of students and the practices. Jaffe (2020) said that changing the way teachers think inside a classroom could create fewer boundaries, make it easier for students to succeed, and encourage students to persist even when facing failure. This study's results suggest a strong link between growth mindset, and teaching and learning, which illustrates the need to continue searching for a specialized teacher performance measurement instrument for special education teachers.
The literature review provided studies about self-efficacy and growth mindset among general education teachers and mindset skills of students but lacked information applicable to the unique situations encountered by special education teachers and their students. Rhew (2017) found the effects of growth mindset intervention on special education students; however, the study did not examine special education teachers. Chiarelli (2018) investigated the mindset of special education teachers and its effects on their success at one North Texas School district. She found that there was no significance between teacher mindset and its effect on math and reading scores on their district assessments. This study indicates that positive interventions, mindset changes, and teacher self-efficacy correlate with improvements in student learning because the statistical analysis results show these variables all move in the same direction.

IMPLICATIONS

The implications of this study showed that there was a monotonic relationship between teacher mindset and student engagement, classroom management, instructional strategies, and

overall self-efficacy. As each independent variable increased so did the dependent variable. The special education population could increase because of the effect of the COVID-19 pandemic. Therefore, school districts and educational leaders have a responsibility to create sustainable solutions to support special education teachers in their mission to teach, grow, and develop special education students. One of the first mindset interventions schools can make is to do their best to restore children's academic habits and overcome the time away from school that children experienced.

The descriptive statistics from this study show that 19% of teachers have only one year of experience teaching special education. This could imply that a high turnover rate is problematic for special education teachers, and many do not have substantial experience in the classroom. A solution could be to provide mentoring from more seasoned special educators who can give advice by sharing their knowledge and experiences with new teachers. Professional learning committees, who are dedicated to the needs of special education teachers would be of great value and support. The literature review also revealed that, according to Glos (2018), this study was only the second study conducted using Gero's (2013) TMS instrument.

Leaders in the public education system would be wise to continue to pursue, create, and find solutions on how to help teachers manage and lead this very delicate population. The literature review found little to no research regarding methods of connecting special education students and their teachers. Kang (2017) revealed that teachers who scored higher in self-efficacy are more effective in their teaching practices. This was just for general education teachers not for special education teachers. Smith et al. (2018) showed that teachers' mindsets could affect their performance, and teachers' feedback could share mindset messages to students and impact student performance. Smith et al. (2018) said that the low state achievement scores of special education students indicated that special education teachers needed more support to cause measurable change among the special education student population. The fact that low passing rates across Texas in reading and math among special education students implies that research in the special education area needs urgent attention.

CONCLUSION

This study was conducted to examine the relationship between mindset and self-efficacy among special education teachers in Region 2 Texas schools. The data analysis of this study illustrated that if teachers have positive mindsets about special education student outcomes, they are more likely to pursue high self-efficacy through professional development that inspires growth mindsets. Raising student STAAR scores, especially those of special education students, depends on providing special education teachers with support and sustainable mindset interventions that improve student learning, which correlate positively according to the results of this study.

School districts need their highest-skilled teachers to be leaders and demonstrate the mindset and self-efficacy necessary to accelerate special education students' educational improvement. The teachers must believe in themselves, be confident in their abilities, and be flexible enough to strategically shift their instruction as required to ensure special education students' developmental learning. Teachers can inspire students by helping them develop a strong interest in classroom topics with a commitment to helping them achieve excellent academic results.

In many instances, the growth and development of a special education student depends on building relationships, so students learn to value their academic achievements as paving the way toward graduation. While this study did not reveal an empirical relationship between teachers' mindsets and self-efficacy, it sheds light on how teacher's skills, experiences, and professional development can help them use their creativity to educate the special needs student population. Celebrating students' accomplishments is essential to giving them a growth mindset and a positive perception of achieving success in school, and in life.

REFERENCES

Bai, B., Wang, J., & Nie, Y. (2021). Self-efficacy, task values and growth mindset: what has the most predictive power for primary school students' self-regulated learning in English writing and writing competence in an Asian Confucian cultural context? *Cambridge Journal of Education*, *51*(1), 65–84. https://doi.org/10.1080/0305764X.2020.1778639

Benz, S. (2019). *Rethinking special education certification in Texas.* Texas Comprehensive Center. https://www.air.org/sites/default/files/Rethinking-Special-Education-Certification-Texas-508-2019.pdf

Chiarelli, A. (2018). *Correlating the growth mindset of special education teachers and student growth* (Doctoral dissertation, Texas Wesleyan University).

Coates, J. K., Harris, J., & Waring, M. (2020). The effectiveness of a special school experience for improving preservice teachers' efficacy to teach children with special educational needs and disabilities. *British Educational Research Journal*, *46*(5), 909–928. https://doi.org/10.1002/berj.3605

De Paul, S. V. (2012). Development and validation of teacher self-efficacy scale. *IOSR Journal of Humanities and Social Science (JHSS)*, *2*(2), 12-18. http://doi.org/10.1.1.1063.1155

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyzes using G * Power 3.1: Tests for correlation and regression analyzes. *Behavior Research Methods*, *41*, 1149-1160 https://doi.org/10.3758/BRM.41.4.1149

Fives, H., & Buehl, M. M. (2009). Examining the factor structure of the teachers' sense of efficacy scale. *The Journal of Experimental Education*, *78*(1), 118-134. https://www.tandfonline.com/doi/abs/10.1080/00220970903224461

Gero, G. P. (2013). *What drives teachers to improve? The role of teacher mindset in professional learning* (Doctoral dissertation, The Claremont Graduate University). https://www.proquest.com/openview/b64de1ddee4dc92e0b4b4dfb6a066a56/1?pq-origsite=gscholar&cbl=18750

Glos, K. S. (2018). *Exploring the relationship between teacher self-efficacy and mindset in high school teachers*. Dallas Baptist University. https://www.proquest.com/openview/a9446f6f68236c2cadabd1c0acc930c7/1?pq-origsite=gscholar&cbl=18750

Jaffe, E. (2020). Mindset in the classroom: Changing the way students see themselves in mathematics and beyond. *Clearing House*, *93*(5), 255–263. https://doi.org/10.1080/00098655.2020.1802215

Kang, A. (2017). *Emotional intelligence, environment, and teacher self-efficacy: A look into the effects of teacher emotional intelligence and socioeconomic status of school on teacher self-efficacy in K-12 public schools*. The College of William and Mary. https://www.proquest.com/openview/6aa76797bac308d1a3c4c09f0a7cab78/1?pq-origsite=gscholar&cbl=18750

Karbasi, S., & Samani, S. (2016). Psychometric properties of teacher self-efficacy scale. Social and Behavioral Sciences, 217, 618-621. https://doi.org/10.1016/j.sbspro.2016.02.069

Laerd Statistics. (2018). *Statistical tutorials and software guides.* https://statistics.laerd.com/

Morgan, G. A. (2020). *IBM SPSS for introductory statistics: Use and interpretation*. Routledge.

National Center for Learning Disabilities (NCLD). (2019, May 22). Forward together: Helping educators unlock the power of students who learn differently. https://www.ncld.org/research/forward-together/

National Center on Intensive Intervention (NCII). (2021). TEA + NCII: Data-Based Individual Cohort [PowerPoint Slides]. Texas Education Agency to Cohort Districts. https://intensiveintervention.org/intensive-intervention/validated-invervention-program

Nestor, A. L. (2017). *Investigating mindset theories: The implications for classroom instruction and professional development* (Doctoral dissertation, University of Pittsburgh). https://www.proquest.com/openview/8e714b685232df3183b5122f1c19b3f1/1?pq-origsite=gscholar&cbl=18750

Rhew, E. A. (2017). *The effects of a growth mindset intervention on self-efficacy and motivation of adolescent special education students* (Doctoral dissertation, Western Connecticut State University). https://www.proquest.com/openview/b602770c236419a2a352c30934d2301c/1?pq-origsite=gscholar&cbl=18750

Tschannen-Moran, M., Hoy, A., & Hoy, W. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research*, *68*(2). 202-248. https://doi.org/10.3102%2F00346543068002202.

Vongkulluksn, V. W., Matewos, A. M., & Sinatra, G. M. (2021). Growth mindset development in design-based makerspace: A longitudinal study. *Journal of Educational Research*, *114*(2), 139–154. https://doi.org/10.1080/00220671.2021.1872473

Woolfolk Hoy, A., & Murphy, P. K. (2001). Teaching educational psychology to the implicit mind. In B. Torff, & R. J. Sternberg (Eds.), *Understanding and teaching the intuitive mind: Student and teacher learning* (pp. 145–185). Lawrence Erlbaum Associates Publishers.