# A Mixed Methods Study on Evaluations of Virginia's STEM-Focused Governor's Schools

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## ABSTRACT

Significant emphasis is currently placed on STEM education as a vehicle to encourage American youth to enter science, technology, engineering, and math-related professions. Gifted students are a natural resource of future innovators for these fields; however gifted programs are largely overlooked for program support. Since 1973, the Virginia Department of Education has sponsored a unique model of regional magnet programs for gifted and talented students called the Virginia Governor's Schools. These schools provide accelerated and differentiated curricula, often in the STEM subjects. As evaluation is a strong component to achieve more funding to meet the scientific and technological demands of these programs, the researcher explored the evaluation reports of five STEM-focused Virginia Governor's Schools. The purpose of the study was to collect consequential evidence of an untested rubric instrument used for the evaluations. A descriptive analysis of the instrument's criteria ratings, a content analysis of evaluation reports, and a thematic analysis of eight evaluator interviews were conducted. Results were triangulated to reveal that the five Governor's Schools met (n= 80.0%) or exceeded (n= 13.87%) evaluation metric standards, and shared similar strengths and areas of needed improvement. Triangulated evidence supported the argument that the instrument addresses gifted students as independent learners, faculty as education innovators, and promotes STEM-capable citizens through scientific research and civic service. Information collected during the study was intended to assist evaluation designers in determining rubric efficacy and provide recommendations for planned future revisions.

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## ABSTRACT

Significant emphasis is currently placed on science education, technology education, engineering education, and mathematics education (STEM) as vehicles to encourage American youth to enter STEM-related professions. Gifted students are a natural resource of future innovators for these fields; however gifted programs are largely overlooked for program support. Since 1973, the Virginia Department of Education has sponsored a unique model of regional magnet programs for gifted and talented students called the Virginia Governor's Schools. These schools provide accelerated and differentiated curricula, often in the STEM subjects. As evaluation is a strong component to achieve more funding to meet the scientific and technological demands of these programs, the researcher explored the evaluation reports of five STEM-focused Virginia Governor's Schools. The purpose of the study was to collect evidence of the consequences of using an untested rubric instrument for the evaluations. A descriptive analysis of the instrument's criteria ratings, a content analysis of evaluation reports, and a thematic analysis of eight evaluator interviews were conducted. Results revealed that the five Governor's Schools met (n= 80.0%) or exceeded (n= 13.87%) evaluation metric standards, and shared similar strengths and areas of needed improvement. The data sets supported the argument that the instrument addresses gifted students as independent learners, faculty as education innovators, and promotes STEM-capable citizens through scientific research and civic service. Information collected during the study was intended to assist evaluation designers in determining rubric efficacy and provide recommendations for planned future revisions.

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To my husband and best friend, Matthew Stith, I dedicate this dissertation to you.

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# CHAPTER ONE

## Introduction

The United States' educational system has experienced several driving movements over the last century in large part due to economic and political situations of the respective time periods. Despite decades of continuous reform stemming from the National Commission on Excellence in Education's *A Nation at Risk* (1983) and the National Science Board's *Undergraduate Science, Mathematics and Engineering Education* (1986), educational programs face a number of challenges in essential quality features as students are inadequately prepared for today's fast-paced scientific and technology-driven society. American students lag behind international counterparts in science, technology, engineering, and mathematic (STEM) proficiencies and lack interest in pursuing STEM-related careers (Thomasian, 2011).

## A National Problem

Policy makers and educational leaders continue to re-arrange curricula and funding initiatives like puzzle pieces to identify "what works" in developing STEM-literate individuals (Bybee, 2013; NRC, 2011; NSB, 2014). There is little agreement amongst scholars as to what defines a STEM-literate individual (Zollman, 2012). However, there are elements of thinking systems that are identifiably STEM-literate that extend beyond the responsibility of knowing content knowledge alone. A student who is STEM-literate should be able to think critically and make rational judgments by managing, analyzing, and synthesizing from multiple streams of information (Partnership for 21st Century Skills, 2011; NCTE, 2008).

The ability to think critically, coupled with deeper understandings of STEM knowledge and skills, are identified as necessary proficiencies to become contributing citizens and "benefit from the economic gains generated by innovation" (US Congress Joint Economic Committee, 2012, p. 1).

As the structure of the U.S. economy has shifted from an industrial economy to a postindustrial service economy, new skill requirements have emerged. In general, the demand for specific academic and vocational skills has been augmented with a growing need for general skills -- including learning, reasoning, communicating, general problem-solving skills, and behavioral skills. (Carnevale & Smith, 2013, p. 494).

## A Complementary Solution in Gifted Education

As gifted students are a promising natural resource to continue the nation's scientific and technological capacities, the support for STEM literacy of this population is critical. According to Watters and Diezmann (2003),

> a country's prosperity is clearly dependent on a population that is scientifically literate but is also dependent on people who are essentially leaders in the field, who create knowledge and who can contribute to the solution of the problems that will confront us in the future.

In a 25 year longitudinal study of 2,409 students who received gifted services, the authors identified the following achievements among the participants: 817 patents, 93 published books, one Fields Medal in mathematics, and a John Bates Clark Medal for most outstanding economist under 40 (Park, Lubinski, & Benbow, 2007). Clinkenbeard (2011) suggests that gifted education investment may lead to social and aggregate benefits such as greater Gross Domestic Product (GDP) and cost savings with lower crime and incarceration rates.

To maximize the STEM literacy of these students and prepare America's future leaders, federal and state educational departments must invest appropriately in gifted programs. The

President's Council of Advisors on Science and Technology (2010) states, "even as the United States focuses on low-performing students, we must devote considerable attention and resources to all of our most high-achieving students from across all groups." Unfortunately, gifted education has experienced poor growth over the last few decades (Lichtenwalter, 2011; VanTassel-Baska, 2006). The federal government lacks a national policy on gifted education and plays a miniscule role for gifted research and services, dedicating just $0.03 of every $100 K-12 federal education dollars allocated to education to this segment (National Research Center on the Gifted and Talented, 2014). In 2015, only four million dollars was allocated to the research and practice of gifted education through the Jacob K. Javits Gifted and Talented Students Education Act of 1988 (DOE-a, 2015), compared to 12 billion for the Individuals with Disabilities Education Act implementation (DOE-b, 2015).

To petition for greater financial resources from federal and state educational departments, program evaluation is a necessary component to provide defensible evidence to the effectiveness of STEM-focused programs that target gifted populations.

Evaluations are an inherently political activity because they are concerned with guidelines or influencing public policies, because their results can have powerful implications for individuals and stakeholder groups competing for power, and because they concern human beings, organizations, and judgments about programs (Fitzpatrick, Sanders, & Worthen, 2011).

Systematic evaluation procedures have gained momentum in determining the working efficacy of programs globally. In education, evaluation focuses on "developing appropriate means for assessing students and their progress, identifying successful schools and schools that are failing, and identifying practices that can help bring students' performance up to the standards" (Fitzpatrick et al., 2011, p. 7). Program evaluations may provide substantial information to stakeholders and assist in the intelligent decision-making of curricular content and direction (Cook, 2010; Mertens, 2014). Despite the importance of evaluation in the continuation of gifted STEM programs, Callahan notes there are significant "holes in the research base" and urges the scholarly community to contribute as a means to "increase effectiveness and efficiency of programs" (2004, p. xxx).

Gifted programs in the United States are largely decentralized with their respective school divisions, thus examining the evaluation procedures across the nation is a colossal task. However some state educational departments, such as Virginia, do sponsor gifted programs with STEM foci that are more systematized and share state-wide evaluation procedures.

**Virginia's Gifted Education Programs**

As Virginia state laws establish gifted education policies and procedures through the Regulations Governing Educational Services for Gifted Students, divisional school boards are required to provide a framework for policy implementation to the Virginia Department of Education. This framework, titled The Local Plan for the Education of the Gifted addresses

> all aspects of local services for gifted students, including, but not limited to, the areas(s) of giftedness the school division will service, an operational definition of giftedness in the division and its supporting identification procedures, program services, professional development, curriculum development, and parent and community involvement. (VDOE, 2012, p. 4)

Local advisory committees are appointed by each school board with the task of assessing the effectiveness of the school division's execution of the Local Plan for the Education of the Gifted and providing consultative services to the division superintendent and school board. In a 2013 document, the Virginia Advisory Committee for the Education of the Gifted (VACEG) highlights the importance for a continuum of services for gifted high school students through differentiation, acceleration, specialty schools, and travel/extension opportunities (VACEG, 2013). Specialty schools in particular are to provide a differentiated and accelerated curricula which "centers on best practices in the field of gifted education and the presentation of advanced content to able learners" (VDOE, n.d.-a, para. 6). Of the specialty schools, approximately 6,500 high ability students are currently enrolled in the Virginia Governor's School Program (Secretary of Education, 2014).

**The Virginia Governor's School Program**

Earl Shiflet, Secretary of Education in the Governor's Cabinet (1971-1974), appointed the Advisory Committee on Gifted Education to provide guidelines and establish a funding stream for Virginia Governor's Schools. The 26 original Advisory Committee members consisted of professional educators, politicians, business owners, parents, and other interested parties who met November 1, 1972 in Richmond, VA (Booth, 1981, p. 155). Initial funding of $250,000, with an additional $50,000 provided by the Department of Education, was established by the General Assembly for a summer program servicing 400 students across the Commonwealth. The original three sites of the Governor's School were designated to the campuses of Mary Washington College Center, the Virginia Museum Center, and Mary Baldwin College Center. The curriculum during the early years focused primarily on enrichment activities for gifted students in humanities, natural sciences, social sciences, and fine arts (Booth, 1981). Participating high school divisions could select up to five rising juniors or seniors who ranked in the 95th percentile on standardized achievement tests and were within the top ten percent of their class.

Over four decades later, the Virginia Governor's School Program has expanded to 40 sites including Academic-Year Governor's Schools (AYGS), Summer Residential Governor's Schools (SRsGS), and Summer Regional Governor's Schools (SRgGS). A report conducted by the Secretary of Education (2014) revealed that the funding formula used for the Governor's Schools did not accurately reflect the costs of providing gifted services, leading to potential difficulties in implementing best practices. As evaluation is a necessary component in pursuing additional financial resources, the evaluation procedures of Virginia Governor's Schools are essential for STEM program development.

**Evaluation of Virginia Governor's Schools**

An evaluation of the Virginia Governor's School Program was first conducted in 1981 through mailed surveys to students, alumni, parents, faculty, and subsequent interviews with key stakeholders (Booth, 1981). The evaluation process has since progressed into standardized formative evaluations, finalized as an executive summary, and submitted to the Department of Education (VDOE, n.d.-b). The evaluation team consists of an evaluation coordinator, team leader, and at least two additional members (e.g. teachers, directors, or assistant directors of another Virginia Governor's School). The evaluation team participates in onsite tours, classroom observations, and interviews with students, parents, and faculty. Each evaluator completes an evaluation rubric, arranged by the VDOE. In 2013, several components within the rubric were modified. Three Virginia Governor's School programs were evaluated with this new rubric during the 2013-2014 school year and feedback from school directors led to additional changes in a 2014 rubric.

## Nature of the Problem

The continuation of Virginia Academic-Year Governor's Schools (AYGS) relies on strong evaluation to ensure that state educational leaders have the information needed to make critical determinations, especially in regards to funding and program development. Instruments used within gifted education evaluation should provide data that "will lead to appropriate educational decisions related to services, curriculum, and instruction" (Callahan, 2013, p. 445). However, a lack of defensible evidence on the validity and reliability of the *2014 Governor's School Full-Site Evaluation* rubric opens debate by stakeholders who may question the instrument's functionality and effectiveness on AYGS program assessment. For decision-makers to conclude that the rubric is a quality instrument, or in need of revision, an investigation of completed evaluations should be conducted and consequential evidence collected. The VDOE does not have a comprehensive analysis of the proficiency levels of AYGS standards in schools evaluated between Fall 2014 and Spring 2016. This datum provides valuable information on the current abilities of the programs to pursue best practices as identified by the VDOE.

As school directors and teachers are currently tailoring curricular programs to align with the rubric, the reorganization process of the instrument during the 2013-2014 year may initiate previously undocumented phenomena within evolving program performance. The early identification of emergent themes in the findings, recommendations, and commendations of completed evaluations that are consistent amongst some or all of the Governor's Schools, would provide data of state-wide successes and potential areas of needed improvement.

Lastly, the objectivity and subjectivity of an evaluation ultimately play a serious role in decision-making. Callahan (2013) recommends that qualitative professional judgments may be the best solution for addressing standards in a gifted program. The evaluators who are tasked to assess the effectiveness of AYGS programs depend on standards provided in the *2014 Governor's School Full-Site Evaluation* rubric. Ideally, evaluators share a consistent belief system on how the rubric standards should be defined and implemented, but the reality of evaluator interpretations are unknown at this time.

## Conceptual Underpinnings of the Study

Widely accepted methods recognized as superior in achieving desired outcomes of gifted students, or best practices, are derived from theory-based and evidence-based constructs. This study is framed by the composition of several underlying theories and models that are featured as best practices by the NAGC and adopted by the VDOE. Though ultimately interrelated, relevant theories are arranged as follows: learning and development, assessment, curriculum planning and instruction, learning environments, programming, and professional development. The constructs of these theories are considered quality indicators of gifted education programs.

### Learning and Development

The scholarly literature is inundated with evidence to suggest that the action of learning is not uniform from person to person. Coffield et al. (2004) identified 71 models of learning styles in a meta-analysis of how humans attain information about their environments. One of the supporters of distinct learning abilities, Robert Gagné (1985), further stipulated that dynamic instructional approaches by teachers are necessary for desirable student outcomes. Strong advocacy exists for introducing variable instructional methods amongst gifted populations to maximize different learning styles (Borland, 2003; Renzulli, 2013). In practice, the NAGC recommends that educators recognize the unique learning, cognitive, and affective developmental needs of students "in school, home, and community settings to ensure specific student outcomes" (Deiner, 2012, p. 345).

**Assessment**

Assessment has a short history within Western education, unseen in scholarly literature before 1959, with divergent outcomes depending on the context of which the assessment is given (Nelson & Dawson, 2014). Joughin (2009) provided a minimalist description of the term: "To assess is to make judgments about students' work, inferring from this what they have the capacity to do in the assessed domain, and thus what they know, value, or are capable of doing" (p. 16). Alternative assessment, the use of multiple criteria to gather data on student performance, has gained popularity in gifted education as "students create their own responses to a task, produce products, or demonstration skill and knowledge through a medium other than a traditional test" (Moon, 2013, p. 148). The NAGC recommends gifted educators and coordinators to implement fully comprehensive alternative assessments for identification and evaluation of student performance. "Assessments provide information about identification, learning progress and outcomes, and evaluation of programming for students with gifts and talents in all domains" (Deiner, 2012, p. 345).

**Curriculum Planning and Instruction**

The term "curriculum and instruction" refers to the content and practices experienced by students and has shown to shape their academic and affective development (Hertberg-Davis & Callahan, 2013). As no single curriculum exists that can serve the diverse needs of all gifted students, gifted services must provide opportunities for differentiation, tailoring programs to align with student needs. Educators must scrutinize the strengths and weaknesses of various instructional strategies, asking questions to drive the curriculum forward (Elder & Paul, 2004). The planning of curriculum and instruction is a fluid process that changes with the gifted population served and the goals of the program. "Educators apply to the theory and research-based models of curriculum and instruction related to students with gifts and talents and respond to their needs by planning, selecting, adapting, and creating culturally relevant curriculum and by using a repertoire of evidence-based instructional strategies to ensure specific student outcomes" (Deiner, 2012, p. 345).

**Learning Environments**

To actively gain youth interest in curricular content, administrators and instructors must address the well-being of students. Shernoff (2013) identifies engagement as an important educational outcome, and the provision of optimal learning environments prevents loss of engagement. In gifted education, the learning environments must subsequently suit the expectations of students with "preferred learning modes" who have developed passions and interests in a variety of areas (Callahan & Hertberg Davis, 2013, p. 329). Attention to the learning environment within a gifted program should augment student engagement in curricular content and skills. "Learning environments foster personal and social responsibility, multicultural competence, and interpersonal and technical communication skills for leadership in the 21st century to ensure specific student outcomes" (NAGC, 2010, p. 11).

**Programming**

Programming is the service delivery approach of an academic institution in providing educational services for the student population. Several models exist in the literature to "describe the multiple settings in which gifted students receive advanced instruction, the multiple types of student groupings they will encounter, and in many cases, the types of curricular experiences in which students will engage" (Hertberg-Davis & Callahan, 2013-b, p. 161). To develop into contributing citizens of society, gifted students often require a program that is focused on their domains of strength. Such diverse strengths within a gifted program require educators who are adaptable.

> Educators are aware of empirical evidence regarding (a) cognitive, creative, and affective development of learners with gifts and talents, and (b) programming that meets their concomitant needs. Educators use this expertise systematically and collaboratively to develop, implement, and effectively manage comprehensive services for students with a variety of gifts and talents to ensure specific student outcomes. (NAGC, 2012, p. 12)

**Professional Development**

Professional development is a "comprehensive, sustained, and intensive approach to improving teachers' and principals' effectiveness in raising student achievement" (Hirsh, 2009, p. 10). Professional development can be formal, informal or non-formal and may incorporate theories of andragogical learning, or dissemination of content, to teachers as they will pedagogically teach younger students (Karagiorgi et al., 2008). Student achievement is the desired product of professional development, and much focus is placed on curricular and instructional practices to increase teacher knowledge and classroom skills (Joyce & Showers, 2002). Teachers trained in the identification and instruction of gifted students have historically been sparse in the educational system (State of the Nation in Gifted Education, 2012-2013). Pre-service programs and professional development opportunities that lack gifted emphasis leave teachers in the classroom without knowledge of recommended practices for their gifted and talented students.

## Rationale for the Study

The Virginia Governor's School Program has undergone multiple iterations of evaluation procedures for over 30 years, generated through the advancement of theory- and research-based best practices in gifted education. Through the introduction of the *2014 Governor's School Full-Site Evaluation* rubric, this study has a unique opportunity to survey the AYGS' approaches to implementing best practices, identify possible trends of shared successes and challenges across the Commonwealth, and investigate evaluator interpretations on the implementation of gifted standards. With a heavy history of financial tribulations and budget cuts, evidence that the evaluation rubric is a trustworthy instrument is an necessary component to support continued gifted program facilitation.

## Purpose of the Study

The Virginia Governor's School Program is an indispensable vehicle for gifted students in Virginia. To confidently promote its benefits for diverse populations of gifted youth, the evaluation process should be holistically explored with each new modification. The purpose of the study was to collect consequential evidence of an untested rubric instrument used for the evaluations. By identifying emergent themes of both the formative evaluation reports and evaluator insights, key decision-makers through the VDOE have the ability to further assess the effectiveness of the *2014 Governor's School Full-Site Evaluation* rubric.

## Research Questions

The focus of this investigation was to holistically collect consequential evidence of a rubric instrument used state-wide to evaluate Virginia Governor's Schools. This research is guided by three primary research questions and six subquestions on the implementation of six essential criteria of gifted educational programming as provided by the VDOE:

RQ1: What are the collective proficiency levels of Virginia Governor's Schools' full-site evaluations?

RQ2: What emergent themes arise from the findings, commendations, and recommendations of the full-site evaluations?

RQ3: What are the interpretations of evaluators on the desired outcomes of the *2014 Governor's School Full-Site Evaluation* rubric standards?

SQa. How do evaluators recognize best practices of learning and development?

SQb. How do evaluators recognize best practices of assessment?

SQc. How do evaluators recognize best practices in curriculum planning & instruction?

SQd. How do evaluators recognize best practices for learning environments?

SQe. How do evaluators recognize best practices for programming?

SQf. How do evaluators recognize best practices of professional development?

## Design of the Study

The nature of the investigation was a mixed-methods approach using secondary data sets of AYGS formative evaluations as well as interviews with evaluators. For the descriptive proficiency levels component of the research design, the rubric standards that were agreed upon by evaluators were tabulated for each program. This data collectively detailed to what extent the school programs achieved 62 gifted standards. To further triangulate the data, qualitative research elements were incorporated in two forms. First, the findings, recommendations, and commendations presented within each report were explored through a content analysis. The purpose of this method was to make general observations of possible phenomena within the AYGS programs. Secondly, interviews were conducted with participating evaluators to investigate the interpretations of gifted standard implementation. Interviews were transcribed and coded with emergent themes identified. This analysis of evaluator interpretations was to assist key decision makers of the VDOE to judge the effectiveness of the rubric instrument.

## Limitations and Assumptions

Callahan (1986) states that evaluation questions are not to address generalizability, but to address specificity to individual programs. Therefore, this study's results were limited to the five schools evaluated during the 2014-2016 academic years and not the remaining 35 AYGS programs, SrRGS programs, and SgRGS programs in Virginia. These results also cannot be generalized to Governor's Schools or STEM-focused programs in other states.

The five schools profiled in this study also may not self-identify as STEM schools. School models with science, technology, engineering, and mathematics components, and the depth of exposure, vary considerably at the local level (Subotnik et al., 2009). The term STEM-*focused* was therefore used in this study to designate schools that have purposefully engaged in STEM education initiatives.

The eight evaluators were selected from a candidate pool of 23 evaluators. Therefore, responses to interview questions cannot be generalized to the perceptions of best practices of all AYGS evaluators.

Lastly, awareness of the variability within the AYGS program model must be taken into account. School C is a full day program whereas the other schools are half day programs. Unlike other Governor's Schools that host students on a campus, School E is a virtual program where students complete courses off-site. These natural parameters may be conducive or prohibitive of best practices identified by the VDOE.

## Definition of Terms

The following terms are pertinent in the context of this study:

*Academic-Year Governor's Schools* (AYGS): A Virginia-based program sponsored by the Virginia Department of Education. During the academic school year, the 19 programs provide accelerated and differentiated curricula to gifted high school students in STEM and non-STEM courses.

*Assessment*: Judgments about students' work to determine what they know, value, or are capable of doing (Joughin, 2009).

*Best Practices*: Approaches to working with students in an educational environment that have been supported by systemic inquiry and research evidence (Robinson, 2007).

*Differentiation*: A method used by teachers to closely align curricula to the unique needs of each student to maximize the capacity of each learner (Purcell et al., 2002).

*Evaluation*: An assessment of the merit of a program using inquiry and judgment methods (Fitzpatrick et al., 2011).

*Gifted evaluation:* A validation of the effectiveness or efficiency of a gifted program and to identify problems in the curriculum or delivery which may be remedied (Callahan & Caldwell, 1986).

*Gifted students:* "Students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities" (NCLB, 2002).

*National Association for Gifted Children (NAGC)*: A non-profit organization to support the learning needs of gifted students through the global sharing of research and practices of parents, educational leaders, and teachers.

*Stakeholders:* Students, parents, teachers, faculty and staff, and key decision makers who have a vested interest in a program that is being evaluated (Joint Committee for Standards for Educational Evaluation, 2005).

*STEM Education*: Science, Technology, Engineering, Math and the education related to those disciplines.

*STEM literacy*: "A deictic means (composed of skills, abilities, factual knowledge, procedures, concepts, and metacognitive capacities) to gain further learning" (Zollman, 2012, p. 12)

*Summer Residential Governor's Schools*: Virginia-based program sponsored by the Virginia Department of Education. During the summer months, 11 programs provide the needs of gifted 11$^{th}$ and 12$^{th}$-grade students in visual and performing arts, humanities, mathematics, science, technology. These programs are located at universities throughout the Commonwealth and generally last for four weeks.

*Summer Regional Governor's Schools*: Virginia-based program sponsored by the Virginia Department of Education. During the summer months, 20 programs provide the needs of gifted students in arts, sciences, and humanities. These programs vary in facilities, curriculum, and student populations.

*Virginia Department of Education*: Governing agency of Virginia responsible for developing and implementing Strategic Plans across the Commonwealth.

**Summary**

Several underlying theories and models are situated within best practices as identified through scholarly literature and recommended the NAGC. These practices are also supported by the evaluation instrument used by the VDOE. Learning and development, assessment, curriculum planning and instruction, learning environments, programming, and professional development are individual keystones, yet build a supportive bridge between gifted program inputs and program goals.

# CHAPTER TWO

## Literature Review

To better understand the evaluation processes of STEM-focused Virginia Governor's School Programs, one must first understand the literature to establish a foundation and context for the topic of study. This review is divided into three major sections. The first section discusses the national problem of cultivating a STEM-capable citizenry and how slow-moving educational reform initiatives risk the United States' ability to maintain global competitiveness. The second section reviews the body of knowledge regarding gifted education and the concept that gifted students are a source of our future scientific and technological innovators. The third section reports on the STEM-focused gifted programs in Virginia, recognized as the Virginia Governor's Schools. Addressed here in this discussion is the orientation of the statewide program within traditional gifted services, the implementation of STEM-focused pedagogical approaches, and the evaluation procedures set forth by the Virginia Department of Education to assure effective program facilitation. The three sections stated above are not exclusive of one another, but weave together throughout the investigation. Figure 1 is an overview of the concepts that shaped this study, illustrating where this study would fit into the current body of literature and its role within STEM reform movements for gifted populations.

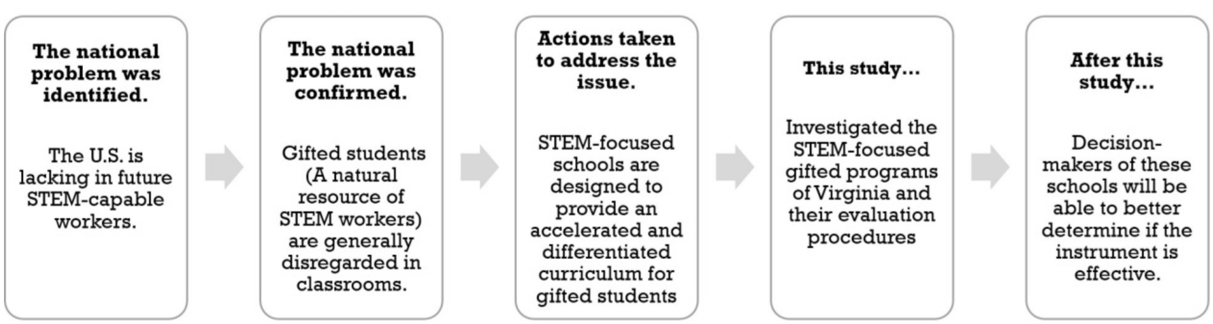


*Figure 1*. Conceptual framework of the study.

## STEM Education

*A Nation at Risk: The Imperative for Educational Reform* (Gardner, 1983), was a landmark report by American President Ronald Reagan's National Commission on Excellence in Education which identified strata of underachievement within America's educational system. In 1986, the National Science Board (NSB) also recognized that "the deterioration of collegiate science, mathematics, and engineering [STEM] education is a long-term threat to our nation's scientific and technical capacity, its industrial and economic competitiveness, and the strength of its national defense" (p. 1). Despite 30 years of this message continuously reverberating through education, the decline in the number of undergraduate STEM degrees has caused concern that the United States may be failing in global competitiveness (Holdren, Lander, & Varmus, 2010; Library of Congress, 2006/2008). Concerns have also arisen of a widening gap between scientific/technological leaders and the average citizen (Technology for All Americans, 1996; National Research Council, 2011), and creating a deficit of STEM-capable workers (NSB, 2014). In the 2002-2003 academic year, fewer than 16% of all degrees conferred were in STEM fields (Library of Congress, 2006, p. 11; Library of Congress, 2008, p. 10). The President's Council of Advisors on Science and Technology (PCAST) notes a lack of academic proficiency and interest in STEM fields (2010), which has led to American students lagging behind international counterparts. According to the National Research Council (2005), only 30% of US students pursue STEM disciplines at a university level compared to 59% of Chinese students and 66% of Japanese students.

STEM-capable workers are needed on every level. The National Science Board (2015) reports that approximately 26 million jobs in the United States require significant STEM knowledge in at least one field, and 16.4 million jobs require a bachelor's degree or higher of

STEM expertise. The National Research Council's *Successful K-12 STEM Education Report* (2011) affirms a chilling statistic that 4% of the nation's workforce is composed of scientists and engineers, a group that creates jobs for the other 96% of the American population.

Many students who are highly qualified to pursue STEM careers simply do not due to negative postsecondary experience, high tuition, challenging curricula, low-paying job prognosis, or lack of role models (Ledbetter, 2012; U.S. Department of Labor, 2007).

The United States Congress Joint Economic Committee (2012) stated:

> improving STEM education at the K-12 level and moving more young people into the STEM pipeline will not be enough if college is unaffordable or out of reach, or if the postsecondary education system more generally does not function effectively to take talented, STEM-interested young people and provide them with the degrees, certifications, and skills to succeed. (p. 9)

The issue is particularly acute for groups underrepresented in STEM, including minorities, women, military veterans, and individuals with disabilities or from lower socioeconomic backgrounds (NSB, 2015). "The United States cannot remain at the forefront of science and technology if the majority of its students—in particular women and minorities underrepresented in STEM fields—view science and technology as uninteresting, too difficult, or closed off to them" (U.S. Department of Education, 2010, p. 36).

To combat this issue, students in grades K-12 must be supported in STEM education to increase interest and build STEM literacy. "Effective instruction capitalizes on students' early interest and experiences, identifies and builds on what they know, and provides them with experiences to engage them in the practices of science and sustain their interest" (NRC, 2011, p. 18).

**STEM Education and STEM Literacy**

STEM education is defined in many ways, by various groups, and is implemented in diverse forms inside and outside of the classroom. As cited in Zollman (2012), Judith A. Ramaley, former director of the National Science Foundation's Education and Human Resources Division, was credited with providing the acronym STEM in 2001. The National Science Foundation continues to use the acronym generically as science, technology, engineering, and mathematics with the education relating to those distinct fields. In a written report to Congress, policy specialists Gonzalez & Kuenzi (2012) refer to STEM education as "teaching and learning in the fields of science, technology, engineering, and mathematics. It typically includes educational activities across all grade levels— from pre-school to post-doctorate—in both formal (e.g., classrooms) and informal (e.g., afterschool programs) settings" (p. 2). Tsupros, Kohler, and Hallinen (2009) defined STEM education as:

> an interdisciplinary approach to learning where rigorous academic concepts are coupled with real-world lessons as students apply science, technology, engineering, and mathematics in contexts that make connections between school, community, work, and the global enterprise enabling the development of STEM literacy and with it the ability to compete in the new economy.

Sanders (2009) argued that STEM education lacks "interaction among the stakeholders," and STEM education is reflective of a century's worth of practices where the disciplines are taught separately (p. 21). As no definition of STEM education is universally accepted, the scope and scale of STEM educational program effectiveness are largely unknown (Gonzalez & Kuenzi, 2012). It is an unrealistic goal for all American students to enter the STEM pipeline after high school, a major objective of STEM education should be to increase STEM literacy for all students. STEM literacy is defined as the knowledge and understanding of scientific and mathematical concepts and processes required for personal decision-making, participation in civic and cultural affairs, and economic productivity for all students (NRC, 1996). Zollman (2012) refers to STEM literacy as "a deictic means (composed of skills, abilities, factual knowledge, procedures, concepts, and metacognitive capacities) to gain further learning" (p. 12). The purpose of STEM literacy, as reiterated more recently by the National Research Council (2011), is to prepare all students, not just those pursuing STEM-related careers, to be well-prepared for a science- and technology-driven society and make knowledgeable personal and societal decisions. Individuals of the 21st Century must possess a broad spectrum of abilities and competencies that encourage success (NCTE, 2013).

Students preparing to enter contemporary society should be able to think critically and make rational judgments by managing, analyzing and synthesizing from multiple streams of information (Partnership for 21st Century Skills, 2008; NCTE, 2013). Students should be able to solve open-ended problems by building connections from what has already been learned (e.g., course content and previous experiences). Students should be able to collaborate respectfully in complex environments, build cross-cultural relationships and share innovative information. Such abilities may be assisted in developing a "proficiency and fluency with tools in technology" (NCTE, 2013). With a curriculum that is designed to implement skills and content, students should achieve a level of STEM-literacy that would not be reached through rich content alone. To accomplish such objectives, Zollman suggested the development of STEM literacies by heavy integration of content in the form of a meta-discipline, a blend of content and pedagogy, attention towards student self-esteem and motivation, and autonomic efficiency to operate STEM technologies (2012). Ledbetter (2012) recommended a critical component to unlocking STEM literacy as increased attention in teacher preparation, ensuring all teachers have strong STEM backgrounds and engage in STEM pedagogical approaches appropriate for the K-12 development stages.

**STEM education initiatives and challenges**

To expand the number of students who pursue careers in STEM fields, broaden participation of underrepresented groups, and increase STEM literacy for all students, education leadership has shifted focus to STEM Education reform. In the 2005 report *Tapping America's Potential: Education for Innovation* a coalition of leading businesses and technology associations recommend public and private sectors take the following action:

- Build public support for making improvement in science, technology, engineering and mathematics performance a national priority.
- Motivate U.S. students and adults, using a variety of incentives, to study and enter science, technology, engineering, and mathematics careers, with a special effort to those in currently underrepresented groups.
- Upgrade K-12 mathematics and science teaching to foster higher student achievement, including differentiated pay scales for mathematics and science teachers.
- Reform visa and immigration policies to enable the United States to attract and retain the best and brightest science, technology, math and engineering students from around the world to study for advanced degrees and stay to work in the United States (Table, 2005).

In a focus group setting in a study conducted by Tsupros, Kohler and Hallinen (2009), teachers and administrators of schools in Southwest Pennsylvania sat down in a post-survey focus group to discuss STEM education. With 62% of participants answering in disfavor of STEM education reform, the researchers delved further into the why.  Two comments in particular by in-service teachers highlight two significant beliefs against STEM inclusion in the classroom settings. One teacher discussed the STEM paradigm as a trend:

> "This sounds very good but like many hot topics in education this will come and go. Because of the demands of everyday teaching and the flood of the next "great trend" this will make little impact on the system. The demands are too great on teachers today and the pressure to attain standardized test results leave little time for this type of program" (p. 17).

Another teacher noted:

> "Teachers and students are not fully aware of the importance of connecting STEM to classroom instruction and career development activities throughout the school year" (p. 17).

The authors concluded that awareness was a key issue for educator buy-in, and professional development opportunities are critical in introducing educators to the various means by which institutions of higher education, business, and industry groups help prepare students for STEM careers.

The National Science Board's (1986) forecast of threats to the United State's science and technical capacities, global competitiveness, and STEM workforce pipeline are still relevant. Significant evidence exists to suggest that the nationwide problem is growing as we delve deeper into a scientific and technological advancement with a citizenry lacking in STEM-literacy and a workforce that cannot fulfill future demand. Educators, administrators, politicians, and businesses must be cognizant that such problems exist and explore solutions to alleviate these growing pressures. One approach is greater investment in our nation's 3 million gifted and talented students, a natural resource to recruit STEM-capable leaders.

## Gifted Education

Gifted students of today are entering a fundamentally different world compared to previous generations. The existing educational agenda largely ignores this subpopulation of students and the preparation of teachers to effectively deliver gifted services. In order to address what actions have been taken to partly resolve this issue at the state level, a review of gifted education is warranted.

### Current Status of Gifted Education.

Implementation of the Elementary and Secondary Education Act, more popularly known as No Child Left Behind (NCLB), was initiated in 2001 to provide all students the same set of educational standards and equalize the learning experiences in K-12 education. With so much discontinuity from state-to-state, district-to-district, and classroom-to-classroom, an assessment-driven reform offered structure and accountability. As the United States approaches 15 years with NCLB, many studies and government reports have raised concerns that the current educational system is preparing students to take a test and not preparing them for future success in society. "One-size-fits-all standards either dumb down instruction to the lowest common denominator or condemn low-ability students to frequent failure" (Wang, Beckett, & Brown, 2006). The Obama Administration adds "NCLB has created incentives for states to lower their standards; emphasize punishing failure over rewarding success; focus on absolute scores, rather than recognizing growth and progress; and prescribe a pass-fail, one-size-fits-all series of interventions for schools that miss their goals" (United States Department of Education, 2010).

NCLB has been particularly detrimental to the gifted student population (Brighton, Hertberg, Moon, Tomlinson, & Callahan, 2005; Hertberg-Davis, 2009; Lichtenwalter, 2011; VanTassel-Baska & Stambaugh, 2005). Gallagher (2015) aptly states "understanding the political issues and the debate surrounding the education of gifted students is based on the recognition that education policy (including rules, regulations, financial allocations, etc.) reflects social policy" (p. 458). At this time, the social policy is not in the best interests of our nation's gifted and talented students.

The Thomas B. Fordham's Institute (2010) identified a stagnation of reading and math NAEP scores amongst gifted populations (90th percentile) compared to rapidly advancing scores of low-achieving students (10th percentile) between 2000-2007. In a 2014 survey of 1,566 schools, 40% of elementary gifted programs, 51% middle school programs, and 60% of high school gifted programs received no state funding (Callahan, Moon, & Oh, 2014). Despite significant political and financial obstacles for gifted programs to continue providing necessary services to students, the advocacy for excellence and equity in gifted education has continued. Advocacy measures call for the support for gifted and talented students in the 21st century and to execute the appropriate mechanisms for implementation.

Grade-based and subject-based acceleration methods are often available in K-12 educational settings and are heavily recognized as an effective curriculum intervention measure (Colangelo, Assouline, & Gross, 2004; Kulik, 2004; Rogers 2004), however using acceleration as the exclusive means of educating gifted students is a controversial tactic (Borland, 2003; Coleman & Cross, 2001).

Evidence suggests that students who exhibit giftedness maximize learning through systematic, continuous services that are appropriately designed to present unique learning opportunities responsive to individual learning rates, styles, and interests (Tomlinson, 2005). A widely accepted solution to the tailoring of educational learning experiences in gifted education is through differentiation. Tomlinson (2001) defines differentiation as "the efforts of teachers to respond to variance among learning in the classroom" (p.2). A teacher with low-performing, average-performing, and high-performing students in the same classroom may engage students in a differentiated lesson or activity, so every student learns the topic at his or her appropriate level. Differentiation may be extended to programs as well. Differentiated programming provides the educational experiences to meet the individual needs, abilities, and interests, and is commonly seen in gifted programs (Berger, 1991; Colangelo, Assouline, & Gross, 2004).

Gifted service program models are typically categorized as within-class differentiation, separate-class differentiation, pull-out programs, and specialized schools. Though all models have shown to be effective (Rogers, 2004), a study by Delcourt, Cornell, and Goldberg (2007) found that both gifted African American and European American elementary students had higher achievement scores when enrolled in separate class, pull-out programs, and specialized schools compared to gifted students enrolled in within-class programs. This study focuses on specialized schools that incorporate STEM education as a high priority within the curricula.

**STEM-Focused Schools Targeting Gifted Populations**

Every student has the right to learn something new every day, but this can be difficult in an all-inclusive classroom. Gifted and talented students exposed to the same content of their peers quickly master the content and learn little else (Tsai, 2007). Reis, Westberg, Kulikowich, and Purcell (1998) conducted a study of 336 students and concluded that 40-50% of the regular curriculum could be eliminated with gifted students still performing equal or higher than students not identified as gifted in both math and science achievement scores. Educators and policymakers recognize that gifted learners have considerable potential for remarkable accomplishment with advanced aptitudes or potential aptitudes for intellectual, academic, career and technical, visual or performing arts success, far greater than their age-level peers.

There are two major frameworks of STEM-focused high schools: selective STEM schools and inclusive STEM schools. Selective STEM-focused schools traditionally target gifted and talented students and require vigorous admission requirements. Inclusive STEM-focused schools target STEM talent among underrepresented minority students and low-socioeconomic areas and do not have admission requirements. Means, House, Young, and Weng (2013) define an inclusive STEM high school as "a school, school-within-a-school, or multi-year school program accepting students primarily on the basis of interest rather than aptitude or prior achievement and giving them the mathematics and science preparation they need to succeed in postsecondary STEM majors and certification programs" (p. 1). Delivery services vary in focus, pedagogical approaches, and opportunity.

Difficulties arise however for STEM-focused schools to increase STEM literacy for minority and high poverty groups. Eisenhart et al. (2015) conducted a comparative case study of eight inclusive schools in Denver, Colorado and Buffalo, New York. The authors found that despite enthusiasm, and high expectations for success, all of the schools faced multiple issues which led to the programs falling apart after a short amount of time. These issues included "large numbers of "low-performing" students, disappointing graduation rates, students with limited English proficiency, competing reform agenda, a limited "college-going culture," and teachers and staff that were stretched thin" (Eisenhart et al., 2015, p. 785).

## Virginia's Gifted Services

The identified academic, developmental, and motivational needs of gifted learners are heavily dependent on the definition of giftedness used. In the Commonwealth of Virginia, gifted students are defined as:

> those students in public elementary, middle, and secondary schools beginning with kindergarten through twelfth grade who demonstrate high levels of accomplishment or who show the potential for higher levels of accomplishment when compared to others of the same age, experience, or environment. Their aptitudes and potential for accomplishment are so outstanding that they require special programs to meet their educational needs. These students will be identified by professionally qualified persons through the use of multiple criteria as having potential or demonstrated aptitudes in one or more of the following areas: general intellectual aptitude, specific academic aptitude, career and technical aptitude, and visual or performing arts aptitude. (VDOE, n.d.-c, p. 1)

Virginia students identified as gifted based upon this state definition, as well as the local definitions provided by their school systems, require services to provide for potential academic and intellectual progressions and affective developmental needs. In accordance with the *Comprehensive Plan: 2012-2017* and regulations set forth by *The Regulations Governing Educational Services for Gifted Students,* school administrators are required to provide gifted services for Virginia's students identified as gifted and talented. Available options are grouped into the following four categories: differentiated opportunities, accelerated content, specialty schools, and beyond the classroom (VACEG, 2013).

Table 1 highlights where the AYGS programs, the focal point of this investigation, fall within the scope of gifted services.

Table 1

*Gifted Service Options for Virginia's Gifted K-12 Populations (VACEG, 2013)*

| | |
|---|---|
| <u>Differentiated Opportunities</u> | <u>Accelerated Content</u> |
| Acceleration | Dual Enrollment Advanced Placement |
| Classroom Differentiation of Instruction | International Baccalaureate (IB) Diploma |
| Cluster Grouping | The Cambridge Program |
| Distance Learning | Early College Academies |
| | |
| <u>Specialty Schools</u> | <u>Beyond the Classroom</u> |
| Academic-Year Governor's Schools | Travel Abroad |
| Summer Residential Governor's Schools | Summer Enrichment |
| Summer Regional Governor's Schools | Seminars, Guest Speakers, and Field Trips |
| Magnet Schools | Independent Study |
| Specialty Centers | |

## Virginia's Governor's Schools

Since 1973, Virginia has sponsored a statewide selective school program, henceforth referred to as the Governor's School Program, which provides specialized curricula arranged for gifted middle and high-school students. The schools often have high academic standards and require specific academic or performance entrance requirements for acceptance. The purpose of the VA Governor's Schools is identified as follows:

> Governor's Schools give gifted students academic and visual and performing arts opportunities beyond those normally available in the students' home schools. Students are able to focus on a specific area of intellectual or artistic strength and interest and to study in a way that best suits the gifted learner's needs. Each program stresses non-traditional teaching and learning techniques. For example, small-group instruction, hands-on-experiences, research, field studies, or realistic or artistic productions are major elements

> in the instructional design at all schools. Students become scientists, writers, artists, and performers as they work with professional mentors and instructors. Every effort is made to tailor learning to needs of the community of learners that compose the program. (VDOE, n.d.-b, para. 5)

The Virginia Governor's School Program is a cohort of part-time and full-time high schools that serve gifted students throughout the Commonwealth. Approximately 6,500 gifted students attend the 40 programs offered (VDOE, n.d.-b). Three models of Governor's schools have evolved since the program originally began in 1973: Academic-Year Governor's Schools (AYGS), Summer Regional Governor's Schools (SRsGS), and Summer Residential Governor's Schools (SRgGS).

The 19 AYGS schools are located throughout the major regions of the Commonwealth. The schools accept 11th and 12th graders (although eight schools additionally accept 9th and 10th graders), and provide a rigorous accelerated and differentiated curricula. Each program specializes in a curricular domain such as art, government and international studies, STEM disciplines, or an integration of multiple areas. Virginia high school students who are interested in applying to the Governor's Schools must be identified as gifted in accordance with the school division's definition of giftedness and subsequently apply to the program of interest. A committee of educational leaders and/or gifted specialists in each school division then select candidates based on high performance or potential for high performance.

**AYGS Program Approaches**

Several collective features exist among the 19 AYGS programs, creating a unique approach towards satisfying the requirements for VA school districts to provide gifted services and partly fulfilling the Virginia Department of Education's (VDOE) mission to prepare Virginia's gifted students for the future workforce.

The Virginia Advisory Group (VACEG) identifies learner outcomes and student benefits that occur with the AYGS program model:

- develop understanding of the importance of free expression, intellectual curiosity, individual responsibilities, and maturity/respect for others;
- form relationships characterized by commitment to scholarship and discovery, openness to ideas, and trust;
- create products in an environment that is intellectually safe and challenging;
- participate in unique classes that use both traditional and contemporary instructional techniques;
- develop of both individual and group talents;
- plan for a prescribed education that take into account the physical, social, emotional and academic development of each student;
- provide a variety of academic experiences in the humanities, arts, sciences, and technology;
- develop of individual learning potential in an academically and intellectually challenging and nurturing environment;
- encourage skills of rational thinking, integration of mind and body, self-actualization, intuitive development, and self-evaluation;
- create opportunities for creative expression in all of its aspects of thinking, feeling, intuiting, and expressing talent through products;

- encourage a sense of social awareness and commitment to humanity and to their environment, and a respect for the worth and dignity of others; and
- implement a hands-on approach to learning in the field and classroom (VACEG, 2013, p. 23-24).

The Virginia College & Career Readiness Initiative was authorized by the Board of Education in 2007 to ensure that college and career-ready learning standards in reading, writing and mathematics are taught in every Virginia high school classroom and to strengthen students' preparation for college and the workforce before leaving high school (VDOE, n.d.-d). Though these opportunities may be found in some traditional secondary education settings for motivated and high ability students, AYGS programs expect *every* enrolled student to participate in initiative measures. Therefore, all AYGS programs offer an array curriculum-embedded enterprises like internships, independent research opportunities, mentorships, accelerated courses, and dual-enrollment courses. The AYGS programs also pursue 21st Century Skills to "support the development of individual and collaborative, as well as critical and creative, thinking skills" and "direct application of advanced content and thinking skill in real-world experiences [to] provide a solid foundation for future problem solving" (VACEG, 2013, p. 24).

With over four decades of work in the field of gifted education, Renzulli (2012) addresses the "yeast" of gifted success as 21st Century skills with "the ability to engage in novel situations that require planning, decision-making, troubleshooting, and compassionate and ethical leadership that is not dependent on routine or well-rehearsed responses to challenging combinations of conditions" (p. 156). The inclusions of these metacognitive social constructs diverge from the tunneled attention on academic and creative development often observed in other avenues of gifted programming.

**STEM-Focused AYGS Program Approaches**

The predominant focus of 17 AYGS programs is in science, technology, engineering, mathematics (STEM) or a combination of these discipline areas. The need for quality STEM education programs, such as the STEM-focused AYGS programs, is significant. With STEM jobs in Virginia expected to rise 12% by 2022 and provide employment for more than 100,000 workers (VDOE, 2015), the preparedness of the future workforce should be a high priority, yet American schools are not generating students willing to pursue careers in laboratories, research institutes, and the entrepreneurial STEM community (Augustine, 2007). However, Subotnik, Tai, Rickoff, and Almarode, (2009) found that 53.4% of students attending specialized STEM-focused high schools graduated with a STEM undergraduate degree compared to 22.6% of the general population. If more students are expected to enter a STEM-driven workforce, the STEM-focused AYGS programs should be considered a serious solution to accomplish this task. Subotnik et al., (2009) illustrated the qualifications of specialized schools in providing a rigorous STEM-curricula:

> [These selective schools] offer the most intensive educational option for developing science talent at the secondary level. These environments typically bring together cohorts of highly able and motivated students with expert teachers, advanced curricula, technically sophisticated laboratory equipment and opportunities for apprenticeships with working scientists. (p.1)

As stated previously, all AYGS students participate in internships, independent research opportunities, mentorships, accelerated courses, and dual-enrollment courses. The STEM-focused AYGS programs emphasize these pedagogical approaches within the STEM disciplines. During the school year and/or summer months, students are encouraged to work in university research laboratories, state extension offices, hospitals, businesses and firms, or other professional settings for hands-on and geniunely authentic learning experiences in the STEM fields. Students often present their internship experiences for assessment in a career preparation or research preparation course.

As a graduation requirement, STEM-focused AYGS students must also engage in independent-research opportunities that may be conducted in a university laboratory, business, school, or home. Many schools provide mentors in STEM fields to work with students on their projects to provide knowledgeable feedback and answer questions. Students may subsequently submit their research to be published or participate in science fairs at the regional, state, national, and international level. Coupled with multiple dual-enrollment courses, many students graduate with 40+ transferrable credits towards colleges and universities across the United States. With the significant number of earned college credits, research experience, and internship experience, it is logical to reason that many students would continue to pursue STEM degrees after high school.

The frameworks of the Virginia STEM-focused Governor's schools vary widely (part-time vs. full-time enrollment, the courses available, services offered, resources available, and demographics of student populations). However, commonalities of STEM educational approaches are encouraged by the VDOE and evaluated through the *2014 Governor's School Full-Site Evaluation* rubric to ensure each program stresses best practices for student learning and for gifted program facilitation. The VDOE highlights non-traditional learning STEM approaches through instructional design, such as "small-group instruction, hands-on experiences, research, field studies, or realistic or artistic productions…" (VDOE, n.d.-b, para 5). These topics will each be explored in greater depth as they are relevant to standards within the AYGS evaluation instrument.

**Small-group instruction**. A majority of the research pertaining to small group learning has been limited to elementary school populations. However, the adage goes that "all children need to be comfortable to perform well" (Dunn & Milgram, 1993, p. 14), and so class size schemes are also important to high school students. Class size is defined as "students regularly in a teacher's room" (Achilles, Finn, & Pate-Bain 2002, p. 24). A meta-analysis of over 100 studies by Glass and Smith (1979) indicated that reduced class sizes of 20 or less students improved academic performance, with a sharper advantage of classes 15 students or below. Benefits of small class sizes include more time for instruction and less time for behavior management (Molnar, Smith, & Zahorik, 1999), more academic and social engagement (Finn, Pannozzo, & Achilles, 2003), greater feedback from teachers, and participation in more hands-on work (Deutsch, 2003). The VDOE recommends that AYGS class sizes not exceed 15 students (VDOE, 2014).

Other studies have shown no correlation between class size and student performance (Rivkin, Hanushek, & Kain, 2005), or have identified methodological problems in previous research studies of class size such as the use of pupil-teacher (PTR) ratios (Deutsch, 2003). There are also several underlying assumptions. In a reduced-class size, one would logically reason students receive more individualized instruction and higher quality instruction, yet this practice has not been supported in the literature (Finn, Pannozzo, & Achilles, 2003). Deutsch (2003) also warns that the extensive literature on small class sizes of primary students does not transfer to high school class sizes.

**Hands-on experiences.** Laboratory practices have long been part of the high school curriculum and are currently required by most states to provide students an opportunity to observe, test hypotheses, and stimulate learning (National Research Council, 1996-b). The transition from teacher-centered lectures to a shared focus of laboratory practices was first documented at Harvard University in the 1880's in the departments of chemistry, physics, zoology, and botany (Tamir, 1976). As additional universities adopted this approach, high school programs closely followed suit and by 1892, the National Education Association (NEA) mandated laboratory science in high school science curriculums (Baker, 1982). In a National Longitudinal Study of participating high school students, Von Secker and Lissitz (1999) found that laboratory instruction positively correlated with higher performance levels and minimized gaps of achievement among students of different socio-economic statuses. Hands-on experience has been introduced in a wide range of disciplines such as manipulatives in mathematics (Gutiérrez, 2013), enzyme implementation in biotechnology (Ruenwongsa, Panijpan, Ketpichainarong, 2010), school gardening (Waliczek & Zajicek, 1999), and adventure learning (Veletsianos & Kleanthous, 2009). Inquiry learning has become a popular approach in recent years learning through discovery. Haury (1993) states "inquiry involves activity and skills, but the focus is on the active search for knowledge or understanding to satisfy a curiosity" (para 3).

Though hands-on learning activities are often regarded favorably by teachers, the practice is still limited in the classroom environment. In 2011, only 67% of Virginia's 8th grade students were engaged in hands-on activities or investigations at least once a week and only 15% were exposed to engineering problems (U.S. Department of Education, 2011). A significant reason for this is the lack of formal training in pre-service and in-service programs (Ruenwongsa et al., 2010). "Most laboratory manual activities ask students to behave as technicians rather than scientists, merely collecting information without interpreting results and designing experiments" (McComas & Colburn, 1995). This cookie-cutter approach is detrimental to preparing a future workforce that is able to critically think and solve problems. Pre-service and in-service educator programs must be cognizant to promote the pedagogical content knowledge needed for teachers to facilitate meaningful inquiry activities.

STEM-focused high schools have recognized the lack of quality hands-on experiences in traditional schools and have made great efforts to incorporate inquiry practices into the curriculum. In a comparative case study of STEM-focused high schools throughout the nation, Catherine Scott (2012) found that the 10 participating schools in her study relied heavily on instructional technologies and data collection instruments for inquiry-based learning. Hands-on activities have shown to increase the confidence and interests of STEM areas in high school males and females in the classroom (Christensen, Knezek, & Tyler-Wood, 2015), and in outreach (Chen et al., 2011). For students who do not have an inherent interest in pursuing STEM careers, the STEM high school model does not change their direction (Subotnik et al., 2009). However the accelerated and differentiated curriculum still prepares them to become STEM-capable citizens. To encourage hands-on experiences in Virginia STEM-focused schools, the AYGS evaluation standards require programs to offer access to classrooms and laboratories with state-of-the-art technology (Standard 3: Curriculum and Planning), educational settings designed to encourage inquiry (Standard 4: Learning Environments) and educators that continually pursue professional development opportunities in both their field and gifted education (Standard 6: Professional Development) (VDOE, 2014).

**Grouping**. The purpose of grouping strategies is to assist teachers with "[arranging] students in configurations most likely to enhance the acquisition of content and skills"

(Tomlinson et al., 2009, p. 52). Kulik (1992, 2003) contests that simply grouping students together is insufficient to detect effects; students must also have an accelerated and enriched curriculum as well. When allowed to engage with intellectual peers, coupled with accelerated and enriched content, gifted students have shown to experience positive reactions (Colangelo, Assouline, & Gross, 2004; VanTassel-Baska & Little, 2011; Dunn & Milgram, 1993). When assessing achievement levels, self-perception, and motivation of high-ability students in gifted programs versus high-ability students in regular classrooms, the students grouped by ability showed positive cognitive and affective outcomes and higher performance levels (Delcourt et al., 2007).

Grouping strategies allow students to quickly achieve expertise. Scott's (2012) study on STEM-focused high schools found that on average, the gifted programs had a 13% higher pass rate for English and mathematics compared to students in non-STEM schools. The *2014 Governor's School Full-Site Evaluation* rubric under Standard 1: Learning and Development states "AYGS educators provide a variety of research-based grouping practices for students to allow them to interact with individuals of various gifts, talents, abilities, and strengths" (VDOE, 2014).

Grouping students on ability has been debated with evidence of poor affective development when removing students from the general classroom. Students of high-ability generally compare themselves to their peers which may lead to low self-concept (Adams-Byers, Squiller Whitsell, & Moon, 2004; Marsh, Chessor, Craven, & Roche, 1995; Neihart, 2007), and are compared to more intellectually-able peers by teachers, which may affect assignment or grade feedback (Zeidner and Schleyer, 1999). Neihart (1999) provides a culminating statement to address this issue:

> It is impossible, then, to make any generalizations regarding the self-concepts of gifted children because it is clear from more than a dozen studies that numerous factors affect one's self-concept. Also, self-concept changes with developmental levels, making it impossible to generalize findings with one age group to other age groups. The research seems to suggest that it is not useful to assess self-concept as a criterion to compare gifted children's psychological well-being; there are too many confounding variables, making generalizations very difficult. (Para 23)

**Research and field studies.** Research and field studies are non-traditional educational pedagogy approaches encouraged by STEM-focused AYGS programs to pursue authentic activities. Brown, Collins, & Duguid (1989) define authentic activities as "ordinary practices of culture" and the creation of meaning-making towards those actions (p. 34). The literature is favorable with providing students in-class science projects, extracurricular activities, and apprenticeships to provide authentic experiences (NRC, 1996-b; Gallagher, 1991; Solomon, 1991; Bell, Blair, Crawford, & Lederman, 2003). After-school, mentorship, and outreach opportunities have shown to increase the standardized math test scores of low income students (Vandell, Reisner, & Pierce, 2007), the engineering self-efficacy of female students (Chen et al., 2011; Hubelbank et al., 2007), and the confidence and interest in science (Chen et al., 2011). In a qualitative case study of high school students, Ayendiz, Baksa, and Skinner (2011) found that two consecutive semesters of research experience significantly improved knowledge of the content area, data collection, analysis techniques, and hands-on skills (e.g. instrument use) in science. The authors add:

> Learning opportunities in authentic settings must be structured in such ways that will allow the novice scientists (i.e., high school students) not only to witness how scientists

> design experiments, interpret data and develop, verify and defend theories but also understand why and how scientists engage in individual and collective cognitive activities they do to produce new knowledge. Only then the desired uniformity and quality of learning outcomes across participants may be achieved. (p. 417)

**Accommodation of preferred learning styles.** Shaughnessy (1998**)** refers to learning styles as, "the way that he or she concentrates on, processes, internalizes, and remembers new and difficult academic information or skills" (p. 141). Evidence supports that accommodating to a student's learning style can increase performance levels. Dunn et al. (1995) conducted a meta-analysis of 42 studies and found that students who were accommodated achieve 75% of a standard deviation higher than students who were not accommodated. The need for accommodation in STEM education is clear. According to the US Department of Labor (2007):

> Competitiveness in STEM fields requires a focus on the skills and the supply of those involved in STEM fields from the most complex research and development and leadership positions to production, repair, marketing, sales and other jobs that require competencies built upon math, science, engineering, and technology knowledge. (p.3)

### Challenges for STEM-focused AYGS programs

With greater advocacy of specialized STEM schools and solutions to avoid problems that can cause gifted students to purposefully not pursue STEM degrees, perhaps part of the nation's STEM workforce problem can be feasibly alleviated.

## Gifted Evaluation and Instrumentation

Gifted programs have relevance, usefulness, and importance in providing services to gifted students and preparing them to become contributing citizens to society. For gifted services to be confidently delivered through the administration of quality programming, it is imperative to pursue evaluation measures. Evaluation methods are widely regarded as an assessment into the quality of a program through "inquiry and judgment" (Fitzpatrick et al., 2011). Formative evaluations assist decision-makers in determining the degree to which the resources and progress towards stated goals are adequate (Moon, 2013). Evaluation should be utilized in a gifted program to assess accountability and impact on students (Callahan, 2004; Davis & Rimm, 2004). Callahan and Caldwell (1986) recommend evaluations to provide:

- documentation of the need of the program;
- documentation for the case of a particular approach within the program;
- documentation of the feasibility of the program;
- documentation of the program implementation;
- identification of program strengths and weaknesses;
- data for in-progress revisions of the program;
- documentation of the results or impacts of the program; and
- explanation/description of the program to interested and uninformed audiences (p. 5).

Evaluations are often sought by primary stakeholders to measure the outcomes from decisions implemented for the educational programs (e.g. what type of curriculum to provide, the pedagogical approaches of educators, identification and selection of students, facilities, and supporting services). With the findings and recommendations of the evaluation, decision-makers have a better understanding of where the program is going and whether or not the program has arrived at desired benchmarks.

Rimm's (1977) Logic Model provides a logistical framework for evaluation that may be used in general or specific gifted programs. The model illustrates how the data assembled by evaluators consolidates the input, processes, and outcomes which may be analyzed to direct future decisions of the program. The following diagram was adapted from Sylvia Rimm's evaluation model (Rimm, 1977 in Davis & Rimm, 2004).

Assessment and Evaluation of Programming (In general of specific programs)

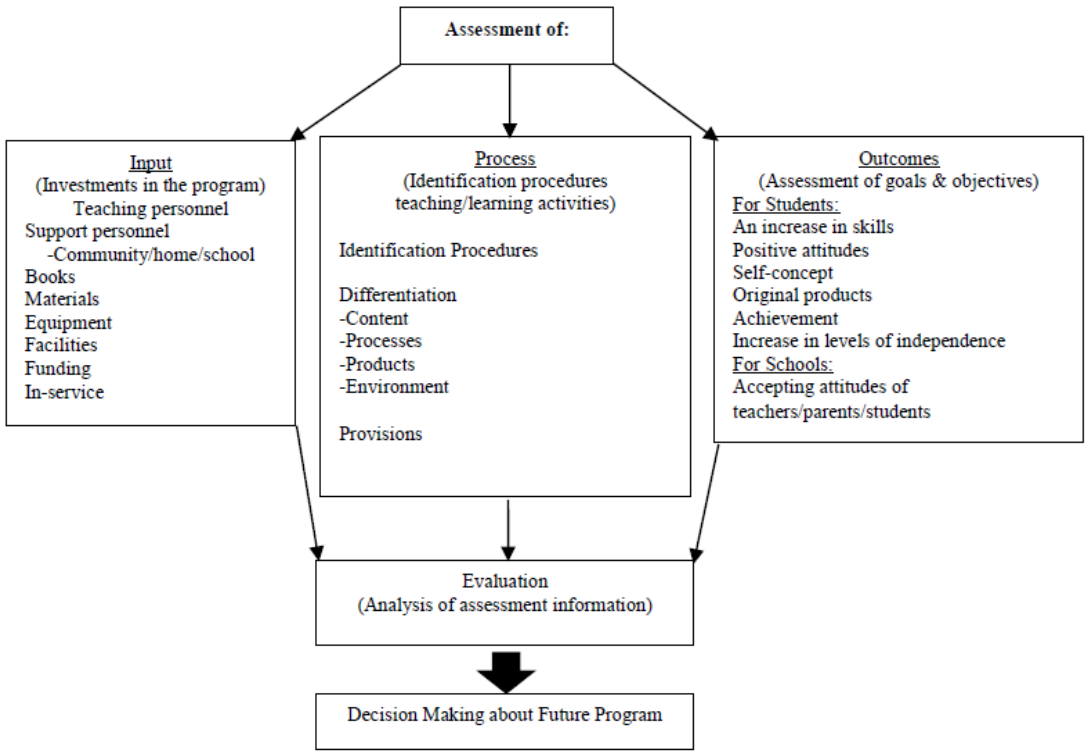


*Figure 2*. Adapted Logic Model of General and Specific Gifted Programming (Rimm, 1977 in Davis & Rimm, 2004).

Existing programs may use educational guides, current research, and thorough planning to develop educational services for the gifted, however these methods do not universally guarantee the achievement of best practices. Familiar with the common trends of gifted education, Callahan & Hertberg-Davis (2013) allege that:

> Too often, educators are willing to reply on reports of "what works" garnered either from the research literature or through rumors about the success from the neighboring district;

> consequently, they fail to determine carefully whether or not, or to what degree, a practice is indeed having the desired effect on their students. ( p. 438)

Instead, program coordinators should attempt to answer universal questions within the appropriate context of their programs and then make decisions that would impact the direction. Reid (1996) suggests program coordinators ask the following evaluative questions:

- What will these students be able to do differently after participation in this particular program?
- How will students' "products" and/or "performances" be different because of the program?
- What would these students think, say, or do differently if the program was successful?
- Has the program done as much as it could for these students?
- Has it maximized their learning? (p. 380-381)

Callahan (1986/2004) addresses that the issues and constraints of developing gifted evaluation questions exist because of the diversification between schools, lack of agreed upon standards and definitions in gifted programming, and the complex sophistication of individualized programs of study. "In such programs it is unreasonable to set group behavioral objectives against which one can assess accomplishment" (Callahan, 1986, p. 2).

Evaluation studies have been conducted in a number of gifted programs and have successfully identified factors to help participating programs continue providing high-quality services (Robinson, Cotabish, Wood, & O'Tuel, 2014; Scott, 2012; VanTassel-Baska, 2006). These studies align with Carter & Hamilton's (1985) recommendation to initiate formative evaluation strategies compared to summative evaluations and Linnemeyer's (1994) proposal of using mixed method approaches to reach respective conclusions regarding program improvement. In a meta-analysis of 70 gifted education evaluations, Hunsaker and Callahan (1993) concluded that a significant number of the evaluations engaged in favorable practices such as multiple-data gathering methodologies, an inherent focus on program improvement by identifying key strengths and weaknesses, and provided recommendations. Ultimately, evidence strongly suggests that evaluating gifted programs holds great potential in understanding the learning environments of students and what pedagogical approaches target their academic and affective development needs.

Conversely, many challenges exist in conducting gifted evaluation. The literature suggests a lack of appropriate evaluation methodology techniques (VanTassel-Baska, 2006), scarce resources available to gifted programs (Gallagher, 2015), and lack of training for internal evaluators (Davis & Rimm, 2004). Hunsaker and Callahan (1993) noted that evaluation reports were significantly limited or weak in the literature available, lacked methodological sophistication, executive reporting, and utility. Lastly, evaluating gifted programs is often considered burdensome by the stakeholders (Callahan, 2004).

Despite these challenges, gifted programs should continue to advocate for consistent evaluations for transparency with administrators, school board members, parents, and funding sources. Davis and Rimm (2004) remind stakeholders that gifted education has a history of critical budget reductions at district, state, and federal levels; therefore, skipping the evaluation process is a "short-sighted decision" (p. 464).

**Instrumentation in Gifted Evaluation**

In program evaluation, the nature of the formal review system relies heavily upon neutrality and transparency. "Such independence is intended to lead to more objective, and hence, more valid, judgments of quality" (Fitzpatrick et al., 2011, p. 135). These are critical criteria as program direction, or even program feasibility, depend on a fair evaluation report. "Any instrument adopted -- a test, a rating scale, an observational protocol, or a portfolio rating scale -- should be examined for current psychometric data that verify their reliability and validity" (Callahan, Renzulli, Delcourt, & Hertberg-Davis, 2013, p. 85).

Unfortunately, few evaluation instruments are available for gifted programs, and instruments tested for reliability, validity, or that provide field test data are even rarer (Reis & Renzulli, 1991). Callahan and Hertberg-Davis (2013) recommend that if psychometric data is not available for a particular instrument, the data must be "collected locally" to justify its use (p. 85). At this time, the *2014 Governor's School Full-Site Evaluation* rubric has not undergone a psychometric assessment, leaving the validity and reliability unknown. As the rubric's current framework is not conducive to a purely quantitative analysis, the researcher has chosen to alternatively investigate the instrument through a mixed methods approach with a more qualitative emphasis.

**Rubrics in evaluation.** A significant component of the AYGS evaluation procedures includes the completion of the *2014 Governor's School Full-Site Evaluation* rubric. In order to provide an informed exploration of this instrument and its implementation, a strong foundation in understanding rubrics and rubric design is warranted.

Rubrics are common in the K-12 setting (Luft, 1999) and have a variety of definitions. Mertler (2001) identifies rubrics as "rating scales" and defines them as "scoring guides, consisting of specific pre-established performance criteria, used in evaluating student work on performance assessments" (p. 1). Cooper and Gargan (2009) summarize rubric as any "rule, guide, criterion, or description that is used to assess the progress of students in their academic subjects, as well as the grading system for assessing each criterion" (p. 54). Many of the definitions found by the researcher specify performance of student work. Therefore, this investigation will use Allen and Tanner's (2006) rubric definition "to denote a type of matrix that provides scaled levels of achievement or understanding for a set of criteria or dimensions of quality for a given type of performance" (p. 197). This definition accommodates the scope of program evaluation rubrics and clarifies expectations for achievement.

***Types of rubrics***. There are two main categories of rubrics: holistic and analytical. Holistic scoring involves an overall judgment by the rater regarding the quality of performance, whereas analytical scoring involves the rater's selection of a dimension with an adjoining score (Jonsson & Svingby, 2007). Holistic rubrics allow for quick-scoring of large groups and only one dimension is needed to determine quality. Analytical scoring engages with detailed feedback and promotion of consistency across the criteria (Hawai'i, 2014). Holistic scoring is often deemed appropriate for large-scale assessment, and analytical scoring is often suitable for the classroom. However, the context of the assessment scenario should determine the use of which type of rubric is implemented. For the evaluation of AYGS programs, the rubric is designed as an analytical scoring instrument.

***Validity of rubrics***. The integrity of the rubric is dependent on the instrument's validity, more so than its reliability (Jonsson & Svingby, 2007). For an evaluator to be confident that his or her evaluation is accurate and fair, the validity of the instrument should be determined. The most common form of validity examination is content validity using the examination of the rubric by experts (Reddy & Andrade, 2010), and involves a comprehensive review with multiple examinations (Jonsson & Svingby, 2007). The *2014 Governor's School Full-Site Evaluation* rubric has not undergone a traditional validity study (content, construct, or criterion); however validity may be tested indirectly through examining the consequences or uses of the assessment results, referred to as consequential evidence (APA/APA/NCME, 1999).

***Reliability of rubrics***. A reliable rubric would score consistently in a variety of contexts. The most common studies of reliability for rubrics are interrater reliability, subjectivity level from rater to rater, and intrarater reliability, the level of impact from external factors (Moskal & Leydens, 2000). There is evidence to suggest that training of raters can increase interrater reliability (Jonsson & Svingby, 2007), but training may also affect the analysis of raters as well (Andrade, 2005). "The belief is that a well-designed scoring rubric should ameliorate inconsistencies in the scoring process by minimizing errors due to rater training, rater feedback, and the clarity of descriptions of criteria" (Reddy & Andrade, 2010, p. 441). In a meta-analysis of 75 rubric-related studies in K-16 education, Jonsson and Svingby (2007) suggest that rubrics aid raters in achieving high internal consistency and issues in reliability can be alleviated when the rubrics are analytical, topic-specific, accompanied by exemplars and/or rater training. The authors add however, "it is not always possible to restrict the assessment format to achieve high levels of reliability without sacrificing the validity" (p. 141). The instrument that is the focal point of this investigation is unable to be tested for its reliability due to its current framework. The consistency of evaluators is also not measurable as only a consensus amongst the team is available in the data sets.

***Rubrics in program improvement***. Despite decades of pedagogical dialogue addressing rubrics, the empirical evidence of instrument effectiveness is still considered limited in the literature (Rezaei & Lovorn, 2010). A small number of studies have shown that rubrics can be helpful in the evaluation of educational programs. Blood-Siegfried et al. (2008) developed a rubric to standardize and critique an online nursing program, resulting in marked improvement of faculty development for technological competence for distance learning and facilitation of administrative issues. Iowa State University implemented rubrics to evaluate pre-service teaching programs and counselors in K-12 distance learning environments and found the instrument to be a helpful facilitator of communicating expectations (Davis & Roblyer, 2005). David Pearce in his 2015 dissertation designed an evaluation rubric for reading programs in one school district. He found that several programs failed to include key components of an effective reading program as determined by the National Reading Panel of 2000 and was able to make recommendations for those programs.

At this time, the interpretations by evaluators are collected from the rubric, discussed for group consensus, and then shared with the AYGS program director of the evaluated school so he/she may make necessary program changes as needed. As stated previously, the *2014 Governor's School Full-Site Evaluation* rubric is unable to be validated through traditional psychometric assessment based on its current framework. However, the rubric's consequential evidence through multiple reports may be helpful for decision-makers to judge the effectiveness of the instrument in its task to improve gifted programming.

**Virginia AYGS Program Evaluation**

Traditionally, schools within AYGS program are evaluated once every six years by representatives of the Virginia Department of Education (VDOE), directors, assistant directors, and teachers. All 19 AYGS programs abide by the gifted standards set forth by the VDOE, justifying implementation for systematic evaluation procedures across the Commonwealth. Every school's evaluation consists of three major data collection initiatives: completion of the *2014 Governor's School Full-Site Evaluation* rubric, classroom observations, and primary/secondary stakeholder interviews (e.g. directors, assistant directors, students and staff).

**AYGS evaluation history**. Evaluations were not initially coordinated during the first eight years of the Virginia’s Governor’s School Program in the early 1970s. The first published evaluation to focus on the Virginia Governor’s Schools was conducted by John Booth for his doctoral thesis in 1981 (Booth, 1981). He sent surveys to students, parents, alumni, staff, and school directors on their attitudes and perceptions of the Governor’s School program. Participants agreed that the program was successful in nurturing the educational and affective developments of students, yet needed direction for future initiatives. Through the 1990s, the Governor’s School programs continued to grow in number, but lacked a formal review system (M. Bentley, personal communication, February 2, 2016).

Shortly after the first edition of the *Pre-K-Grade 12 Gifted Program Standards* was published by the National Association for Gifted Children (NAGC) in 1998, a formative evaluation was designed by the Academic-Year Governor’s Schools (AYGS) directors and the VDOE. In 1999, Dr. Tom Morgan of the Central Virginia Governor’s School conducted a literature review for evaluation designers. The new rubric, which would serve as a central component of the evaluation, contained 34 standards within the domains of (a) curriculum; (b) program design; (c) guidance and counseling; (d) professional development; (e) identification and selection process; (f) facilities; and (g) program administration and management. The rubric was field tested at Central Valley Governor’s School and Roanoke Valley Governor’s’ School in April and May of 2000. Table 2 outlines the evaluation timeline, tailored after the Southern Association of Schools and Colleges (SACS) review process (VDOE, 2005):

Table 2

*Timeline of the 2000 Governor's School Evaluation Process*

| Date | Objectives |
|---|---|
| One year in advance | Set date for evaluation<br>Determine number of evaluators and length of evaluation<br>Work with AYGS directors to suggest potential evaluators |
| Beginning of school year | Work with VDOE to determine final team and invite members<br>Designate team leader<br>Make draft arrangements of schedule and stakeholders to be observed and interviews<br>Assist with lodging and travel arrangements |
| One month before visit | Make lodging and travel arrangements<br>Coordinate pre-evaluation meeting for new team members<br>Prepare documents, maps, schedules, and mail to team members |
| Week before visit | Confirm team arrangements<br>Confirm site's arrangements with director |
| First Night | Overview of program; introduction to faculty, staff, and students<br>Interview superintendent (s), governing regional board member(s), parent(s), and others, as needed |
| First Full Day | Interview and observe classrooms, other sites as scheduled<br>Complete documentation in electronic or paper form as determined by the team leader<br>Determine draft commendations and recommendations |
| Second day | Continue observations and interviews as scheduled.<br>Participate in exit presentation with the director and his/her staff, as needed |
| Two weeks after visit | Forward all evaluation documents to Evaluation Coordinator<br>Submit travel vouchers with receipts to site director for payment<br>Prepare final draft |
| One month after visit | Allow site director to comment on final report |
| Two months after visit | Provide written final report to director, chair of regional governing board, and Virginia Board of Educators, as requested.<br>Ensure that all participants have received payments for their work. |

In 2010, the NAGC revised the *Pre-K-Grade 12 Gifted Program Standards* to align with more contemporary research and theories prevalent in gifted education. During the summer of 2012, the *2014 Governor's School Full-Site Evaluation* rubric was re-designed. Changes included an increase in the number of standards and domain designation. The 2012 rubric was field tested at the Piedmont Governor's School for Mathematics, Science, and Technology located in Martinsville and Danville, VA. Based on recommendations from directors of the AYGS and representatives of the VDOE, the rubric was further revised during the Summer of 2014 and is currently the version in use (R. Phillips, Personal Communication, 2015). The evaluative instrument includes 62 standards within the six domains of (a) learning and development; (b) assessment; (c) curriculum planning and design; (d) learning environments; (e) programming; and (f) professional development (VDOE, 2014).

**Current AYGS evaluation procedures.** Since its inception, the *2014 Governor's School Full-Site Evaluation* rubric has evaluated three AYGS programs during the 2014-2015 academic year and three AYGS programs during the 2015-2016 academic year. The rubric is on an ordinal scale with gradations of quality; levels of mastery are denoted as "Doesn't meet standard," "Meets standard," and "Exceeds standard" (VDOE, 2014). The levels of mastery align with Bresciani, Zelna, and Anderson (2004), cautioning rubric designers not to use more than three levels of mastery lest evaluators are unable to make operational sense of the scale. The rubric format maintains two columns of open cells for commendations and recommendations by evaluators.

Once the evaluators interview stakeholders, observe classrooms, and collect information to complete the rubric, a final report is submitted to the regional governing board and director of the evaluated AYGS program. The final report includes an introduction of the evaluation procedures, a brief history of the school, program of studies available, demographic information of the students, and a summary of the findings, commendations, and recommendations agreed upon by the evaluators.

The rubric's purpose is to ensure that AYGS programs are implementing decisions to promote an appropriately accelerated and differentiated curriculum. "The heart of effective programming for gifted education services lies in the development and the implementation of curricula and instructional strategies that will challenge and enhance learning outcomes for these students" (Callahan, Moon, Oh, Azano, & Hailey, 2015, p. 137). The VDOE mirrors this sentiment "the foundation of the Virginia Governor's School Program centers on best practices in the field of gifted education and the presentation of advanced content to able learners" (VDOE, n.d.-b, para 1). Though curriculum and instruction are heavily emphasized, additional components are evaluated as well. Evaluators who collect information from students and staff are assessing the quality of learning and development, assessment, learning environments, programming, and professional development.

## Summary

A national problem of preparing students for a contemporary society, widely recognized through landmark reports in the 1980's, was confirmed to still exist within the educational system of the United States. Evidence was provided to show that a deficit of STEM literacy has led to a widening gap between scientific and technological developers and average citizens, a threat to global competitiveness, and inability to maintain a future STEM-capable workforce. Though a natural resource of future leaders and innovators, gifted students are often largely ignored in all-inclusive classrooms. To maximize the learning experiences of these gifted students, accelerated and differentiated programs that focus on STEM disciplines have been recognized as a viable solution for the national problem. Though ranging in various frameworks, these programs have a higher rate of students graduating with STEM degrees compared to the national average. The Virginia Governor's Schools provide gifted services to approximately

6,500 students in Virginia with many schools promoting a STEM-focused curriculum. The evaluation procedures of these programs were recognized to play an important role in providing evidence to the effectiveness of these programs and as one solution to the national problem.

CHAPTER THREE

# Methods and Procedures Overview

The purpose of the study was to collect consequential evidence of an untested rubric instrument used for the evaluations. The results of the AYGS evaluations were used to complete the following: identify the current findings, commendations and recommendations among the schools, highlight emerging trends, and compare the interpretations of evaluators in their operational definitions of the evaluation metric standards. The intent of the researcher was not to pass judgment upon the instrument, but rather identify trends and phenomena connected by preconditions of goal achievement. This backward mapping was designed so that evaluation designers may be well-informed when determining instrument efficacy. Succeeding a review of the research questions, the components addressed in Chapter Three are: (a) design for the study; (b) selection of sample; (c) selection of participants; (c) collection of data; (d) pilot study; (e) data analysis; (f) measures taken to ensure quality and rigor; (g) role of the researcher; and (h) chapter summary.

## Research Questions

The three research questions and six sub-research questions for this investigation developed by the researcher provide an exploration of the evaluations of five AYGS programs and assist in the development of a schema for discourse with evaluators. The evaluators consisted of directors, assistant directors, and teachers from within the statewide Governor's School program and were, therefore, knowledgeable of the quality indicators set forth by the VDOE to ensure best practices for gifted programming.

RQ1: What are the collective proficiency levels of Virginia Governor's Schools' full-site evaluations?

RQ2: What emergent themes arise from the findings, commendations, and recommendations of the full-site evaluations?

RQ3: What are the interpretations of evaluators on the desired outcomes of the *2014 Governor's School Full-Site Evaluation* rubric standards?

SQa. How do evaluators recognize best practices of learning and development?

SQb. How do evaluators recognize best practices of assessment?

SQc. How do evaluators recognize best practices in curriculum planning & instruction?

SQd. How do evaluators recognize best practices for learning environments?

SQe. How do evaluators recognize best practices for programming?

SQf. How do evaluators recognize best practices of professional development?

**Design for the Study**

There is no universally accepted operational definition of the collection, analysis, interpretation, or reporting of data through the integration of multiple paradigms and orientations in research design strategies (Creswell, 2009; Creswell & Plano Clark, 2011; Morse, 2003). Several typologies of the practice have evolved in the literature as multi-trait (Campbell & Fisk, 1959), multi-methods (Brannen, 2005), multi-strategy (Bryman, 2006), mixed methodology (Tashakkori & Teddlie, 2003), and mixed methods (Creswell, 2009; Creswell & Plano Clark, 2011; Greene, Caracelli, & Graham, 1989; Johnson, Onwuegbuzie, & Turner, 2007). Bryman (2006) distinguishes the typologies above based on the following methodological emphases: simultaneous or sequential collection of both qualitative and quantitative data, priority of design approach from the two major factions, the function of the integration, the placement of the research process within the overall framework, and the number of data strands available. In any case, strong advocacy exists for the implementation of integrated research designs (Bryman, 2006; Johnson et al., 2007).

For this investigation the term *mixed methods* was used, based on the theoretical framework as identified by Cresswell and Plano Clark (2011). The authors define mixed methods as:

> a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases of the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone. (Creswell & Plano Clark, 2011, p. 5)

The justification for the utility of this definition is the befitting lens and statement of purpose to conduct an investigation previously unexplored in scholarly literature.

Mixed methods research has continued to gain popularity in recent years and is observed as the third major research design (Tashakkori & Teddlie, 2003). Johnson, Onwuegbuzie, and Turner (2007) stated that a mixed approach to a study might be more expensive, more time consuming and create unknown challenges with conflicting results that must still be interpreted. The authors suggested that some of these issues will never be resolved as the field continues to grow, but social discourse in these matters should be encouraged.

Despite the challenges described above, a mixed methods design was deemed an appropriate research design for this investigation based on the distinct natures of multiple databases used. The research design incorporated the strengths of both qualitative and quantitative approaches and provided a more holistic view of the consequential evidence. Lastly, the researcher was able to take advantage of triangulation, which was not easily situated within the other traditional paradigms.

**Selection of the Sample**

Since its inception, the *2014 Governor's School Full-Site Evaluation* rubric has been used to evaluate three AYGS programs during the 2014-2015 academic year and three AYGS programs during the 2015-2016 academic year. As the investigation was concentrated on STEM-focused AYGS programs, the researcher purposefully omitted one school focused on the arts. To maintain anonymity, the five STEM-focused AYGS programs were designated School A, School B, School C, School D, and School E. A brief description of each school has been provided below:

**School A**. School A is located in the Shenandoah region of Virginia and at the time of the evaluation had 170 students enrolled in the program. Students are in 11$^{th}$ and 12$^{th}$ grade and attend classes part-time. The program provides rigorous STEM classes and non-STEM classes.

**School B**. School B is located in the Central region of Virginia and at the time of evaluation had 580 students enrolled in the program. Students of 11$^{th}$ and 12$^{th}$ grade attend classes in the morning while students in 9$^{th}$ and 10$^{th}$ grade attend classes in the afternoon. The program provides rigorous STEM classes and non-STEM classes.

**School C**. School C is located in Eastern Virginia and at the time of evaluation had 242 students enrolled in the program. Students of 10$^{th}$, 11$^{th}$, and 12$^{th}$ grade attend classes part-time. The program provides rigorous STEM classes.

**School D**. School D is also located in the Shenandoah region of Virginia and at the time of the evaluation had 76 students enrolled in the program. Students of 11th and 12th grade attend classes part-time. The program provides rigorous STEM classes.

**School E.** School E is located in Southwest region of Virginia and at the time of the evaluation had 243 students enrolled in the program. Students of 10th, 11th, and 12th grade attend classes virtually through online course offerings. The program provides rigorous STEM classes and non-STEM classes.

## Selection of Participants

To contribute to this study, participants had to fulfill the following two criteria: experience working with gifted students as a director, assistant director, or teacher in at least one of the 19 AYGS programs and had served on at least one of the five AYGS evaluation teams between the Fall of 2014 and the Spring of 2016. The names of the evaluators and the AYGS programs they are associated with were listed on each evaluation. Using this list, the researcher obtained e-mail addresses through school websites. A recruitment e-mail was sent in September 2016 to potential participants. The e-mail provided an introduction to the research study, the general framework of the data gathering interviews, and assurances of anonymity and confidentiality (See Appendix A). The initial eight evaluators contacted were purposefully selected to ensure that at least one team member from every site visit was represented in the study. Merriam (2009) posited, "purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore, must select a sample from which the most can be learned" (p. 77). Eight people responded to the e-mail; the researcher contacted each participant individually to send a consent form and arrange dates for the data gathering interview.

**Pilot Study**

The intent of a pilot study was not to build consensus, but to ensure the clarity of questions. The researcher opted to conduct an interview with one evaluator for a pilot study before contacting additional participants. The pilot participant was selected based on extensive classroom and administrative experience, as well as on having made significant contributions to evaluation teams in multiple AYGS site visits.

The investigator designed the initial interview questions, primarily, from constructs and practices written within the standards of the evaluation rubric. The researcher met face-to-face with the pilot participant and asked 50 semi-structured question. The pilot participant answered all of the questions thoroughly, which resulted in an interview of 1 hour and 41 minutes. The participant's ability to answer the questions without requesting clarification or rewording increased the confidence in that question comprehensibility. The interview questions that appeared to cause uncertainty were removed or modified into prompts, leaving 36 questions for the data gathering interviews.

**Collection of Data**

Multiple strategies of collection were used due to the unique natures of the data sets. Prior to contacting potential participants, the researcher received approval from the Institutional Review Board (IRB) at the home institution. A copy of the IRB approval may be found in Appendix B.

The first action was to obtain the evaluation reports of the five schools. The researcher contacted the VDOE to request a copy of the evaluations; the request was granted and sent in two installments in a digital format. Evaluations for Schools A and B were received October 2015 and evaluations for Schools C, D, and E were received July 2016. The evaluation reports provided the data to conduct a descriptive analysis and a summative content analysis to inform Research Questions 1 and 2.

The second action was for the researcher to collect data through interviews with participants, thus informing Research Question 3 and the sub-research questions. After initial contact with a participant was made, the researcher formalized a time for the structured interview. The structured interview aligned with Becker's (1996) recommendation to arrange an opportunity for the researcher to become better acquainted with the participant, discuss the general nature of the project as necessary, address participant involvement, and answer questions before the data gathering interview. The structured interview was not audio-recorded. During the structured interview, the researcher reviewed the general purpose of the investigation and confirmed confidentiality for the participant. Participants at this time were allowed to select his or her pseudonym. Two copies of the consent form were signed if the participant was meeting face-to-face with the investigator and the participant received a copy (See Appendix C for Consent Form). The home institution IRB designated that a verbal consent was acceptable for distance interviews. An additional date was selected by the participant and researcher for the data gathering interview.

The researcher met one-on-one with the participant for the data gathering interview. The participant recommended the time and place for the interview to occur with five participants opting for a face-to-face interview and three participants for an online interview through Facetime or Google Hangout. The interview was arranged to be semi-structured with open-ended questions (See Appendix D). The interview questions were designed to gain an understanding of the evaluator's experience in education and evaluation, elicit evaluator operational definitions of terms found in the *2014 Governor's School Full-Site Evaluation* rubric, and identify what each evaluator was looking for as evidence of best practices within the six rubric domains.

During the data gathering interviews, handwritten field notes were made by the researcher to track key points of particular interest, facial expressions, and body language to establish a context and make sense of the interview later. Patton (2002) described this technique as "critical to the rigor and validity of qualitative inquiry" (p. 383). Two voice recorders were used during the data gathering interview for subsequent transcribing. This quality control measure ensured that the dialogue was accurately recorded and provided a safeguard should one voice-recorder fail (Creswell, 2009). Each interview was saved within a digital folder on the recorders and later downloaded directly to the researcher's computer. Immediately following the interviews, the researcher's thoughts, feelings, and responses were recorded in reflexive memos.

## Data Analysis

Descriptive analysis, content analysis, and thematic analysis provided triangulation for this investigation. Triangulation was first coined and described by Norman Denzin in *The Research Act: A Theoretical Introduction to Sociological Methods* (1978) as "the combination of methodologies in the study of the same phenomenon" (p. 291). Cresswell and Miller (2000) referred to triangulation as "a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study" (p. 126).

**Descriptive analysis**. A descriptive analysis was used to answer Question 1, quantifying how proficiency standards were rated within each school. Reading systematically through the six domains on the evaluation of School A, the researcher tabulated the ordinal scores of "Doesn't meet standard," "Meets standard," or "Exceeds standard" for all 62 proficiency levels.

This process was repeated for Schools B, C, D, and E (See Appendix E). The frequency and percentages of the ordinal scores were calculated on Excel to describe the landscape of each school.

**Content analysis**. Content analysis is a widely accepted method of textual investigation through a systematic process (Silverman, 1993; Weber, 1990), and was a practical technique with the existing documents available. Fitzpatrick, Sanders, and Worthen (2011) recommended collecting existing information for analysis because of cost-effectiveness, resilience to change with researcher accessibility, and potential to answer evaluation questions. In the scholarly literature, content analysis typologies fall into a "form-oriented" analysis, focusing on the quantification of concepts, or "meaning-oriented" analysis, focusing on underlying themes and relationships among concepts (Smith & Taffler, 2000). This investigation used meaning-oriented as part of the mixed methods convergent design to inform Research Question 2.

The researcher closely reviewed each evaluation and highlighted keywords or constructs in the "Findings, Commendations, and Recommendations" section of each evaluation and separate "Commendations" and "Recommendations" columns embedded within the rubric. The keywords and constructs were coded for the evaluations of Schools A, B, C, D, and E. Codes that were similarly situated on more than one evaluation were categorized. The researcher interpreted the underlying context of the text and compared to existing literature (Boullion, 1995).

**Thematic analysis**. To gather information about a phenomenon, researchers often rely on the primary methods of participation in the setting, observation, interviews, and analysis of documents and audio-visual materials. The interview process is a salient method in research and is relied upon heavily to collect information.

***Data gathering interviews***. The researcher read and reread the transcribed data on multiple occasions to become familiar with the text. During the first reading of each interview, the researcher observed similarities in words, phrases, and ideas. Before a second reading, the responses were sorted and grouped in the order of the six sub-research questions. The researcher coded the full transcript of each participant and made note of the references in each response category. The researcher completed this step for all interviews to develop a final coding list. After coding all of the data and condensing the codes and a final read of each transcript, the researcher collapsed the codes into themes to convey rich, thick description. The researcher returned to the scholarly literature to determine which findings were supported or not supported by the literature.

Table 3

*Summary of Research Questions, Data Collection, Sources, and Data Analysis Methods*

| Research Question | Data Collection | Sources of Data | Data Analysis Methods |
|---|---|---|---|
| RQ1: What are the collective proficiency levels of Virginia Governor's Schools' full-site evaluations? | Secondary Data Set | Evaluation Report | Descriptive Analysis |
| RQ2: What emergent themes arise from the findings, commendations, and recommendations of the full-site evaluations? | Secondary Data Set | Evaluation Report | Content Analysis |
| RQ3: What are the interpretations of evaluators on the desired outcomes of the *2014 Governor's School Full-Site Evaluation* rubric standards?<br>SQa. How do evaluators recognize best practices of learning and development?<br>SQb. How do evaluators recognize best practices of assessment?<br>SQc. How do evaluators recognize best practices in curriculum planning and instruction?<br>SQd. How do evaluators recognize best practices for learning environments?<br>SQe. How do evaluators recognize best practices for programming?<br>SQf. How do evaluators recognize best practices of professional development? | Individual Interviews | Evaluators | Thematic Analysis |

**Quality Criteria**

The pursuit of "truth value" (Lincoln & Guba, 1985), is a critical element of a qualitative study, and so the researcher must identify and implement techniques, methods, and/or strategies throughout the inquiry to ensure an "accurate reflection of reality" (Cho & Trent, 2006, p. 322). Additional goals such as the applicability of evidence, consistency of evidence, and neutrality of evidence must also be pursued to add robustness to the research. This investigation used the lens of credibility, dependability, confirmability, and transferability to ensure standards of quality.

Credibility is defined as to the degree of which the data, analysis of the data, and conclusions are believable and trustworthy (Lincoln and Gruba, 1985). A goal of credibility is that the researcher's manner of inquiry ensures that the participant is appropriately identified and described (Marshall and Rossman, 2011). In this study, credibility criteria included the adoption of well-documented research methods and triangulation of the data.

Dependability focuses on the consistency of the research. According to Shenton (2004), dependability is the capability of the researcher to document specific steps taken to conduct the study in detail so that others may repeat it. Marshall and Rossman (2011) argued that repeatability is not possible in qualitative research, at least as it is understood to be in quantitative research; therefore, dependability is how the researcher "plans to account for changing conditions in the phenomenon chosen for study and changes in the design created by an increasingly refined understanding of the setting" (p. 253). Strategies that this study used to increase dependability included flexibility and openness towards the emergent research.

Confirmability is the extent to which the findings are based on the study's participants and settings instead of research bias (Frambach et al., 2013). Maxwell (2008) recommends bracketing researcher bias, or addressing reflexivity up front, to limit the effect of the researcher's experience, values, and, presumptions. To practice confirmability, the researcher examined the literature for situations that could disconfirm the findings, as well as reflected upon a role as both a researcher and educator within the Virginia Governor's School program.

Transferability is the applicability of the evidence. Rudestam and Newton (2007) explained the difficulty of obtaining transferability in qualitative research "the qualitative study emphasizes the thick description of a relatively small number of participants within a specific setting" (p. 132). To practice transferability, the researcher provided thick descriptions of the data to make the findings meaningful to others, supported explanations for the sampling strategy and described emergent themes in accordance with existing literature.

**Role of the Researcher**

Patton (2014) recommended that the investigator "carefully reflect on, deal with, and report potential sources of bias and error" (p. 58). This study draws on the researcher's professional experiences as a high school science teacher in a Virginia Governor's school for the last five years, tasked to provide accelerated and differentiated pedagogical instruction to the gifted students of the local community. The role as an educator within the Virginia Governor's School Program will not permit true neutrality. Therefore the researcher must identify the intersubjective realm between self and research. An early intention in selecting this research area as a dissertation topic was to promote the Virginia Governor's Schools. With the acceptance of fluidity between work, schooling, and life, the researcher has taken the proactive stance to explore the various beliefs encountered throughout this journey.

There are many misconceptions in working with gifted students, such as the programs are elite and cater to the children of the hegemonic class, all students are naturally well-balanced with high intellectual abilities that can "do well on their own." In large part due to these misconceptions, gifted education has a complicated history of budget cuts which have dramatically limited program delivery of gifted services and the researcher's abilities to provide meaningful learning opportunities for students. In reality, a significant population of the researcher's students are of a lower socio-economic class in a rural area of Appalachia Virginia; these students rely on the Governor's School as a primary vehicle for acceptance into a college or university and for attaining scholarships to pay for their higher education. Because of the obstacles they face in their home and traditional academic settings, it is incredibly important to the researcher, as an educator, to provide the type of learning environments students need to succeed. The Virginia Governor's Schools have an arduous task to provide opportunities for educational equality for gifted students with a lack of nationwide political and societal empathy.

Virginia Governor's School directors, assistant directors, and educators have been exposed to the similar difficulties. Their approaches to learning and instruction and the students served are different from what would be experienced in a traditional secondary education setting. No matter how the educator manages his or her professional life, additional challenges of working with gifted students and families exist.

The researcher has explored many avenues through the doctoral journey and found that evaluation is one mechanism that is both intriguing and provides sound evidence for the continuation of high-quality gifted services in schools tasked to prepare a STEM-capable citizenry.

## Summary

This researcher utilized a convergent mixed methods design to explore multiple sets of data. With data retrieved from the evaluations of five AYGS schools, a descriptive analysis and content analysis were completed to inform Research Questions 1 and 2. Evaluators were recruited to participate in the study and interviewed on their interpretations of best practices for AYGS program standards, thus informing Research Question 3 and six sub-research questions. The researcher subsequently embedded strategies within the study design to establish truthfulness, credibility, dependability, and transferability into the study. Lastly, the role of the researcher as an educator within the AYGS program was addressed.

# CHAPTER FOUR

## Findings

The purpose of the study was to collect consequential evidence of an untested rubric instrument used for the evaluations of five Virginia Academic Year Governor's Schools (AYGS) with a focus on STEM education. Information collected during the study was intended to assist evaluation designers in determining rubric efficacy. This study implemented a convergent mixed methods design with data from the AYGS programs' final evaluation reports and evaluator interviews. Chapter Four presents the findings assembled from the data; the quantitative component of the study was a descriptive analysis of the evaluation reports while the qualitative components were a content analysis of the evaluation reports and thematic analysis of evaluator interviews. The chapter begins with a demographic profile of the study participants, followed by the quantitative and qualitative categories that inform the research questions. The research questions are:

RQ1: What are the collective proficiency levels of Virginia Governor's Schools' full-site evaluations?

RQ2: What emergent themes arise from the findings, commendations, and recommendations of the full-site evaluations?

RQ3: What are the interpretations of evaluators on the desired outcomes of the *2014 Governor's School Full-Site Evaluation* rubric standards?

SQa. How do evaluators recognize best practices of learning and development?

SQb. How do evaluators recognize best practices of assessment?

SQc. How do evaluators recognize best practices in curriculum planning & instruction?

SQd. How do evaluators recognize best practices for learning environments?

SQe. How do evaluators recognize best practices for programming?

SQf. How do evaluators recognize best practices of professional development?

**Profile of Schools**

Academic-Year Governor's Schools were selected for this study based on the criteria that the programs implemented a STEM-focused curricula and were evaluated with the *2014 Governor's School Full-Site Evaluation* rubric during the 2014-2016 academic calendar years. The researcher purposefully omitted a sixth art-focused Governor's School evaluated in Spring 2015. To maintain anonymity, the five STEM-focused AYGS programs were designated School A, School B, School C, School D, and School E. Table 4 summarizes the evaluation dates, schedule, student population, focus areas, and general location.

Table 4

*Profiles of Schools Evaluated by the 2014 Governor's School Evaluation rubric*

| School | Evaluated | Schedule | Student Population | Focus Area STEM | Non-STEM Classes offered |
|---|---|---|---|---|---|
| School A | Fall 2014 | Part-time | 170 | Y | Y |
| School B | Spring 2015 | Part-time | 580 | Y | Y |
| School C | Spring 2016 | Full-time | 242 | Y | N |
| School D | Spring 2016 | Part-time | 76 | Y | N |
| School E | Spring 2016 | Part-time | 243 | Y | Y |

**Quantitative Results**

**Research Question 1**. The first research question asked, "What are the collective proficiency levels of Virginia Governor's Schools' full-site evaluations?" Five AYGS programs that focused on STEM education were evaluated with the *2014 Governor's School Full-Site Evaluation* rubric. The rubric's six dimensions were deconstructed into 62 standards and each standard was given a criteria rating of "Doesn't Meet," "Meets," or "Exceedingly Meets" by evaluators. The researcher systematically noted the proficiency scores of the rubric's standards for Schools A, B, C, D, and E. Figure 3 describes the profiency levels of the programs using the three criteria ratings.

School A's proficiency levels were recorded as follows: Doesn't meet standard (n= 4, 6.45%), Meets standard (n= 50, 80.64%), and Exceeds standard (n= 8, 12.90%). School B's proficiency levels were recorded as follows: Doesn't meet standard (n=2, 3.22%), Meets standard (n= 50, 80.64%), and Exceeds standard (n= 10, 16.12%). School C's proficiency levels were recorded as follows: Doesn't meet standard (n= 6, 9.67%), Meets standard (n= 47, 75.80%), and Exceeds standard (n= 9, 14.51%). School D's proficiency levels were recorded as follows: Doesn't meet standard (n= 3, 4.83%), Meets standard (n= 50, 80.64%), and Exceeds standard (n= 9, 14.51%). School E's proficiency levels were recorded as follows: Doesn't meet standard (n= 4, 6.45%), Meets standard (n= 51, 82.25%), and Exceeds standard (n= 7, 11.29%).

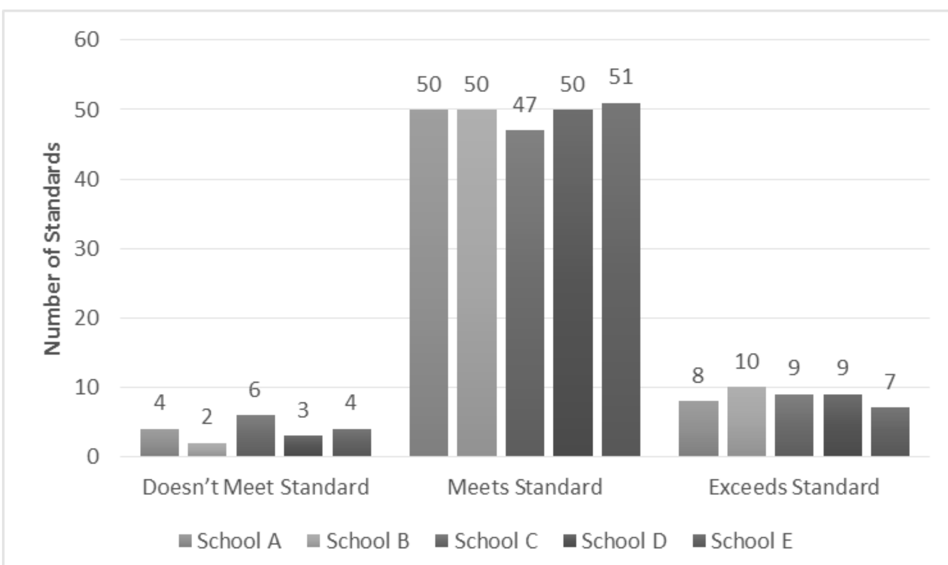


*Figure 3*. Proficiency levels of AYGS programs.

**Profile of Participants**

To contribute to the study, participants had to fulfill the following two criteria: (1) experience working with gifted students as a director, assistant director, or teacher in one of the 19 AYGS programs and (2) had served on at least one of the five AYGS evaluation teams between the Fall of 2014 and the Spring of 2016. Eight teachers and administrators took part in the study. Demographic information was obtained from each participant (See Table 5).

Table 5

*Demographic Profile of Participating Evaluators from AYGS Full-Site Evaluations*

| Participant | Sex | Years of Teaching/Administrative Experience | | | | Content area(s) taught |
|---|---|---|---|---|---|---|
| | Male/Female | 5-10 | 10-15 | 15-20 | 20+ | |
| Leslie | F | | X | | | Life Sciences |
| Judy | F | | | | X | Mathematics |
| Allistor | M | | X | | | Physical Sciences |
| Tom | M | X | | | | Physical Sciences |
| Molly | F | | X | | | Science/Technology |
| Ava | F | | | | X | Art/Technology |
| Sydney | F | | | X | | Mathematics/Technology |
| Mason | M | | | | X | Mathematics |

**Qualitative Results**

**Research Question 2.** The second research question asked, "What emergent themes arise from the findings, commendations, and recommendations of the full-site evaluations." A content analysis of the five evaluation reports yielded the following six emergent themes: (a) supported faculty are a catalyst for program initiatives; (b) instructional technology is important for STEM education; (c) stakeholder engagement is indispensable to program momentum; (d) beyond the classroom and into the world; (e) culture of accomplishment in the classroom; and (f) opportunities exist for the educational leadership. Figure 4 summarizes the quantity of codes associated with each category.

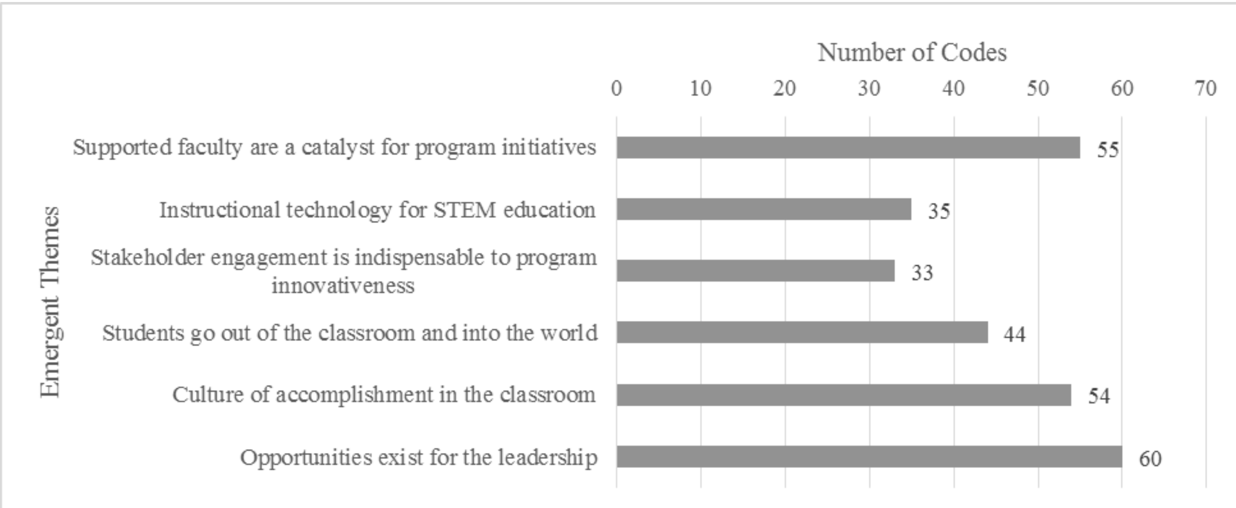


*Figure 4.* Findings, commendations, and recommendations categorized (n= 281).

***A supported faculty is a catalyst for program initiatives***. References were extensively made that AYGS directors, assistant directors, guidance counselors, and teachers provided an important role for the delivery of gifted services to students. See Table 6 for a summary of categories.

School A was commended for the "accessible and energetic" faculty that were dedicated to building a community of learners. Teachers offered tutoring and study sessions two evenings a week and leadership worked with each student to maximize his or her academic and affective developments. Leadership was further recognized for "fostering a learning environment that is founded on individual attention and belief in self-worth, as well as passion for learning and achievement." The faculty successfully integrated inquiry and problem-solving in the STEM and humanities fields. Lastly, faculty collaborated to work on strategic plans for the future.

School B's evaluation report noted commendations for faculty who provided "a positive impact on the whole student experience" and designed interdisciplinary units in course content areas. Faculty worked collaboratively to share materials, resources, and ideas that adhered to a pacing guide. Faculty maintained high expectations for students and fostered a community of learners. Students had an opportunity to work with instructors one-on-one and were exposed to a variety of unique instructional methods. Faculty also participated in staff development opportunities.

School C received commendations for a strong educational leadership and committed staff which successfully fostered a community of learners. The faculty was recognized for sharing personal experiences and connections to students, and were available to students outside of traditional class (e.g. tutoring). "Product-based assessments" were used by faculty to measure student progress and enrich learning experiences. Faculty also participated in professional development and pursued gifted endorsement. The program's leadership was commended for "the ability to develop positive relationships with school board members, superintendents, personnel, and community college personnel to foster support…"

School D was commended for stable leadership, and nurturing a "spirit of mutual trust and respect" between faculty and students. Instructors sought atypical venues for student learning beyond the classroom such as competitions, school trips, and special summer programs. Faculty also sought appropriate mentors for research projects. These out-of-the-classroom practices were coupled with differentiated deliverables in the classroom to align with student interests. Faculty routinely used rubrics and written feedback to assist with academic progress, promote students to self-reflect upon their work and provide opportunities for students to develop leadership skills. The curricula had design-based and project-based learning initiatives and product- and performance-based assessments. A community of learners was further supported through the efforts of the program's leadership to develop positive relationships.

School E received commendations on strong leadership and "highly qualified and very caring individuals" who facilitated a community of learners in a virtual environment. The faculty was additionally recognized for sharing expertise and passion for "intellectual and artistic endeavors," tailoring the curricula to capitalize on regional issues, providing challenging content, and exposing students to professional level research opportunities. Leadership was commended for fostering working relationships with partners and other academic institutions and providing support to instructors for maintaining high expectations of students.

Table 6

*Supported Faculty are a Catalyst for Program Initiatives Categories*

| Category | School A | School B | School C | School D | School E |
|---|---|---|---|---|---|
| Commitment | X | X | X | X | X |
| Build community of learners | X | X | X | X | X |
| Accessible to students out of class | X | X | X | X | X |
| Individualized attention to students | X | X | X | X | X |
| Unique pedagogical approaches | X | X | X | X | X |
| Strong leadership | X | X | X | X | X |

***Instructional technology is important for STEM education***. Faculty and student accessibility to up-to-date technology was highlighted as essential to meet the needs of gifted learners in a technological society. Table 7 summarizes instructional technology-related categories addressed in the evaluations. Schools B and E were commended for providing available technologies such as laptops, IPads, 3-D printers, wind tunnels, Google apps, learning management systems. School B was additionally lauded for a broadcast system to encourage a community of learners between multiple campuses. Instructional technology was present in the evaluation reports for Schools A, C, and D; however specific technologies were not addressed.

Table 7

*Instructional Technology is Important for STEM Education Categories*

| Category | School A | School B | School C | School D | School E |
|---|---|---|---|---|---|
| Technology infrastructure present | X | X | X | X | X |
| Technological tools available to students | X | X | X | X | X |

***Stakeholder engagement is indispensable to program momentum.*** The support of educational leaders, members of the community, and parents lead to unique opportunities for students. All five schools were commended for developing working relationships that reinforced goals of the program. See Table 8 for a category summary of stakeholders involved in promoting the AYGS programs.

School A invited guest artists to develop theater productions and art exhibitions, worked with colleges to provide dual-enrollment, and the Parent-Student Advisory Committee raised funds for scholarships, materials, and equipment. School A also hosted a Director's Fund managed by the Community Foundation. School B's Parent-Teacher Organization offered stress management seminars and worked directly with surrounding area high schools. The program also hosted guest speakers, and the Parent-Teacher Organization introduced a stress management seminar for students. School B was also included as part of the planning process for two new area high schools. Lastly, School B had the patronage of School Board members, Superintendents, Principals, instructional personnel, and facilities personnel.

School C's School Board Members, Advisory Committee, Governing Board, Steering Committee, Foundation, and local school divisions provided backing for the program. Parents and students were "overwhelmingly supportive" and benefited from multiple partnerships with local colleges and businesses. School D was supported by the "Steering Committee, community mentors, and partners" as well as participating Regional Governing Board and Superintendents. Students, parents, and teachers were also acknowledged for supporting the program. School E was commended for "maintaining communication and good relationships with all of the participating schools' staff" and "excellent working relationships with the four community colleges and the school divisions." School E was also noted to have support from parents, students, School Board members and Superintendents.

Table 8

*Stakeholder Engagement is Indispensable to Program Innovativeness Categories*

| | School A | School B | School C | School D | School E |
|---|---|---|---|---|---|
| Educational Leaders | X | X | X | X | X |
| Parents | X | X | X | X | X |
| Students | X | X | X | X | X |
| Faculty | X | X | X | X | X |
| 3rd party- Higher Education | X | | X | X | X |
| 3rd party- Businesses | X | X | | X | |
| 3rd party- Community | X | X | | X | |

***Students go beyond the classroom and into the world.*** All programs were recognized to provide learning opportunities for students beyond the in-school environment. Table 9 provides a summary of AYGS approaches for learning experiences outside of the classroom. School A was commended for providing STEM and art outreach activities to upper elementary and middle school gifted students as well as inviting interested 10th graders to shadow Governor's School students. School A had fostered exchange programs with European and East Asian countries, provided outreach activities for its students, and permitted service projects as part of the Capstone learning experience. School B encouraged service activities, workshops, social events, field trips, summer experiences, businesses partnerships (e.g. FIRST Robotics), and opportunities for career exploration. School B was also commended for "providing opportunities for students to do service within the community through activities such as judging middle school science fairs, doing tutoring, helping with middle school robotics, and helping middle school students develop portfolios." School C was recognized for providing interdisciplinary field experiences, summer programs, competitions, symposiums, and service opportunities through local business partnerships. School C also assisted with river clean-ups and wetland restoration. Notably, the evaluators identified "specific events contributing to the spirit of cooperation and trust are the new student orientation, the sophomore camping trip, and all overnight trips." School D was commended for "competitions, mentors, special summer programs, and other out of school learning opportunities to meet the needs and interests of students." Field experiences and group projects were recognized for students to form collegial relationships. School E's partnerships with astronomical observatories and health profession programs provided career exploration opportunities for students. Students were additionally encouraged to publish in a locally distributed magazine for student writing.

Table 9

*Students Go Beyond the Classroom and into the World Categories*

| | School A | School B | School C | School D | School E |
|---|---|---|---|---|---|
| Field trips/experiences | X | X | X | X | |
| 3rd party businesses and schools | | X | X | | X |
| Social activities | | X | X | X | |
| Summer programs | | X | X | X | |
| Community service projects | | X | X | | |
| Outreach (with community youth) | X | X | X | | |
| International Exchange Programs | X | | | | |

***Culture of accomplishment in the classroom.*** Virginia Governor's Schools aim to deliver tailored gifted services to students and maximize learning experiences. Evaluators noted the culture of high expectations for students during interviews with educational leaders and teachers. During the content analysis, classroom teaching strategies were sub-categorized into traditional teaching methods and independent research projects.

*Traditional teaching*. Table 10 provides a description of traditional teaching methods used within the five AYGS programs. School A was commended for the use of "product-based assessments," working with students' individual needs, adding inquiry and problem-solving into instruction, and integrating STEM and humanities instruction. School B was commended for an adjusted curriculum to better serve students, designed interdisciplinary units, opportunities for creative thinking in all course content areas, accessibility to research journals, and "creating a culture that encourages achievement at a high academic level and self-exploration." School C faculty members were recognized for differentiating curricula to serve the unique learning styles of students and the use of a "variety of product-based assessments used to measure student progress (Socratic seminar, problem- solving presentations, calculus class debate, environmental issues presentations, etc.)." Faculty also matched content to student interest. School D faculty were recognized for differentiated and problem-based deliverables that were meaningful and engaging to students. Teachers used rubrics and written feedback to communicate expectations. The development of leadership skills and self-reflection were aided with collaborative opportunities between students and cross-content connections. School E was commended for the use of "product-based assessments," purposeful grouping, and the structuring of curricula to adapt to student schedules. Courses were considered regionally meaningful, fostered a "close community of learners," and prepared students for expectations of an educational experience provided through technology.

Table 10

*Traditional Teaching Categories*

| | School A | School B | School C | School D | School E |
|---|---|---|---|---|---|
| Inquiry and problem-based learning | X | X | X | X | X |
| Product-based assessments | X | | X | | X |
| Interdisciplinary | X | X | X | X | X |
| Career Exposure/guest Speakers/mentors | X | X | X | X | X |
| Collaboration | | | | X | X |
| Intellectual rigor | X | X | X | X | X |
| Differentiation | | | X | X | |
| Resources for students | X | X | X | X | X |
| Independent and/or team research | X | X | X | X | X |

*Independent research***.** Table 11 provides a description of independent research categories used within the five AYGS programs. Four Virginia Governor's Schools were recognized for facilitating students to complete an independent research project. School A was acknowledged for offering Senior Capstone and research projects. School B was commended for the holistic approach to the Culminating Project that encouraged "achievement at a high academic level and self-exploration." School C was commended for the Independent Research Projects that allowed students to explore topics in-depth to demonstrate "advanced and complex learning." School C further promoted the research projects to be evaluated by regional experts at the Science Symposium. School D was commended for the research projects that included mentors from the community, faculty that designed project steps for student understanding and communicating project expectations. Culminating research projects were not addressed by the evaluators for School E.

Table 11

*Independent Research Categories*

| | School A | School B | School C | School D | School E |
|---|---|---|---|---|---|
| Culminating Project/capstone Project | X | X | X | X | |
| Mentorships | | X | | X | |
| Projects of personal interest | X | X | X | X | |
| Competition/science symposiums | | X | X | | |

***Opportunities exist for the educational leadership.*** Several recommendations were addressed by the evaluators for all five AYGS programs. Recommendations to School A included adding more enrichment opportunities and recognition of student achievements, increasing partnerships with other businesses and the community, exploring ways to create a more diverse applicant pool of students, locating more research opportunities and career exploration opportunities for students, connecting Governor's School strands through interdisciplinary activities, providing safer facilities, and updating equipment, materials, and software. School A was also recommended to present the Capstone research project as a stand-alone class and seek additional sources of funding professional development courses for faculty.

Evaluators recommended that School B should explore uses for technology to group students across multiple campuses, establish grades or credits for students participating in the research project, define the logistical expectations, determine the needs for technology, and provide multiple avenues for counselor services. School B was also recommended to increase the utility of the broadcast system, explore means to retain students, equalize the access to state-of-the-art lab facilities, recruit a more diverse student body, promote safety protocols, and employ a full-time and knowledgeable staff who have access to continued professional development opportunities.

School C recommendations included the provision of more enrichment opportunities and recognition of student achievements, design of a strategic plan that would build a community of learners through electronic or site based student interaction, exploration of interdisciplinary connections, increase of a diverse application pool, and clarification of policies and procedures (e.g. update tutoring guidelines). Recommendations also included suggestions to further incorporate staff development opportunities, address curriculum consistency across sites, determine the program's needs for technology, and provide counselor services.

Evaluators recommended to School D to review its mission and vision statements for future planning and growth. Additional short and long term goals included an increase of outreach activities for future students, development of a more diverse application pool, provision of interdisciplinary opportunities that would assist in the research project, increase of partnerships with business and community leaders, and to make further efforts to follow and communicate with alumni. School D also received comments to maintain a 15:1 class ratio, use product-based assessment for the Capstone project, and upgrade labs, educational technology, and safety procedures. Lastly, School D was charged to pursue funding for a guidance counselor, ensure that all faculty are endorsed in gifted education in a timely manner, and revisit mission and vision statements.

School E was recommended development of a strategic planning process which would embed unique opportunities for all students across classes, increase of communication between teachers and low performing students, formalization of the recruitment process, development of procedures to follow alumni, upgrade of technology, integration of "product based assessments" in all classes, provision of definitions expected outcomes for all students, and the formalization and documentation of all policies and procedures. School E was also encouraged to provide more interdisciplinary approaches, reduce the number of students in classes, provide supplements for students with equipment to perform experiments, explore individualized learning opportunities outside of the class environment, encourage a multi-day orientation, revisit the mission and vision statements for program development, clarify policies and procedures regarding staffing, and provide professional development opportunities. See Table 12 for a summary of recommendations by evaluators for the five AYGS programs.

Table 12

*Opportunities exist for the educational leadership Categories*

| | School A | School B | School C | School D | School E |
|---|---|---|---|---|---|
| Upgrade technology | X | X | X | X | X |
| Review mission and vision statements | X | X | X | X | X |
| Modify instructional delivery | X | X | X | X | X |
| Equalize across multiple campuses | X | X | X | | X |
| Increase diversity | X | X | X | X | |
| Increase interdisciplinary connections | X | X | X | X | X |
| Encourage greater staff development | X | X | X | X | |
| Provide counseling services | X | X | X | X | |
| Increase communication across campuses | X | X | X | | X |
| Track and build alumni relationships | | | X | X | X |
| Clarify policies and procedures | | | X | | X |
| Increase partnerships | X | | | X | |
| Increase safety | X | X | | X | |
| Expand research opportunities | X | | X | | X |
| Expand career exploration opportunities | X | | X | | X |
| Pursue funding | X | | | | |
| Reduce class sizes | | X | X | X | X |
| Encourage more public venues | | | | | X |
| Formalize recruitment | | | | | X |

***Depth of descriptions***. The level of detail in the findings, commendations, and recommendations of the final evaluation reports differed amongst the five schools. The researcher notes that practices not identified in the content analysis may have been present and observed at the schools, but were not recorded by evaluators. Additionally, areas for improvement as identified by the evaluators (See Table 10) may pertain to more programs than what was recorded in final evaluation reports.

**Research Question 3.** The third research question asked "What are the interpretations of evaluators on the desired outcomes of the *2014 Governor's School Full-Site Evaluation* rubric standards?" The researcher interviewed eight evaluators to collect data on the perceptions of best practices in the domains of Learning and Development, Assessment, Curriculum Planning and Instruction, Learning Environments, Programming, and Professional Development. After the researcher transcribed and coded the data, several categories emerged. A narrative was organized by the researcher to summarize the eight evaluators' perceptions. Figure 5 is a summary of the quantity of codes associated with each rubric domain.

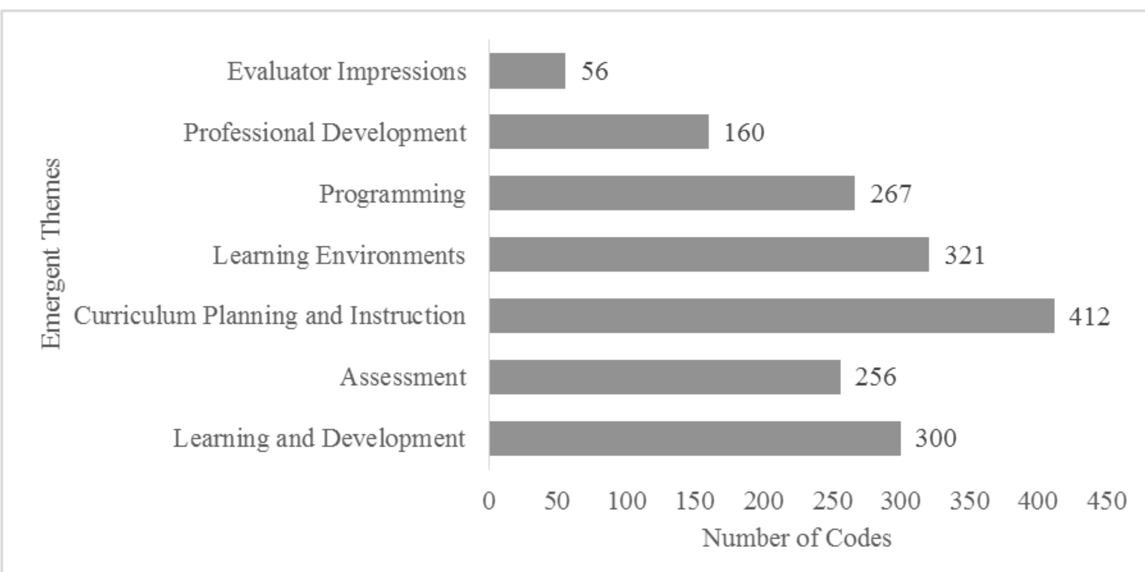


*Figure 5*. Quantity of evaluator codes (n= 1,716) from interviews

***Learning and development.*** Sub-research Question A asks, "How do evaluators define best practices in Learning and Development?" In this domain, the VDOE tasks "educators, recognizing the learning and developmental differences of AYGS students, promote ongoing self-understanding, awareness of their needs, and cognitive and affective growth of these students in school, home, and community settings to ensure specific student outcomes" (VDOE, 2014).

*Learning differences*. Governor's Schools must accommodate gifted students who enter the program with varied preferred learning modes and reside between the range of novice to expert in STEM content areas. Tom identified his own classes where some students have received thorough instruction in the physical sciences whereas other students have had no previous instruction at all.  As an evaluator, he looked for how other teachers' solve this issue, "You have kind of in your head all the possible different methods one could administer the course, different ways that they could get to the kids and try and get the kids engaged in the material, different learning methods, helping them work together, there are a lot of different things that you can do to have kids buy into the education and an exemplary school would be one that utilized many or most of those methods." Leslie recalled, "I've been on teams where "Exceeds Standard" has been marked either because a particular course was developed to fit into a need for the program … or maybe you have a case where someone goes out of their way to allow students to integrate an interest." Allistor discussed educational opportunities outside of the classroom to accommodate for learning differences. He shared examples of where students were able to go into the field and conduct water quality and animal studies that contributed to a larger conservation initiative, appealing to kinesthetic learners.

*Self-understanding*. Bell and Leite (2016) define self-understanding as "the ongoing process of the unfolding articulation of one's psychic life" (p. 305). Tom stated that Governor's School students often enter the program thinking that they will be the "best and brightest" students in the school and then encounter peers who also exhibit high, if not higher, performing academic abilities. Though difficult for the students to acknowledge at first, he emphasized that this exposure of varied abilities is important for students to minimize the shock of even greater academic diversity in higher education settings. Ava wanted to see students of a program that had developed an appropriate understanding of and respect for similarities and differences between themselves and their peer groups. Other evaluators sought evidence that students are supported through this shift of self-understanding.

Mason described that the freedom to show self as an epistemological experience is important for students. He looked for programs that can elicit responses from students similar to "Hey, I do not have to just meet this goal, I can show something else, I can show another side of me." Mason also added that, in a supportive environment, it is okay for students to fail; expectations are not always met even with great effort.

With students who do not have a lot of familiarity with the STEM subjects, evaluators also looked for areas of engagement. Judy recommended that AYGS educators assist students with identifying strengths and interests and then follow-up with engaging students in those strengths and interests. Allistor mirrored this sentiment in describing a student he interviewed who originally "hated science," but became excited by science through his lived experiences with the Governor's school program.

*Awareness of needs for cognitive and affective growth*. Tieso (1999) highlights some of the identified challenges experienced by gifted teenagers: (a) family and peer relations; (b) biological and developmental issues; (c) negative and harmful school culture, (d) drug and alcohol abuse; (e) sexual promiscuity; (f) inappropriate academic curriculum; (g) underachievement; (h) perfectionism; and (i) stress. The evaluators addressed that Governor's School educators must recognize the pressures of gifted students and accommodate accordingly. Molly, Mason, Allistor, Sydney, Ava and Leslie were particularly sensitive to the needs of students who are often burdened with difficulties in and out of school. Molly stated, "I look at if the Governor's School is trying … are they bringing forth a good, big effort to support these kids?" Allistor and Leslie acknowledged that socio-cognitive issues, particularly underachieving, are a common challenge with the Governor's School and concrete evidence must be observed where that the educators are attempting to find motivators for students. The evaluators addressed the inherent need for guidance counselors and teachers to be available to assist students. Mason added "I want to take the position that when you go into teaching, that it's not just you show up at 7:30 and you leave at 4 or whenever … I want to see the people that are the happiest in what they are doing [and] have kids who know that they can get them whenever."

When asked about how educators can continue to promote student growth in the home settings and the community settings, evaluator answers diverged. Though all eight participants felt that the role of the Governor's School was critical for student academic growth, the role that the Governor's School plays in the home and community for cognitive and affective development was not clearly established. Judy, Sydney, Ava, and Allistor felt that Governor's Schools should encourage students to participate with the community through projects like volunteer work and service learning. Mason was of a similar ideology, but particularly valued the depth of community service. "If it's just a matter of whether they are doing those [community] things to say "I can check that off on my application … I understand that it is important to them, but I want to look at it more as where they are seriously involved…it's something that is a passion for them and they do it because it means a lot to them." Leslie sought evidence that schools were making an effort to interact with the families, "I think that that's mostly read in the team setting in terms of the school trying to communicate with family and have an open dialogue about progress that's been made with the student and whether or not they are taking advantage of the special school." Ava, however, indicated that the parents at home need to be supportive of the student and provide him/her "whatever it is they need at home to help enhance their learning…"

***Assessment.*** Sub-research Question B asks, "How do evaluators define best practices in Assessment?" The VDOE tasks Governor's School educators to "provide information about identification, learning progress and outcomes, and evaluation of programming for AYGS students in all domains" (VDOE, 2014). The assessment domain is divided into two distinct constructs: (a) The identification of gifted students that may be recruited into the program; and (b) Student assessment once the student is recruited and has begun coursework.

*Identification of gifted students.* Judy expected to see evidence of strong recruiting and recalled a school visit where a school was rated as exemplary for unique approaches to gaining student interest:

"There was one school that actually followed the tenth graders from out of their feeder schools, had them visit the Governor's school, and then when the regular Governor's School students left, they stayed for the rest of the afternoon and the teachers did different activities with them. A very outstanding example of outreach and recruitment."

Molly stated that she felt the identification of gift students was a data-driven standard and during her evaluation visits, she sought the ability of educators to use and manage the data to drive the program forward. Leslie sought consistency in a program that successfully brought back a population of students "year after year after year."

Several of the evaluators expressed uneasiness with the standards regarding identification within the domain of assessment as many Governor's Schools do not choose which students to enroll and they felt as though "meets standard" would have to be the default answer. An action plan or strategy for working with other schools for recruitment was suggested to determine the criteria rating.

*Learning progress and outcomes*. Sydney shared that schools with best practices are ones that use a combination of qualitative and quantitative assessment measures. Many of the evaluators appeared to share this sentiment, but use of qualitative measurements was emphasized. Allistor appreciated Governor's School educators' uses of projects and independent research for students to show mastery of content. Mason sought for educators to provide opportunities for students to express themselves in different ways to prove to their teachers that learning took place. He said "I think we as Governor's Schools do a good job at providing multiple assessments for our students, it gives them an opportunity to use a strength in that particular assessment where they may not be able to in another." Mason also noted that he expected Governor's Schools to incorporate technology in assessment. Tom mentioned that assessments should be given on a frequent basis as a method of feedback for the teacher. He stated, "So you're looking for a lot of very varied methods of assessment and then also assessments at regular intervals … daily, weekly so that's what I would be looking for." Evaluators discussed product-, performance-, and off-level assessments as beneficial alternatives to traditional assessment methods.

***Curriculum planning & instruction.*** Sub-research Question C asks, "How do evaluators define best practices in Curriculum Planning and Instruction?" The VDOE tasks "Educators [to] apply the theory and research-based models of curriculum and instruction related to students with gifts and talents and respond to their needs by planning, selecting, adapting, and creating culturally relevant curriculum and by using a repertoire of evidence-based instructional strategies to ensure specific student outcomes" (VDOE, 2014). The curriculum planning and instruction domain was credited by some evaluators as the significant piece that defines the AYGS model. All evaluators shared that they looked for evidence that teachers of the Governor's School acknowledge the diverse abilities of students and prepare curricula and instruction to address the unique needs.

*Diverse approaches within the curricula*. Prior to his employment at a Governor's School, Tom thought that gifted students were a homogenous population of high-performing students. However, he soon recognized that student learning styles were markedly varied and had to amend his curriculum to accommodate these styles. During his evaluation visits, he wanted to discern if other teachers also showed consideration of the diverse needs as well. Sydney and Leslie described how a curriculum can be positioned to better serve through math analogies. Students enter a Governor's School at different math abilities; some students need courses that a Governor's School has available whereas other students proved mastery of the available mathematics courses. Educational leadership should locate resources to provide greater depth within the curricula to provision those students. Leslie described integrated courses and a wide variety of courses in the curricula that are challenging and meaningful for students of varying abilities.

*Varied instructional strategies*. Critical support for diverse needs often manifests in teacher instruction, so evaluators acknowledged merit in instructional strategies that were appropriate for each student enrolled in the program. Tom shared that even before the first day of class, his students fall along a spectrum of novice to expert in his STEM subject area. He stated, "The teacher's job is to put together a plan for the curriculum where the thinking is about the students, the different needs of the students, the different abilities of the students . . . and how they are going to meet these needs."

Mason detailed that he looked for teachers that can architect experiences. "…I think to have orderly chaos takes a tremendous amount of planning. So you go in and you see the kids engage and there are so many different things going on and the teacher is being more of a facilitator rather than standing up and giving a lecture ... that's the way I see that it's been well planned." Judy regarded nontraditional instructional strategies as important for student engagement, but also surveyed student comfort as well, "Of course they are doing special things that day because they realize the evaluator is there, but I look for students used to having a say in what kinds of things they do in class, what they study next, what kinds of assessments they have."

Leslie, Molly, Judy, and Allistor also assessed a Governor's School on the evidence of faculty collaboration that lead inter-, multi-, or trans-disciplinary incidences. Allistor was particularly attentive if classes were labeled as interdisciplinary. He defined interdisciplinary as the educators providing projects that span across two or three classes and tie the classes together, but he often sees individual classes self-identify instead. He stated, “Can I uncover that there is some real evidence that is happening or is it only on paper, because it is easy to write on paper, but to me the "meets standard" is not the default. This is a big one in my book because it's something we should all be going for." Sydney provided examples of unique instructional strategies that were incorporated into student research, career exploration, professional writing/publishing, laboratory skills, and humanities.

*Differentiation.* The Planning and Instruction domain charges educators to practice differentiation in the classroom. In asking the evaluators how they defined differentiation, the answers revealed two paradigms: teacher-led strategies and student led-strategies. Allistor, Tom, Molly, and Sydney indicated that they looked for teachers to recognize the individual needs of students and then take a lead role in adapting instruction so that all students reach a particular goal. Molly stated, "Differentiation is not just giving different people different things, but looking at where the student is and what they need to reach."

Mason, Judy, and Ava shared their definitions of differentiation as students taking a lead role to prove to the teacher that learning has occurred. Mason stated, "I think differentiation is giving the students the opportunity to give back to you and what they feel comfortable doing and how they feel that they could most effectively display back to you what you're looking for." He added that teachers set the guidelines, but they are less scripted and students introduce the "individuality."

Leslie identified both exemplars in her definition of differentiation. She revealed that once a topic was introduced, the teacher should be able to distinguish the different manifestations of understanding by students. Students who do not understand the concepts may need to be introduced in varied ways to then develop understanding. Students who understand quickly need opportunities to "investigate the implications and dig deeper." Her definition further crystallized as she explained how she looked for teachers to provide opportunities for students, yet avoid a simple menu of options. "Did you shape the [content] in a way so that you can reach students that have different long term goals and different immediate interest? Also have you been able to make it accessible in a way so that their background isn't something that's a hindrance to them?"

*Use of resources.* Evaluators sought evidence of educators effectively using community resources for the planning and instruction of classrooms. The building of relationships with universities and businesses to support the curriculum had been observed in evaluated schools and was praised by evaluators. Molly noted that the use of resources should also be consistent amongst schools that are located on multiple sites. During an evaluation visit, she discovered that one campus of a multi-campus program was significantly better equipped for labs which led to a stronger curricula compared to a sister site. Technology was often mentioned as a resource for students as well.

***Learning environments.*** Sub-research Question D asks, "How do evaluators define best practices in Learning Environments?" The VDOE designates this domain as "Learning environments foster academic attainment, personal and social responsibility, multicultural competence, and interpersonal and technical communications skills for leadership in the 21st century to ensure specific student outcomes" (VDOE, 2014).

*Logistics arranged for academic attainment*. Evaluators indicated that multiple factors are warranted for students to achieve their academic goals. Safety and transportation were top priorities for the evaluators and instances where schools failed to meet the expectations of the VDOE were shared. Evaluators look for evidence that students were safe, had reliable transportation, and were not inhibited from reaching their academic goals because of program logistics. Efforts for AYGS teachers to go beyond expectations were praised. Judy referred to a teacher who recorded lessons for absent students as a notable example of exceeding expectations.

Allistor recalled an evaluation where a Governor's School and the community partnered to provide state-of-the-art facilities for the students.

In thinking what he looks for in a learning environment, Mason stated "I don't look at the facilities as such to what is made available to those students to make them feel that they have the opportunity to reach out…" Sydney also did not focus on the contemporariness of the facilities and technology, as long as students were able to receive meaningful instruction. She adds, "I would like to see a program that has a real range of learning and was appropriate for that population of students."

*Community of learners.* Learning environments are critical for gifted students as it plays a role in their academic and cognitive development. Evaluators looked for areas of support through facilities, counseling, and group cohesion. Leslie assessed the effort made by the program to "acknowledge that there will be struggles" for students and that students can adapt to the changes of the new learning environment.

Mason also discussed the importance of talking to alumni and gaining feedback of the learning environment. During her evaluation visits, Sydney was attentive to the social interactions of students and the time Governor's Schools allow for social interaction for the students. She felt that programs and teachers, on the whole, do not provide enough time for students to talk to one another. She looked favorably upon program initiatives that deliberately planned opportunities to promote interaction.

Tom identified educators' sensitivity to student needs, particularly students of different cultural backgrounds, to receive an exemplary rating in the standard "try to make sure that the students had what they needed to be successful … sensitive to any of these different challenges that the students would face, or differences that the students have relative to other learners so that they are able to accomplish the same goal."

***Programming.***

Sub-research Question E asked, "How do evaluators define best practices in Programming?" The VDOE defines Programming domain as:

> Educators are aware of empirical evidence regarding the (a) cognitive, creative, and affective development of AYGS learners, and (b) programming that meets the concomitant needs. Educators use this expertise systematically and collaboratively to develop, implement, and effectively manage comprehensive services for students with a variety of gifts and talents to ensure specific student outcomes" (VDOE, 2014).

*Meeting student needs.* Evaluators perceived best practices as settings and content offered by a Governor's School that should not be typically available in the traditional public school setting. Mason described it this way: "I think it is essential that we show that we're not just a traditional high school…gifted kids who have special needs get what we are offering and it is something they could not get in any other place. That's the program we need to look at." All evaluators sought evidence of purposeful decision-making in program implementation that were reflective of the VDOE's definition of giftedness.

Sydney expected the Governor's Schools to "reach outside that box in some way" and shared several examples like delivery of interdisciplinary courses, encouragement of mentorships and internships, invitations to guest speakers, and development of projects within the community. Leslie shared the use of competitions, independent research, and online tutoring and assessment programs. Molly also noted that Governor's Schools should "reach out" more than a non-Governor's School; she had given positive ratings for programs where students applied their learning to a real world situations and created culminating experiences. Tom, Allistor, and Mason sought evidence of uniqueness, such as classroom and laboratory resources or efforts to increase student engagement. According to Allistor, "When you go into the classrooms, you just get a snapshot of what's going on but you get a sense of the engagement and awareness of what is going on in the world around us … those are the things that exceed the standards."

Evaluators also discussed the logistics of programming so students could pursue cognitive and creative self-fulfillment. Services such as transportation to and from the school, fully-equipped laboratories, safe classrooms, and up-to-date technology were identified as programming necessities. Exposure to these "above and beyond" learning approaches can be difficult on limited budgets, but the evaluators expressed that programs that are resourceful or have strategic plans in these endeavors generally meet or exceed the standards.

***Professional Development.*** Sub-research Question F asked, "How do evaluators define best practices in Professional Development?" The VDOE tasks Governor's School leadership to develop a Professional Development domain where:

> All educators (administrators, teachers, counselors, and other instructional support staff) build their knowledge and skills using the NAGC-CEC Teacher Standards for Gifted and Talented Education and the National Staff Development Standards. They formally assess professional development needs related to the standards, develop and monitor plans, systematically engage in training to meet the identified needs, and demonstrate mastery of standard. They access resources to provide for release time, funding for continuing education, and substitute support. These practices are judged through the assessment of relevant student outcomes. (VDOE, 2014)

Evaluators sought evidence that educators continuously build upon their expertise within STEM content and use professional development to master pedagogical methods appropriate for teaching gifted students. Allistor, Leslie, Molly, Mason, and Tom noted that teachers should have the appropriate credentials within a content area to teach the courses at a Governor's School. Tom stated, "Gifted students tend to have deeper, more probing, and more thoughtful questions . . . which is why I think personally that the teachers who are teaching them should also have a deeper and more thorough background in their particular topic. That's the clientele we are serving."

Evaluators also acknowledged that professional development should be an opportunity for Governor's School educators to expand instructional strategies that are suited for the unique needs of gifted students. Mason referred to conferences and visiting other schools as methods to gain different outlooks. Judy and Sydney suggested that endorsement in gifted education is one way to exceed the professional development domain. Sydney acknowledged that all teachers endorsed in gifted education would likely exceed the standard, but with the reality of constrained budgets she sought "a comprehensive plan that provides a variety of modalities and opportunities for teachers to improve their skill set and knowledge of gifted children or their chosen field of study."

Evaluators sought evidence that faculty are accommodated to pursue professional development opportunities. Financial support (i.e. through the school or fiscal agent school divisions) and availability to take days off of teaching were highlighted as major factors to receive a "Meets standard" or "Exceeds standard" within the domain. Leslie, Ava, and Mason stressed that there are inherent challenges for school leadership of many programs to provide the funding for professional development activities as budgets are often limited, and many teachers that are financially supported to obtain licensures and/or gifted endorsement eventually leave their teaching positions. Many evaluators did not want to "punish" programs for not having all teachers endorsed, but expected strategic plans in place for professional development.

**Evaluator impressions of evaluation.** In addition to informing the Research Question 3, a seventh category emerged from evaluator interviews regarding evaluator perceptions of the VDOE evaluation procedures. The eight evaluators were confident that participating in evaluations improved their own teaching and administrative practices. Table 13 provides examples of evaluator perceptions towards the AYGS evaluation procedures.

Table 13

*General Impressions of Evaluation*

| Quote |
|---|
| *I love the opportunity to go…there are just little things that you can see as ideas of doing things that maybe you wouldn't do in the same way, but gives you an idea to think about as a solution for your own school.* |
| *I really just enjoyed the opportunity to go visit some of the other schools because they're also very different. I really enjoy getting to see and talk to the students at other schools. I really appreciated the opportunity to see what other programs have, what they're doing that might work for us, being able to offer suggestions that we do that might work for them.* |
| *I think being on an evaluation team is really a great thing and improves me as a teacher, because I can see all of these different, really excellent professional teachers. I absolutely hope that I help with the process, but I totally come back with great ideas and a renewed spirit of what can happen at our school.* |
| *I enjoyed it. It was really fun to talk to the other instructors. I think I personally enjoyed it more than anything else because it's something that I can bring back and I think more Governor's School teachers should be involved in evaluating schools.* |
| *I've always enjoyed being on evaluation teams… I think it's very useful and helpful. I always feel like I wish I had more time.* |

*I love doing the evaluations, this is the only opportunity to really go to another school and really spend time seeing what the other programs are doing. I always bring back things that I've learned and I think that's great. I love going to spend time at other programs.*

*I always learn a lot when participating in an evaluation, it doesn't matter if I'm on the team or I was at the school being evaluated. I think overall, the whole process is immensely valuable to everybody who participates.*

*I think it's been a really positive thing. I look forward to it because it gives me an opportunity to step out of my particular school…and gives me so many things that I can bring back.*

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## Summary

The primary purpose of the study was to collect consequential evidence surrounding an untested rubric used during the evaluations of five STEM-focused Virginia Governor's Schools. In Chapter 4, the quantitative findings were presented in the form of descriptive statistics to address Research Question #1, while the qualitative findings were presented in the form of categories and conclusions to address Research Question #2 and Research Question #3.

The descriptive analysis revealed that the collective proficiency levels of the AYGS programs were rated as Doesn't meet standard (n= 19, 6.10%), Meets standard (n= 248, 80%), and Exceeds standard (n= 43, 13.87%) for the 62 standards in the *2014 Governor's School Full-Site Evaluation* rubric (See Figure 3). The content analysis revealed the following six emergent themes from the findings, commendations, and recommendations of the evaluation reports: (a) supported faculty are a catalyst for program achievement; (b) instructional technology is important for STEM education; (c) stakeholder engagement is fundamental to program success and improvement; (d) out of the classroom and into the world; (e) culture of accomplishment in the classroom; and (f) Opportunities exist for the educational leadership. The thematic analysis uncovered that evaluators envision the "best practices" for gifted students similarly, but personal experiences and pedagogical philosophies lead to more critical evaluation of some standards over others.  Evaluators had an overall positive impressions on the evaluation procedures.

# CHAPTER FIVE

## Introduction

The purpose of this study was to collect consequential evidence of an untested rubric instrument used for the evaluations of five Virginia Academic-Year Governor's Schools (AYGS). A descriptive analysis and content analysis was conducted on the AYGS final evaluation reports, and a thematic analysis was completed on the interviews of eight evaluators who used the instrument during the evaluation site visits. The results were used to summarize the current findings, commendations, and recommendations among the five schools, highlight emerging trends, and encapsulate the interpretations of evaluators in their operational definitions of the rubric's metric standards. The intent of the researcher was not to pass judgment upon the instrument, but rather identify phenomena which had emerged through a tabulation of program necessities identified by the VDOE. This was so that evaluation designers may be well-informed when determining instrument efficacy. This research was guided by three primary research questions and six subquestions:

RQ1: What are the collective proficiency levels of Virginia Governor's Schools' full-site evaluations?

RQ2: What emergent themes arise from the findings, commendations, and recommendations of the full-site evaluations?

RQ3: What are the interpretations of evaluators on the desired outcomes of the *2014 Governor's School Full-Site Evaluation* rubric standards?

SQa. How do evaluators recognize best practices of learning and development?

SQb. How do evaluators recognize best practices of assessment?

SQc. How do evaluators recognize best practices in curriculum planning & instruction?

SQd. How do evaluators recognize best practices for learning environments?

SQe. How do evaluators recognize best practices for programming?

SQf. How do evaluators recognize best practices of professional development?

**Summary of Findings**

The descriptive analysis revealed that the five AYGS programs largely met (80%) or exceeded (13.87%) the rubric's standards within the domains of Learning and Development, Assessment, Curriculum Planning and Instruction, Learning Environments, Programming, and Professional Development. The content analysis of the final evaluation reports concluded the following six emergent trends: a) supported faculty are a catalyst for program achievement; b) instructional technology is important for STEM education; (c) stakeholder engagement is fundamental to program success and improvement; (d) out of the classroom and into the world; (e) culture of accomplishment in the classroom; and (f) opportunities exist for the educational leadership. The thematic analysis uncovered that the eight evaluators had analogous expectations as to how Governor's School leadership and teachers should implement best practices. Discrepancies of operational definitions were minimal but were shaped by evaluators' personal experiences and pedagogical philosophies. Categories identified through the descriptive analysis, content analysis, and thematic analysis were triangulated to yield conclusions. The conclusions were subsequently tied into the literature base.

## Discussion of Conclusion Findings

### The Instrument Supports the Development of the Student as an Individual

Though research has shown that gifted students generally have supportive and healthy relationships with their families, teachers, and peers (Field et al., 1998), they may have difficulty managing and augmenting their significant talents with the physical and emotional immaturity of youth. The AYGS programming model intends to provide a solid framework for students to safely extend into areas of self-fulfillment. An instrument to assess this important purpose must address the academic, physical, social, emotional, and multicultural development needs of the student as an individual.

The evaluators iterated the necessity of AYGS leadership to find ways to celebrate the particularity of the student. Examples included accommodation of student-preferred learning modes, differentiation, retaining quality teachers that serve as role models, mentorships, counseling, and opportunities for positive social interaction. Engagement was heavily emphasized by evaluators to incorporate the passions and interests of students into the learning environment (similar to Callahan & Hertberg-Davis' [2013] study).

Contemporary views of engagement have emerged in the scholarly literature as a significant construct to lower gifted dropout rates (Landis & Reschly, 2013), increase interest in school (Fredericks et al., 2010), lengthen retention of learned content (Smith, Rook, & Smith, 2007) and improve teacher-student relationships (Pianta, Hamre, & Allen, 2012). Engaged students "select tasks at the border of their competencies, initiate action when given the opportunity…exert intense effort… concentration in the implementation of learning tasks; they show generally positive emotions during ongoing action, including enthusiasm, optimism, curiosity, and interest" (Chapman, 2003, p. 2).

There are obstacles associated with providing a challenging curriculum to gifted students which may lead to instances of additional stress through social comparison, emotional upheaval, and repelling students from STEM careers. Studies have shown that students in gifted classrooms have lower self-concept than their peers (Marsh, et. al., 1995; Neihart, 2007). "If students continually compare their performance to that of others in the new academic group instead of focusing on individual growth and achievements, their sense of academic self-concept can be affected negatively (Gubbins, 2013, p. 183). With AYGS students continually cognizant of their research projects, academic work, successes, and failures compared to colleagues, this may lead to underachievement in the program and/or aversion to pursuing STEM degrees.

The evaluators regarded the emotional and affective development needs of students as critical and expected programs to provide a supportive social-learning environment. Best practices included counseling services and the fostering a community of learners where students could celebrate their similarities and differences. The five Governor's Schools evaluated had varying success with tailoring the educational experiences for the individual student, evidenced by commendations for unique pedagogical approaches, alternative assessments, nontraditional instructional strategies, instructional technology, and independent research. Recommendations were noted in four evaluations for increased counseling/affective development services and increased focus on multiculturalism. Positive manifestations and applications of giftedness in a STEM-focused environment may encourage more youth to enter the STEM pipeline, but more research is needed in this area.

**The Instrument Supports Faculty that are Committed to Building Positive Relationships, Scholarship, and Pursuing Professional Development**

Delivering quality services to gifted students is a national challenge (Johnsen, 2013), and so the continued facilitation of STEM-focused gifted programming weighs heavily on the teachers themselves. The *2014 Governor's School Full-Site Evaluation* rubric follows NAGC (2010) tenets that teacher measurement must extend beyond professional requirements and identify teacher-related factors that are evidenced to encourage student achievement.

**Positive relationships.** Teacher-gifted student interactions lead to positive student outcomes (Goh & Fraser, 1998; Lang, Wong, & Fraser, 2005; Siegle, Reis, & McCoach, 2006; Wubbels & Levy, 1993; Wubbles, Brekelmans, & Hooymayers, 1991). The five evaluation reports and evaluator interviews revealed that AYGS faculty play a significant role in the successful delivery of gifted services, with "trust between faculty and students" coded intermittently throughout the data. Evaluators spoke with high regularity of teachers serving as role models. All five programs were commended for strong teacher commitment, leadership, and accessibility for students outside of school.

The community of learners was heavily emphasized in the data sets as a scaffold for collaborative stewardship. Though there was divergence of evaluator opinion on to what extent the community of learners could be cultivated, the underpinnings were shared with Dewey's work *Democracy and Education* (1916) in which he stated that human beings, especially children, have a natural tendency to connect with others: "to give out, to do, and to serve" (Dewey, 1916, p. 55).

**Scholarship**. Scholarship is the pursuit of academic achievement, a necessary component within national efforts to prepare students in STEM literacy and provide stimulating conditions to increase STEM interests (Subotnik, et al., 2009; Weis et al., 2015). An evaluation instrument should address how educators provide settings of intellectual rigor to prepare students for success in a scientifically and technologically driven society. From the data, a strong culture of academic attainment was revealed. The use of accelerated and differentiated instruction, interdisciplinary content, use of advanced instructional technology, and application of alternative assessments, were some of the examples of best practices provided. These strategies were similarly noted within the evaluation reports. Deviations emerged after the data triangulation on the position of instructional technology within the school.

With an increase in the use of technology among youth, Siegle (2004) welcomes instructional technology as a means to introduce integration, complexity, quick processing, critical thinking, creative productivity, and technological literacy in gifted curricula. He states, "Future education movements to promote student technology literacy will serve gifted children well since current technology literacy goals are very compatible with many gifted and talented students' learning preferences" (Siegle, 2004, p. 33). The commendations of the evaluation reports noted strong instructional technology infrastructure in the program, but all five schools were recommended to upgrade technology. Evaluators discussed that the technology available is important for the learning environment and provides dynamic options for teachers, but technology should be consistent amongst all campuses. Budget constraints were noted as problematic for the AYGS programs to meet or exceed instructional technology-related standards.

**Professional development.** Working with gifted students requires appropriate and ongoing professional development. The *2014 Governor's School Full-Site Evaluation* rubric highlights many forms of professional development such as district-sponsored workshops and courses, university courses, professional conferences, independent studies, and presentations by external consultants (VDOE, 2014). However, a trend that emerged from the data is that professional development should be placed as a higher priority. This category follows a national problem with inadequate support for science and mathematics teachers to pursue professional development opportunities (Hossain & Robinson, 2012). However, evaluators noted that all faculty are licensed with the VDOE and adding the gifted endorsement may not be feasible for all with budget constraints.

**The Instrument Supports Developing STEM-capable Students through Scientific Exploration and Civic Involvement**

There is a pervasive problem of American students lacking interest and proficiencies in STEM fields, potentially leading to the inability of the United States to remain globally competitive (PCAST, 2010; NSB, 2015). The VDOE mirrors this position with the mission for STEM-focused schools to prepare students for success in postsecondary education (VDOE, n.d.-d). An evaluative instrument should incorporate standards to prepare students of diverse populations to engage in authentic learning experiences for college and career readiness. The literature is favorable that authentic activities increase the confidence and interests of STEM topics in high school males and females (Christensen, Knezek, & Tyler-Wood, 2015), increase scientific literacy (Hossain & Robinson, 2012), provide meaningful contexts to scientific concepts (Bennett, Hogarth, & Lubben, 2003), and increase self-efficacy in STEM-related areas (Almarode et al., 2014).

The content analysis of the five Governor's Schools revealed two major avenues for preparing students for a STEM workforce: independent research and community service. The strong incorporation of research amongst the AYGS curricula was consistent with other STEM-focused schools (Pfeiffer, Overstreet, & Park. 2009; Subtonik et al., 2009). The implementation of research activities of inter-, multi-, or trans-disciplinary natures was commended by evaluators during the interviews as not only important for postsecondary success, but also cognitive and creative development for students. Community service and outreach was also addressed by evaluators as a way for students to learn "outside of the walls of the classroom" and gain civic knowledge.

The five Governor's Schools scored higher criteria ratings on the standards pertaining to research and community service. These findings are similar to the Tofel-Grehl and Callahan (2014) survey of STEM High school communities that found strong themes of valuation in research and importance of independent learning and responsibility.

**The Instrument Importance, Relevance, and Usefulness**

Callahan (1986) remarks that "serious attention" must be placed on evaluations of gifted programs to yield accurate data to inform action (p. 2). By triangulating the findings of the evaluation reports and evaluator interviews, the researcher identified areas of instrument integrality and opportunities for development.

**Importance.** One of the most frequent uses of evaluation is to make modifications to improve the program based on evaluation results (Fitzpatrick et al., 2011). The *2014 Governor's School Full Site Evaluation* rubric was designed by the VDOE to determine "…the effectiveness in curriculum, professional development, program design, guidance and counseling, identification and selection process, and facilities" (VDOE, n.d.-e). The evaluation instrument should therefore provide direction and focus with AYGS programs.

With the initiation of the *2014 Governor's School Full-Site Evaluation* rubric, AYGS program leaders are instituting program changes. With this reality, it is recommended that the evaluative instrument be restructured to undergo a psychometric assessment for instrument validity and reliability. A similar restructuring for Colorado's RtI Implementation Rubric was completed in 2014 and the instrument was determined to be a viable option for measuring academic and behavioral outcomes of students across the state (Miller, 2014).

If unable to be restructured, then efforts should be made to ensure that the language of the instrument is evaluative and not simply descriptive. In Table 13, several evaluators shared concerns that arise with the language:

Table 14

*Evaluator concerns of the 2014 Governor's School Full-Site Evaluation rubric*

| Quote |
|---|
| *I'm not sure what goes where.* |
| *I think some of the standards are tough because the Governor's School is getting evaluated, but it [the standard] is asking about things that are outside of the Governor's schools control…there's only so much that the Governor's School itself can push or work to get something to happen.* |
| *I hate to see someone knocked down for something they can't control.* |
| *Some of these things [standards] are just really out of the school's hands in terms of collaboratively planning services. Sometimes you just don't and can't get cooperation from the feeder schools or from the community.* |
| *I think some of these standards definitely lend more to the full day programs than to the half day programs. I've always felt like because the full day programs tend to have more of the resources and having something be consistent for a student all the way through the school day, whereas the half day programs, it's a little bit tougher. They generally don't have the resources to do as much support in an area as they would like.* |
| *I'll be honest. Some of these standards we struggle on as an evaluation team. Like for instance, they identify high school learning opportunities that match values and interests. I'm all about that, but it's tough if you're in a part day situation where students leave immediately and then go to their base schools. And then they are involved in everything possible up until late in the evenings… we need to be careful and look at the whole picture . . .* |
| *I do think there's a lot of language in many of these [standards] that you see in common in all of the strands. When I've been on teams there are things we want to say about programs or things we want to give praise for or have recommendations for and when you are trying to write the report you have to try to figure out where is the best fit.* |

Lastly, the instrument provides an important role for highlighting what components of the AYGS program should be addressed by leadership. According to the evaluators, a rating of "Doesn't Meet Standard" is not always considered detrimental. Some directors share the low rating as evidence for their respective regional governing boards on a need to revise funding strategies. It is unfortunate that a director must use an approach with negative connotations to raise awareness of program needs. The researcher requests evaluation designers to work with the AYGS director and consider adding a summary in the final report of resources needed to meet all 62 standards.

**Relevance.** The Virginia Advisory Committee for the Education of the Gifted identify STEM education, College and Career Readiness, and 21st Century Skills as focal points within the AYGS model (VACEG, 2013). The instrument used to assess AYGS programs should encompass standards that are relevant to students becoming contributable citizens. Students must be prepared for the challenges of living in a scientific- and technology-driven society and should possess a broad spectrum of abilities and competencies to be successful (NCTE, 2013). Several standards are embedded within the instrument that promote the initiatives identified by VACEG, but the five evaluated schools had varying success with these outcomes. The evaluation teams recommended program leadership to review program missions and vision statements, upgrade technology, increase interdisciplinary connections, increase community partnerships, and provide more staff development. These recommendations are highly relevant to address STEM education initiatives that are currently pushed at a national level.

Some evaluators shared that though standards are relevant to program outcomes, a few are difficult to fairly evaluate. For instance, a desired VDOE outcome relates to gifted student identification in the Assessment Domain. However Governor's School's leadership are often not the decision-makers of which students enter the program. Many evaluators stated that instead of following the standard as written, they assessed a program on the evidence of a communicative relationship with gifted coordinators of the schools where young students are recruited. The researcher recommends that the standards relating to student identification be adjusted to increase relevancy.

**Usefulness.** Program evaluation with rubrics is generally regarded as more reliable than program evaluation without rubrics (Jonsson & Svingby, 2007). An instrument should provide direction and focus for evaluators to find evidence in a program. This study indicates that the eight evaluators were consistent in their perceptions of best practices and sought similar incidences to credit a school as having met or exceeded the standard. However, the study's findings revealed that there are opportunities for some standards to be further developed due to (a) inconsistencies in the evaluator interpretations of standards, or (b) more research is now available on STEM-focused secondary schools.

***Evaluator interpretations***. Another usefulness issue that arose during evaluator interviews was the standard regarding off-level assessment. Evaluator responses to the interview question "How do you define off-level assessment" are located in Table 15:

Table 15

*Evaluator responses to "How do you define Off-level Assessment?"*

| Quote |
|---|
| *So usually with those we are looking for something that doesn't cap….we are looking for something that doesn't have a ceiling.* |
| *That's a really good question. I'm not sure if I fully know off-level.* |
| *I look at that more as to give them [students] an opportunity to do some things that go beyond…to be able to assess them maybe in different areas.* |
| *I have no idea. I don't remember how we've defined these before.* |

*I would define as assessments that are not outcome based but are just immediate. Kind of like clicker assessments where you have just seen where the student is.*

*So you are making sure that you are not just hitting what the requirements of the course are. That if they are in an AP class, that you shouldn't just be checking off the requirements of an AP, but as a Governor's School, they should be going beyond that and you know a little bit deeper into some of the topics…making sure that they're more advanced that what they would get in a typical classroom.*

*Off level to me would be some way of assessing a student's ability to go beyond what's expected at that point in time and at their skill level.*

*I have no idea. I'm not sure. I'm looking at a student who maybe in Level 1 in theory and maybe is getting it very quickly and moving to a higher level or exceeding that Level 1. So that instructor is giving them more advanced work.*

All five schools were given a "Meets Standard" on off-level assessment, but the purpose of this standard is missed when a general definition is not widely understood. The researcher recommends evaluation designers provide definitions for terminology within the standards.

***More research available on STEM-focused schools.*** The Council for Exceptional Children (CEC) posits that gifted evaluations should incorporate findings from new research into the evaluation system (2013). For example, the VDOE tasked that a Governor's School provide opportunities for interactions with mentors.  Though literature exists that mentorships are beneficial for students (Sadler, Burgin, McKinney, & Ponjuan, 2010), a more recent study conducted by Mason, Klop, and Osseweijer (2016) revealed that students who were disappointed in their working interactions with scientists did not increase interest in STEM fields or were even repelled from pursuing STEM careers. The authors advise that "teaming up students with scientist to enthuse students for STEM-education is not a simple success-factor, but needs to be embedded and managed carefully" (p. 100). The addition of specificities on how Governor's

Schools could more closely manage activities, like mentorships, would be helpful for evaluators to fairly assess quality of the activity and make recommendations as needed.

## Summary of Conclusion Findings

The research questions that directed this study were based upon concerns from stakeholders that the *2014 Governor's School Full-Site Evaluation* rubric was an untested instrument that was leading to modifications of programming within the Governor's Schools. The inclusive results of rubric implementation have identified general areas of strengths and weaknesses in program curriculum, professional development, program design, guidance and counseling, identification and selection processes, and facilities amongst the five schools. Evaluators who have used the instrument have similar perceptions and expectations of how AYGS faculty should implement best practices. The conclusion of this study is not to assess the effectiveness of the instrument, but condense major findings to inform evaluation designers of consequential evidence. Major findings of the study are highlighted as follows: (a) the instrument supports the development of the gifted student as an individual; (b) the instrument supports faculty that are committed to building positive relationships, scholarship, and pursuing professional development; (c) the instrument supports developing STEM-capable students through scientific exploration and civic involvement; and (d) the instrument contains constructs of importance, relevance, and usefulness. (See Table 16)

Evaluators were positive in their impressions of the AYGS evaluation procedures and welcomed opportunities to observe the spectrum of strategies implemented to deliver gifted services. The perceptions of best practices were analogous amongst participants and observed incidences of best practices manifested in diverse ways. Recommendations by the researcher are for rubric designers to restructure the rubric to undergo a psychometric assessment and/or ensure the language is evaluative instead of descriptive, modify standards to increase relevancy (e.g. student identification), provide definitions for rubric terminology, and specify what evidence of program actions are to be sought to ensure quality programming.

Table 16

*Matrix of Findings and Sources for Data Triangulation*

| Category | Findings, Recommendations, and Commendations | Rubrics of Final Report | Evaluator Interviews | Conclusion |
|---|---|---|---|---|
| Culture of accomplishment | X | X | X | Instrument supports the development of the gifted student as an individual |
| Learning and developmental differences | X | X | X | |
| Learning progress and outcomes | X | X | X | |
| Self-direction | | | X | |
| Academic attainment | X | X | X | |
| Diverse needs within the curricula | X | X | X | |
| Cognitive, creative, and affective development | X | X | X | |
| Differentiation | X | X | X | |
| A supported faculty is a catalyst for program initiatives | X | X | X | Instrument supports the faculty that are committed to building positive relationships, scholarship, and pursuing professional development |
| Instructional strategies | X | X | X | |
| Use of resources | X | X | | |
| Building knowledge and skills through professional development | X | X | | |
| Professional development needs | | | X | |
| Stakeholder engagement is indispensable to program momentum | X | X | | Instrument supports developing STEM-capable students through scientific exploration and civic involvement |
| Instructional technology is important for STEM education | X | X | X | |
| Beyond the classroom and into the world | X | X | X | |
| Community of learners | X | X | X | |
| Difficulty with the instrument | | | X | Instrument contains constructs of importance, relevance, and usefulness |
| Opportunities exist for the educational leadership | X | X | | |

## Recommendations for Future Research

This study focused on collecting the consequential evidence of the *2014 Governor's School Full-Site Evaluation* rubric. The data presented in this research were based on the final evaluations of five Governor's Schools and the perceptions of eight evaluators on the best practices for gifted students. Based on the findings and conclusions of the study, there are recommendations for future research questions.

What are the responses or solutions of Virginia Governor's School Directors upon receiving recommendations from an evaluation? This research question would extend from the current study to follow program leaders who must implement changes set forth by the evaluation committee. The perceptions and actions of leadership would further assist in any future evaluation redesigns.

More research can be conducted to determine rubric proficiency level differences between half-day and full-day STEM-focused AYGS programs: are there differences in the learning experiences of students who are exposed to different protocols and processes used in one model over another? This information may determine a preferred model for incorporation of new AYGS programs in the future.

Stemming from the success of Virginia Governor's Schools in gifted education and STEM initiatives, how do AYGS program outcomes compare with outcomes of STEM programs for students of low-, average-, and high-performing capacities that are not identified as gifted? From within these multiple models, what teacher pedagogical methods or student experiences are found to be effective in encouraging youth to enter the STEM pipeline? From the other end of the spectrum, what factors within a STEM program lead to students repelling away from STEM opportunities (Big-Fish-Little-Pond Effect)? Further research in this area would raise awareness to AYGS leadership of practices that impede growth in STEM interests.

**Implications**

Evaluation has minimal direction in gifted programming (Callahan, 2004) and STEM education (National Science and Technology Council, 2014). This study introduces the literature to an instrument implemented state-wide for gifted programs with a STEM focus, and provides evidence to support that the instrument overall aligns with best practices identified by the Virginia Department of Education and by evaluators who have worked extensively with STEM-interested gifted youth. The programs evaluated by this instrument are also performing successfully in the delivery of gifted services in a STEM setting.

Virginia's Governor's Schools set a precedence of quality gifted/STEM-focused programming, with research-based practices that have been credited for contribution toward student success. Incidences that were highlighted in this study included independent research, mentorships, advanced instructional technology, field experiences, outreach, summer programs, career exploration, community service projects, inquiry and problem-based learning, differentiation, purposeful incorporation of student interests, and employing quality faculty that tailor instructional strategies for student growth.

The reader must assess the transferability of the instrument, but the *2014 Governor's School Full-Site Evaluation* rubric provides the constructs for program directors/principals, gifted coordinators, STEM coordinators, general educators, and other decision-makers of education who are interested in developing STEM-literacy amongst youth. An organized checklist from the constructs may be designed that communicate some of the most innovative approaches used in education that are feasible in any learning environment. By incorporating these strategies into local, state, and national evaluation procedures, greater direction will be seen in STEM education reform initiatives.

## Concluding Statement

In 2014, an evaluation rubric was introduced to the Virginia Governor's Schools which provided evaluation metrics for the VDOE's identification of best practices. The rubric was field tested and modified prior to state-wide program implementation, but did not undergo a psychometric analysis. With five STEM-focused schools evaluated with the instrument during the 2014-2016 academic years, stakeholders shared concerns that the rubric contains subjective language and may not align with the goals of best practices for gifted students identified by the VDOE.

The Virginia Governor's Schools serve as a valuable conduit for increasing STEM literacy amongst America's gifted youth and so the evaluation instrument plays a significant role in the future educational experiences of thousands of students. As the rubric directs AYGS leadership in the areas of program curriculum, program design, guidance and counseling, identification and selection processes, and facilities, the reliability and validity of the instrument is paramount.

The current framework of the instrument is not conducive to quantitative assessment; therefore, data was collected from the final evaluation reports and evaluator interviews. Triangulation revealed several emergent conclusions to inform evaluation designers of the rubric's consequential evidence. From the descriptive analysis, the five STEM-focused Governor's Schools met (n=80%) or exceeded (n= 13.87%) the 62 standards in the domains of Learning and Development, Assessment, Curriculum and Instruction, Learning Environments, Programming, and Professional Development. The content analysis of the final reports highlighted strengths and weaknesses of the programs. Faculty were acknowledged as the impetus for successful programming; however the provision for professional development opportunities in content and pedagogical approaches was emphasized. Schools with multiple forms of instructional technology were commended in the evaluations, but all schools received recommendations to further host instructional technology appropriate for propelling the curricula forward. Stakeholders were recognized as valuable assets to provide learning experiences within formal and informal learning environments and provided voices for gifted advocacy. AYGS programs were commended on current partnerships and encouraged to seek new collaborations with local businesses, higher education institutions, and community members. Emanating from the efforts of teachers and stakeholders, multiple examples were provided of students participating in real world issues outside of the classroom. Inside the classroom, students were challenged academically in an accelerated and differentiated environment to prepare them in a scientific and technological world; Governor's schools were encouraged to continue challenging students with interdisciplinary topics.

Interviews with evaluators revealed that the general conceptions of best practices were similar, indicating that the rubric served as a consistent template for evaluators with similar pedagogical beliefs. Evaluators sought evidence of leadership and teachers purposefully tailoring educational experiences through instructional strategies and appropriate curricula to the learning differences of students served. The presence of a community of learners was believed to help students adapt to the new learning environment and provide continuing support throughout their academic tenure. Services provided were expected to extend beyond the scope of a traditional high school and meet students' concomitant needs. Evaluators also assessed the professional development measures to ensure that Governor's School teachers were building upon their expertise in content areas and gifted education pedagogy.

With this consequential evidence, the researcher recommends several constructs for future rubric revisions. First and foremost, the framework of the rubric must be restructured in order to undergo a psychometric assessment. The addition of more criteria ratings to the ordinal scale of "Doesn't meet standard", "Meets standard", and "Exceeds Standard" would allow for a content validity, construct validity, and factorial analysis. The quantitative substantiation would appease concerns of stakeholders and provide greater reliability of the instrument to parties interested in adopting a similar rubric.

Language that is evaluative, instead of descriptive, would provide guidance for evaluators to determine the appropriateness of AYGS procedures. The researcher noted that evaluator expectations of standard implementation diverged for rubric standards that were not clearly defined. Specificities in procedural implementation would alleviate such concerns. Language more relevant to AYGS program capacities would also assist evaluators who asserted that some standards were difficult to fairly evaluate, such as the standards regarding identification and selection of students.

Opinions also diverged on the definitions of education terminology. Though the definitions of terminology were relatively similar with the eight evaluators, the constructs may change in the future from accepted cultural implications today. Notably, the standard of "off-level assessment" was exceptionally ambiguous. The researcher recommends a definitive list of terms and definitions provided by the VDOE. The National Association for Gifted Children (NAGC) currently maintains a glossary of terms informed by the current literature in gifted education. The VDOE may adopt a similar strategy for future evaluation site visits.

Similar to consistent terminology definitions, the rubric's design must encourage sameness despite different individuals on evaluation teams. This conclusion was based upon observation that the final evaluation reports of some schools were significantly more detailed than other evaluations. All schools should receive equivalent levels of constructive feedback.

Lastly, the researcher recommends that an additional component be added to the final evaluation reports to document the needs of the AYGS program to receive a passing criteria rating for any standards designated as "Doesn't Meet Standard" by the evaluation team. This documentation could serve AYGS leadership for future decision-making, evidence for budget or logistical requests to governing boards, and provide data of emerging trends in the coming years.

The literature is inundated with the critical need for STEM-capable workers and a STEM-literate citizenship in the United States. These actions stated above would strengthen the evaluative process of a fruitful state-wide program that targets gifted youth with STEM interests who are responsive to academic challenge. The Virginia Governor's Schools could continue, durably, to serve as a conduit for gifted students in STEM fields.

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# APPENDICES

## APPENDIX A

### Recruitment Letter

My name is Krista Stith and I am a life sciences instructor at the Southwest Virginia Governor's School, as well as a doctoral candidate of Integrative STEM Education at Virginia Tech. I am inviting you to take part in a research study for my dissertation. The research study is entitled A Mixed Methods Study on Evaluation of Virginia's STEM-focused Governor's Schools. The purpose of this study is to encapsulate the evaluations for Virginia Governor's Schools, sequester connections to provide evidence of existing trends, and explore the perceptions of evaluators towards the implementation of "best practices" for gifted students. In other words, what are you looking for when you evaluate a Governor's School?

The study invites eight teachers and administrators who have participated in at least one Governor's School site visit between 2014 and 2016. Your voluntary participation consists of one data gathering interview approximately one hour in length. The interview may be in one of the following formats of your choosing: a face-to-face meeting or digital communication (e.g. Skype, Google Hangouts, or Facetime).

This research study has minimal risks for any potential participants involved. The interview will be audio-recoded for transcription purposes; however your identity will remain confidential and any personal information shared during the interview will be confidential in perpetuity. The interview questions are noninvasive and were designed to provide me insight into what you look for when evaluating a Governor's School program. The results from the findings will be available to you.

If you are willing to participate in this study, or have any questions, please reply to this invitation by email within seven business days or call me at (540) 818-1920. Prior to the data gathering interview, I will mail you a copy of the actual consent form for your records. I look forward to your participation in this study.

Sincerely,

Krista Stith

APPENDIX B

Institutional Review Board Approval

VirginiaTech

**Office of Research Compliance**
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website http://www.irb.vt.edu

**MEMORANDUM**

**DATE:** September 14, 2016

**TO:** Jeremy V Ernst, Krista Marie Leonard

**FROM:** Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)

**PROTOCOL TITLE:** A Mixed Methods Study On Evaluation of Virginia's STEM-focused Governor's Schools

**IRB NUMBER:** **16-139**

Effective September 14, 2016, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

**PROTOCOL INFORMATION:**

| | |
|---|---|
| Approved As: | **Expedited, under 45 CFR 46.110 category(ies) 5,6,7** |
| Protocol Approval Date: | **September 14, 2016** |
| Protocol Expiration Date: | **September 13, 2017** |
| Continuing Review Due Date*: | **August 30, 2017** |

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

**FEDERALLY FUNDED RESEARCH REQUIREMENTS:**

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

*Invent the Future*

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
*An equal opportunity, affirmative action institution*

# APPENDIX C

## Consent Form

**VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY**
Informed Consent for Participants
in Research Projects Involving Human Subjects

Title of Study
A Mixed Methods Study on Evaluation of Virginia's STEM-focused Governor's Schools
Investigator
Krista Stith (kstith@swvgs.us/ kleonard@vt.edu)

**What are some general things you should know about research studies?**
You are being asked to take part in a research project. Your participation in this project is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research projects is to gain a better understanding of a certain topic or issue. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form, it is your right to ask the investigators for clarification or more information. If at any time you have questions about your participation, do not hesitate to contact the investigator named above.

**What is the purpose of this research?**
To petition for greater financial resources from federal and state educational departments, program evaluation is a necessary component to provide defensible evidence to the effectiveness of STEM gifted programs. The continuation of All-Year Academic Virginia Governor's Schools (AYGS) relies on strong evaluation to ensure that state educational leaders have the information needed to make important decisions, especially in regards to funding and program development. The purpose of this research is to holistically explore the evaluative process and investigate the interpretations of evaluators on gifted standard implementation. This analysis would assist key decision makers to assess the effectiveness of current evaluation procedures. This study is the doctoral dissertation of the investigator and the results of the study will be published.

**What will happen if you take part in this project?**
You will participate in one interview (approximately one hour in length) with the investigator named above. The format may be face-to-face or over long distance as a video conference call (Skype, Facetime, or Google Hangouts) and will be audio-recorded. Interview questions are designed to provide insight on what evaluators are looking for when judging Virginia Governor's School programs.

**Confidentiality**
The information in the artifact records will be kept confidential to the full extent allowed by law. Data will be stored securely and measures will be taken to protect the security of data. No reference will be made in oral or written reports, which could link you to the project. A pseudonym will be arranged in transcribed dialogue. After the data is collected and the project is over, all audio recordings and transcriptions will be destroyed.

**What if you have questions about this study?**
If you have questions at any time about the study or the procedures, you may contact the researcher, Krista Stith, at kstith@swvgs.us or (540) 440-5542. If you have questions about your rights as a study participant, you may call the Virginia Tech IRB: Dr. Moore/IRB contact: (540) 231-4991 and moored@vt.edu.

**Consent To Participate**
I have read and understand the above information regarding this research study. I agree to participate in a data gathering interview. I understand that I may choose to withdrawal from the research study at any time without penalty.

**Participant's signature**____________________________ **Date** _____________

**Investigator's signature**___________________________ **Date** _____________

Virginia Tech Institutional Review Board Project No. 16-139
Approved September 14, 2016 to September 13, 2017

# APPENDIX D

| Participant Interview Questions | | Prompt Questions |
|---|---|---|
| Script | "I would like to begin with some background information." | |
| Introduction | Tell me about your career in education | How many years have you taught?<br>What subjects have you taught?<br>What grade levels?<br>Tell me what it is like to be a Governor's School teacher/administrator |
| Script | "Excellent, I would also like to ask you general questions about your experience with evaluation" | |
| Introduction Cont. | Did you participate in a Governor's School evaluation this past school year? If so, how many? | The 2015-2016 school year |
| | Did you participate in a Governor's School evaluation the previous school year? If so, how many? | The 2014-2015 school year |
| | What was your role in the evaluation(s)? | Were you an evaluation coordinator, team leader, or a team member?<br>Do you have a particular area of expertise that was helpful to the evaluation team? |
| | Did you had any previous experience with evaluation prior to participating in a Governor's School evaluation site visit? | Have you observed other teachers/administrators as a peer reviewer? |
| | Describe what the training experience was like for you to evaluate a Governor's School. | How confident did you feel after the training to evaluate Governor's Schools?<br>Do you have suggestions for future training sessions for evaluators? |
| | Explain the criteria ratings as you understand them on the rubric (Doesn't meet standard, Meets standard, Exceeds standard). | What does "Doesn't meet standard" mean to you?<br>What does "Meets standard" mean to you?<br>What does "Exceeds standard" mean to you? |
| Script | "Great, I think we are ready to begin discussing the standards. Please feel free to refer to the rubric at any time. The first standard is about Learning and Development. I would like to ask some specific questions to learn about what you are looking for as an evaluator when you are observing a Governor's School. Please take a moment to re-familiarize with this standard and when you are ready, we may begin. " | |

| | | |
|---|---|---|
| Learning and Development | Describe to me in what ways a Governor's School could score a poor rating in "Learning and Development." | What educational practices could a Governor's School carry out that would not be effective for student growth? |
| | How should a teacher continue to promote student growth in home settings and community settings? | What can a teacher do to support students at home, perhaps with their families, as well support students in a larger community setting. |
| | What approaches should a Governor's School utilize to receive an exemplary rating in promoting "Learning and Development"? | Describe to me an example of a Governor's School that did very well, even exemplary, for this standard. |
| | Do you have anything that you would like to add regarding the standard of "Learning and Development"? | |
| Script | "Thank-you very much. We will now discuss Standard 2 which is about Assessment. Once again I would like to ask some specific questions to learn about what you are looking for as an evaluator. Please read the standard and let me know when you are ready." | |
| Assessment | How would you generally describe "student assessment"? | Why is student assessment evaluated in the Governor's Schools? |
| | Describe to me in what ways a Governor's School could score a poor rating in "Assessment." | What educational practices could a Governor's School carry out that would not be effective for student assessment? |
| | What approaches should a Governor's School utilize to receive an exemplary rating in assessment? | Describe to me an example of a Governor's School that did very well, even exemplary, for this standard. |
| | How do you define performance-based assessments? | In the evaluation, you rated performance based assessments. What were some features you observed teachers with practicing performance-based assessments? |
| | How do you define product-based assessments? | In the evaluation, you rated product-based assessments. What were some features you observed with teachers practicing product-based assessments? |
| | How do you define off-level assessments? | In the evaluation, you rated off-level assessments. What were some features you observed with teachers practicing off-level assessments? |
| | Do you have anything that you would like to add regarding Student Assessment? | |

| | | |
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| Script | 'Excellent, we will now move onto Standard 3 which is on Curriculum Planning and Instruction. Please read over Standard 3 and let me know when you are ready." | |
| Curriculum Planning and Instruction | Describe to me in what ways a Governor's School could score a poor rating in "Curriculum Planning and Instruction". | What educational practices could a Governor's School carry out that would not be effective for curriculum planning and instruction implementation? |
| | What teacher and/or classroom characteristics stand out to you when you have observed teachers who exceedingly meets curriculum planning and instruction? | What is the range of instructor behaviors that you have observed? |
| | How do you define differentiation? | What are some examples of differentiation that you have observed? |
| | What approaches should a Governor's School utilize to receive an exemplary rating in "Curriculum Planning and Instruction"? | Describe to me an example of a Governor's School that did very well, even exemplary, for this standard. |
| | Do you have anything you would like to add about "Curriculum Planning and Instruction"? | |
| Script | "Next we will talk about best practices of Standard 4: Learning Environments. Please take a moment to read over Standard 4 and then I would like to ask some follow-up questions. Let me know when you are ready." | |
| Learning Environments | Describe to me in what ways a Governor's School could score a poor rating in "Learning Environments." | What educational practices could a Governor's School carry out that would not be effective for providing a quality learning environment? |
| | In your opinion, what is necessary for educators to build a community of learners? | What types of resources or mindsets should be shared? |
| | What approaches should a Governor's School utilize to receive an exemplary rating in "Learning Environments"? | What were some unique needs that students had when you evaluated the Governor's School? How did the Governor's School address those needs? |
| | Do you have anything you would like to add about Standard 4: Learning Environments? | Describe to me an example of a Governor's School that did very well, even exemplary, for this standard. |
| Script | "Thank you very much. We will now move onto Standard 5 regarding Programming. Once again I am interested to know what you are looking for as an evaluator. When you are ready to begin discussing Standard 5, please let me know." | |
| Programming | Describe to me in what ways a Governor's School could score a poor rating in "Programming." | What educational practices could a Governor's School carry out that would not be effective for a quality program? |
| | What approaches should a Governor's School utilize to receive an exemplary rating in "Programming"? | Describe to me an example of a Governor's School that did very well, even exemplary, for this |

| | | |
|---|---|---|
| | | standard. |
| | Is there anything you would like to add about Standard 5 on "Programming"? | |
| Script | The last standard on the rubric is Standard 6: Professional Development. Please take a moment to review the Standard and let me know when you are ready to begin with my follow-up questions. | |
| Professional Development | Describe to me in what ways a Governor's School could score a poor rating in "Professional Development". | What educational practices could a Governor's School carry out that would not be effective for professional development? |
| | As an evaluator, what are you looking for to determine if educators are building their knowledge and skills in gifted education?<br>Do you look for teachers to use the NAGC-CEC Teacher Standards for Gifted and Talented Education and the National Staff Development Standards? | In your opinion, why is professional development necessary for Governor's School teachers?<br>What types of guidelines or frameworks should the professional development follow? |
| | What approaches should a Governor's School utilize to receive an exemplary rating in Professional Development? | Describe to me an example of a Governor's School that did very well, even exemplary, for providing professional development opportunities for teachers? |
| | Do you have anything that you would like to add regarding the standard of Professional Development? | |
| Closing Questions | Are there any other thoughts or feelings you would like to share with me concerning your experience in participating in a Governor's School Evaluation? | Are there any stories or experiences during the evaluation that really stood out to you? |
| | Do you have any further questions for me? | |
| Script | Thank you so much for participating in this study, I appreciate you taking the time to answer these questions so I can learn more about what you are looking for during a Governor's School Evaluation. | |

# APPENDIX E

Virginia Department of Education *Governor's School Full Site Evaluation* rubric
(VDOE, 2014)

Governor's School
for
Full-Site Evaluation
(date)

Introduction

Evaluation Procedures

History, Program of Studies, and Demographics

| Ethnicity | (Insert AYGS Name) |
|---|---|
| American Indian or Alaska Native | |
| Asian | |
| Black, not of Hispanic origin | |
| Hispanic | |
| White, not of Hispanic origin | |
| Native Hawaiian or Pacific Islander | |
| Non-Hispanic, two or more races | |
| Total | |
| Gender | |
| Female | |
| Male | |
| Total | |

Findings, Commendations, and Recommendations

<table>
<tr><td colspan="5">STANDARD 1: LEARNING AND DEVELOPMENT<br>Description: Educators, recognizing the learning and developmental differences of AYGS students, promote ongoing self-understanding, awareness of their needs, and cognitive and affective growth of these students in school, home, and community settings to ensure specific student outcomes.</td></tr>
<tr><td>Student Outcomes</td><td>Governor's School Standard</td><td>Criteria Rating</td><td>Commendations</td><td>Recommendations</td></tr>
<tr><td rowspan="2">Students demonstrate self-knowledge with respect to their interests, strengths, identities, and needs in socio-emotional development and in intellectual, academic, creative, leadership and artistic domains.</td><td>AYGS educators engage students in identifying interests, strengths, and gifts.</td><td>☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard</td><td></td><td></td></tr>
<tr><td>AYGS educators assist students in developing identities supportive of achievement.</td><td>☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard</td><td></td><td></td></tr>
<tr><td rowspan="3">Students possess a developmentally appropriate understanding of how they learn and grow and demonstrate understanding of and respect for similarities and differences between themselves and their peer group.</td><td>AYGS educators provide a variety of research-based grouping practices for students that allow them to interact with individuals of various gifts, talents, abilities, and strengths.</td><td>☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard</td><td></td><td></td></tr>
<tr><td>AYGS educators serve as role models for students.</td><td>☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard</td><td></td><td></td></tr>
<tr><td>AYGS educators identify out-of-school learning opportunities that match student' abilities and interests.</td><td>☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard</td><td></td><td></td></tr>
</table>

| STANDARD 1: LEARNING AND DEVELOPMENT<br>Description: Educators, recognizing the learning and developmental differences of AYGS students, promote ongoing self-understanding, awareness of their needs, and cognitive and affective growth of these students in school, home, and community settings to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| Students benefit from meaningful and challenging learning activities addressing their unique characteristics and needs and recognizing their preferred approaches to learning. | AYGS educators develop specialized intervention services for students who are underachieving and are now learning and developing their talents. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS teachers accommodate students' preferred approaches to learning and expand upon them. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 2: ASSESSMENT<br>Description: Assessments provide information about identification, learning progress and outcomes, and evaluation of programming for AYGS students in all domains. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| All students in middle school and high school have access to a comprehensive assessment system that allows them to demonstrate diverse characteristics and behaviors that are associated with giftedness. | AYGS educators provide information to upper elementary, middle, and high school students about the prerequisite skills and content mastery required for admission to the AYGS program. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 2: ASSESSMENT<br>Description: Assessments provide information about identification, learning progress and outcomes, and evaluation of programming for AYGS students in all domains. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| Students' exceptionalities or potential is noted through assessment evidence so that appropriate instructional accommodations and modifications can be provided. | Participating divisions and the AYGS program establish comprehensive, cohesive, and ongoing procedures for identifying and serving prospective students. Data collection and procedures which inform and allow continual improvement of student identification may include ongoing evaluation of student retention and grades; surveys; opportunities for mastery of prerequisite skills, and interviews and/or appeals procedures for both entry and exit from the AYGS program. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 2: ASSESSMENT<br>Description: Assessments provide information about identification, learning progress and outcomes, and evaluation of programming for AYGS students in all domains. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| | AYGS admission educators select and use multiple assessments that measure diverse abilities, talents, and strengths that are based on current theories, models, and research. These assessments provide qualitative and quantitative information, including off-level testing, are nonbiased and equitable, and are technically adequate for the purpose. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| | AYGS admission educators select and use non-biased and equitable approaches for identifying AYGS students, which may include using locally developed norms or assessment tools in the child's native language or in nonverbal formats. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| Students demonstrate advanced and complex learning as a result of using multiple, appropriate, and ongoing assessments. | AYGS educators use pre- and post- performance-based assessments to measure the progress of AYGS students. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |

| STANDARD 2: ASSESSMENT<br>Description: Assessments provide information about identification, learning progress and outcomes, and evaluation of programming for AYGS students in all domains. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| | AYGS educators use product-based assessments to measure the progress of AYGS students. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators use off-level standardized assessments to measure the progress of students as appropriate to course content areas. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators regularly provide assessment information to students and their parents/guardians. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| Students demonstrate important learning progress as a result of programming and services. | AYGS educators ensure that the assessment of the progress of students uses multiple indicators that measure mastery of content, higher level thinking skills, and achievement in specific program areas. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 2: ASSESSMENT<br>Description: Assessments provide information about identification, learning progress and outcomes, and evaluation of programming for AYGS students in all domains. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| | AYGS educators disaggregate assessment data and yearly progress data (e.g., enrollment statistics, college acceptance percentages, performance on national exams, drop-out rates) to examine the quantity, quality, and appropriateness of the programming and services provided for students. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 3: CURRICULUM PLANNING AND INSTRUCTION<br>Description: Educators apply the theory and research-based models of curriculum and instruction related to students with gifts and talents and respond to their needs by planning, selecting, adapting, and creating culturally relevant curriculum and by using a repertoire of evidence-based instructional strategies to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| Students demonstrate growth commensurate with aptitude meeting course standards during the school year. | AYGS educators use local, state, and national standards to align and expand a comprehensive and continuous scope and sequence to develop differentiated curriculum. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators adapt, modify, or replace the core or standard curriculum to meet the needs of AYGS students with special needs such as twice-exceptional, highly gifted, and English language learners. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators design differentiated curricula that incorporate advanced, conceptually challenging, in-depth, distinctive, and complex content for students using current technologies. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 3: CURRICULUM PLANNING AND INSTRUCTION<br>Description: Educators apply the theory and research-based models of curriculum and instruction related to students with gifts and talents and respond to their needs by planning, selecting, adapting, and creating culturally relevant curriculum and by using a repertoire of evidence-based instructional strategies to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| Students develop their abilities in their domain of talent and/or area of interest as well as becoming more competent across dimensions in learning. | AYGS educators design curricula in cognitive, metacognitive, affective, aesthetic, social, and leadership domains that are challenging and effective for AYGS students. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators select, adapt, and use a repertoire of instructional strategies and materials that differentiate for students and that respond to diversity. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators use school and community resources that support the curriculum. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators provide opportunities for students to explore, develop, or research their areas of interest and/or talent. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| Students become independent investigators. | AYGS educators use critical and creative-thinking strategies to meet the needs of students. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 3: CURRICULUM PLANNING AND INSTRUCTION<br>Description: Educators apply the theory and research-based models of curriculum and instruction related to students with gifts and talents and respond to their needs by planning, selecting, adapting, and creating culturally relevant curriculum and by using a repertoire of evidence-based instructional strategies to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| | AYGS educators use problem-solving and inquiry model strategies to meet the needs of students. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| Students develop knowledge and skills for living and being productive in a multicultural, diverse, and global society. | AYGS educators develop and use challenging, culturally responsive curriculum to engage all students. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| | AYGS educators develop and use curricula with an interdisciplinary emphasis. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| | AYGS educators integrate career exploration experiences into learning opportunities for students. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| Students benefit from gifted education programming that provides a variety of high quality resources and materials. | AYGS educators demonstrate familiarity with high quality resources and materials that are appropriate for students in a particular content area. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| | AYGS educators maintain appropriate student-teacher ratios; recommended 15:1. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |

| STANDARD 3: CURRICULUM PLANNING AND INSTRUCTION<br>Description: Educators apply the theory and research-based models of curriculum and instruction related to students with gifts and talents and respond to their needs by planning, selecting, adapting, and creating culturally relevant curriculum and by using a repertoire of evidence-based instructional strategies to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| | AYGS educators provide appropriate and modern equipment and technology. Classrooms and laboratories are fully equipped with state of the art technology and equipment. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators provide facilities to support research. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators provide space that provides for the instructional needs of the program. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 4: LEARNING ENVIRONMENTS<br>Description: Learning environments foster academic attainment, personal and social responsibility, multicultural competence, and interpersonal and technical communication skills for leadership in the 21st century to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| Students demonstrate growth in personal competence and dispositions for exceptional academic and creative productivity. | AYGS educators maintain high expectations for all students as evidenced in meaningful and challenging curriculum, instruction, and activities. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| | AYGS educators provide opportunities for self-exploration, development and pursuit of interests, and development of identities supportive of achievement. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| | AYGS educators create environments that support trust among diverse learners. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| | AYGS educators provide feedback that focuses on effort, on evidence of potential to meet high standards, and on mistakes as learning opportunities. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |

| STANDARD 4: LEARNING ENVIRONMENTS<br>Description: Learning environments foster academic attainment, personal and social responsibility, multicultural competence, and interpersonal and technical communication skills for leadership in the 21st century to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| | AYGS educators provide examples of positive coping skills and opportunities to apply these skills. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| Students develop social competence manifested in positive peer relationships and social interactions in order to form a "community of learners." | AYGS educators provide opportunities for social interaction with intellectual and artistic/creative peers. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| | AYGS educators provide opportunities for students to educate and be educated as part of a "community of learners." | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| Students demonstrate personal and social responsibility and leadership skills. | AYGS educators establish a safe and welcoming climate for addressing social issues and developing personal responsibility. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| | AYGS educators provide environments for developing many forms of leadership and leadership skills. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| Students value their own and others' language, heritage, and circumstance. They possess skills in communicating, teaming and collaborating with | AYGS educators model appreciation for and sensitivity to students' diverse backgrounds and languages. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |

| STANDARD 4: LEARNING ENVIRONMENTS<br>Description: Learning environments foster academic attainment, personal and social responsibility, multicultural competence, and interpersonal and technical communication skills for leadership in the 21st century to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| diverse individuals and across diverse groups. | AYGS educators censure discriminatory language and behavior and model appropriate strategies. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |
| Students develop competence in interpersonal and technical communication skills. | AYGS educators provide resources to enhance oral, written, and artistic forms of communication. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | . | |
| | AYGS educators ensure access to advanced communication tools, including assistive technologies, and use of these tools for expressing high-level thinking and creative productivity. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐Exceeds standard | | |

<table>
<tr><td colspan="5">STANDARD 5: PROGRAMMING<br>Description: Educators are aware of empirical evidence regarding (a) the cognitive, creative, and affective development of AYGS learners, and (b) programming that meets their concomitant needs. Educators use this expertise systematically and collaboratively to develop, implement, and effectively manage comprehensive services for students with a variety of gifts and talents to ensure specific student outcomes.</td></tr>
<tr><td>Student Outcomes</td><td>Governor's School Standard</td><td>Criteria Rating</td><td>Commendations</td><td>Recommendations</td></tr>
<tr><td rowspan="3">Students participate in a variety of evidence-based programming options that enhance performance in cognitive and affective areas.</td><td>AYGS educators regularly use multiple alternative approaches to accelerate learning.</td><td>☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard</td><td></td><td></td></tr>
<tr><td>AYGS educators regularly use enrichment options to extend and deepen learning opportunities within and outside of the school setting.</td><td>☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard</td><td></td><td></td></tr>
<tr><td>AYGS educators regularly use individualized learning options such as mentorships, internships, online courses, and independent study.</td><td>☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard</td><td></td><td></td></tr>
</table>

| STANDARD 5: PROGRAMMING<br>Description: Educators are aware of empirical evidence regarding (a) the cognitive, creative, and affective development of AYGS learners, and (b) programming that meets their concomitant needs. Educators use this expertise systematically and collaboratively to develop, implement, and effectively manage comprehensive services for students with a variety of gifts and talents to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| Students demonstrate progress as a result of the shared commitment and coordination between and among the Governor's School, participating school divisions, and the community. | Community members and educators in gifted, general, and special education programs, as well as those in specialized areas, collaboratively plan, develop, and implement services for AYGS students. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | Participating school divisions facilitate transportation for students to and from the Governor's School, both for equity of access to the program and for student safety. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| Students' learning is enhanced by regular collaboration among families, community, and the school. | AYGS educators regularly engage families and community members for planning, programming, evaluating, and advocating. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| Students participate in an AYGS that is adequately funded to meet student needs and program goals. | AYGS administrators track expenditures at the school, district, and state level to verify appropriate and sufficient funding. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 5: PROGRAMMING<br>Description: Educators are aware of empirical evidence regarding (a) the cognitive, creative, and affective development of AYGS learners, and (b) programming that meets their concomitant needs. Educators use this expertise systematically and collaboratively to develop, implement, and effectively manage comprehensive services for students with a variety of gifts and talents to ensure specific student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| | The director and regional board use creative financial management strategies to tap resources beyond the state and local funds available to support the program. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| Students attend a Governor's School that is guided by clear policies and procedures that provide for their advanced learning needs (e.g., early entrance, acceleration, dual enrollment). | The AYGS is governed by policies and procedures approved by the Regional Board. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators and the governing Regional Board create policies and procedures that are built on an evidence-based foundation in gifted education to guide and sustain all components of the program. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

STANDARD 6: PROFESSIONAL DEVELOPMENT
Description: All educators (administrators, teachers, counselors, and other instructional support staff) build their knowledge and skills using the NAGC-CEC Teacher Standards for Gifted and Talented Education and the National Staff Development Standards. They formally assess professional development needs related to the standards, develop and monitor plans, systematically engage in training to meet the identified needs, and demonstrate mastery of standard. They access resources to provide for release time, funding for continuing education, and substitute support. These practices are judged through the assessment of relevant student outcomes.

| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
|---|---|---|---|---|
| Students develop their talents and gifts as a result of interacting with educators who have participated in professional development aligned with national standards in gifted education and in their specialized fields of instruction. | AYGS educators systematically participate in on-going professional development that addresses the foundations of gifted education, characteristics and identification of students with gifts and talents, assessment, curriculum planning and instruction, learning environments, programming, and social and emotional development and needs, leading to the Virginia endorsement in gifted education. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| | AYGS educators are expected to be licensed in the fields in which they teach and to obtain specialty endorsements as necessary. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 6: PROFESSIONAL DEVELOPMENT<br>Description: All educators (administrators, teachers, counselors, and other instructional support staff) build their knowledge and skills using the NAGC-CEC Teacher Standards for Gifted and Talented Education and the National Staff Development Standards. They formally assess professional development needs related to the standards, develop and monitor plans, systematically engage in training to meet the identified needs, and demonstrate mastery of standard. They access resources to provide for release time, funding for continuing education, and substitute support. These practices are judged through the assessment of relevant student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| | AYGS budget and policies provide human and/or material resources needed for professional development in gifted or specialized endorsement education (i.e. release time, funding, and substitute teacher support). | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |
| Students develop their gifts and talents as a result of educators who are life-long learners, participating in ongoing professional development and continuing education opportunities. | AYGS educators assess their instructional practices and continue their education in local staff development, professional organizations, and higher education settings that employ multiple modes of delivery, including online courses, online and electronic communities, workshops, and professional learning communities. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

| STANDARD 6: PROFESSIONAL DEVELOPMENT<br>Description: All educators (administrators, teachers, counselors, and other instructional support staff) build their knowledge and skills using the NAGC-CEC Teacher Standards for Gifted and Talented Education and the National Staff Development Standards. They formally assess professional development needs related to the standards, develop and monitor plans, systematically engage in training to meet the identified needs, and demonstrate mastery of standard. They access resources to provide for release time, funding for continuing education, and substitute support. These practices are judged through the assessment of relevant student outcomes. | | | | |
|---|---|---|---|---|
| Student Outcomes | Governor's School Standard | Criteria Rating | Commendations | Recommendations |
| | School-wide staff development reflects the long-range goals and objectives of the Governor's School. | ☐ Doesn't meet standard<br>☐ Meets standard<br>☐ Exceeds standard | | |

# APPENDIX F

## Request for Evaluations

Evaluations of AYGS Inbox x

**Krista Stith** <kstith@swvgs.us> 6/25/15

[redacted]

Good afternoon [redacted]

I hope you are enjoying a wonderful summer! I am taking a summer class, but just got back from vacation with the husband in Ireland. If you have not been there, I highly recommend it.

I met with my committee a few weeks ago and they provided some great advice on looking at the evaluation process of the Governor's School system holistically for my dissertation. I think this is a great idea and I was wondering if you would be willing to play a part in this project. I want this study to be an open book for the VDOE, especially if it can be of any assistance to the Governor's Schools' continuing viability in Virginia.

I am considering part of the work to include a content analysis of the written recommendations by the evaluators (individual and group). I know there are not many with the newest rubric, but would it be possible for me to take a look at them? I'd be more than happy to fill out an IRB if necessary.

Thank you so much and I hope you have a wonderful week. Sincerely, Krista

...

[redacted] 6/25/15

to me

Not a problem . . . with the new rubric we did three schools 2013-14, made changes, and did three more schools this school year ending 2015 . . . so I’ve attached those documents so you can see what you’d be working with. Let me know you received them and lately some of the larger attachments have not been going through people’s servers. We will have three more school this coming year – but most may not be completed until the May or June timeframe (I’m not sure how that aligns with your schedule).

[redacted]

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[redacted]

# APPENDIX G

## Code Mapping for Evaluations

| Code Mapping for Evaluations<br>(Research Question 2) | | | | | |
|---|---|---|---|---|---|
| RQ#2:<br>Final Reports<br>AYGS Schools | RQ#2:<br>Rubric School A | RQ#2:<br>Rubric School B | RQ#2:<br>Rubric School C | RQ#2:<br>Rubric School D | RQ#2:<br>Rubric School E |
| CONCLUSIONS | | | | | |
| Supported Faculty are a catalyst for program achievement<br>S-T-E-M requires the "T"<br>Stakeholder engagement is fundamental to program success and improvement<br>Out of the classroom and into the world<br>Culture of Accomplishment in the classroom<br>Opportunities exist for the educational leadership | | | | | |
| THEMES | | | | | |
| *Faculty expose students to STEM opportunities<br>*The "T" in technology<br>*Multiple paths convey program strengths outside of the classroom<br>*Multiple paths convey program strengths within the classroom<br>*Challenges exist, thus a need for clarity in short and long term goals | *Faculty commitments are a stimulate success<br>*Physical space and logistics<br>*Support by stakeholders<br>*Working with the community<br>*Multiple approaches of acceleration and differentiation can cover spectrum of student interests<br>*Opportunities for improvement | *Academic and affective development is contingent on knowledgeable faculty<br>*Technology creates opportunity for interaction and progress and should compliment appropriate learning environments<br>*Strong leadership and support by third parties in an effort to reach all students<br>*Extension of the curriculum through community service, research, and encouraging students to pursue interests<br>*Value of quality academics and research for gifted students<br>*Metamorphosing from the status quo | *Faculty must be supported professionally and personally to deliver gifted services<br>*21st Century skills are facilitated through the meaningful integration of technology<br>*Stakeholders invested to support the program<br>*Beyond the classroom<br>* The learning environments and curricular approaches prepare students to reach desirable academic goals<br>*Tactical planning should be on the forefront to lead future direction | *A strong faculty must be supported by the program<br>* Technology and lab equipment are important components to facilitate learning in an online environment.<br>*Cooperation of current stakeholders and the opportunities for new ones facilitate programming<br>*Out of classroom experiences provide richness to education<br>*Approaches in the classroom can have dynamic impacts on student learning | *Faculty support the cognitive and academic development of students with professional development training<br>*Online environments are enhanced when technology and logistics are addressed<br>*Communication with stakeholders leads to exceptional programming and student opportunities<br>*Experiential learning may still occur outside of an online environment<br>* Meeting student need met in a variety of pedagogical approaches |

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| | | | | * Attention to short and long term goals for program improvement | *Communication and planning to increase visibility, awareness, and understanding |
| Initial Codes/Surface Content Analysis | | | | | |
| 1A. Constructive role to community<br>1A. Leadership and faculty inspire<br>1A. Collaboration of stakeholders<br>1A. Collaboration of outside parties lead to student opportunities<br>1A. Partnerships lead to prospects<br>1A. Partnership lead to career prospects*<br>1A. Connection of campuses<br>1A. Critical need for updating<br><br>1B. Evaluators appreciate organization<br>1B. Living, breathing program<br>1B. Community of learners<br>1B. Value for students of different locations<br>1B. Challenges of school within a school model<br>1B. Differentiated curricula is a challenge, but beneficial<br>1B. Culminating project achieves desired gifted outcomes<br>1B.Extrinsic motivation for Culminating project<br>1B. Guidance counselor appropriate for gifted students<br>1B.Technology to be used for connectivity of students<br>1B. Facilities not suitable<br>1B. Loss of faculty from challenges | 2A1. Standard 4: Faculty commitment<br>2A2. Standard 5: Extend associations to community<br>2A3. Standard 6: Faculty sacrifices for student benefit.<br>2A3. Standard 6 Cont. Faculty reinforcement to serve student needs<br>2A4. Standard 8: Outreach activities for youth to prepare STEM interest.<br>2A4. Standard 8 Cont. 'Spend a Day' opportunities for youth<br>2A5. Standard 9: Unique approaches to recruitment must be explored<br>2A6. Standard 11: Diversity at Governor's Schools<br>2A7. Standard 12: Alternate approaches of assessment.<br>2A8. Standard 19: Learning is tailored to the student<br>2A9. Standard 20: Intermittent upgrading of technology<br>2A10. Standard 23: professionals of the arts incorporated<br>2A11 Standard 23 | 2B1. Standard 1: student freedom to explore interests.<br>2B2. Standard 3: Need to explore technology<br>2B3. Standard 4: Faculty play roles in student success<br>2B4. Standard 5: Culminating projects supported by mentors<br>2B5. Standard 6: Need for gifted savvy guidance counselors for each campus It is also recommended that at each home school Governor's School students be assigned to one guidance counselor who has received staff development in gifted education and who is well-versed in the Governor's School program.<br>2B6. Standard 8a: Prospective students well-informed<br>2B7. Standard 8b: Need for diversity as it is representative<br>2B8. Standard 9: Concern of student loss<br>2B9. Standard 10: Curriculum renovations and Culminating projects<br>2B10. Standard 20: Need to maximize available technology<br>2B11. Standard 23: Field experiences, guest | 2C1. Standard 1: Different learning styles and research provide unique approaches to learning<br>2C2. Standard 2: Need for enrichment and to recognize high achievement<br>2C3. Standard 3: Need for creating unity across multiple campuses<br>2C4. Standard 4: Faculty draw on personal experiences.<br>2C5. Standard 5a: Services and field opportunities<br>2C6. Standard 5b: Need for out of classroom experiences across all campuses.<br>2C7. Standard 6a: Tutoring opportunities offered by teachers<br>2C8. Standard 6b: Clarification of tutoring and academic expectations needed<br>2C9. Standard 8: Recruitment plan to interest youth.<br>2C10. Standard 9: Student selection process now more unambiguous<br>2C11. Standard 11: Underrepresented populations should provide greater | 2D. Standard 5: competitions, mentors, special summer programs, and other out of school learning opportunities<br>2D. Standard 8: Need to communicate with other schools through outreach<br>2D. Standard 11: Recruitment tools more suited for ELL and other populations to increase diversity<br>2D. Standard 13: differentiated deliverables<br>2D. Standard 16: Rubrics and written feedback<br>2D. Standard 17: evaluate long term success of alumni<br>2D. Standard 20: Technology in class for communicative and evaluative purposes<br>2D. Standard 21: Student collaboration opportunities<br>2D. Standard 22: Problem-based learning strategies<br>2D. Standard 23: Need to seek out additional third party support<br>2D. Standard 24: Strong | 2E. Standard 3a: Purposeful grouping for collaboration<br>2E. Standard 3b: Purposeful grouping not used throughout<br>2E. Standard 4: Faculty share experiences with students<br>2E. Standard 5a: Partnerships and professional writing opportunities<br>2E. Standard 5b: need for equitable opportunities across courses<br>2E. Standard 6: Parents should be contacted by faculty<br>2E. Standard 8: Increase visibility to potential students, school divisions, and other stakeholders<br>2E. Standard 9a: Collaboration with home school programs to recruit gifted students<br>2E. Standard 9b: Formal process to identify students<br>2E. Standard 10: Multiple assessments to recruit future candidates<br>2E. Standard 13 a: Product-based assessments encourage successful learning |

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| 1B. Professional integrity with trials<br><br>1C. Appropriate curricula for locality and demographics<br>1C. Transition to STEM-capable<br>1C. Open minds to new opportunities<br>1C.Stakeholder support<br>1C. 3rd party organization support<br>1C. Strong leadership eases concerns<br>1C. Multiple paths to convey strengths<br>1C. Strive for improvements<br>1C. Community of learners described<br>1C.Interdisciplinary links encouraged<br>1C. Professional Development to prepare teachers<br>1C. Need for technology and counselors<br><br>1D. Meetings needs of the community<br>1D. Support from stakeholders<br>1D. Strong student leadership<br>1D. Community of learners explained<br>1D. Positive relationships<br>1D. Change encouraged<br>1D. Extend the authentic learning opportunities<br>1D. Lack of funding inhibits program growth<br>1D. Need for technological upgrades<br><br>1E. Suitability of higher education for students<br>1E. Strong support of | Continued: Dual-enrollment of colleges beneficial for student learning.<br>2A11. Standard 23: It colleges, medical facilities, businesses, and industry partnerships should be utilized.<br>2A12. Standard 25: SCHOOL A instructors are commended for integrating inquiry and problem-solving into STEM and Humanities instruction.<br>2A13. Standard 26: inquiry and problem solving incorporated<br>2A14. Standard 28a: STEAM movement<br>2A15. Standard 28b: Need cross-disciplinary opportunities<br>2A16. Standard 29a: Expose students to art careers<br>2A17. Standard 29b: Needs to seek additional STEM career opportunities<br>2A18. Standard 30b: It is Need to visit other Governor's Schools<br>2A19. Standard 32: Need to improve facilities and maintain safe environment<br>2A20. Standard 33: It additional space needed | speakers, and mentors to increase learning<br>2B12. Standard 24a: Development of an interest area<br>2B13. Standard 24b: Need to award students with extrinsic motivation for research<br>2B14. Standard 25: Critical and creative thinking<br>2B15. Standard 28: Interdisciplinary learning<br>2B16. Standard 29: Career exploration opportunities through guest speakers, summer experiences, and Culminating Project mentors.<br>2B17. Standard 30: Cooperation and organization of faculty.<br>2B18. Standard 31: Need for dedicated faculty in quantity and quality<br>2B19. Standard 32a: Technology replacement satisfactory.<br>2B20. Standard 32b: Need for laboratory facilities that are equal across sites<br>2B21.Standard 33: Accessibility to professional literature<br>2B22. Standard 34a: Positive relationships of other school divisions.<br>2B23. Standard 34b: Need for lab space for more authentic activities<br>2B24. Standard 35: High expectations for student success<br>2B25. Standard 36: Culture | representation<br>2C12. Standard 12: Student progress should be monitored for evaluative data<br>2C13. Standard 13: Research projects and product-based assessments<br>2C14. Standard 17: Planning for the future<br>2C15. Standard 18a: Strong themes of student interest<br>2C16. Standard 18b: Consistency needed across all locations<br>2C17. Standard 20: Need for instructional research coach<br>2C18. Standard 23: Strong use of third party resources<br>2C19. Standard 24a: Independent research project enables students.<br>2C20. Standard 28a: field research of interdisciplinary approach<br>2C21. Standard 28b: Need for greater interdisciplinary opportunities<br>2C22. Standard 29: Themes change student perceptions on science careers<br>2C23. Standard 31: Need for fewer students per teacher<br>2C24. Standard 32: Technology inconsistent amongst the three campuses.<br>2C25. Standard 35: unique | support in research project<br>2D. Standard 25: Faculty trained in providing transdisciplinary learning strategies<br>2D. Standard 26: inter and transdisciplinary experiences<br>2D. Standard 28: Cross content connections<br>2D. Standard 30: Use classroom opportunities to prepare for out of classroom research<br>2D. Standard 31: Improve student: teacher ratio<br>2D. Standard 32: Need to improve technology and facilities<br>2D. Standard 36: Faculty foster research success by encouraging interest<br>2D. Standard 37: atmosphere of trust between teachers and students<br>2D. Standard 38: Use of rubrics in the classroom<br>2D. Standard 39: Need for guidance counselor<br>2D. Standard 40: Need to increase class interaction<br>2D. Standard 41: Community of learners<br>2D. Standard 43: Use of programming to increase collaboration and leadership.<br>2D. Standard 46: Need | 2E. Standard 13b: Product-based assessments should be an important component of all SCHOOL E classes.<br>2E. Standard 17: Formal process to follow alumni<br>2E. Standard 18: Defined outcomes<br>2E.Standard 19: Student needs for courses addressed<br>2E. Standard 20: Faculty passion<br>2E. Standard 23: Support of Advisory Board<br>2E. Standard 24: Provisions of classrooms and facilitators<br>2E. Standard 27: Course activities are within the culture of the local area<br>2E. Standard 28: Need for cross disciplinary opportunities<br>2E. Standard 30: Resources shared from Gov School to other schools<br>2E. Standard 31: Reduce section sizes<br>2E. Standard 32a: Experiment resources provided to students<br>2E. Standard 32b: Technology and supplies should be provided to all students<br>2E. Standard 33: Professional level research opportunities<br>2E. Standard 24: Support by division schools<br>2E. Standard 35: High |

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|---|---|---|---|---|---|
| stakeholders<br>1E. Collaboration of colleges increase student exposure<br>1E. Strong leadership to increase opportunities<br>1E. Demographic challenges yet still meet student needs<br>1E. Value placed in the courses<br>1E. Continued growth pertinent<br>1E. Technology upgrades needed<br>1E. Policies and procedures renewed to better represent program mission | 2A21. Standard 34: Space ill-equipped<br>2A22. Standard 36: instructional leadership leads to healthy learning environments<br>2A23. Standard 40a: Exchange programs for students<br>2A24 Continued: SCHOOL A outreach and shadow activities<br>2A25. Standard 40b: integrate STEM and humanities in student appreciations<br>2A26. Standard 41: Outreach and service projects.<br>2A27. Standard 42: faculty accessibility to aid in student goals<br>2A28. Standard 46: It "meaningful and manageable." To Capstone project through a classroom environment<br>2A29. Standard 50: New localities explored<br>2A30. Standard 51: Guest artists to encourage art appreciation.<br>2A230. 51 Continued SCHOOL A Collaborative effort to design school mission<br>2A31. Standard 52: Need of student transportation<br>2A32. Standard 53: | of achievement<br>2B26. Standard 39a: Stress management course for entering 9th graders<br>2B27. Standard 39b: Need for guidance counselor<br>2B28. Standard 40: Students of different sites working together through technology and social activities.<br>2B29. Standard 41: Leadership works with stakeholders to create a "community of learners"<br>2B30. Standard 47: Technology available for student use<br>2B31. Standard 48: Preparing for 21st century through technology<br>2B32. Standard 49: Schedule malleability for unique out of classroom opportunities.<br>2B33. Standard 51: Support network available from home schools<br>2B34. Standard 55: FIRST robotics and other business partnerships<br>2B35. Standard 57: Support from the Governing Board<br>2B36. Standard 58a: Gifted education for staff development<br>2B37. Standard 58b: Need for all faculty to be endorsed in gifted education.<br>2B38. Standard 61: action research and evaluation to maximize instructional approaches | instructional strategies in the classroom<br>2C26. Standard 36a: independent research projects and summer research programs<br>2C27. Standard 36b: Need for guidance counselor<br>2C28. Standard 37: trust between faculty and students<br>2C29. Standard 39: Need for guidance counselor<br>2C30. Standard 41a: Leadership fosters communication with others<br>2C31. Standard 41b: Need to further develop community of learners<br>2C32. Standard 47: E-mail addresses for consistency<br>2C33. Standard 49: Rich experiences for students<br>2C34. Standard 50: Need for external mentorships and/or internships.<br>2C35. Standard 51: Advisory committee support<br>2C36. Standard 52: Logistics of travel suitable<br>2C37. Standard 55a: Foundation support<br>2C38. Standard 55b: Need to review long term goals and purpose.<br>2C39. Standard 56: Support from Governing Board and Steering Committee.<br>2C40. Standard 58a: Professional development budget | for capstone<br>2D. Standard 47: Need for additional public venues to enhance learning<br>2D.Standard 49: competitions, trips, and special programs to extend student learning<br>2D. Standard 50: Mentors<br>2D. Standard 51a: The Steering Committee, community mentors, and partners support program<br>2D. Standard 51b: Increase partner base<br>2D. Standard 55: Seek additional funding opportunities<br>2D. Standard 57: Regional Governing Board and Superintendent support<br>2D. Standard 58: Gifted endorsement an important goal for teachers<br>2D. Standard 59: Financial support available for teachers<br>2D. Standard 62: Revisit mission for long and short term goals | expectations from leadership and faculty<br>2E. Standard 37a: Faculty availability<br>2E. Standard 37b: Orientation to promote unity<br>2E. Standard 41a: Community of learners<br>2E. Standard 41b: The Governor's School should continue to develop opportunities for students to interact and learn collaboratively.<br>2E. Standard 42: Warm and caring virtual community<br>2E. Standard 43: Greater advocacy from students needed<br>2E. Standard 45: On-line etiquette<br>2E. Standard 47: Need for hybrid online instruction models<br>2E. Standard 50: Need for additional learning opportunities outside of class<br>2E. Standard 51: Refine mission, goals, and long term plan development<br>2E. Standard 52: Logistics of transportation<br>2E. Standard 53: Expand Advisory Board and showcase achievements<br>2E. Standard 54: School Board support<br>2E. Standard 55: Community college supports |

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| | SCHOOL A Family role in school program strategies<br>2A33. Standard 55: SCHOOL A Family financial backing of school<br>2A33. Standard 55 Continued. Students and Community Foundation financially back school.<br>2A34. Standard 57: The Governing Board, Superintendents, and Advisory Committee support<br>2A35. Standard 58: Endorsement in gifted education needed<br>2A36. Standard 60: Funding needed for gifted endorsement.<br>2A37. Standard 62: Teamwork to formulate future goals | | 2C41. Standard 58b: Staff development should be an ongoing process<br>2C42. Standard 59: Gifted credentialing should be encouraged<br>2C43. Standard 60: Gifted endorsement for all teachers<br>2C44.Standard 61: Personal and professional goals<br>2C45.Standard 62: Long term goals for staff | | 2E. Standard 57: Clarity needed by leadership in midst of transitions<br>2E. Standard 58: Endorsement in gifted education necessary for all faculty<br>2E. Standard 60: Policies for professional development<br>2E. Standard 61: Always strive for more effective pedagogical approaches<br>2E. Standard 62: Staff development plan needed |

APPENDIX H

Transcript Sample

Interviewer: So for Standard One, Learning and Development, could you describe to me in what ways the Governor's School could potentially score a poor rating in Learning and Development?

Tom: Sure … so again you're looking for how you know kind of how they were doing things. And we talked to students, we talked to teachers, we saw a couple of different classes and then you look at how they did you know they expect during outcomes and try and figure out … were there instances that you saw or that I saw where they either were doing a good job with one of these particular student outcomes or whether they were not doing it well. And so it was limited in scope because everyone's literature was always fantastic and you only saw a little snap-shot and I'm sure it was like when we were here at the governor's school and we were like, "do you best, do your best" it's you know kind of a [pony-ish] sort of thing. So anyway you would have to see something really lacking for them to say that it wasn't meeting the standard. And so for instance I did not see that in learning and development, everything I saw there was really good but if for instance students benefit from me, following and challenging and learning activities, addressing their unique characteristics, needs and recognizing their preferred approach for learning.

If you saw something that … as a for instance that was more of just a traditional chalk talk discussion, very little interaction, I mean that would not be meeting the needs of these gifted students who typically need more involvement and better instructional methods than just at a board talking. And so that would have been for me a . . . this does not meet that standard, so anyway. Also . . . anytime that they were not able to help the students with the needs as a gifted student. So like I said, you typically are looking for different methods of instruction, varied methods of instruction, getting the students to work together, looking at groups, looking at challenging exercises that would meet their particular ability levels. How do they help the students stretch, how do they deal with the fact that not all students have the same ability, questions like that, which is stuff that we struggle with here.

From my experience at the Governor School, we have students come in and that are at tremendous different abilities, and it's a wide range because some of the more rural schools really struggle. And so if you are trying to help the students learn and develop, you have to have approaches for each of the different students' abilities levels and how to bring them all to the same sort of end point.

# APPENDIX I

## Reflexive Memo Example

The purpose of this memo is to share my "presuppositions, choices, experiences, and actions during the research process" (Mruck & Breuer, 2003, p. 3), and to show transparency of my approach.

For actions within the research process, I am continuing the interviews with evaluators in either a face-to-face or online forum. I am beginning to see more of the puzzle pieces fit together from data collected during the content analysis and I am excited to visualize the connections. Though Research #3 is, by far, the most difficult to analyze- I am not finding myself as frustrated with the analysis as I thought I would be

At this point in the interview processes I am surprised with the consistency of definitions amongst the participants. Prior to these interviews, I had concerns that the terminologies often used in educational settings like "authentic", "assessment", "product-based", "STEM Education", were going to be variably defined based on the pedagogical experiences or formal instruction of the teachers. I acknowledge that my preconceptions of this phenomenon was incorrect regarding the participants. Through their own words, definitions are similar to what is generally accepted within the literature. It would be interested to compare definitions across a wider population of gifted educators who have had training in gifted endorsement versus not.

I empathize with the evaluators that they have a tough job to do. Indirectly, they are invested in the performance of the school. No one wants another school to look bad, yet the goal is to perform a fair evaluation and report findings. I feel as though some evaluators have more empathy then others. One evaluator thought that "Meets Standard" is the default and that annoys him whereas another evaluator expects "Exceeds standard" to be the default. I ask myself, what if one evaluator disagrees with the group and his/her criteria rating is overridden during a team meeting? Is there animosity or conflict? This has not arisen in any interview conversations at this time, but it is something to consider.

At this point, I am beginning to see that what the evaluators are discussing fits into the results of the content analysis. I will continue the interviews and coding strategies at this time.