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Adams, C. M., Cotabish, A., & Dailey, D. (2014). *A teacher's guide to using the Next Generation Science Standards with gifted and advanced learners*. Waco, TX: Prufrock Press.

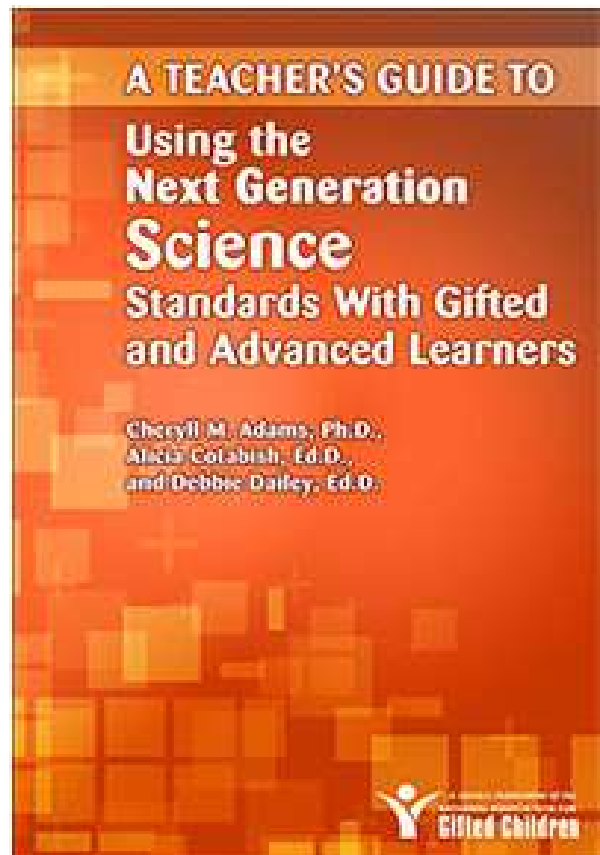
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As a science teacher-leader in my school, I have a dog-eared copy of a little book on my desk. It's filled with notes and stickies as I plan my science instruction for my classroom of gifted students. This little gem is *A Teacher's Guide to Using the Next Generation Science Standards With Gifted and Advanced Learners*. It is a go-to manual, not only of how the Next Generation Science Standards (NGSS) are set up, but offers concrete examples of how to adapt the standards to meet the needs of my students who advance through the content at an accelerated pace.

A Teacher's Guide to Using the Next Generation Science Standards with Gifted and Advanced Learners offers a practical and clear synthesis of what the NGSS are and how to use and adapt them for use with students who are gifted and advanced learners. This book is part of a series of service publications offered by the National Association for Gifted Children, written by practitioners in both the academic fields as well as the field of gifted education. Other books in this series examine the Common Core State Standards (CCSS) in



Mathematics and English Language Arts (2010) for use with gifted and advanced learners.

The NGSS, as well as the CCSS, are complex documents for a practitioner to wade through while lesson planning. The amount of information contained in these documents can be overwhelming. There are footnotes and appendices that must be referenced and “the devil is in the details” or the fine print. This book takes the reader through a clear overview of the standards and offers teachers and administrators practical ways to access the document to plan successful instruction for students. While the NGSS do not offer suggestions for acceleration as the CCSS does, this book discusses ways that educators can adapt the NGSS for this particular population of learners. Advice is offered for both vertical alignment teams as well as classroom practitioners, which makes this a very useful tool for the classroom.

The overview of the organizational structure of the NGSS and a description of how to use them begins with a discussion of ways that educators plan learning experiences. The authors outline the cross-overs between the NGSS and the CCSS in mathematics and English Language Arts. They also include discussion of the incorporation of 21st Century skills. In addition to the eight science and engineering practices, the authors suggest an additional ninth practice of, “solving problems in novel ways and posing new scientific questions of interest to investigate” (p. 13). They note that this standard supports advanced and gifted learners to take risks, embrace challenge, and solve problems in novel ways to inspire a passion for science.

An important inclusion in this discussion of the standards is that the NGSS offer a way for the gifted education community to better align itself to the *NAGC Pre-K - Grade 12 Gifted Programming Standards* (NAGC, 2010). For example, the NGSS emphasize the need for problem-solving skills as an important part of scientific development. Page nineteen offers an excellent graphic to

show the convergence and relationships found between the NGSS, CCSS, and the NAGC Pre-K - Grade 12 Gifted Programming Standards. This clearly indicates that the NGSS aligns with many of the already-present tenets of gifted education.

The NGSS do not provide a scope and sequence of learning for students, but rather learning progressions across the K-12 spectrum. These differ from the traditional scope and sequence in that they are research-based practices to ensure that students learn science in a developmentally-appropriate way. They do not merely add more detail or information, but rather require students to learn science in an ever-deepening complexity as they move through the grade levels. The learning progressions provide end-points for student understanding and assessment ceilings to ensure that students are assessed appropriately at each level. The progressions move from concrete understandings in the early grades to abstract in high school. Chapter two offers several examples of how these progressions look across the grades. These can also be found in Appendices E, F, and G of the NGSS (NGSS Lead States, 2013). These charts should be the foundation for differentiating for gifted and advanced science learners.

A strength of this book is that the discussion does not stop at the explanation of the overlap of standards. The authors proceed to discuss differentiated learning experiences, problem- and project-based learning, and assessment, using direct examples from the standards. Chapter three offers lesson plan outlines for elementary, middle, and high school science lessons. These lessons outline a trajectory for typical students and for advanced students to provide an example of excellent differentiation in practice. These examples provide practitioners with a clear idea of how to implement the ideas discussed earlier in the book. Too often, books that discuss standards are academic and difficult to implement in the classroom, but this book

moves seamlessly between theory and practice throughout.

Since the NGSS require open-ended activities and problem-solving activities more than ever, it is imperative that teachers reflect on how their classroom management routines work within this framework. There is a definite need to ensure that students have the skills to work cooperatively and parameters for behavior that are conducive to more open-ended learning. This book offers excellent advice on how teachers might begin their school year to prepare students for success. Team-building activities, student-hook ideas, as well as an overview of the 5E lesson model are discussed to scaffold teachers who are new to implementing the NGSS standards.

In addition to offering ideas for implementation, this book goes on to offer a challenging discussion about how assessments need to change for use with the NGSS. A simple multiple-choice assessment will not assess the science and engineering practices, nor the thinking skills required to master the

NGSS. Teachers and administrators need to find new ways to assess the NGSS more fully. Several standardized testing options are discussed as well as classroom considerations.

Finally, this book offers a challenge to administrators about how professional development should look for teachers new to implementing the NGSS. This discussion is not unaware of the challenging budgetary times we teach in, and offers several models that schools and districts should consider when implementing the NGSS. Although the NGSS is a more challenging set of standards, educators must be careful not to think that these standards will suffice to challenge gifted and advanced learners without additional adaptation of the standards. This book serves as a guide for school districts to do just that. Overall, *A Teacher's Guide to Using the Next Generation Science Standards with Gifted and Advanced Learners* is an excellent document to have on an administrator or teacher desk for ready reference when planning science instruction.


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About the Reviewer

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