Integrating Mindset Interventions with Language Arts Instruction: An Exploratory Study with Seventh Grade Students

David Strahan
Western Carolina University
Cullowhee, NC
strahan@email.wcu.edu

Kloo Hansen, Annie Meyer, Ryan Buchanan
Western Carolina University
Cullowhee, NC

Jennifer Doherty
Asheville City Schools
Asheville, NC

Abstract
Researchers engaged in a collaborative, yearlong study with a seventh-grade language arts teacher who integrated activities to enhance students’ understanding of mindsets with content instruction. Lessons emphasized four aspects of mindsets: belief that learning abilities can grow with the investment of effort, willingness to address challenging tasks and persevere, development of stronger learning strategies, and ability to articulate connections between effort and accomplishment. During the school year, the team observed lessons, gathered work samples, and conducted interviews with 12 students. Work samples showed that most students articulated a general understanding of the concepts related to mindset emphasized during instruction. Case studies documented patterns and differences in ways students articulated connections among concepts. Although limited by sample size, results suggested that seventh graders can understand the construct of mindsets, especially when offered guidance and support.

Keywords: instructional practices, literacy, middle school, mindset, classroom research

Teachers have long recognized that early adolescence is a period when students begin to think more systematically about their own thoughts. Logical reasoning, understanding abstractions, and making inferences are some ways that thinking grows more sophisticated across the middle grades. In recent years, Carol Dweck and...
colleagues have highlighted the importance of students’ “mindsets” in their mental development (Dweck, 2008; Romero, Master, Paunesku, Dweck, & Gross, 2014). Learners with “growth mindsets” understand that their intelligence is malleable and changeable, whereas learners with “fixed mindsets” believe intelligence is a static trait and cannot change. A growing number of studies demonstrate that learners with growth mindsets invest greater effort in learning new concepts that are difficult and, consequently, perform better academically. Students with growth mindsets are likely to employ strategies for awareness and understanding in the tasks they undertake (Blackwell, Trzesniewski, & Dweck, 2007).

With these thoughts in mind, a team of seventh grade teachers at Central Middle School (a pseudonym) decided to create explicit lessons on how the mind works and engage students in a series of instructional activities designed to help them learn more about their mindsets. They invited a team of educational researchers to join them in a yearlong effort to integrate awareness of thinking with academic learning and to study student responses. This report describes some of what teachers and students learned together as they attempted to understand mindsets and their impact in the classroom.

Conceptual Framework

Understanding and responding to the developmental needs of young adolescents has long been the bedrock of the middle school concept. As stated in This We Believe (NMSA, 2010), “The curriculum, pedagogy, and programs of middle grades schools must be based upon the developmental readiness, needs, and interests of young adolescents. This concept is at the heart of middle level education” (p. 5).

In an earlier publication, we reviewed case studies conducted with successful teachers and described how they demonstrated “theories of action” based on an understanding of developmental needs in general and individual needs in particular (Strahan, 2013).

Good teachers know that middle school students are as different from each other as they are from elementary children or older adolescents. They know that puberty triggers major changes, some predictable, others less so. They know that middle school students learn to think in new ways, especially so about themselves and how they relate to the world. They understand the fragile nature of peer dynamics and moral judgments. Although they have internalized these insights, these teachers are more likely to talk about what Juan wants to know about Latin America, why Liz wants to look cool, when James is engaged in activities, why Mariah appears distracted, or how to bring Michael into discussions. (p. 224)

One way that successful teachers respond to students is by integrating an explicit focus on learning and remembering with content area instruction. Helping students understand their thought processes gives them more ownership of their learning. In recent years, a growing body of research has helped illuminate the aspects of thinking that shape engagement. These studies are summarized in the sections that follow.

Importance of Growth Mindset to Academic Engagement

Recent research has provided growing evidence that an essential element of engagement is the “mindset” the student brings to the task. Mindsets affect motivation, receptiveness to learning, and level of achievement, especially in critical subject areas such as math and science (Dweck, 2008). Longitudinal research has shown that the extent to which students believe that intelligence is fixed or malleable predicts achievement or underachievement rates. Dweck’s (2008) studies indicated that 40% of students adopt fixed mindsets, and 40% adopt growth mindsets. The remaining 20% of students showed mixed mindsets or could not be classified. These data have proven consistent across multiple analyses (Boaler, 2013; Lee, Heeter, Magerko, & Medler, 2012).

Mindsets regularly predict performance and achievement behaviors (Blackwell et al., 2007; Dweck, 2008; Good, Aronson, & Inzlicht, 2003; Lee et al., 2012). Students with fixed mindsets will often be successful in environments in which cognitive tasks present less challenge (Dweck, 2008). These students often view success on routine academic assignments as verification of their talent or intelligence. Good grades and high test scores show them how smart they are. This reinforcement solidifies their fixed mindset and may negatively impact future motivation and achievement when tasks become more challenging (Blackwell et al., 2007). Students with fixed mindsets regularly opt to participate in activities that would make them look smart over those that would offer learning something new (Dweck, 2010). When they experience more difficult assignments, they may question their abilities and resort to negative strategies like cheating or lying about their successes.
In contrast, people with growth mindsets recognize that they can develop their abilities (Blackwell et al., 2007) and grow. Students who hold growth mindsets are more likely to embrace intrinsic learning goals that cultivate their abilities and talents. Growth mindsets value acquisition of varied skills in the face of challenging tasks. Instead of resorting to negative strategies like cheating and lying about success, people with growth mindsets acknowledge errors and immediately employ new learning strategies. Strategies include error correction, increased effort and perseverance, and self-advocacy (e.g., actively seeking the help of parents and teachers).

These performance behaviors correlate with increased motivation and ambition to engage in traditionally difficult subject areas, like math and science, and participate in advanced academic curricula (Blackwell et al., 2007; Dweck, 2008; Romero et al., 2014). Blackwell and associates (2007) followed seventh graders through middle school, measuring their mathematics achievements. The research showed that students with a growth mindset at the onset of middle school consistently made good grades, and over time, the researchers could easily predict their math and science achievement.

**Interventions to Promote Growth Mindsets**

Research is beginning to show that interventions designed to teach students about mindsets and encourage stronger growth orientation can impact fixed mindsets and enhance achievement. In studies that assessed the impact of learning interventions that explained how the mind works and engaged students in reflections about their mindsets, participating students reported greater satisfaction in school, outperformed expectations, and had noticeable behavioral changes (Aronson, Fried, & Good, 2002; Boaler, 2013; Dweck, 2008; Good et al., 2003). Interventions developed by researchers have varied in methodology, yet demonstrate the impact of growth mindset instruction, especially for underrepresented populations who traditionally struggle with academic engagement and achievement (Dweck, 2008).

A 2003 study by Good and associates found positive outcomes for seventh grade students who participated in an intervention condition that emphasized an incremental, growth-oriented view of intelligence. Students in the growth mindset condition had a 4.5-point increase in mathematics scores and a 4-point increase in reading scores. Gender gaps in achievement decreased among students who participated in the intervention, while gender gaps remained in the control group. In addition, the researchers found similar achievement gains in minority populations.

Blackwell and associates (2007) conducted a longitudinal study that measured the long-term trajectories of student achievement, especially for students who experienced growth mindset interventions to reverse declining achievement patterns. Researchers tracked four waves of seventh grade students through the middle grades and focused on the mediators between theories of intelligence and achievement. They measured individual, long-term theories on intelligence and achievement trajectories with an emphasis on explanations of why espousing an incremental theory of intelligence may increase academic achievement. Researchers also implemented an intervention condition for low performing students, and measured whether the intervention facilitated greater effort and motivation in academic tasks. Intervention session data showed lasting changes in behavior and attitudes among participants as well as improvements in grades.

These studies of interventions suggest that growth mindset interventions in the middle grades may help facilitate students’ mental awareness of effective thinking and learning strategies, and result in improved academic achievement.

**Related Mental Processes That Enable Engagement**

Mindsets are just one aspect of a broader cluster of mental dynamics that impact academic performance. Farrington and associates (2012) conducted an extensive review of research on related factors that enable achievement, and they identified five general categories of influential noncognitive factors: academic behaviors, academic perseverance, academic mindsets, learning strategies, and social skills. Studies in the review found that students who perform well academically tend to have developed a set of academic behaviors that become habitual: engaging with learning activities, paying attention, participating in class, and completing homework. Students learn these behaviors over time when they experience supportive school and classroom contexts, internalize social skills that enable positive interactions with teachers and classmates, develop growth mindsets, and know how to use the learning strategies that work for them. These dynamics enable the academic perseverance needed to accomplish challenging tasks. Interactions
among these noncognitive factors become strongest when students have grown up in a sociocultural and family context that nurtures learning. Farrington and her colleagues concluded, “The best ways to improve students’ perseverance and strengthen their academic behaviors is through academic mindsets and learning strategies” (2012, p. 73).

Conceptual Focus for the Present Study
As Dweck and other researchers have demonstrated, students may be more successful when they possess a growth mindset and believe that their learning abilities can grow as they invest effort. This growth mindset enables them to address challenging tasks and persevere. Farrington and her colleagues described how mindsets connect with a set of other factors that interact in a complicated fashion. They noted that students develop stronger mindsets when they experience a supportive learning environment, develop stronger learning strategies, and make sense of connections between effort and accomplishment. The conceptual framework for the present study weaves together these strands of research and focuses on four aspects of mindsets: (a) belief that learning abilities can grow with the investment of effort, (b) willingness to address challenging tasks and persevere, (c) development of stronger learning strategies, and (d) ability to articulate connections between effort and accomplishment.

Our working theory was that teachers’ intentional efforts to engage students in activities to help them learn more about their mindsets would facilitate their awareness and understanding. Guided by this theory, we generated three interrelated research questions:

1. How does a teacher integrate mindset interventions with her language arts instruction?
2. How do students respond to her efforts to help them better understand their development as learners?
3. To what extent do students demonstrate growth in the four aspects of mindsets emphasized?

This conceptual framework guided our approach to data collection and analysis. Our working theory served as a general proposition to guide data collection and analysis.

Methods, Data Collection, and Analysis
This study focused on teachers’ efforts to help students learn more about mindsets at Central Middle, a school that served approximately 600 students in a small city in the southeast. At Central City, 35% of the students were members of minority groups, and 45% of the student body qualified for free and reduced meals. The language arts teacher and lead researcher had worked together on several initiatives over the years. Two of the research assistants were graduate students in education, and the third was an experienced teacher and university program specialist. These five coauthors constituted the research team.

A team of three seventh grade teachers participated in general discussions about mindset interventions. The research team worked most intensively with the language arts teacher and her first period class. Researchers invited all 23 students in this class to participate in the study. They obtained consent from 12 of these students and their parents to participate in case studies. According to the language arts teacher, the sample generally represented the range of reading performance in the class with the exception of struggling readers. The research team made repeated unsuccessful attempts to obtain consent from some of the struggling readers’ parents. Hence, the voluntary sample of 12 students (9 girls, 3 boys; 5 members of minority groups) did not fully represent the entire class.

To explore ways that students in the class responded to their teacher’s efforts to help them learn more about their mindsets, researchers observed lesson activities, interviewed teachers, and examined work products. The team conducted a total of 22 lesson observations in first period and interviewed the teacher about her work with students. The dataset included a total of 12 formal and informal interviews across the school year. Formal interview questions asked the teacher to reflect on lesson activities and student responses. Informal questions focused on individual students and the teacher’s instructional planning. These reflections from teachers provided another source of data for the case studies with individual students. The appendix lists the basic protocol for interview questions designed to guide conversations.

Researchers examined four work samples submitted as part of lessons that focused explicitly on aspects of mindsets. Students were invited to permit the researchers to make copies of their papers. Consequently, the number of work samples varied across the activities from 32 on the first activity to 19 on the second, 32 on the third, and
Researchers conducted individual interviews with the students to explore individual differences among them and gather more specific data about their perceptions of their learning. The purpose of these interviews was to record the student’s perceptions of their experiences in the project in a conversational fashion. The appendix lists the basic protocol for interview questions designed to guide conversations. The introductory cluster of interview questions elicited information about students’ perceptions of themselves and school. Debriefing questions focused on specific classroom activities and assignments. Questions for interviews administered at the end of the year focused on students’ perceptions of their experiences with state mandated achievement tests.

From November through June, researchers conducted a total of 37 interviews with the 12 students. Of these 12 students, four participated in three interviews; one in four interviews; five in five interviews; one in six interviews; and one in seven interviews. Interviews occurred during class time and lasted for 15 to 20 minutes. Interviewers began with a shared set of interview questions and revised the interview protocol four times as the year progressed (see appendix for interview protocols). Additionally, interviewers asked follow-up questions based on students’ responses so that the interview transcripts documented a combination of shared questions, individualized follow-ups, and informal conversation.

Researchers constructed preliminary analyses of the individual cases using procedures recommended by Yin (2009) to interpret data in relation to the research questions. The general strategy reflected his emphasis on stating “theoretical propositions” to guide data collection and analysis (p. 130). For this study, the working theory was that teachers’ intentional efforts to engage students in activities to help them learn more about their mindsets would facilitate their awareness and understanding. Using this theory as a guiding proposition, researchers identified comments from interviews and assignments in which students expressed perceptions of mindsets and then organized these comments by cluster for each student using the “pattern matching” analytic technique described by Yin (2009, p. 136). The four aspects of mindsets in the conceptual framework served as a foundation for identifying levels of students’ awareness and understanding, and then clustering cases into three categories: understanding all four aspects of mindsets emphasized, understanding some aspects of mindsets, and showing limited understanding.

As a point of triangulation, researchers asked the language arts teacher to share her summary judgments of students’ academic progress. Based on end-of-grade assessments and on her observations across the years, she rated each participant as “showing little or no growth,” “showing growth,” or “showing more dramatic growth.” Researchers then reviewed each case narrative to examine how students’ understanding of mindsets related to her judgments, noting both correlations and discrepancies.

In all phases of analysis, multiple sources of data and triangulation among sources improved the likelihood that the analysis would be authentic, relevant, and credible. Finally, researchers assigned pseudonyms to the report to ensure confidentiality.

Results

We report our results in the three major sections that follow, organized to parallel our three research questions: (1) teachers’ instructional interventions to help students learn more about their mindsets, (2) students’ personal connections and conceptual understanding in work samples, and (3) case studies with participating students.

Instructional Interventions to Help Students Learn about Their Mindsets

At the beginning of the project, the language arts teacher identified four instructional goals to integrate with content area instruction: (a) students would understand the impact of mindsets on themselves and others; (b) students would question assumptions about abilities; (c) students would articulate relationships between effort and accomplishment; and (c) students would engage in literacy tasks with greater concentration and deeper levels of understanding.

Working with her teammates and the university researchers, she planned a yearlong progression of activities that included (a) introducing the concept of mindsets and ways the brain functions, (b) conducting three Paideia lesson cycles (prereading, shared reading, discussion, writing) using texts related to mindsets, (c) mini-lessons on reading
strategies, and (d) activities that focused explicitly on decision-making in regard to schoolwork. A recurring activity was the use of “mindset board games” that featured strategic thinking. Students began playing these games periodically, sometimes when they had completed assignments and other times as team-building events. They recorded their perceptions of their engagement with the games in a logbook. Entries included the date, name of the game played, minutes spent playing, rating of the difficulty, rating of level of engagement, and lessons learned about game strategy. In the spring, seminar lessons focused more specifically on content related to mindsets. For example, one lesson cycle used the texts “Invictus” by Henley and “Me against the world” by Tupac, both of which emphasize persistence. Students chose one of these poems and wrote a detailed analysis of the ideas.

An essential aspect of the language arts teacher’s approach was integrating reading strategies into all of her literacy learning activities and encouraging students to think explicitly about these strategies. An exchange from one of her interviews illustrates her approach to this process:

Two of the strategies I emphasized the most were “speed bump” and “thinking tracks.” The speed bump is when you realize you are not understanding what you read, you stop, look away for a moment, back up, find a key word to restart, and think “what’s this for me?” I tell them over and over, “This is a strategy that works when you are tired or when you get bored reading something that is required.” The thinking tracks is simply stopping periodically to write down your thoughts.

In lesson observations, researchers regularly noted instances when the language arts teacher sat down with individual students and asked them about their work. She often encouraged them to reread a passage or rethink a response to a study guide question. As the year progressed, she more frequently asked questions like, “What can you do when you don’t understand it?” Students would then often reply, “Read it again,” or “Look back in the passage.”

Students’ Personal Connections and Conceptual Understanding in Work Samples

To explore general patterns of responses from students, the research team analyzed four work samples for types of understanding. The first of these was an essay students wrote as the culmination of a Paideia lesson cycle in October. Students read “How Not to Talk to Your Kids: The Inverse Power of Praise,” and discussed the power of praise and the research conducted regarding praise for “smarts” and praise for “effort.” Thirty-two students shared their essays with the team. Nineteen essays demonstrated clear personal and conceptual connections with the essential ideas of the text and discussion. Ten of these essays focused primarily on personal experiences students had with forms of praise and its unintended consequences. The other successful essays focused more specifically on the importance of praising children for effort. Less successful essays demonstrated partial comprehension with contradictory perspectives.

The second work sample researchers analyzed was a reflective activity on concentration in lesson activities from March. In this activity, the teacher first asked the students to identify their own patterns of concentration and to describe specific tasks that engaged them to the point of losing track of time and the reasons why they lose track of time. Second, the teacher asked students to reflect on the barriers to their concentration. Nineteen students shared their responses. In their responses, students described four general types of activity that most often engaged their concentration: (a) digital gaming and social media; (b) watching TV, movies, or videos; (c) playing sports and being outside; and (d) other engaging activities (e.g., reading a book, decorating the house, doing math, and “lying down and staring at the ceiling”).

In a follow-up lesson to the reflection on concentration activity, the research team provided students with a model for charting decisions and consequences. The researchers asked students to think about end-of-year testing and consider the consequences that would flow from three different decisions about levels of effort to invest in test preparation: putting in “a lot of effort,” “a little effort,” and “no effort.” Their responses provided a third work sample for analysis with papers from 32 students. Ten of the flowcharts demonstrated concrete and specific connections between choices and consequences, showing a progression from investing effort in test preparation to selecting more rigorous course options, realizing better opportunities in college, and achieving success in later life. For example, “If you invest a lot of effort, you could get a great score, get in smart people classes, get into a good college (maybe a scholarship), get a good job, make lots of money, and have a successful life.” Five of the charts focused more on negative consequences from not investing effort and emphasized the stress of
the tests and poor performance. For example, “If you don’t try, you get a bad grade, you may get in a bad place next year, or you may get in trouble.” Seven students elaborated upon the negative strategies to which a student may resort when they have not prepared for their end of course tests: cheating, guessing, and confusion. Five students did not present their own independent thoughts into the test prep flowchart or submitted incomplete charts.

The fourth work sample researchers analyzed was the essay students wrote during the final week of school. In this essay, students addressed three main prompts regarding what they learned about themselves as learners. Prompt one required the students to identify if they believed in fixed mindsets or growth mindsets. Prompt two required students to summarize the most important things they knew about learning and remembering, and how they would use those strategies over the next two years. Prompt three required students to reflect on how the adults in their lives influenced their mindsets. As part of their response to prompt three, students provided advice to next year’s teachers regarding how they learn best. Thirty-six students shared their essays with the team.

Twenty of these essays demonstrated clear personal and conceptual connections with essential ideas. Students articulated strong understanding of the relationships among growth mindsets, effort, and perseverance. They also described specific learning strategies, gave examples of their use of these strategies, and showed awareness of their personal strengths as learners. For example, one student wrote, “I think I have a growth mind set (or I try to at least) because when I look back to my fifth grade self I can really see improvement in my intelligence and learning drive . . . I feel better about myself knowing that if I work hard, I live life accomplished.”

Five essays demonstrated the comprehension of ideas with less integration. These students focused primarily on the necessary learning strategies that would support a growth mindset mentality. While these students could define growth mindset to an audience and readily describe the learning strategies to achieve academic success, they did not make clear connections with themselves as learners. Four of the essays addressed at least one of the prompts, yet they did not completely address all three. Four students demonstrated partial comprehension with contradictory perspectives (e.g., “I think I can become smarter if I focus really hard in school.” and “I think I will do well in my school life because I am a quick learner.”). The other seven responses were rather vague and did not offer any insights concerning the three main prompts of the original assignment.

Analysis of these four work samples suggested that students were beginning to internalize relationships among aspects of mindsets. Across the four samples, three-fourths of the responses consistently demonstrated strong general understanding of the mindset concepts presented. The work samples that did not demonstrate understanding were most often incomplete.

To examine these patterns of understanding and identify individual differences among student responses, researchers completed detailed case summaries with the 12 students who agreed to participate in this more in-depth analysis.

Case Studies with Participating Students

From December through June, the research team conducted a series of interviews with 12 students. Each student participated in at least three interviews, with seven participating in five or more. When researchers integrated interview responses with teacher reflections and student work samples, they identified six case study participants who understood all four aspects of mindsets emphasized, four who understood some aspects, and two case study participants who demonstrated limited understanding. These case studies documented the extent to which these seventh graders articulated connections among the aspects of mindsets emphasized.

Case Participants Who Understood All Four Aspects of Mindsets Emphasized. Michelle, Melissa, Susan, and Emily expressed highly sophisticated understanding of their thoughts and actions, using their experiences with dance and music to describe specific instances when they thought about effort and accomplishment. James and Michael began to convey recurring thoughts about how they might apply their understanding of mindset concepts to difficult courses in the future and then to their careers.

Michelle’s teachers described her as one of their most conscientious students, a young woman who is always prepared for class, participated actively, and embraced assignments with enthusiasm. In her interviews, she clearly prided herself on her performance in mathematics, insisting that she did math problems for
fun and would do so across the summer when they were no longer assigned.

I like all the equations. My concentration only wanders when the whole class gets loud and Mr. L tells us to get quiet. . . . I like doing math so I keep thinking about it. If I don’t get it, most of the time, I circle it and ask the teachers to explain it. It’s important to me to get it finished and know how to do it.

In her debriefing interviews on assignments, Michelle hinted that she sometimes relied on her “natural abilities.” When asked specifically about the end-of-grade tests, Michelle commented,

I know that our teachers want us to do is take our time and take notes. I probably won’t really do that. Sometimes I read the questions first and that helps me focus. Two of the answers are always wrong. One is right and one really close to that.

As researchers talked with Michelle, they often felt she was answering questions the way she would expect her teachers would want her to answer them. She rarely veered from presenting herself as a serious and committed student. She seemed to have formed a sense of identity as a great student and wanted to live up to that image of herself.

In her final essay, Michelle articulated explicit, visible connections between effort and accomplishment.

Mindset is important to the growth of many people around the world because it helps to determine your level of ability to succeed, it helps you learn new skills, and it affects the way you think about things. . . . Lots of people don’t give effort and then, when they fail, blame their problem on something that is not to blame. . . . Growth mindset is having a positive attitude, participating, interacting, accepting mistakes, and many other things.

Michelle’s explicit articulation of all four aspects of mindsets correlated highly with the language arts teacher’s judgement that she showed growth in reading. Her scores from the previous year were so high that it would have been unlikely to show dramatic growth.

Melissa was a seventh-grade student who had formed a strong identity as a dancer and a good student. Dance provided an opportunity for her to get special recognition. She modestly reported,

I am really good at contemporary and hip hop. I have been on TV before, several times. On Univision, we would perform on the weekend. We would film for 2 or 3 hours. They would pay me. It was fun.

Since moving to the region, Melissa joined a private dance company and spent at least two hours each evening in lessons and rehearsal. Talking about dance provided Melissa with opportunities to articulate sophisticated connections between her belief that learning abilities could grow with an investment of effort and her willingness to address challenging tasks and persevere.

When I start dancing, when we are doing a movement and we are trying to replicate it and trying to memorize it, your brain is not going off thinking about random things—things that happen at school or what you are going to eat next. Or other random off-topic things; you are focused on the movement. If we didn’t do that, we would be like everywhere.

In her debriefing interviews regarding her reading assignments, Melissa described some of the ways she had developed stronger learning strategies:

Strategies are how you plan out your actions. In reading, strategies are planning your time to get all your work done. There are some specific strategies, like inference, which is using our background knowledge plus text clues. The “speed bump” strategy is to slow down. Thinking Tracks is writing down little notes.

Melissa regularly articulated visible connections between effort and accomplishment. In one interview, she shared, “Even though I try to avoid the most difficult problems, I know you need to spend more time on them. I do go in and ask the teacher for one-on-one help. That does help me. If I want to get more confident, I have to work on it.” Like Michelle, Melissa expressed all four aspects of mindsets emphasized. She also showed dramatic growth in reading.

In many of the same ways that Melissa drew strength and confidence from her dance, Susan was passionate about music and drama. She loved singing, acting, playing piano, and writing music. This was a common
Emily appeared vibrant and spirited with lots of energy, and her worldview revolved around her friends and social life, which seemed to take precedence over academics. Nonetheless, she was a good student who usually earned A's and B's. Although she appeared confident, Emily revealed in the interviews several internal insecurities that (at times) had affected her learning, concentration, and overall success. Emily disclosed that her parents had very high expectations for her academic performance and expected all A's; anything less resulted in stiff consequences and usually the loss of privileges. These high standards may have had mixed influences on Emily’s mindset, confidence, and motivation. When reflecting on her levels of concentration, Emily noted that sports had helped her learn to focus better.

Playing sports really helps. I play field hockey and during my games I am really focused and everything else just seems to kind of go away. I have to take time to think about what I’m going to do next. I’m not one of those fast thinkers off the top of my head. It takes me forever to think through things and I probably way overthink everything.

At the end of the year, the language arts teacher noted that Emily was one of the students who made dramatic progress on the reading tests, growing from an 80th percentile in sixth grade to a 99th percentile in seventh.

In her final essay, Emily articulated a general summary of the relationships among mindsets, effort, strategies, and accomplishment. She stated, “I believe that I have a growth mindset. I think if you put enough effort into it, you can always learn more. As long as you take the time to pay attention, you can learn anything.” As with the other students in this section, Emily expressed all four aspects of mindsets and showed dramatic growth in reading.

In the fall, James’s teachers described him as a student who was “quite bright, but has a lack of confidence about academic tasks. He is very social. He loves learning, but if he gets stuck, he won’t move forward on a task. Little things keeping him from moving forward.” During the year, James made great progress, especially in reading. In the interviews, James often noted that although he did not always enjoy school, it was important to him. At the end of the year, he noted that he had grown much more confident in his abilities as a student:

Well, I know that I can get better grades now. Because I know that, I can stay confident and do the work with little stress. I’ve learned the more confident I am, the better I can do, because of mindset. I just gotta think confident and I can get the work done, and I’ll get good grades as long as I’m confident and I can do the work.

James regularly indicated that learning was all his responsibility: “My learning is all my responsibility. If you don’t want to learn, you don’t do the work. If you want to learn, you do the work.” He also expressed a
strong belief that learning abilities can grow and articulated connections between effort and accomplishment. “I believe in growth mindset. . . . If you are in class you don’t have to listen to the teacher and don’t have to do the assignments–but you won’t learn anything.” All four aspects of mindsets appeared in James’s case, and he showed dramatic growth in reading.

In her reflections on students at the end of the year, the language arts teacher recalled, “Michael never turned in much quality work in years past.” She went on to say,

He had a reawakening in my class. By the second semester, he began participating more, putting in more effort, and grew in reading. He really enjoyed participating in the mindset activities. If I showed you some work from the beginning of the year, then showed you work from the end of the year, it would be difficult to believe it is the same kid.

Michael considered himself smart, yet he sometimes expressed doubts about himself as a student. As the year progressed, he became more interested in doing well. He said, “My mindset flicked a switch. The bad grade made me realize I needed to get in shape.” Later, Michael reported that he had pulled his grades up to straight A’s. Getting organized, with the help of his Mom, enabled him to concentrate better. “My brain feels less clogged,” he said. “It feels like I cleaned my room for the first time. I don’t need to remember everything in my head anymore because of having a schedule.”

Michael became increasingly aware of his thought processes throughout the year. At one point, he said, “[The mindset activity] made me think of how much more I think, but I don’t realize how much more I think. I think a lot when I’m doing things, but it doesn’t occur to me.” This awareness of thinking seemed to influence his use of strategies to improve, including time management. “This year I learned that I need to manage my time better. . . . Time management was little off, but near the end I got it figured out a little better.”

Michael seemed to become very aware of how his present actions could have an effect on his future. He stated goals of getting a car and going to college, and he said, “I like thinking about my future job.” He stated in his brief end of the year essay: “I have learned about myself this school year. I believe everyone has a growth mindset because everyone can learn something new. If you put forth the effort, you can learn anything.” As with the other five students in this section, Michael explicitly articulated all four aspects of mindsets emphasized and showed dramatic growth in reading.

Case Participants Who Demonstrated Growth in Some Aspects of Mindsets. Although they did not articulate their thoughts so completely, Jessica, Robert, and Sarah expressed growing awareness of these concepts. In particular, these three students expressed keen insights regarding the extent to which their engagement varied according to their levels of personal interest. Similarly, Christina’s case suggested that she was on the verge of bringing together these ideas as she gained confidence as an English language learner.

Jessica’s teachers describe her as a very hard worker. “She works hard in class, has high standards for herself, and works well independently.” They observed that she does not naturally bond with lots of other students.

She has a hard time finding students who are comfortable with her sense of humor, who appreciate the fact that she is a bit goofy. She is definitely an avid reader, has a book with her all the time, reads at lunch.

She is a very innovative, creative thinker. The way she thinks around problems, the way she solves them is quite creative. . . . Her strongest ability is her mental creativity. She uses logical thought and picks up things quickly. I have started handing her little challenges. I give her the option to choose high or mid-level reading. She has gravitated to higher levels. I have no doubt she will do better with more difficult text.

Jessica’s emphasis on hard work was the foundation of her belief that learning abilities can grow with the investment of effort, and her willingness to address challenging tasks and persevere.

When asked to explain what she had learned from the lessons on mindsets and relate what she learned to herself, Jessica reported,

A mindset is what you set your mind on. I can relate to that when I am reading a new book and it’s really hard. I am more of a fiction person. If it’s non-fiction, I at least try. Sometimes with fiction, I don’t really have to try to concentrate, it just happens. If it’s boring, I try to force myself to read. I tell myself, ‘I like books so much.’ Or I give myself a kind of reward. If I finish a book I don’t
like, then I read a chapter in a book I really like. I tell myself, ‘If I get this done, I will be able to read something I like.’

At the end of the year, the language arts teacher noted that Jessica invested more effort with challenging texts and made strong progress on her end-of-grade reading test. She enjoys reading fiction and realizes that when she is reading for pleasure, remembering and concentration seem to happen naturally. When faced with an assignment she finds boring, she tells herself to try harder. When describing the video games she enjoys and the Manga she reads for fun, her tone of voice and nonverbal language show energy and enthusiasm. When describing school assignments, her demeanor becomes more “nose to the grindstone.” Rarely did she describe specific strategies for making sense of new ideas or focusing her mental energy. Nor did she fully articulate visible connections between effort and accomplishment. Jessica’s general articulation of some aspects of mindsets emphasized correlated slightly with the language arts teacher’s judgement because she showed dramatic growth in reading.

Robert sees himself as someone who invests a great deal of energy and effort in things that interest him. Sometimes, these interests compete for his attention with his academic assignments. He acknowledges that he does not invest a great deal of effort in tasks he finds boring. His language arts teacher commented, “I have noticed that Robert disappears into his other interests.” Robert’s comments in interviews affirmed his sense of himself as guided by his interests, as indicated by the following exchange near the end of the year.

Interviewer: Part of this last reading assignment is to work on stamina. What does your teacher mean by that?

Robert: I don’t know. Stamina is staying with something, going toward it, having it as a goal.

Interviewer: What would stamina have to do with the end-of-grade tests?

Robert: Stamina on a test would be not getting distracted, doing all the questions, and going back to check on answers. To stop trying to get it done fast to just get it done—instead of hurry up and sleep. Ms. D wants us to really try and read the entire passage and make like notes and stuff which I don’t like doing. I just like reading without doing all that work. I like to read for entertainment. Tests make us read stuff we will never use in real life.

Interviewer: What do you think you will do on the test when you reach a boring passage?

Robert: I don’t know. Slow down and force myself I guess.

After he completed the end of the year tests, Robert recalled,

A lot of the passages were somewhat entertaining and easy. One was really boring. I tried to read it but gave up on second page. I was about to fall asleep. I had enough sense of it to make some good guesses.

The language arts teacher confirmed that Robert scored well on the test. He had made such strong growth the year before that this year’s score showed little growth. She went on to say,

Robert’s stance is, “I am going to decide what is valuable. I am not that concerned about other people’s rewards or punishment.” The biggest change for Robert has been having friends. They have their own private jokes; they found each other. The things he is doing are never just time fillers. Whatever it is he is fully invested in it. Whether he is creating a new comic series, drawing.

Like Jessica, Robert expressed some aspects of mindsets and made progress in reading. Like Michelle, his scores from the previous year were so high that it would have been unlikely to show more dramatic growth.

Early in the study, Sarah’s teachers described her as a student who does not test well but works “three times as hard as other students.” Sarah views herself as a diligent learner with good insight into both her strengths and areas of improvement, but she is able to cite her perceived weaknesses more easily than her strengths.

Over time, it became clearer that Sarah’s self-perception in terms of the fixed/growth continuum fluctuates depending on subject matter, skill, and personal interest in the task. For example, when asked to describe the most important aspects of
mental preparation for her EOG exams, Sarah’ responded, “Knowing that no matter what, I could study for weeks and weeks but what I know is what I know and what I get is what I get.” She went on to say,

Well, it depends on which test. With the science test, I reread and I went through it and took the test again just to make sure I did everything right cause it was a simple test and didn’t take very long. But the reading and math, I didn’t have time to do that—they took too long. When I was doing them, I would mark them [challenging questions] with a star and then go back to them.

Sarah was definitely aware of the value of effort, focus, and persistence in order to achieve goals in various life areas. When asked how she prepares for challenging tasks, she said, “I just tell myself that no matter what happens, I’m still going to grow from this experience and even if it goes bad, it’s just a bump in the road and I can still continue trying and it’ll be fine.” When asked how much of how well she does on academic work is self-influenced, and how much is teacher influenced, “I’d say it’s 50/50. Cause I have to have the will to actually read the question and put the effort in. We have to remember what they taught us and how we learned it.”

Sarah’s final essay illustrated her uncertainty about the relationships between effort and accomplishment.

I grew up being told that I can never learn too much. When I was in elementary school, until second grade, I was behind two grade levels. Then I had a teacher and a tutor that helped me get on track. They found that I memorized things very well. . . . You can keep learning things until you refuse to. Every student can become engaged with a topic and learn more things about that topic. Each of us can grow stronger if we try, in school or out. The more effort I invest, the more I learn, the more I grow.

Sarah showed growth in reading but not dramatic growth, and expressed some aspects of mindsets.

Christina’s teachers described her as a “very introverted” student who flew “under the radar.” Her teachers were not always sure if she was understanding in class or “just going through the motions.” They explained that Christina began school in the English language learner program but later became proficient enough in English to exit the program. The language arts teacher added, “Christina is very shy about her heritage. She will work her tail off but it’s often hard to tell if she enjoys the work.”

In her early interviews, Christina shared that she was born in Mexico and immigrated to the U.S. when she was eight years old. Her sister was the only other person in the home who spoke English. Christina identified her sister as someone she admired, but she also expressed some frustration over her sister’s many accomplishments and suggested that she would never be as good as her sister. She said, “I just don’t think I’m that smart.” Christina’s biggest concern often seemed to be what other people thought of her. She said she struggled to fit in because of her different culture and described herself as “shy” and not “really comfortable” with speaking English. She shared, “I was just scared that people would judge me.”

As the year progressed, Christina stated that she felt more confident and comfortable with herself. Christina shared that seventh grade had been her best year so far, academically. She was making better grades, learning more, and comprehending the information more easily. She credited her teachers for this success more so than her own efforts and diligence. Christina’s final essay suggested she was beginning to understand the complex dynamics of learning and remembering.

I believe that we pick what we want to learn. If a teacher puts something in front of you and you decide you don’t care about it or you don’t want to do the work, then it would be your choice to not learn something. Sometimes not everything is about the teachers. It could be about you too.

Beyond this general expression of awareness, researchers found little evidence that Christina was willing to address challenging tasks and persevere, or to develop stronger learning strategies. As with the other three cases in this cluster, Christina expressed some aspects of mindsets and showed growth in reading.

**Case Participants Who Demonstrated Limited Growth.** How well Jennifer and Ashley understood mindsets was difficult to determine, as they sometimes had less to say than the others and often seemed to focus more on their immediate experiences as young adolescents. Jennifer reported that she began the school year with good intentions: “I’m not gonna have
any absences and I’m gonna try and make straight A’s next year.” Her teachers suggested several times that she was capable of academic accomplishment but often more focused on her life out of school. Early in the study, Jennifer stated that she was “kind of struggling . . . it’s a lot of stress with homework and extracurricular activities.” In her interviews, she shared that her mother had some health issues (possibly a heart attack), and at times, this caused some anxiety for her. When prompted on whether anxiety about her mother affected her academic work, Jennifer stated, “If we’re in the middle of class or something, the teacher will say something that will remind me of it. Then I’ll like, black out, my eyes will be open or whatever but I’ll just like black out in my own thoughts . . . then I’ll see the teacher and remember to get back to work, and then I’m ok.”

Jennifer admitted that she did not like to read if the subject was not of interest to her. She was aware of her own effort and her academic outcomes, but she added that some of her lack of interest in reading was due to struggles with reading comprehension. When asked what it would be like if she did not struggle with reading, Jennifer says, “I think I would be like really smart.” She stated that her score on the ELA end-of-grade test was due to her lack of interest in the article topics, and therefore, lack of effort. Researchers found little evidence that she had grown more willing to address challenging tasks and persevere or that she had developed stronger learning strategies. In her final essay, she described herself as “hard working but . . . easily off track. I am a very creative person in how I think. I take the longer way instead of the easier road.” Jennifer vaguely articulated mindset concepts and showed little growth in reading.

Ashley described herself as “a somewhat emotional person.” She appeared somewhat reserved but straightforward. She was a member of the school cheerleading squad and put a lot of effort into her cheerleading. When prompted about seventh grade, she stated, “It’s fun. Sometimes it’s tough, you have to finish all your work in a certain amount of time . . . You should know what the rules are, and you try harder than you would in sixth grade.”

Ashley shared that she would like to be a lawyer one day to help bring justice to issues concerning racial oppression and discrimination. When prompted on how she will see this desire to fruition, Ashley stated, “stuff that’s going on right now, like in my generation, bad things . . . I don’t want to end up like them. I just stay to myself. I don’t really get into drama like that.” Concerning grades, Ashley mentioned that she held straight A’s at one point in the semester. Interestingly, she did not score as well as she had hoped on the end-of-grade test for ELA. In response to this, she stated, “I’ve grown a lot in ELA, I mean, not by my EOG score, but just by what I’ve done in class.”

Concerning effort and engagement, Ashley appeared to grasp the concept of effort and outcome very well. She presented herself as a very driven student and team member on the cheering squad. On her final essay, she summarized her views.

I believe that if you actually put your mind to something you want to learn, then you don’t have a fixed mindset. You have a growth mindset. But, if you think about it, some people don’t like to try new things and they get afraid when the teacher gives them a challenge.

While she expressed this general idea in writing, researchers found little evidence that she had grown more willing to address challenging tasks and persevere, or that she had developed stronger learning strategies. She acknowledged this ambiguity in her essay, “When I go to college, I want to become a lawyer. In order to do that, I’m going to have to be a good listener but I don’t like to listen to other people.” Like Jennifer, Ashley vaguely articulated of some aspects of mindsets and showed little growth in reading.

Conclusions

In this study, researchers and teachers collaborated to design instructional activities to help seventh graders better understand their thought processes and their development as learners. Results chronicled the teachers’ efforts to provide explicit instruction in how the mind works and how mindsets determine engagement. The teacher regularly revisited issues related to mindsets across the second semester and approached the construct of mindsets broadly, emphasizing connections between effort and accomplishment, the value of challenging assignments, and the importance of perseverance. She made explicit connections between mindsets and learning strategies in language arts, encouraging students to articulate their understanding of mindsets in visible ways through discussion and writing.
Informal analysis of work samples suggested that most students could articulate a general understanding of the concepts related to mindset emphasized in language arts class. They defined key terms such as smartness, growth mindset, fixed mindset, effort, and concentration. They also gave examples of how their mindsets affected their decisions both in and out of school. Detailed case studies conducted with 12 students demonstrated ways that individuals responded to the teacher’s efforts to help them better understand their thought processes. Ten of the 12 students showed growth in their understanding in concrete ways. These students provided specific illustrations of times when they engaged or disengaged in school. Their examples showed how their engagement varied by the nature of the task and level of interest, affirming the importance of students having choice in how they approach assignments.

Unlike earlier studies that offered mindset interventions as enrichment, this extended case study showed how a teacher integrated the exploration of mindset with language arts instruction. This integration was especially powerful when class texts explicitly related to the nature of thinking and decisions were the foundation of multiday lessons that connected reading, discussion, and writing. As in earlier studies of mindset interventions, results confirmed that students could make connections among effort, engagement, concentration, and accomplishment in pursuing personal interests and academic goals when they received explicit guidance and feedback (Blackwell et al., 2007; Dweck, 2010).

At the same time, the case studies illustrated the complex dynamics of thinking in school. As Farrington and associates (2012) emphasized, thoughts related to learning are dynamic and interwoven, and students who rarely succeed in school often find these dynamics overwhelming, sometimes forming negative habits of mind that are difficult to reverse. One of the biggest limitations of this study was the composition of the sample of students selected as case participants. As noted in the methods section, researchers were unable to obtain consent from the students in the first period class who struggled most with reading. Even though data from the test scores at the end of the year demonstrated growth in reading for most of these students, it is difficult to know the extent to which they internalized mindset concepts.

Although limited by sample size and selection, this exploratory study showed that seventh graders are capable of understanding the construct of mindsets and describing ways that their mindsets influence personal learning and performance. Case studies and work samples were limited, however, in the extent to which researchers could determine whether students could go beyond articulation and apply these understandings to the variety of educational and personal experiences they encountered. Some of the interviews suggested powerful applications. In others, students could describe and acknowledge the importance of mindsets, yet they shared examples of giving up on tasks because they became too difficult. Clearly, further investigation is needed, especially in ways that teachers and researchers can connect interviews and writing samples with direct observations of decision-making.

Insights from this exploratory study will guide further examination of the specific dynamics related to students’ learning about learning. As this line of inquiry progresses, the research team will aim to recruit a wider range of students for case studies. In addition, it may be possible to provide more recurring opportunities to engage students themselves as researchers through the instructional components of the intervention. It will be especially helpful to provide students regular opportunities to make explicit connections between mindsets as ideas and mindsets as they apply to daily living.

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Appendix

General protocols for interviews

General questions for debriefing with teachers after project activities

1. Tell me about this most recent activity. What did you do?
2. What did you hope to accomplish and why?
3. How well do you think this activity went?
4. What did you observe about students’ responses?
5. How might you improve the activity?

Introductory questions for interviews with students

Explain the research project, concept of key informant (not an undercover agent).

1. “Tell me a little bit about yourself.” (Would like to get some demographic info to get a better idea of their worldview—single parent, both parents, etc.; siblings; main rules in the house/expectations/chores, etc.)
2. “Tell me about 7th grade so far.” (Likes/dislikes, accomplishments/challenges, things they have learned, etc.)
3. “What sorts of activities do you do for fun?” (Hobbies & Interests, why they enjoy it, what they get out of it, etc.)
4. Which of these activities really engage your attention and challenge you? What are you thinking about when you are _____? When preparing for a challenging task (i.e. physical or mental), how do you prepare yourself for it? Please share a few examples.

General questions for debriefing after project activities

1. Tell me about this most recent activity. What did you do?
2. What did you hope to accomplish and why?
3. How well do you think you did?
4. Now that you have completed this activity, how do you think it relates to your own personal experience and life outside of school?
5. How could the teachers improve the activity?

Questions for the end of the school year

1. These past few weeks, teachers have put a lot of emphasis on “mental preparation” for the end of the year exams. What are the most important aspects of this mental preparation for you?
2. Part of this mental emphasis is concentration. When do you think your concentration is at its best? What types of activities? Why those activities?
3. How do you know when your concentration is weakening? What do you do to try to get it back?
4. How well do you think you will be able to concentrate on the end of year exams?
5. Another part of this mental preparation is stamina. What does stamina mean to you? How strong is your test taking stamina?
6. We know how important these tests are to your teachers. How important are they to you? Why?