**Evidence Supporting the Implementation of the**

**Science Ambassador Professional Learning Model**

This “Science Ambassador” initiative is supported by current and emerging research on best instructional practice to support content knowledge, application, critical thinking, and differentiated instruction. This document provides the evidence-based instructional strategies and professional learning strategies promoted in the Science Ambassador initiative.

**Instructional Strategies Promoted**

Content literacy and discipline literacy for science (Moderate Evidence, see summary <https://ies.ed.gov/ncee/edlabs/regions/southeast/aar/l_01-2017.asp> )

Conceptual change strategies (Moderate Evidence)

Developing cognitive models to explain phenomena (Moderate Evidence)

Developing metacognition (Strong Evidence)

Graphical depictions (e.g., visible learning) (Moderate Evidence)

Formative assessment (Strong Evidence)

Feedback (Strong Evidence)

Cooperative Learning (Moderate Evidence)

(NOTE: for more information evidence-based practices, see <https://www2.ed.gov/policy/elsec/leg/essa/guidanceuseseinvestment.pdf> )

**Georgia’s Professional Learning Model for Science Standards Roll-out**

A quality professional learning model provides teachers with the tools needed to successfully carry out instruction using Georgia Standards of Excellence (GSE) for Science. The Ambassador imitative focuses on building content and pedagogical content knowledge and should be supported over time with school-based professional learning practices (see Yoon et al., 2007).

The Ambassador initiative provides a cadre of teacher leaders poised to support professional learning in school environments. The Georgia Department of Education recruited expert science educators to promote a holistic and personalized learning approach for implementation of the new science standards (c.f., Jobs for the Future and the Council of Chief State School Officers, 2015). The professional learning framework promoted by the Science Ambassadors includes opportunities for professional learning via face-to-face and electronic/digital interactions. Georgia’s Science Ambassador model for professional learning utilizes the following evidence-based practices:

1. Engage teachers and leaders with the core disciplinary content knowledge needed to support student learning by:
   1. Recognizing the importance of developmentally appropriate scientific ideas
   2. Understanding the progression in depth and sophistication of scientific ideas through the K-12 school years.
   3. Acquiring expertise in the fundamental scientific concepts embedded in the Georgia science standards and their interconnectivity (c.f., National Academies Press, 2013)
2. Engage teachers and leaders with the appropriate tools (i.e., instructional and assessment strategies) that will facilitate student learning by:
3. Familiarizing them with the science practices that support scientific inquiry, disciplinary literacy, and engineering applications (National Research Council, 1999; National Research Council 2013).
4. Making thinking visible through the development of classroom strategies that will allow them to engage students in the use of language and scientific argument, as well as other forms of representation, to communicate and further develop their ideas (National Research Council, 2008).
5. Using appropriate and relevant formative assessment tools that engage students in thinking deeply about their ideas and explanations for scientific phenomena and allows them to better determine how well students are progressing toward developing clear scientific understandings (Keeley, 2008).
6. Allowing teachers to uncover the pre-existing conceptions that students bring to their learning and understanding of how students learn (National Research Council, 1999; National Research Council, 2013).
7. Provide teachers with skills to develop a culturally relevant curriculum that makes knowledge accessible to all students (Gay, 2010).
8. Provide administrators who supervise science teachers with tools to identify and value “good science practices” and provide the needed support when necessary.

**Evaluation: Creating Continuous Improvement**

The Science Ambassador Professional Learning initiative is measured and improved through a data-informed continuous improvement cycle (Bryk et al., 2012).

Dissemination of the Ambassadors is measured by tracking the number of school districts and agencies represented in the cadre of Science Ambassadors and the reach of the science ambassadors as they provide professional learning inside their own school systems. A second component of the evaluation includes a measure of educators’ perceived changes in believes and practices. Participating teachers will self-report and conduct peer-observations using tools like the *Surveys of the Enacted Curriculum* from the Council of Chief State School Officers (Blank, Smithson, Porter, Nunnaley, & Ostshoff, 2006).

Furthermore, the Center for Evaluation and Research Services at Georgia State University is evaluating the implementation of the Georgia Standards of Excellence via survey and social network analysis. Evidence demonstrates that social network analysis can show how standards and educational initiatives are taken up in districts and schools (Coburn, Mata, & Choi, 2013; Finnegan, Daly, & Che, 2013). More specifically, social networks are shown to influence whether and how teachers implement new standards (Hodge, Salloum, & Benko, 2016). Georgia’s social network analysis survey consists of two parts: (a) teachers’ learning; (b) school-level supports. Survey results will be analyzed to demonstrate how teachers have learned about the changes in the standards and what supports they have in their schools. In addition, survey results will demonstrate how social networks have facilitated the distribution of information about the GSE for Science.

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