Chess From Square a1: Incorporating Chess Into the Gifted Class
Thomasina C. P. Adams
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What is This?
Abstract: Teachers of gifted students often are challenged to find ways to stimulate critical thinking and problem-solving skills. School chess clubs are one way of meeting that challenge. This article poses how games such as chess affect learning and gifted students. Two detailed strategies for teaching chess to students beginning in kindergarten are presented in this article, narrative story and visual spatial strategies challenge students to learn. Chess is a tool that can be used to meet gifted program standards. Resources for teachers of the gifted are discussed and evaluated throughout the article.

Keywords: gifted education, critical thinking and problem-solving enhancement, chess strategies, skill transfer, teaching tools, resources, gifted program standards, chess club, visual spatial, analogies, games, sportsmanship

Chess From Square a1
Incorporating Chess Into the Gifted Class
Thomasina C. P. Adams, MS

I remember sitting at the table with my father and my sister learning how to play chess. I was 6 years old at the time and loved anything that my father taught me. This was a common scene during my childhood. Not only did my father teach my sister and me to play chess at an early age, but he also sponsored an after school chess club for high school students from the alternative school where he taught. His “problem students” would show up every week at the local Wendy’s restaurant to play chess. At first, the students showed up for the incentives that were offered by Wendy’s restaurant, but eventually they were there for the challenge of playing the game against stronger opponents. When I asked my father why he did this, he said there were several reasons. He said the students needed something constructive to do with their time to keep them out of trouble—at home or with the law. Then he told me that the competition was good for students and it taught them appropriate coping skills. Both of those were great reasons, but I remember my father saying, “I guess the best reason that I’ve found is that chess is one of the few things proven to raise IQ scores.” As a child, I accepted what my father said as law; I did not need proof. As I grew up, we still played chess, but it was less often. I never became great at the game, but I have always enjoyed playing. Today, I still classify myself as a novice chess player, but I enjoy teaching the students in my gifted program to play chess, often starting with kindergarten and continuing through fifth grade.

Chess Club
I forgot about the talks I had with my father until Clifton (pseudonyms are used throughout this article), a fifth-grade gifted student who was accelerated from second to fourth grade, and his mom approached me and another teacher of the gifted at our urban, public elementary school about Clifton’s desire to start a chess club. Clifton had been attending a chess club with his older brother at the middle school, but he could not participate in the tournaments because he was much younger and not an official member of the middle school’s chess club. Clifton’s passion for the game was clear when he sought to change the situation he saw as a roadblock to his success in chess. The school agreed that we would have a chess club for elementary students. Clifton helped make the decisions about the grade levels he would invite to participate, when we would meet, and how the meetings would operate. With a little guidance, he decided to invite all second- through fifth-grade students to stay after school in the cafeteria every Wednesday from 3:00 p.m. until 4:00 p.m. and lessons would be given for beginners, whereas advanced players would challenge one another. When the decisions were final, I began to think about the effects the chess club would have on our students. I reflected back on my conversations with my father, and I began to consider all the possibilities of how something as simple as a chess club could influence our gifted students. My father had mentioned that chess could raise IQ scores, but

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what other possibilities were there for our gifted students? How could I help the gifted students get the most out of our chess club when I was not an expert on chess?

Clifton encouraged his friends and classmates to attend the new chess club. As the youngest student in the fifth-grade gifted class, Clifton often had the attention of the other students. If Clifton could do something, they thought they should be able to do it as well, because they were older. The students had a compulsion to participate because they wanted to prove their skills against Clifton’s. The students signed up, and on the 1st day, our chess club had 38 charter members. The students were separated into three groups: students who had never played chess, students who knew how the pieces moved, and students who were proficient and used strategies in chess. Parent volunteers worked with the proficient students easily whether they knew how to play chess or not. The other teacher of the gifted did not have experience with chess and felt she could not teach the game but she could organize, communicate with parents and school administration, and supervise. Without her involvement, the chess club would not have been successful. Because I was the only teacher involved with the chess club who knew how to play chess in any capacity, I worked with the beginners.

The first few meetings of the chess club were mostly instructional for those who had never played before. As an introduction to the game and the possibilities ahead, we had a local university professor, who was a state chess champion, come teach the students the rules of the game. The professor was ranked third in the state when he spoke with our students. I was pleased that he started with talking about the history of chess and that the number one rule was good sportsmanship. He talked about being polite and taking turns as well as shaking hands before and after a match. He said to the students that chess is a civilized sport. His first activity was to have all the students shake hands with the person next to them and say, “Good Game!” The students loved it; a few of the students even started using the gesture in other classes.

I was delighted with how quickly the students were able to play the game and understand the rules. The students learned to play chess, but more importantly, they learned skills that they would not have been “taught” directly. The students learned to appreciate their opponent in the game, to think through two or three moves ahead, as well as to focus their attention. These skills were those that the teachers in the school began to notice. In my own class, students who had difficulty deciding what to do first when given instructions started asking fewer questions while figuring out the correct steps. When I asked one particular student, Chuck, how he decided what he needed to do, he replied, “It’s like in chess. I know what I want to do, so I figure out the best way to get there.” His response made me smile as he continued working on his project. Teachers throughout the school had similar stories and encouraged many of their students to sign up for the chess club.

**Rationale**

As I began to research the impact of chess for elementary students, I was happily surprised when I found Internet resources, research articles, and books that supported what my father had told me so many years before. Chess can be beneficial for students and teach students skills that can relate to numerous areas of study. Researchers have linked chess to many vital developmental skills, including concentration, problem identification, problem solving, planning strategies, appreciation for the consequences of action, creativity, lucid thinking, logical thinking, analytical thinking, patience, judgment, self-discipline, and decision-making skills (Gobet, de Voogt, & Retschitzki, 2004; McClain, 2005; Storey, 2000).

*How games affect learning.* The research available on games and children’s learning focused on transfer of skills or knowledge (Gobet & Campitelli, 2006; Hays, 2005). Researchers looked for ways to improve student learning by exploring how the skills and strategies used in games transferred to other areas of learning. Studies measured transfer of skills from a game to an academic area to decide whether the desired learning goals have been reached to the same degree, or higher, than other instructional strategies. Hays (2005) examined games used for instruction at multiple levels: elementary, middle, and high school, as well as college. His results showed that the use of games did not *raise* the scores after instruction, but it did yield results approaching the same scores as other instructional strategies. The benefits of using the games were comparable with other strategies. The same skills practiced in the games were practiced in other forms of instruction, but students preferred playing games most of the time. Researchers considered that learning these skills in a game helped students transfer skills from the game to other areas.

Gobet et al. (2004) found that specific skills wouldn’t transfer from one area of study to another, but skills that were taught as a transfer skill could be used in multiple areas of study. The examples given of skills that wouldn’t transfer were mathematical skills used in geometry. These geometry skills did not transfer to history class. If you were going to use the skills for higher mathematics, the transfer would make sense, but because it was a completely different domain, geometry skills wouldn’t transfer to history. According to Gobet et al., psychologists Grotzer and Perkins found empirical evidence of generic skills transferring between domains when the skills were taught with transfer in mind. With the evidence that the skills used for games have applications in other areas, I looked at how the specific skills taught in chess could affect learning.

*How chess affects learning.* The research available on chess and children’s learning was difficult to find in scholarly journals; however, numerous authors have publications available about their research on university websites, chess websites, and in *Chess Life* magazine. After much searching, articles about learning, practice, problem solving, and memory surfaced (Bilalic, McLeod, & Gobet, 2008; Rifner & Feldhusen, 1997; Unterrainer, Kaller, Halsband, & Rahm, 2006). One article was especially
helpful when looking at problem solving. Ferreira and Palhares (2008) gave reasons that strategy games, specifically chess, contribute to the development of skills in mathematics and problem solving in a study conducted on third- to sixth-grade children. Ferreira and Palhares found that a relationship existed between the ability of the chess player and the child’s abilities in patterns involving problem solving. The skills used for finding patterns that involve problem solving are also used in chess. Rifner and Feldhusen (1997) concluded that the instruction of the game of chess, as well as the strategies involved in the game, helped students with problem-solving and logical-thinking skills. This relationship makes chess an ideal method of teaching problem-solving patterns.

Why we should use chess with gifted students. Research revealed that teachers must look at ways to instruct gifted students related to their special characteristics that distinguish them from their peers. Gifted learners can learn skills quicker than average students, work with ideas that are abstract or complex, are more advanced than peers of their age, use thinking skills at a higher level, evaluate their own performance, look for “ordered complexity” (Reis & Small, 2001, p. 7), have a discrepancy between their intellectual and emotional development, and have not experienced failure (Reis & Small, 2001). Students with these characteristics need opportunities to explore their skills. This is where chess can make a difference in the education of gifted students. Chess allows students to start at the same point, square one, or in chess, square a1, and then excel at their own pace. Gifted students, characterized by their drive to become experts in a specific topic, sport, art, or, in this case, game, enjoy the challenge of chess as well as the skills and strategies they obtain from playing the game.

Strategies for Teaching Chess

My students have gained a lot of self-confidence with chess. Often, the most timid student will begin taking risks on the chessboard and then later in other activities as well. To help foster their self-confidence, I teach the students how to play using different instructional strategies. One strategy focuses on a story and learning through narrative, and another focuses on visual spatial learning styles. There are many resources available for teachers to use that have different strategies, but I designed these for use in my classroom of gifted learners. In my experience, it has been best to offer both strategies to all students and what they do not gain from one, they generally pick up from the other. I have outlined my instructional approach below.

Narrative story strategy. The first strategy is the one my father used to teach me—hands-on play. I have made adaptations to his methods; but the most enjoyed adaptation is the story I tell for setting up the chessboard and how the pieces move. I share the story of a kingdom that has walls (the rooks are placed on the corner squares) that protect the people inside the walls. There is a castle inside the walls, but the horses that the knights ride on live outside the castle but still inside the walls (knights are placed next to the rooks). I tell the students that before they can meet with the king and queen, they have to make it past their advisors (bishops) who are always next to the king and queen. Then I explain that the queen is very particular and always wants her shoes to match her dress (queen goes on the square of her color: black on a dark square, white on a light square). The king stands next to his queen with his crown and cross on his head looking over all his soldiers (the pawns) lined up to protect his kingdom. As I tell the story, the students set up their chessboards with me. This story helps them to remember where the pieces go and helps when explaining how the pieces move.

After the chessboard is set up, I begin to explain how the pieces move. Using the story, we start with the rooks. I explain to the students that the rooks are the walls around the kingdom. When we think of walls, we usually think of straight lines. The rooks are like walls because they move in a straight line. I tell the students that walls can be long or short, so the rook can move seven squares—if no piece is in his way—or one square. The students then practice moving the rook around the chessboard in straight lines: left, right, forward, and backward making walls around other pieces as they move.

The knight is the next piece I explain when using this strategy. I ask the students to remember why the knight has to go on the square of her color: black on a dark square, white on a light square. The king stands next to his queen with his crown and cross on his head looking over all his soldiers (the pawns) lined up to protect his kingdom. As I tell the story, the students set up their chessboards with me. This story helps them to remember where the pieces go and helps when explaining how the pieces move.

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The king is the next piece I explain when using this strategy. I ask the students to remember why the knight has to be next to the rook, and they usually remember that the horses have to stay outside the castle. Then I talk to them about how the knights are “cool” because they can ride a horse. They are the only piece that can jump over other pieces. The horses jump from a light or dark square to the opposite color square. To get there, they trace a path that is the same shape as a capital letter “L.” The knight moves one square (or two squares) in any direction and then two squares (or one square) in a direction that makes a right angle. I usually count with the students and demonstrate how to move a knight. “The knight moves up one, over two, or up two over one, or back one, over two, or back two, over one, or over two, up one, or over one, up two.” I also tell the students that the knight can be attacking up to eight different squares at one time, so they are helpful to protect other powerful pieces while attacking the opponent.

It is important to note that starting with a simple moving piece such as the rook helps to build confidence in the students before attempting the complicated moves of the knight. There
are also games that allow students to practice the simple and complicated moves without the negative thought of losing the game. (See the resource books from Championship Chess in the “Resources for Chess” section for more games that encourage learning the pieces.)

After the students have an understanding of the knight, I teach them the simple moves of the bishop. I continue with the story explaining that the king and queen need their advisors to be able to get to them quickly, so they have to be able to move across the chessboard forward and backward. I help the students use the shape of the piece as a mnemonic device to remember the way it moves by telling the students that the bishops think that because they have pointed heads, the best way to move is pointed lines—the diagonals. The bishops like pointed lines, so they always stay on the color on which they start; one bishop is on a light square, the other is on a dark square. For practice, the students then pretend they have an urgent message to get to the king or queen and move the pieces across the chessboard through other pieces to get close to the king or queen.

The students have now learned how the rook, knight, and bishop move. This makes it easier to teach them about the queen. The story continues, and I share with the students that the queen is a very busy woman and has to attend many functions. She has to be seen everywhere and get there in a timely manner. Because she is so important, she has special privileges. The queen can move as far as she wants in any direction she wants. She is a combination of the rook and the bishop. I then have the students practice moving the queen around with the other pieces on the chessboard. The goal is for the queen to get to all four corners and back to her starting point without being captured. As with the rook and bishop, the queen can capture any piece in her way, which makes sense; no one wants to be in the queen’s way when she has somewhere to go.

When students have an understanding of the major pieces, not including the king, I bring out the pawns. Up until this point, the pawns have not been on the chessboard when they have played. The story goes on with the queen announcing that the king will be joining her soon, so she sends for the royal army. The pawns march onto the chessboard in a straight line. The white pawns line up in front of the white pieces on the second rank and the black on the seventh rank in front of the black pieces. The pawns are very slow-moving pieces. They are soldiers that are burdened with a large shield and a sword or spear. The pawns hold their shields in front of them to show the direction they are marching. When the king tells a pawn to move, they have a choice to run (move two squares), or walk (move one square). They only have enough energy to do this one time because their armor is so heavy. After their first move, whether they walk or run, they are too tired to run again. They walk (move one square) the rest of way across the chessboard. As the pawns have the huge shield in front of them, they get blocked by any piece that stands in front of them. This can be a hazard, but it can also help the pawns and their team. Even though the pawns are limited in their movement, they can capture enemy pieces. The pawns have the shield in front of them, but their sword or spear can reach out diagonally to the squares in front of them. If they attack a piece, they move into the square and take the place of the piece they captured. This can help block the opponent. Unfortunately, because of all the armor and heavy shield, pawns cannot move to the sides or backward; they would fall over if they tried.

With all the pieces on the chessboard, the king comes to the game. The king is the most important piece of the game. He has to be protected and cannot be put into danger (check—this is when an opponent’s piece is attacking the king) by a move he makes or a move one of his army makes. Because he is so important, he does not move around quickly. He is very powerful, so he can move in any direction he wants (any of the eight squares adjacent to him), but he can only move one square at a time. He has to be careful not to get into danger (check) because he has to run the kingdom. The students understand this best when I say he has to stay close to his throne. He can still capture pieces if they are next to him, but he cannot capture a piece if it is protected by another piece of the opponent’s army. The king is paralyzed (checkmate—this is the end of the game because the king cannot get out of check) when he is attacked by his opponent and has nowhere to move that is safe from the opponent. The king has an army that protects him, so often he can order another piece to capture the opponent’s piece that is attacking him. The other pieces will also sacrifice themselves by getting between the king and an opposing piece that is attacking the king. When the king is paralyzed and cannot move out of the way, capture the piece attacking him, or put a piece of his army in the way, the game is over. The students then practice moving the king around trying to make through the chessboard to their opponent’s queen’s corner square without getting in check or checkmate.

**Visual spatial strategy.** The other strategy I use is a combination of a website, www.chesskids.com, and hands-on play. The website introduces students to chess starting with the very beginning, the chessboard, and then works through each piece with games and quizzes. This specific site is based in the United Kingdom; my students have enjoyed using it and learning British expressions and terminology. This site is also good for parents to work through with their children.

In my experience, students can perform differently on the computer than they do on a chessboard. This is evident when a student who consistently beats the computer has a harder time playing peers in the classroom or chess club. Some students who play well against opponents in class cannot beat the computer even when it is set to the easiest level. I have decided that the best way for the students to work around the differences of a three-dimensional and a two-dimensional game is to play them simultaneously. When my students are working on learning the pieces or playing a game against the computer,
they have a chessboard set up beside the computer. This is where they practice what they learn from the website and/or make the moves of the game they are playing. This strategy has an added bonus of making the students physically move the piece for the computer, thus allowing the student to think of the options the computer could use. Having the chessboard setup also helps develop their visual spatial awareness of the chessboard. The students can visualize how a piece will move before they attempt to make their move. This is important for tournament play because one of the rules of a tournament is if a piece is touched, it must be moved unless it is an illegal move such as when the move puts the king in check or does not follow the rules of how that piece moves. I prefer to use this strategy after I have taught the students how to play using the narrative strategy. The visual spatial strategy is great for practicing and for learning to follow the rules of chess, including notation (writing down chess moves).

Connecting Chess to Gifted Programs

As a teacher, I know that using more than one instructional strategy helps intellectually diverse students come to a better understanding of any topic covered. Since their 1st year of the chess club, I have included chess as a part of the curriculum in my gifted classes. I start by teaching my kindergarten students how the pieces move and how a tournament works. The other grade students (first through fifth) participate in different activities based on their chess ability level and have periodic tournaments throughout the year.

Lessons learned. My gifted students have had tremendous success with chess. They have learned how to “be a good sport” by shaking hands and saying “Good Game!” to their classmates as well as to hold back their impulses (during the game) because they have figured out how to get ahead in the next few moves. A minor setback in chess is not the end of the game. Good sportsmanship is an essential rule in almost any tournament that players attend. This basic rule, when implemented from the beginning, helps gifted students appreciate their opponents. This is also a great opportunity to discuss how to properly shake hands, and it gives everyone confidence boost when they do not play their best. Hearing their opponent tell them it was a good game allows students the chance to reflect on the good moves and where they made gains in the game. My gifted students have also learned that their opponent can read their actions and reactions. They have learned that if they do not control their impulses—laughing aloud when their opponent makes a mistake—they give away their strategy and plans. Many of my students have formed various strategies to control their outbursts such as sitting on their hands, covering their mouth when an opponent is moving, and only showing their surprise or glee on the notation sheet. In addition to these valuable “life” lessons, my students also enjoy learning about their friends and playing the game. When I asked one of my students what he likes about chess, he said it best by stating, “It’s just fun. I get to learn new moves from Ben and he keeps me thinkin.”

Analogy. Every Friday my students participate in Thinking Centers that focus on different thinking skills such as logic, divergent thinking, creative thinking, and problem solving. When my students have options of activities to do during Thinking Centers, more often than not, about half of them usually choose chess. This has been helpful considering I can use the game to help explain other relationships. I often use chess as an analogy for other skills I need to enforce. For example, I tell the students that they cannot have a sentence without a subject because that would be like a chess player calling out a square to move without saying which piece will be moving. I have also used the chessboard to help students practice coordinate graphing. When they see a use for the skill of graphing, they are more eager to learn the concepts. There are many ways to use chess for instruction in academic areas; Root (2006, 2008, 2009) wrote three books on how to integrate chess into a curriculum, and she also provided detailed lesson plans on how to make the transition smooth for teachers and students. (See resources below.)

Resources for Chess

Resources for learning to play chess are readily available to any student looking for them. The plethora of resources can be daunting to the teacher or parent who is still a novice chess player. I have found multiple resources that have a varying degree of benefits, and each resource has its merits. Below I have listed the resources I have used most recently. The goal in locating a good resource is to find one that meets your needs and your chess ability level. The resources listed below met the needs of my elementary gifted students, and I hope they prove to be useful to others.

Championship Chess, found online at http://www.championshipchess.net/preview.html, provides resources for teaching older students how to play chess. This series of books starts at the beginning, and teaches students about the chessboard and how each piece moves. It incorporates quizzes and games into the learning process. The aspect of these books I enjoy the most is the kid friendly language and the games that are at the end of each lesson. These games give students the chance to practice with the pieces they have learned. It also encourages the use of algebraic notation from the beginning, so students do not feel they are learning a whole new language when they need to record their games. I have used the reproducible pages to allow students time to work through puzzles, and practice finding locations and pieces on the chessboard. My school purchased the set of books for our Chess Club, and the puzzles challenged even our best players. If your students know how to play, start with Book 2 and even your “experts” may learn something new. Other books designed for younger students with many illustrations and practice games are available.

There are many resources available online for learning to play chess (see Table 1). I have found a website, www.chesskids.com, which I mentioned earlier, that has helped my students have a better understanding of chess. This website
offers activities for parents, teachers, and students who want to learn chess or practice against computer opponents. Students who start at the beginning will be able to master the pieces using the self-guided lessons and quizzes. When they master the moves of the pieces, there are games at various levels of difficulty, as well as puzzles and games for the students to solve and play. There are often websites provided by local clubs such as www.kidchess.com in Atlanta, Georgia, and www.chesskids.com in New York.

In addition to websites designed to teach students, there are websites dedicated to the chess community such as www.uschess.org. This website has resources for all levels of players. It is also the website used to register for a tournament. Competing in a tournament gives players an Elo rating, the scale used to determine how well a player plays. When chess players compete in tournaments, their Elo rating goes up if they win and down if they lose. Elo ratings range from a beginner score near 900 to a Grand Master’s score of 2,500 or greater.

Further Ideas

Using a game for instruction is not a new idea (Hays, 2005; Holding, 1985). However, including the game as a part of the curriculum is a new idea to some. Schools around the world in countries, such as Venezuela, Iceland, Russia, and Canada, have already incorporated chess into their curriculum (Ferguson, n.d.; McClain, 2005; Milat, n.d.). States such as Iowa, Illinois, New Jersey, and New York have chess programs in many schools. My work in the use of chess with gifted students has shown me that I have just begun to understand the benefits of using chess with my students. Chess can be included in the curriculum for gifted students in multiple ways depending on how the gifted program is designed. My program is a resource classroom in which gifted students are pulled out of their homeroom class for enrichment, so I infuse units of study, thinking skills, and enrichment projects during the school year. Teachers can use chess in any of those three areas. Chess could also become a part of a schoolwide club or independent study. Many options are available for implementation of chess as an instructional tool.

Chess can also help address some of the gifted program standards published by the National Association of Gifted Children (2008). Some evidence-based practices can be included in a curriculum involving chess. Table 2 includes some of the evidence-based practices that I believe chess enhances. The standards of Learning and Development, Curriculum Planning and Instruction, and Learning Environments have sections that can be addressed through the use of chess.

Table 2 lists my personal ideas, but future research could decide to what extent those ideas are effective in addressing the standards.

Every little step is one step closer to a bigger, better picture of what our students can achieve. These little steps, starting at “square a1,” also lead to self-confidence, which is even more important. The gifted student struggles to find an activity that challenges and encourages. Chess is a tool that gifted students can use, and most of them will want to use. What child would give up the chance to play a game?
Conflict of Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References


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<td>1.4.2. Educators identify out-of-school learning opportunities that match students’ abilities and interests.</td>
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<td>1.7.1. Teachers enable students to identify their preferred approaches to learning, accommodate these preferences, and expand them.</td>
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<td>3.3.3. Educators provide opportunities for students with gifts and talents to explore, develop, or research their areas of interest and/or talent.</td>
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<td>3.4.3. Educators use problem-solving model strategies to meet the needs of students with gifts and talents.</td>
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<td><strong>Standard 4: Learning Environments</strong></td>
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<td>4.2.2. Educators provide opportunities for interaction with intellectual and artistic/creative peers as well as with chronological-age peers.</td>
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Bio

Thomasina C. P. Adams, MS, has a master’s degree in special education with an emphasis on gifted education from the University of Southern Mississippi and is working toward a PhD in gifted education from the University of Georgia in Athens. While employed in the Clarke County School District in Athens, Georgia, the gifted education program has grown from less than 30 students with one teacher to more than 60 students and three teachers (of which she is the lead instructor) during the 2011-2012 school year. She has been involved in multiple organizations within gifted education, including Pine Belt Gifted Teachers Association (charter member, cosecretary for 2 years), Mississippi Association of Gifted Children, Georgia Association of Gifted Children (board member serving as the website chair), National Association of Gifted Children, teacher for Summer Gifted Studies and Saturday Gifted Studies at the University of Southern Mississippi with Dr. Frances Karnes, teacher for Saturday School for Scholars and Leaders at Georgia State University, and member of the committee to revise and develop portfolio options for the Clarke County School District. Her career has focused on teaching gifted students and assisting other teachers in finding ways to enhance their teaching skills to better facilitate critical thinking in gifted students.