WHAT THE RESEARCH SAYS: THE IMPACT OF TEACHER BELIEFS ON GIFTED EDUCATION

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Each year, the TAGT Research Resource Committee selects an area of the field of gifted education research to synthesize recent work and bring forward to the TAGT community. This year, the Research Resource Committee focused on exploring current research findings on the role of teachers in gifted education. Teachers play an important role in all aspects of gifted education, from identifying potential talent, to challenging learning opportunities, to helping students navigate social-emotional growth. Yet the research on the impact of teacher beliefs and the impact on gifted learners is sparse.

Teacher preparation programs have a significant impact on the preparedness and effectiveness of teachers (Darling-Hammond, 2000), but very few teacher preparation programs provide coursework focused on the nature and needs of gifted learners. As a result, teachers of the gifted rely heavily on professional learning opportunities to learn about best practices for gifted learners. Professional learning is a valuable tool in teacher change, especially when the teacher is able to take the new concept/strategy and then implement it in the classroom while being supported by mentors and/or ongoing professional learning sessions. Guskey's (1985) Model of Teacher Change established three principles for change to occur. The first principle is that change does not happen quickly and is often a difficult process. Second, teachers need to experience a positive outcome in student learning in order to solidify the changes. Finally, ongoing support for the teachers is necessary during the implementation of the new instructional practices. Professional learning, therefore, must be an ongoing sustained process moving beyond the standalone session.

Other facets of the role of teaching are the instructional practices, delivery, and pedagogy behind the instruction. Effective teaching practices have been thoroughly researched, examining all aspects of instructional delivery, content-area best practices, collaborative and independent learning, pacing, and assessment. The National Association for Gifted Children (NAGC) as well as TAGT offer resources on their webpages for identifying, implementing, and assessing best practices for gifted instruction.

Yet the role of teacher beliefs in gifted learner achievement is not well researched—even though most educators would firmly agree that teacher beliefs play a significant role in the success or failure of gifted learners. Teacher beliefs encompass the "thoughts, beliefs, perceptions, and values about their roles as educators, education, and about how students learn" (Schmid, 2018). Research is divided on the degree to which teacher beliefs inform one's instructional practices. In gifted education where teachers are often the gatekeepers for referral, identification, and retention in gifted programs, studies focused on teacher beliefs are few and far between. Russell (2018) compiled existing literature to identify three categories of teacher perceptions on giftedness and gifted education. The first category is assumptions, which are thoughts held by early educators and preservice teachers toward gifted education. The second category is attitudes, which are thoughts held by practicing teachers with experience teaching gifted learners. The third category is practices, which are the tools and instructional strategies for delivering content-area instruction. In this review of recent literature, we examine research articles related to the assumptions, attitudes, and practices of teachers of gifted learners.

Allotey, G. A., Watters, J. J., & King, D. (2020). Ghanaian science and mathematics teachers' beliefs about gifted education strategies. *Gifted Education International, 36*(3), 250–265. https://doi.org/10.1177/0261429420946732

Participants in this qualitative study consisted of a purposive sample of 10 mathematics and science teachers (five males and five females) with a minimum of 2 years teaching experience in Accra, Ghana. The purpose of this study was to "explore Ghanaian teachers' claims about the support provided for gifted students and the beliefs that informed the practices they adopt" (p.

253). Thirteen interview questions were developed to ascertain their beliefs about gifted education strategies, and researchers analyzed the participants' lesson plans to determine if teachers in Ghana implement gifted education instructional strategies.

The overall findings of this study revealed teachers (a) without exposure to gifted education overlooked gifted education instructional strategies, (b) were not provided training to be able to implement appropriate instructional strategies for gifted learners (which were unnecessary because gifted students can learn on their own), and (c) lacked knowledge about how to accommodate for individualized student needs.

Additional findings were that teachers were confused about what differentiation of instruction was, some claimed differentiated instruction was biased against students with lower abilities and disabilities, and 6 of the 10 felt that brainstorming, questioning, and whole-class, textbook-based instruction, which connected instruction with real-world learning experiences, were sufficient instruction for all students.

Conclusions acknowledged that identification and instruction of gifted students was not a priority in Ghana, systemic change was needed, and individual teacher educators needed to be held responsible for understanding and implementing instruction for gifted learners. A reduction of large class sizes and professional development experiences with gifted education components would initiate a reversal of the lack of priority toward educating gifted learners in Ghana. The authors associated appropriate instruction for the gifted as a factor in the development of an educated population from which "future leaders, entrepreneurs, and innovators" (p. 263) would emerge in Ghana.

van Gerven, E. (2021). Educational paradigm shifts and the effects on educating gifted students in the Netherlands and Flanders. *Journal for the Education of the Gifted, 44*(2), 171–200. https://doi.org/10.1177/01623532211001452

This article examined the ways in which five paradigm shifts in education in Flanders and the Netherlands affect gifted education in these countries. The paradigm shifts in question are (a) an inclusive approach of education, (b) response to educational needs, (c) new perspectives on

giftedness, (d) social constructivism, and (e) evidence-informed teaching.

The first paradigm shift of an inclusive approach to education highlights a tension between a focus on instructional, didactic, and pedagogical practices that are good for all and the current popularity of segregated instruction for gifted populations in Flanders and the Netherlands. The author acknowledged the evidence that highlights effectiveness of homogenous grouping for gifted students in other countries, while also acknowledging evidence that inclusive practices have also been proven effective. The tension between a system built on inclusiveness with a group that receives segregated education is one that plays out as both confusion and conflict at many different levels in the Flemish and Dutch education systems. The tension discussed here extends in various ways to each paradigm currently shaping educational decisions in the two countries.

The interconnected nature of all five paradigm shifts means that addressing the needs of gifted students and educators of gifted students will naturally be complicated by each of the other paradigms. The author concluded that, as a result of the inclusive approach to education, gifted education should not reside in segregated programs. In order to balance what is optimally desirable with what is optimally workable, educators in both university training programs and post university training need to further develop their skills in these competencies:

1. understanding conceptions of giftedness,
2. seeing educational needs,
3. understanding educational needs,
4. responding to educational needs, and
5. assessing the responses to interventions.

Ultimately, the author argued that these competencies are already a core part of teaching competencies and that their application to gifted education needs should always be tied to core competencies. In effect, one cannot become a master of these competencies without understanding how the competencies affect all students at all levels including gifted students.

Johnsen, S. K., & Kaul, C. R. (2019). Assessing teacher beliefs regarding research-based practices to improve services for GT students. *Gifted Child Today, 42*(4), 229–239. https://doi.org/10.1177/1076217519862332

Johnsen and Kaul sought to measure teacher beliefs, implementation practices, and perceived student outcomes related to research-based practices in gifted education. Three-part surveys were sent to classroom teachers in a suburban Texas school district, and 682 teacher responses were included in the study. The instrument used for this particular research included three levels of questioning. First teachers were asked if they agreed with each of 13 belief statements related to a research-based practice. Instructional practices included in the survey related to ability grouping, assessment, differentiation, acceleration, and collaboration. If teachers showed agreement with the presented belief statement, they participated in the second level of the survey, which asked them how often they practiced that instructional strategy. In the third section of the survey, teachers who agreed with the effectiveness of the strategy but reported using the strategy less than once a month they were asked to report barriers to using that strategy, while teachers who reported using the strategy more frequently were asked to indicate their perception of effect on student outcomes as a result of the strategy.

The researchers found that all 13 of the practice belief statements were agreed on by the majority of respondents with agreement percentages ranging from 75% to 96%. The highest percentages of teacher agreement related to products matched to interest (97%), ability grouping (96%), curriculum with more depth and complexity (95%), and teacher/parent collaboration (95%). The teachers who reported practicing the teaching strategies regularly in their classrooms reported perceived student outcomes, including developing and strengthening relationships with peers when grouped by ability (83%), becoming more engaged in the classroom when depth and complexity were added (78%) and when accelerated (79%). It should be noted that even though teachers agreed with the belief statements related to these researched-based practices, none of the strategies were used by a majority of teachers on a weekly or monthly basis. These data suggest that, even though teachers feel these instructional strategies are important, they are not being practiced regularly. In

their responses to questions about barriers to implementing research-based practices, teachers most often cited a lack of time and resources, the need for more focused professional development, and the need for alignment with district/campus expectations.

VanTassel-Baska, J., Fischer Hubbard, G., & Robbins, J. I. (2020). Differentiation of instruction for gifted learners: Collated evaluative studies of teacher classroom practices. *Roeper Review, 42*(3), 153–164. https://doi.org/10.1080/02783193.2020.1765919

In a compilation study by VanTassel-Baska et al. (2020), the connection between teacher attitude, traits, and observed effective use of differentiated instruction in the regular education classrooms with gifted students was explored. Differentiation was defined as "the processes by which curriculum, instruction and assessments are modified to be responsive to the needs of gifted learners" (p. 153). The focus question revolved around whether teachers were putting into practice professional development in differentiation in general education classrooms where gifted students were clustered.

Data collected from observations of 329 teachers over a 4-year period from six different school districts, 56 schools, 168 elementary schools, 84 middle schools, and 77 high schools in the four core areas were examined for the presence and effectiveness of differentiation. Classrooms in school districts with gifted education programs of 30 years longevity were observed for 30 to 60 minutes to determine what teachers were regularly doing to differentiate (VanTassel-Baska et al., 2020).

The William & Mary Classroom Observation Scale Revised (COS-R) instrument was used to document "Observed" and "Non-Observed" teacher behavior in six categories: Curriculum Planning and Delivery, Materials and Strategy Utilization, Accommodations for Individual Differences, Critical Thinking Strategies, Creative Thinking Strategies, and Analysis and Inquiry Strategies (VanTassel-Baska et al., 2020).

Frequency counts, percentages and means were calculated to reflect patterns in the use of differentiation in the classroom observed. High expectations (96%), Application of new knowledge

(93%), Expressing thoughts (81%), Sub-grouping for instruction (54%), Evidence-based strategies for higher-level thinking (61%), Independent and/or group learning (81%), Self-discovery of ideas (76%), Evaluating situations (68%), Inquiry process (58%), Analysis of text, models, and symbols (64%) were observed over 50% of the time. Planning, monitoring, or assessing learning, Reflection, Differentiated materials use, Models for thinking, Accommodation for Individual/subgroup differences, Multiple interpretations, Comparing and contrasting, Generalizing from concrete to abstract, Synthesis or summary of information, High level questions, Building argument in multiple forms, and Drawing inferences were "Not Observed" in 50% or more of the classrooms. The Creative Thinking Strategies were "Not Observed" in 50% or more of the classrooms. Differentiated teaching behaviors observed were rated as "Effective" to "Somewhat Effective" (VanTassel-Baska et al., 2020). According to the findings, "Teachers working with gifted learners in programs designed for gifted students used differentiation to a greater extent and more effectively than other teachers" (p. 161).

The underutilization of differentiation strategies raises the question of why and the need for additional support from administration and the need for improvement in teacher preparation.

Copur-Gencturk, Y., Cimpian, J. R., Lubienski, S. T., & Thacker, I. (2020). Teachers' bias against the mathematical ability of female, Black, and Hispanic students. *Educational Researcher, 49*(1), 30–43. https://doi.org/10.3102/0013189X19890577

The authors of this study investigated teacher assessments of mathematics ability and if teacher beliefs might be a factor ultimately contributing to the underrepresentation of women and individuals of color within science, technology, engineering, and math (STEM) career fields. The authors developed the following research questions:

- When examining problem solutions of fictitious students, do teachers' ratings of students' correctness and mathematical ability differ depending on the gender or race/ethnicity of the name assigned to the student?
- Do teachers' own race, gender, and educational backgrounds predict their implicit biases?

(Copur-Gencturk et al., 2020, p. 33)

To examine this hypothesis, the researchers recruited 390 teachers who had participated in professional development focused on math teaching pedagogy. A series of student-completed math problems were labeled with made-up student names described as White-, Black-, or Hispanic-sounding. Teacher participants were asked to rate each solution for correctness (e.g., correct, partially correct, incorrect) and to provide a rating of the student's mathematical ability based on the solution. The researchers used hierarchical linear modeling (HLM) to determine the source of potential differences in teacher ratings. Teacher ratings of correctness for the solutions did not differ based on student gender, race, or ethnicity. However, there were differences in the ratings of mathematics ability for students with partially correct and incorrect responses. For partially correct responses, solutions that were assigned White-sounding student names were given higher ratings by teachers of all races and ethnicities than students with Black- or Hispanic-sounding names. For incorrect responses, White teachers rated male students higher than female students on math ability, whereas Black and Hispanic teachers showed no gender-based differences in their ratings. Estimations of math ability from teachers of all races and ethnicities were lowest for Black and Hispanic females. Teacher gender, type of certification, level of postsecondary degree, and years of teaching experience did not predict teachers' math ability ratings.

These findings indicate that when there was less ambiguity in the evaluation task, such as determining the correctness of a solution, teachers in this sample showed no implicit gender or cultural biases when evaluating mathematics ability. However, when there was more ambiguity in the assessment task, such as predicting math ability from partially correct or incorrect responses, teacher gender and cultural biases were more evident. The authors suggested that one interpretation of these results might be that teachers of all genders, races, and ethnicities have internalized stereotypes and unintentionally act upon them in evaluations of student work, particularly when they are first introduced to students or have little information about prior performance or current skills levels. The researchers recommended further inquiry to explore the distinction between the valid

professional inferences educators make in the course of their teaching duties and implicit biases that may impact student evaluations within a course. The messages young people receive from their teachers can influence their self-beliefs, including math self-efficacy, and their postsecondary college and career choices, so it is critical to understand the relationship between teacher beliefs and student achievement.

Russell, J. L. (2018). High school teachers' perceptions of giftedness, gifted education, and talent development. *Journal of Advanced Academics, 29*(4), 275–303. https://doi.org/10.1177/1932202X18775658

Russell studied high school teacher's beliefs about giftedness and gifted education. The two main research questions that Russell attempted to answer were: (1) How do high school teachers of the gifted perceive giftedness? and (2) What assumptions, attitudes, and feelings do high school teachers of the gifted have about gifted education? The study took place in two phases and used the grounded theory data analysis technique. In Phase I the researcher surveyed seven high school teachers in a large suburban school system in North Texas, asking questions on an open-ended survey. The four emerging themes in Phase I were "(a) inherent giftedness, (b) classroom differentiation, (c) training and programming, and (d) advocacy for the gifted" (p. 283) and were added as direct survey statements to the end of the semi-structured interviews conducted in Phase II. An additional question was added to Phase II concerning whether the best instructors of gifted students are gifted themselves because it was mentioned several times.

In Phase II, 13 high school teachers from the gifted education program were interviewed. Overall, the findings in Phase II were similar, but more nuanced than the themes found in Phase I. For example, in Phase II, the educator's attitude was that "giftedness is an innate ability" similar to Phase I, but "that [it] requires training and development to achieve its full potential" (p. 290). Also in Phase II, teachers said that they need to move "beyond curriculum . . . and becom[e] more engaged with the social and emotional aspects of giftedness" (p. 291).

Russell's suggestions for further research include questions, such as "How could

programming and instruction be redesigned for more effective secondary gifted education?" (p. 295). As practitioners in gifted education, he challenges those "who guide gifted programming [to analyze their] expertise and how they effectively pass it on to those at the classroom level" (p. 295).

Bergold, S., Weidinger, A. F., & Steinmayr, R. (2021, February 18). The "big fish" from the teacher's perspective: A closer look at reference group effects on teacher judgments. *Journal of Educational Psychology*. Advance online publication. https://doi.org/10.1037/edu0000559

This study examined the big-fish-little-pond effect of students in multiple classrooms. In this observational study in Germany, data were collected about 837 students from 56 teachers in 20 elementary schools. Specifically, teachers were asked to rate the student reading ability, mathematics ability, and cognitive ability in reference to all same aged students; the study also examined grades in German and mathematics as well as the recommendation for the student's track. The teacher's professional experience and the amount of time with the current class were considered as potential moderators of teacher ratings, grade, and recommendation.

The results indicated, in general, contrast effects: The higher the class average, the lower the teacher ratings were of individual higher achieving students, and the lower the class average, the higher the teacher ratings were of the individual high-achieving students. This pattern was more pronounced for teacher ratings of academic abilities and mathematics grades and less pronounced for German and tracking recommendations. Also, the shorter the time the teacher knew the student, the more the teacher ratings, grades, and recommendations tended toward the average of the class.

This study illustrated that teacher ratings can be subject to contrast effects and to assimilation effects, which has implications for teachers of high-achieving students, as both of these can be harmful to students. If a high-achieving student is in a higher achieving class, this student may be more likely to be seen as average. Further, if a teacher has not worked with a particular class for very long, teachers may be more likely to default to the average achievement of the class rather than recognize the underlying ability in high-achieving students.

Matheis, S., Keller, L. K., Kronborg, L., Schmitt, M., & Preckel, F. (2019). Do stereotypes strike twice? Giftedness and gender stereotypes in pre-service teachers' beliefs about student characteristics in Australia. *Asia-Pacific Journal of Teacher Education, 48*(2), 213–232. https://doi.org/10.1080/1359866x.2019.1576029

Matheis et al. (2019), finding a lack of research in the field of gifted stereotypes, conducted research on giftedness and gender and their influence on preservice teachers' perceptions of gifted students in Australia. These researchers believed that stereotypes influenced beliefs about and behavior toward their gifted students, thus affecting the learning opportunities afforded the students.

An outdated theory known as the "disharmony hypothesis" once postulated that with great intelligence comes a lack of social-emotional development and behavioral issues, such as absentmindedness and arrogance. This theory has been since proven false; however, the stereotype remains. In previous research when these beliefs were combined with gender stereotypes, teachers perceived gifted males less favorably than gifted females. However, these findings tend to be inconsistent and make the results unclear as to whether the two stereotypes interact with each other.

This study addressed these issues with the following research questions:

1. Are preservice teachers' rating on students' characteristics affected by students' giftedness?
6. Are preservice teachers' ratings on students' characteristics affected by students' gender?
7. Do stereotypes about giftedness and gender interact with each other?

The research was conducted on a sample of 315 Australian preservice teachers. They were given several instruments that gathered data on their demographics, provided a vignette to stimulate their thinking about student characteristics, assessed on their beliefs about gender and giftedness, and assessed with four items from the Crowne-Marlow Social Desirability Scale.

The findings showed that the sampled preservice teachers held to the disharmony hypothesis, as well as gender stereotypes. As for whether these findings are found to be "striking twice," both male and female gifted students were believed to be equally more maladjusted than their average-

ability counterparts. The researchers found that implicit beliefs lean toward both gender and gifted stereotyping while explicitly the disharmony belief prevails over gender stereotypes. In conclusion, these beliefs should be examined, as their presence can affect which students are identified as gifted and which are overlooked. These beliefs are also linked to the expected behavior and expectations of their gifted students.

Godor, B. P. (2019). Gifted metaphors: Exploring the metaphors of teachers in gifted education and their impact on teaching the gifted. *Roeper Review, 41*(1), 51–50. https://doi.org/10.1080/02783193.2018.1553219

Godor (2019) explored the metaphors teachers used to describe gifted students and the influence of this metaphor on their instructional practices with gifted students. Research has shown that metaphors funnel understanding of abstract concepts into concrete experiences, which are easier to make sense of. Metaphors highlight connections between a teacher's beliefs and instructional practices. This study sought to contribute to the limited research focused on teacher beliefs and practices in the field of gifted education. 147 teachers participated in the study by completing a short online questionnaire. The responses were then analyzed by the researchers using an inductive approach. The participants created a metaphor to complete the statement: Gifted students are. . . . Next the participants were asked to explain how the metaphor influenced their teaching. From these metaphors, researchers utilized thematic clustering to identify nine themes. For each theme, the researcher described the metaphor and the effect on teaching. For example, the theme "Multilayered" was identified by the metaphors, which focused on depth, complexity, and variation. The effect on teaching was for the teacher to act as a tour guide for gifted students in the educational journey, which is a challenging job due to the complexity of gifted learners. A strong connection was found between the participants' metaphors and their teaching practices. Godor cautioned that the very process of coding and analyzing metaphors may result in some of the complexity of the metaphor being lost; however, it is a useful starting point in understanding the relationship between teacher beliefs and classroom practices.

Each of these research studies provided valuable insight to understanding teaching practices and beliefs of educators of the gifted. Join us at giftED21 as we dive deeper into these studies exploring the relationship between teacher beliefs and gifted education. We are looking forward to engaging with you in a lively conversation centering around the impact of teacher beliefs on instructional practice. The Research Resource Committee is also excited to share a second session, which explores how the findings in the research are put into practice in the K–12 gifted classroom. During this session, a panel of current Texas educators will share their experiences with teaching gifted learners and the impact of teacher beliefs.

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