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Teachers' and Students' Perspectives of School-Based Opportunities for Student Creativity

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Teachers' and Students' Perspectives of School-Based Opportunities for Student Creativity

Laurel Eileen Brandon, PhD

University of Connecticut, 2019

This mixed-methods study examined teachers' responses on the Imagination, Creativity, and Innovation (ICI) Index instrument's confirmatory data set ($n=220$). ICI Index scores represented teachers' predictions of how students would rate their school's support for student creativity, which was assumed to represent the teachers' perspective of the actual support for student creativity at the school. Teachers of grades 6-8 ($n=55$) had significantly lower ICI Index scores than teachers of grades 3-5 ($n=155$; $p<.05$). Regular classroom teachers ($n=151$) did not differ significantly from gifted and talented teachers ($n=49$) on their ICI scores. Qualitative analysis found that, when asked to give examples of products, performances, and services produced by students that were points of pride, most teachers discussed their own creative teaching practices rather than student-initiated projects. Most major content areas were represented in these points of pride, and about one-quarter of responses were interdisciplinary. The most common audience for these points of pride was the school community. Time was often discussed as a support for creativity by respondents, and special periods, including Enrichment Clusters and Genius Hour, were common periods of time that teachers reserved for student creativity. Teachers with high ICI Index scores usually discussed how the entire school community provided opportunities for all students to be creative, whereas teachers with low ICI Index scores reported that support for student creativity was absent or limited to specific groups, such as gifted students or the school chorus. Implications for practice and future research are offered in the conclusion of this study.

Teachers' and Students' Perspectives of School-Based Opportunities for Student Creativity

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Doctor of Philosophy

at the

University of Connecticut

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APPROVAL PAGE

Doctor of Philosophy Dissertation

Teachers' and Students' Perspectives of School-Based Opportunities for Student Creativity

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2019

Dedicated to my son Archer, and written in the hopes that this little bit of new knowledge helps to make schooling a happier, more creative experience for him and every other child.

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Chapter 1. Introduction

Corporate and governmental leaders in the United States and around the world have recently called attention to the need for young people to enter the workforce equipped not only with academic and technical skills, but also with the skills and attitudes necessary to generate and implement creative ideas (Adobe, 2014; International Business Management Corporation, 2010; Robelen, 2012). These skills can be taught in schools, but with test scores in reading and math driving evaluations, little incentive currently exists for teachers or school leaders to devote resources to developing student creativity.

As part of a larger project to develop an instrument to measure opportunities for creative productivity in schools, teachers responded to a Likert-scaled survey in which they predicted the degree students would agree that their school supports three factors: imagination, creativity, and innovation. Teachers also indicated their ideal level of support for the same prompts. Teachers were asked to respond to three short-answer, open-response items in which they described both examples of students' creative accomplishments at their school and support for creativity provided by the school. This instrument was developed as one solution to the problem that teaching for creativity is ostensibly valued but in practice is not evaluated or incentivized. The pilot data also provided an opportunity to ask questions that may not have previously been investigated due to the absence of a measure with which to answer them.

The current study examined teachers' perceptions of support for student creativity provided in their schools by both analyzing teachers' predictions of student ratings of support as well as analyzing teachers' descriptions of student accomplishments and support for creativity in their schools. In this study, the ratings of teachers who identified themselves as gifted specialists were compared to the ratings of teachers who identified themselves as classroom teachers.

Additionally, this study compared the ratings of elementary (grades 3-5) and middle school (grades 6-8) teachers. This study also included a qualitative analysis of all of the responses to the item regarding student accomplishments. Finally, this study examined themes in teachers' responses to the item about support from the teachers with the highest and lowest scale ratings.

This study had two primary goals. The first goal was to determine whether meaningful differences exist between any comparison groups, in order to identify potentially fruitful avenues of future research into support for creativity in the classroom, such as determining through interviews, observation, or surveys about educational background those things that lead to the observed differences. Interventions could then be developed to address the observed or background differences. The second goal was to identify common supports and obstacles described by teachers in order to learn how school leaders who are interested can increase their support for student creativity.

Statement of the Problem

In the United States, schools and teachers are usually evaluated on academic achievement growth, primarily in math and reading, attendance, and student behavior (e.g., time on task or suspension rate; Doherty & Jacobs, 2015; Education Commission of the States, 2017). Because schools and teachers are not generally evaluated on how well they support creativity, there is little data on how and to what degree creativity is being supported in schools or what supports and obstacles may contribute to the current status of creativity development.

A new instrument, the Imagination, Creativity, and Innovation (ICI) Index and Portfolio, was designed to be an easy-to-implement, formative tool for assessing the degree teachers provide opportunities and support for ICI to students in their classrooms. The instrument consists of a linked pair of Likert-scaled surveys. The first survey measures the teacher's ideal level of

classroom support for creativity and the support she believes the students perceive in her classroom. The second survey measures the students' perception of support provided by the teacher. The teacher instrument includes a pair of open-ended items about creative activity at the school level and the supports provided by the school for student creative productivity. The student instrument includes an open-ended item that prompts the student to describe one or more projects completed during the current school year of which he or she is proud.

The current study, using data from the larger project to develop and validate the ICI instrument, focused on teachers' perceptions of support in their schools for creativity using both quantitative and qualitative data. This study may help school leadership who seek to increase their schools' support for student creativity. If support for creativity is added to the set of measures with which schools are evaluated, as has been proposed in California, Massachusetts, and Oklahoma (Robelen, 2012), then the results of this study may help school leadership to prepare for the infusion of creative opportunities for students as well as the evaluation of that goal.

Research Questions

This study addressed the following research questions:

1: *Do elementary and middle school teachers differ with respect to the degree they believe their students will report support for creativity at school?*

2: *Do teachers in general education settings differ from teachers in gifted education settings with respect to the degree they believe their students will report support for creativity at school?*

3: *How do teachers describe products, performances, and services that are "points of pride" at their school?*

4: Do teachers who predict their students will report relatively high levels of support for creativity in school differ from teachers who predict their students will report relatively low levels of support for creativity in school with respect to their descriptions of support for creativity that is provided by the school?

Methods

This study used a convenience-sampled survey to examine teachers' perceptions of support for creativity in classrooms. This study used mixed-methods, employing quantitative and qualitative methods separately, as appropriate for the data collected, as well as considering qualitative data in light of quantitative data.

Instrument.

This study used responses from the confirmatory data set of the instrument development study for the Imagination, Creativity, and Innovation (ICI) Index and Portfolio. The full instrument development study included content validation, an initial pilot, and a confirmatory pilot, with revisions completed after each sample's analysis. The ICI Instrument was developed to serve as an additional measure of a teacher's effectiveness to be considered with academic performance and observations when making decisions about professional growth. It was based on the idea that opportunities for imagination, creativity, and innovation are beneficial for all students. Students' perspectives are an important part of such an evaluation, because they spend so much time with their teachers and can provide insight into teachers' usual methods.

Accordingly, the instrument was developed with both a teacher version and a student version.

This study examined teachers' responses.

The final instrument used for this study included a linked pair of online surveys, one for the teacher and a parallel version for his or her students. Each survey included instructions that explained the intention of the study, a short demographic section, 15 Likert-scaled items, and two (student) or three (teacher) open-ended items. The teacher survey included three open-ended items. The first open-ended item for the teachers prompted participants to describe one or more products, performances, or services completed by students at their school that was a point of pride. The student survey included a parallel version of this first question. The second open-ended item for the teachers prompted participants to describe the supports that their school provides for students to develop products, put on performances, or provide services to others. The final open-ended item for both groups prompted participants to add anything else they would like to say. The teacher survey is presented in Appendix A.

Sample.

Data for this study was obtained from the larger instrument development study for the Imagination, Creativity, and Innovation (ICI) Index and Portfolio. A convenience sample of districts were recruited for the study by contacting district leaders who had previously expressed an interest in supporting student creativity within their districts. The research team provided recruitment letters, which the district contacts shared with school administrators and teachers to encourage them to participate. District contacts independently determined whether to send the recruitment materials to all schools and teachers or to specific schools and teachers. The number of teachers per responding school varied by district and by school.

Subjectivities

Both the researcher and the second coder have experience as classroom teachers and teachers of gifted and talented students. They have both provided professional development in the Schoolwide Enrichment Model and related enrichment activities. This experience enabled them to interpret teachers' responses that may not include many details (e.g., interpreting "choiceboard" to mean that several projects or assignments are offered as ways students can practice and/or demonstrate mastery of classroom content.)

This experience also caused the primary researcher to assume that while teachers had good intentions, they may have given themselves credit for supporting student creativity when in fact the options they offered did not provide extensive opportunities for creative thinking or creative expression. This researcher values creativity and believes that it is important and good for teachers to provide opportunities for genuine creativity. This orientation can paint less-creative options in a negative light. When coding qualitative responses, the researcher was careful to consider these assumptions about each response, reflecting on both positive and negative interpretations of examples that were not well-described before assigning codes.

Chapter 2: Review of Literature

Recent educational literature and policy statements emphasize that all students need to learn to be creative thinkers as part of a set of “21st Century Skills” (Ananiadou & Claro, 2009; Geisinger, 2016; Lucas, Claxton, & Spencer, 2013; Partnership for 21st Century Learning, 2007). The field of gifted education has long promoted creativity as a key component of gifted programs (Gallagher, 1994) and this study builds on a pedagogical model for gifted education that emphasizes providing various types and levels of creative opportunities for all students.

Creativity research in schools may address several major topics, such as creative pedagogy, creative students, creative teaching, teachers’ definitions of and beliefs about creativity and creative students, and teaching for creativity (Plucker & Makel, 2010). This study examined teacher’s perceptions of support for creativity, and includes a review of these aspects of creative pedagogy and what is known about teachers’ definitions and beliefs. These factors will undoubtedly have shaped the teachers’ responses to items about support for creativity as well as the researchers’ interpretations of their responses to the open-ended prompts. This section also reviews literature about teacher’s perspectives on supports for and barriers to teaching for creativity.

Theoretical Framework

The theoretical framework for this study was Renzulli’s (1977) Enrichment Triad Model (ETM), a pedagogical model for encouraging creative productivity in young people. The “Enrichment Triad” includes three types of enrichment. Type I enrichment exposes students to new potential interests through activities like field trips, videos, or guest speakers. Type II enrichment teaches students specific thinking and executive function skills for later use in

projects. In Type III enrichment, students work to create an original product, performance, or service to address a student-defined “real problem” in an area of interest. A problem is considered “real” for a student if it is personally relevant, has no definite solution, and is intended to affect a specific audience (Renzulli, 1982). The third component of a real problem requires that Type III projects eventually must be presented to that audience through such means as actively providing a service, submitting work for publication, or offering a product to the targeted individual or group.

The goal of the ETM is to promote creative productivity in young people by encouraging and enabling students to complete Type III projects. Although any of these three types of enrichment might lead to another, it is expected practice in the ETM for a student’s interest to be activated with a Type I experience and subsequently developed through Type II experiences and independent learning. This interest-development process may then culminate with the student choosing to work on a Type III project. Research on this model, the related Schoolwide Enrichment Model (SEM; Renzulli & Reis, 2014), and curricular applications of the SEM has demonstrated that these types of enrichment can support the achievement of students identified as gifted, the general school population, and students from special populations. Studies have also shown that this approach promotes creative productivity and helps to reverse underachievement, among other benefits (Allen, Robbins, Payne, & Brown, 2016; Gavin, Casa, Adelson, Carroll, & Sheffield, 2009; Gubbins, 1995; Reis, Gentry, & Park, 1995; Reis et al, 2005; Renzulli & Reis, 1997, Reis & Renzulli, 2004).

Although this was not a study specifically about the Enrichment Triad Model, it was based on the same premise as the ETM: that educators should promote creative productivity in young people in order to prepare the next generation to be creative producers as adults. That

premise is reflected in this study's examination of support for student imagination, creativity, and innovation. The instrument used in this study was based on creativity theories and the ETM, which is a pedagogical model for enriching the educational experience of all students, including those showing the potential for gifted behaviors. This premise is also reflected in the interpretation of the qualitative items. Although the open-ended items did not specifically ask teachers to describe *creative* products, performances, and services, the responses were generally interpreted as examples of opportunities for student creativity.

Recently, Renzulli's framework for giftedness and gifted education has been expanded to include two components that address how schools can promote the development of social capital and the executive functioning necessary to put ideas into practice (Renzulli & D'Sousa, 2014). These components are referred to as Operation Houndstooth and Leadership for a Changing World. The goal of these additional components is to help bright children grow up to be effective, prosocial leaders. All Type III projects and some Type II experiences are expected to develop students' executive functions as they learn to complete related tasks, such as organize resources and follow a schedule. But only some projects would also be expected to increase students' awareness of and concern for the needs of others. Renzulli and D'Sousa classify these as Direct Involvement I and Direct Involvement II activities. Simulations and service learning, which are directed by the teacher rather than initiated by students, are examples of Direct Involvement I activities. Projects which originate from a students' awareness of a social need (i.e., prosocial Type III projects) are examples of Direct Involvement II activities.

Key Terms

As pointed out by Plucker, Beghetto, and Dow (2004), it is not helpful to the research literature to conduct a study of creativity without clearly defining the term as it is to be used in

the study. The term “creativity” has been defined in many ways since Guilford’s call in the 1950’s for more comprehensive research by psychologists on this elusive topic (Runco, Millar, Acar, & Cramond, 2010; Kozbelt, Beghetto, & Runco, 2010). Although some authors suggest that it is undefinable (Silvia, 2018), most current definitions are quite consistent. Plucker, Beghetto, and Dow (2004) proposed a definition of creativity based on a content analysis of 30 recent articles that included definitions of creativity: “Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context” (p. 90). Since that article’s publication, additional definitions of creativity have been proposed (e.g., Batey, 2012; Simonton, 2012), but they maintain the essential features of novelty and usefulness. Plucker et al.’s definition of creativity served as the basis for the instrument used to collect data for this study.

The overarching construct for the ICI instrument is creative productivity (c.f., Renzulli, 1977). The construct of creative productivity is divided into three factors in the ICI instrument: imagination, creativity, and innovation. These relate to the three types of enrichment in the Enrichment Triad Model described above, but school personnel do not need to implement the ETM in order to support these three factors. Imagination is viewed as the precursor to creative-productive activity, and is defined as *engaging in possibility thinking, considering new alternatives, and generating novel ideas* (Craft, 2014; Beghetto, 2008). In the ETM, one purpose of Type I experiences is to elicit student excitement about possibilities for pursuing a new interest. In any school, interest-generating activities such as field trips, guest speakers, movies, or book talks might activate students’ imaginations in this way. Student-teacher interactions may also support students’ engagement in possibility thinking, such as when a teacher asks her

students to think of how a story might be different if the main character made a different choice at a turning point, or when a teacher encourages students to think of many ways to solve a math problem (Beghetto, 2013).

Creativity is viewed as the middle process between imagination and innovation, and is defined as *developing novel and task-appropriate ideas, behaviors, and products that can result in innovative outcomes* (Beghetto, 2013; Plucker, Beghetto, & Dow, 2004). In the ETM, Type II experiences related to creative thinking or teaching students to develop their own version of an innovative product are examples of support for creativity. Any teacher can support students' creativity by teaching process skills such as brainstorming or by actively encouraging students to be creative as they work on school assignments.

Innovation is viewed as the outcome process, and is defined as *applying creative ideas to behaviors and product development that influence the broader socio-cultural context* (National Science Foundation, 2013; United States Patent and Trademark Office, 2013). In the ETM, innovation as defined in this way is experienced when students complete Type III experiences. As part of the process of helping a child plan a Type III project, the teacher should ensure that the problem or topic the child wishes to address or investigate has not yet been solved and that there is an audience other than the teacher who will appreciate or benefit from the outcome of the project. A teacher might support and encourage student innovation by enabling students to participate in competitions or by arranging for student work to be displayed publicly or critiqued by outside experts.

Creative Pedagogy

Theorists have proposed viewing creative pedagogy in terms of three elements: *creative teaching*, *teaching for creativity*, and more recently, *creative learning* (Anderson, 2002; Beghetto, 2016; Lin, 2011; NACCCE, 1999). Creative teaching encompasses the *teacher's* creativity in planning, implementing, and assessing lessons and instructional units, as opposed to following a scripted or packaged curriculum or simply employing premade instructional materials. Teaching for creativity means that a teacher's planned activities are intended to promote *student* creativity. Creativity training exercises are a straightforward example of this, but lessons which integrate creativity training, such as teaching a brainstorming strategy as part of a problem-based learning experience, would also be defined as this type of teaching. Creative learning refers to creative ideas and insights that occur as part of the learning process. For example, a young student learning about expanded form in mathematics might have the creative insight that she can solve single-digit-by-double-digit multiplication problems more quickly by mentally expanding the two-digit factor (in effect, "creating" the distributive property). A summary of literature on creative pedagogy follows.

Creative teaching.

Beghetto (2017) referred to *creative teaching* as *teaching with creativity* and defined it as "applying principles and techniques of creativity to subject matter teaching" (p. 551). He described the knowledge necessary for creative teaching as highly specialized, because it requires knowledge of how to teach particular content to particular students. Anderson (2002) wrote that teachers require autonomy for creative teaching and recommended that school leaders promote teachers' autonomy by enabling them to develop their own curricula and to modify prescribed curricula. Many professional and popular books have been written to help teachers do

this. For example, the *Problem-Based Learning in the Science Classroom* series by NSTA Press, the *Easy Make and Learn Projects* series by Scholastic Publishing, and many simulations by Interact Publishing offer curriculum and curriculum extensions for teaching and assessing regular school subject matter in a creative way. Websites such as TeachersPayTeachers.com, ReadWriteThink.org, and Pinterest.com offer additional examples that teachers can use to inspire creative lessons in a sort of virtual collaboration. Popular press and edited books also offer general principles for making one's teaching more creative (e.g., Boss, 2018; Burgess, 2012; King W., & King, H., 2018; Renzulli & Waicunas, 2016). Creative teaching has mostly been discussed theoretically, as few studies have examined it empirically (Beghetto, 2017). This study contributes to the literature on creative teaching by providing examples of products, performances, and services that are outcomes of some creative teaching practices.

Teaching for creativity.

Jeffrey and Craft (2004) described creative pedagogy as an integrated process, building on the National Advisory Committee's statement that, "teaching for creativity involves teaching creatively" (NACCCE, 1999, p.90). Jeffrey and Craft warned that distinguishing *teaching for creativity* from *creative teaching* might lead to an artificial dichotomy that could reduce the effectiveness of advocating for either. They also acknowledged that a benefit of this distinction was the attention drawn to teaching for creativity that had previously been lacking in research and practice. Beghetto (2017) defined *teaching for creativity* as "nurturing students' creativity in the context of specific subject areas or nurturing creativity itself in training programs" (p. 551) He described the knowledge necessary to do this successfully as a combination of knowledge about creativity and knowledge of techniques for teaching people how to be (more) creative. Creativity training programs are known to positively affect creativity. Scott, Leritz, & Mumford,

(2004), and Tran, Ho, Mackenzie, and Le (2017) reported that professional development in creative pedagogy is effective for increasing teachers' use of techniques that promote students' creativity. However, many teachers have not been taught how to teach for creativity, and their confidence in their ability to do so varies (Aish, 2014; Bereczki & Kárpáti, 2018).

Creative learning.

Creative learning is the involvement of creativity during the learning process. Beghetto (2016) defined creative learning as “a combination of intra-psychological and inter-psychological processes that result in new and personally meaningful understandings for oneself and others” (p. 4). Creative learning has usually been discussed in relation to the student experience (e.g., Beghetto, 2016; Lin, 2011), which is not the focus of this study. However, the teacher's response to students' expressions of creative learning is something that the teacher controls. A teacher who rejects or dismisses a student's creative idea may “kill the idea softly”, reducing the student's likelihood of offering up creative ideas in the future (Beghetto, 2013). Repeated or severe experiences of such rejection may engender creative mortification, where a student's aspirations toward being an adult creator are quashed by negative feedback that they are unable to view in a manner that is conducive to positive change (Beghetto & Dilley, 2016). Selkrig and Keamy (2017) advocated for teachers to become aware of their own creative learning in order to better understand and improve their creative pedagogy.

Teachers' Views on Creativity

Teachers' beliefs about creativity can influence whether and how they teach for creativity in their classroom instruction (Beghetto & Kaufman, 2014; Cropley, 2001). Most studies related to teachers' thoughts about creativity in the school setting focus on teachers' definitions of

creativity, teachers' beliefs about whether creativity can be taught, and the type of environment teachers believe might support or hinder creativity.

Teacher's definitions and beliefs about creative students.

Aljughaiman and Mowrer-Reynolds (2005) asked teachers to describe the characteristics of creative students. One-third of the teachers associated creativity with artistic production. Teachers described creative students as having "rich vocabularies, enthusiasm about learning and high IQ" (p. 31), which suggests that they may have confounded creativity with academic achievement or giftedness. The authors suggested that regular classroom teachers may regard the classes of teachers of gifted and talented as having the responsibility to support creative students. Three recent reviews of the literature described general education teachers' beliefs about creativity in research conducted between 1991 and 2015 (Andilou & Murphy, 2010; Bereczki & Kárpáti, 2018; Mullet, Wilkerson, Lamb, & Kettler, 2016). Teachers' definitions of creativity did not align with researchers', as most teachers continued to emphasize originality but not appropriateness and to associate creativity primarily with the arts. Most teachers believed creativity to be a universal, teachable skill, though teachers who believed creativity to be innate also believed that it cannot be taught. Teachers also continued to describe creative students as talented, intelligent, and high-achieving.

Teacher's beliefs about teaching for creativity.

Teachers' perspectives on their responsibility for teaching students to be creative has changed in recent years, perhaps in part because of the advent of the "21st Century Skills" movement which includes creativity as one of the "4 C's" in which all students should become proficient. The National Education Association, (2015) and Aljughaiman and Mowrer-Reynolds (2005) reported that although most teachers believed both that their students had creative

potential and that creativity could be taught in schools, only 33% believed that teaching students to be creative was their responsibility. More recently, Aish (2014) reported that although 75% of teachers believed that they had some responsibility for teaching creativity, a majority of those teachers also lacked confidence in their ability to do so due to lack of training. Bereczki and Kárpáti's (2018) systematic review of the literature between 2010 and 2015 reported that teachers generally had high self-efficacy about supporting their students' creativity. However, this does not necessarily translate into teaching practices that promote creativity. For example, McLellan and Nicholl (2012) reported that although the teachers were confident that they provided ample opportunities for creativity to emerge in their classrooms, their students disagreed. And in an observational study of elementary generalists, very few teachers were observed using any technique that would promote creative thinking in their students (Schacter, Thum, & Zifkin, 2006).

Teacher's beliefs about creativity-supportive classroom environments.

The classroom's physical and social environment can affect students' expression of creativity, and teachers are instrumental in determining whether that environment is one that promotes or quashes creative impulses (Beghetto, 2013; Beghetto & Kaufman, 2014; Davies, Jindal-Snape, Collier, Digby, Hay, & Howe, 2013; Yi, Hu, Plucker, and McWilliams, 2013). Researchers have reported that schools that promote student creativity support student agency and student involvement in decision making (Craft, Cremin, Hay, & Clack, 2014) and show respect and caring for students (Cremin, Barnes, & Scoffham, 2006). Teachers have described a classroom that supports creativity as one that uses methods such as brainstorming, collaborative learning, choice and differentiation (Adams, 2013; Fleith, 2000; Liu & Lin, 2014) and autonomous learning in an open and friendly atmosphere (Fleith, 2000; Henriksen & Mishra,

2015; Liu & Lin, 2014). They also describe a classroom that supports creativity as enabling unstructured learning (Fleith, 2000) and connecting learning to the real world and to multiple disciplines (Henriksen & Mishra, 2015). These observations and teacher perspectives are in alignment with Cropley's (1995) list of creativity-fostering behaviors, though his list also includes encouraging mastery of factual knowledge, promoting student self-evaluation, and helping students learn to cope with frustration and failure.

Teachers' perspectives on supports and barriers to teaching for creativity

Aljughaiman and Mower-Reynolds (2005) recommended research on the “administrative/parental/political pressures felt by teachers to address issues of accountability and demands for increased standardized test scores” (p. 30). Lack of time, lack of or inadequate training, and pressures related to standardized tests are consistently reported as barriers to teaching for creativity (Adams, 2013; Aish, 2014; Cheng, 2010; Eason, Giannangelo, & Franceschini, 2009; Edinger, 2008; Fairfield, 2010; Hansen and Feldhusen, 1994; Jones & Egley, 2004; Olivant, 2015). Curricular restrictions, time constraints, and large classes also negatively affect teachers in gifted programs who wish to teach for creativity, even when these teachers have training and are interested in promoting student creativity (Chan & Yuen, 2014). Modern or “Gen Z” students and their teachers desire a greater focus on creativity in the classroom (Adobe, 2016). Teachers who believe they are able to teach for creativity report that they work with open, supportive principals and have time for collaboration (Adams 2013; Edinger, 2008). Louis and Marks (1998) reported that teachers who were observed to use more authentic teaching strategies, including connecting instruction to the outside world (c.f. Cropley, 1995), tended to have stronger, collaborative professional communities with shared values around their goals for

student achievement. The current study provides additional details about the supports that teachers describe as useful for promoting students' creativity.

Chapter 3: Methods

This was a mixed-methods study because it analyzed quantitative and qualitative data separately as well as qualitative data in light of quantitative data (Tashakkori & Creswell, 2007). This mixed-methods approach to data collection and analysis was selected for two primary reasons. First, the qualitative responses to the item about points of pride could support conclusions drawn from the quantitative measures. Second, analyzing qualitative responses in light of quantitative scores allowed the investigation of possible differences between teachers' descriptions of support between high- and low- ICI Index scores (predicted student ratings), which could provide practically useful information to school and district leaders even if no other between-group differences were identified.

Sample

The four school districts whose leadership elected to participate in the study are located in three states in the southeastern and southwestern United States. The districts serve between 27,000 and 104,000 students in rural, suburban, and urban settings (U.S. Department of Education, 2018). All of these states legally mandate that school districts identify and provide services to gifted students.

Two hundred ninety-two educators and administrators responded to the final survey. Participants indicated their role (administrator, classroom teacher, gifted/talented teacher, or other) and grade level(s) taught as part of the demographic information section of the survey. The current study examined responses from 220 teachers who indicated *both* their role and their

grade level taught. This included 49 gifted and talented teachers and 171 classroom teachers (see Table 1 for grade levels). Twenty-nine teachers who did not respond to the grade-level question were excluded. Responses from 13 school administrators and from 25 educators who indicated their role as “other” (e.g., library/media specialists, counselors) were excluded from this study’s analyses in order to more accurately assess the perspectives of teachers in particular. Optimal Design software was used to calculate a Minimum Detectable Effect Size of approximately .38 for the total sample (220 participants) at power of .8.

Table 1

Number of Responses by Grade Level and Teacher Assignment

Column Head	Grade Level(s) Taught	Gifted and Talented	Classroom Teacher	Total
Elementary	3	4	48	52
	4	3	37	40
	5	1	36	37
	3,4	4	1	
	3,4,5	6	2	
	3,4,5,6	1	0	
	3,5	0	1	
	4,5	4	1	
	4,5,6	16	0	(Multi-grade) 36 (All elementary)165
Middle School	6	1	9	10
	7	3	19	22
	8	1	9	10
	5,6	1	0	
	5,6,7,8,9,10	1	0	
	6,7,8	3	5	
	6,7,8,9	0	1	
	6,8	0	1	
	7,8	0	1	(Multi-grade) 13 (All middle school) 55
Total		49	171	220

Note: For the initial t test, teachers of multiple grade levels were dichotomously coded as elementary school (if they taught primarily grades 3-5) or middle school (if they taught primarily

grades 6-8). The teacher who taught 5-6 was placed in the middle school group because they indicated “middle school” in their open-ended responses.

Instrument

This study used responses from the confirmatory data set of the instrument development study for the Imagination, Creativity, and Innovation (ICI) Index and Portfolio. The full instrument development study included content validation, an initial pilot, and a confirmatory pilot, with revisions completed after each sample's analysis. Twenty-six educators and researchers in the field of gifted education reviewed the initial item set. After revisions, approximately 400 educators including gifted and talented teachers, classroom teachers, administrators, and others completed and provided feedback on the pilot survey, which included 15 ICI items (5 each for imagination, creativity, and innovation) for each of 8 subject areas. Exploratory factor analyses showed the same or very similar factors across subject areas, so the subject area divisions were removed for the confirmatory pilot study.

The final version of the instrument from which the data for this study was used included a linked pair of online surveys that were taken by the teacher and his or her students. Each survey included a short demographic section followed by 15 items on a 5-point Likert scale and two or three open-ended items. The teachers responded to each of the 15 Likert-scaled items twice: the first response indicated the how often the teacher believed the school should ideally do each item, and the second indicated the teacher's prediction of how often students would indicate that each item actually happened at the school (i.e., the teacher's perception of the school's actual level of support for student creativity). The items in the teacher and student survey were parallel, with modified language for the students intended to be comprehensible by students as young as third grade.

The teacher survey (included in Appendix A) also included three open-ended items with large text boxes provided for responses. The first item prompted the participants to describe one

or more products, performances, or services completed by students at their school that is a point of pride. This is referred to as the “point of pride” item. The second item prompted the participants to describe the supports that their school provided for students to develop products, put on performances, or provide services to others, referred to as the “support” item. A third item prompted the participants to add anything else they would like to say.

Quantitative Methods

In initial data cleaning, 19 respondents did not select a Likert response to one or two items. These missing items were more often in the second half of the survey, possibly indicating response fatigue, but otherwise showed no particular pattern (i.e., no single item was avoided). As the items appear to be missing at random, the missing response values were imputed as a mean of the remaining responses within each scale, as recommended by Siddiqui (2015). A total of 18 responses were imputed.

The scale scores for each factor were computed as an average of the five factor items and found to have high reliability (Imagination, $\alpha = .87$; Creativity, $\alpha = .90$; Innovation, $\alpha = .84$). Because the factors were highly correlated (Imagination-Innovation = $.76$; Imagination-Creativity = $.83$; Creativity-Innovation = $.87$), ICI Index scores rather than scale scores were used for these analyses. ICI Index scores were computed by taking the mean of the fifteen items, resulting in a value from 1 to 5 ($\alpha = .94$; see Table 2 for descriptive statistics of each analyzed group).

A dichotomous variable was created using grade level(s) taught to classify the educator as a middle or elementary school teacher, with 6th grade as the first middle school level. Beginning the middle school classification with 6th grade is not uncommon in school settings, and also divides the grade levels under study into two spans of three grades. If an educator indicated that

he or she taught multiple grade levels including grades from both elementary and middle school levels, the predominant set was used to classify that educator (i.e., if the individual indicated grades 4, 5, and 6, he or she was classified as elementary level).

Table 2

Descriptive Statistics for ICI Index Score of Analyzed Groups

Category	<i>n</i>	<i>M</i>	<i>SD</i>
Gifted and Talented	49	3.20	.68
Classroom Teacher	171	3.01	.61
Elementary School	165	3.10	.63
Middle School	55	2.89	.64
Classroom Grade 3	48	3.20	.58
Classroom Grade 4	37	3.02	.66
Classroom Grade 5	36	3.01	.58
Classroom Grade 6	9	3.03	.56
Classroom Grade 7	19	2.73	.64
Classroom Grade 8	9	2.74	.66
Low-Scoring	33 (5 G/T, 10 Middle)	2.19	.28
High-Scoring	34 (12 G/T, 6 Middle)	4.14	.33

Note: G/T stands for Gifted and Talented. Scale is out of 5 points. Classroom teachers by grade level do not sum to 171 because some classroom teachers reported teaching multiple grade levels.

Due to the nested nature of the data (teachers within schools), hierarchical linear modeling (HLM) was considered for examining research question 1 and 2. The intra-class correlation (ICC) was calculated to be .15, suggesting that HLM would be necessary due to the large proportion of the variance explained at the school level. However, 13 of the 39 schools were represented by only one teacher and a further 7 were represented by fewer than 5 teachers, many of whom held the same teaching assignment within a school. All of the variance explained at Level 2 (school) for those teachers would be equal to the variance explained by grade level and teacher assignment. Using HLM with so much of the variance in the level-1 variables of

interest confounded with the variance of the level-2 variable would therefore mask any differences that did exist (E. Loken, personal communication, February 6th, 2019).

Qualitative Methods

Initial data review indicated that most of the participants responded to the first and second open-ended items, but 184 (84%) did not respond to the third open-ended item (“Enter any additional thoughts or comments here”) or answered “no”. The remaining responses to the third open-ended item were evaluated to determine whether they reflected additional information about support (or obstacles), points of pride, or neither. If a response clearly reflected additional information about support or points of pride, then the response was evaluated as a single response along with the primary response from that individual. No responses to the third question provided additional information about points of pride, and 11 provided additional information about support or obstacles.

The responses to the open-ended items were analyzed following Strauss and Corbin’s (1998) procedure of open coding for initial concepts, axial coding to link concepts into families, and selective coding to formalize these relationships. This process was completed for all responses for the item about points of pride and for the subsets of teachers with ICI Index scores at least 1 standard deviation beyond the mean ($n = 67$; 30.5%) for the item about support. Sample items for each code are listed in Table 3.

Table 3

Summary of Themes

Theme	Examples
All teachers	
<p style="text-align: center;"><u>Point-of-Pride Item</u></p>	
<p>1. Creative teaching practices</p>	<ul style="list-style-type: none"> • My reading students created graphic novels based on a well known fairy tale or children's story. • Our art class produces nice bulletin boards quarterly. • Students make great art work all the time that is on display in the hallways of our school. • Science created a garden and practiced agricultural skills while using scientific methods. • We recently create our own Inventions, while studying the inventors at the Turn of the Century. • The math students on my hallway were very proud to display their projects. While the projects were not fancy art projects, they were simple, clean and precise. • I have had students write letters to President Obama to let him know which part of speech he could eliminate since he had to eliminate one due to budget cuts. • We also use choiceboard for most of our science and social studies units that allows students to create to show their knowledge on particular material • Encourage students to create oratorical speeches to think about what Martin Luther King, Jr. would think of the world today and participate in local community competition. • Just One Africa is a service project for students. Harris Burdeck is a creative writing competition for students. Young Georgia Author is another writing competition. • Cell Organelle Wanted Posters, Biotic/Abiotic Collages, Food Web Projects, Symbiosis Presentations, Cell Analogy Projects • Students were taught the what the terms of pollution and conservation meant. Our classes went outside to clean up our school playgrounds. A recycling project was assigned were they were required to created a usable item out of recyclable objects. They added decorations to their creation. • Students chose to make a puppet show, a commercial, or a pamphlet of their favorite part of their book. • Wax Museum--students research, do time lines, do speeches, make the person out of craft materials, make items that are associated with the person, dress as the person, act like the person at a performance for parents- the wax museum-the students work hard and have an authentic audience to see them on display. We also incorporate technology for research, making of the timelines, etc....to complete the triboard/powerpoint. Students also put this on for the 2nd grade classes before PTO since some students may not attend at night. • My Life as Water Drop stories, plays, and songs - after studying the water cycle in depth, students were asked to write a creative piece following the life of a water drop through the water cycle. Modeling included a

Theme	Examples
2. Supporting student interests	<p>reader's theater play and a song. Student projects went above expectations and many students chose to involve others in their pieces when we performed them for the class. As a result of in-class performances, two students went on the school morning show to share their work with the school community.</p> <ul style="list-style-type: none"> • The students engage in cross-content project based learning for all standards. Their work is then showcased to parents and placed on student created individual websites. An example of one of these projects would be studying a time period, reading a companion historical fiction novel, and then writing, adapting, and producing a play. Currently, they are making Lego movies to showcase their science unit. This unit incorporates multiple standards in science and includes reading and writing. • We had students enrolled in a Ted Ed Club, they researched a topic of their choice and then gave a presentation on why others should care about their topic. • Passion Projects - time to research and learn more about a personal passion and introduce the passion to the class. • In addition we have an after school program called Genius Hour where students create a passion project. They are able to pick a topic or career that interest them, conduct research, and create a presentation of their choice to show off and inform other about their passion. • Wonder Time-Students are given time to research a topic of their choice and choose their own means of presentation. When the student is ready, the information is presented to their classmates. The student becomes the expert for that topic. • Students complete genius hour projects on my team. A genius project, is a project where the students get to research a topic of their choosing and create a presentation about it to share with their classmates. • Genius hour is a time that our 7th grade team implemented allowing students to research their own topic of choice and present it in whatever way they choose.
3. Student-initiated, student-developed projects	<ul style="list-style-type: none"> • Type 3 projects Cluster night • Clusters have created a recycling program, and created games and puzzles to give to after school programs. • Student wrote a third volume of a two volume novel. They did not want the story to end so they wrote another volume. • All of my students are in National Elementary Honor Society and pride themselves on service learning. They have begun the recycling club, tutoring program, and teacher help programs. • Our students take an active role in planning, advertising, and carrying out fundraisers for their end of the year activities. • In our scrapbooking enrichment cluster, students are creating scrapbooks using their own photographs. They have been able to make beautiful memory books using all types of scrapbooking supplies. Many students have been so excited about them that they have continued adding to their scrapbooks at home and have plans to make other scrapbooks in the future • Non-honors students throughout the school bring in stray bottles and a few even bring in bags of plastic on

Theme	Examples
	<p>occasion that they've collected on their own; there is a bit of a grass-roots movement with this so I have brought it to the attention of the school principal.</p>
<p><u>Support Item</u></p>	
<p>4. The importance of time</p>	<ul style="list-style-type: none"> • We make special schedules for days when we research and build museum exhibits. • Class time, teacher support, and peer support. • We have enrichment classes in the mornings, genius hour, art club. • My school affords time and some resources that enable me to complete these projects as well as develop new ones. • Students are given class time and "cluster time" to develop products based on the students' interests. • We have the time with an extra class period to work with. We have complete flexibility with our team schedules. We have title money to buy supplies. • Our school has academies which determine their own goals for service in the community, Genius Hour, etc. Flexibility with our daily schedules, materials provided, etc. to reach those goals. • We make special schedules for days when we research and build museum exhibits. • Time is given to art classes, set design for drama, and we spend four weeks teaching a poetry unit when everyone else is on the bandwagon of "informational texts". • In the past we would have an extra hour at the end of the day that provided time for such activities. We do not have that anymore. • We have clusters that produce many things--but I do not agree with the time it takes away from the classroom. • I think the school WOULD provide the support if we had time (as classroom teachers) to develop such products, performances and services.
<p>Low-scoring teachers</p>	
<p>5. Time is the main support</p>	<ul style="list-style-type: none"> • We are given the flexibility to change our schedule within our team to allow time for these types of projects. • The schools provides time, space for publishing and show casing student work. • There is little support due to time restraints. • Our school provides the time, location, materials, and adult support needed to work on this service project. • The 3-5 students in chorus put on concerts that are supported by our music teacher. They attend practice every Thursday.
<p>6. Access to support for creativity is limited</p>	<ul style="list-style-type: none"> • Our gifted center provides more opportunities than the gen ed classes, as they have the time/ability. • Our school attempts to promote PBL. We have a choir, a rock band, violin and drumming concert for performance. • Currently, supports are provided by the gifted teachers at the school, we use our knowledge to best help the

Theme	Examples
High-scoring teachers 7. The community works together	<p>students.</p> <ul style="list-style-type: none"> • This happens mostly for the SEARCH/Gifted students through type 3 projects. This occurs during clusters, depending on the cluster. • Chorus concerts in music
8. All students have access to support for creativity	<ul style="list-style-type: none"> • PTA is very supportive. • The school and county supports all the above by providing the materials, time, and teacher support to make them happen. • They provide total support for the museum and drama. They greatly encourage thinking outside the box. They provide professional development that encourages teachers to plan student centered lessons. • We have support from all stakeholders in completion of any project or performance. This expands from volunteering, assisting, or sending in supplies. • Administration, enrichment teachers, and classroom teachers all work with students to develop products and showcase their work. Students also participate in service projects. • One to one technology, PD Days for sharing and planning. • STEM Club Drama Club In/out of classroom We have so many amazing clubs that support and reach out to all children :) • IIM projects for the entire school • Our school encourages a school-wide science fair. This school has Art and STEM classes that work with classroom teachers to integrate these skills into their projects. • The supports our school provides are having technology and 1:1 chromebooks as well as providing time to create innovative projects which allow students to be creative. • Our school follows an inquiry model which allows multiple opportunities for students to make inquiries and discoveries on their own. We also have units that were created by staff that included project-based learning tasks. • Our school has enrichment clusters once every three weeks for two hours. The students are presented with each of the clusters through a presentation and they choose the cluster that they are interested in. Through these clusters the students drive the facilitation of the cluster by their inquiries and what they want to learn.

Note: Themes are presented in a different order here than in the body of the text. ICI Index score was calculated from responses to the ICI Index items following the prompt, “predict what your students will say about how often this actually happens” and is assumed to reflect the teacher’s perception of the actual availability of support for creativity in their school.

Points of pride responses.

Two coders initially and separately open-coded 28 responses and then compared and discussed the coding procedure they would follow for the remaining responses. The author then separately coded all of the responses three times, in a random order each time, to evaluate whether new codes should be added or previously generated codes should be combined or revised.

The responses fell into three broad categories based on the level of detail. One type of response was one or more project titles, such as “Math Meet Creativity Olympics Art show Chorus Band” and “Science Project, sing in the choir, recite poems for volunteer breakfast, butterfly gardening, video club, peer mentoring”. For these responses, the coders assumed that these were typical examples, such as interpreting “Chorus band” to mean that the chorus and band classes performed an assigned piece (or pieces) of music for an audience beyond the classroom.

The second type of response was a brief description, which enabled the coders to more confidently assign codes. For example, “In October our grade level participated in Kid President's Socktober initiative to collect socks for the homeless. Students researched a famous American from our standards for an afterschool exhibit.” For this example, the coders assumed that the Socktober initiative was introduced by the teachers rather than a student, and that the afterschool exhibit was presented to the school community, particularly parents.

The third type of response was highly detailed, such as “First and Second grade students participated in a drawing cluster. They produced Spring themed pictures for we framed them. The students elected to donate these pictures to the children's ward at the hospital so that they cheer up the patients when they are sick and in the hospital.” These were coded with the highest

confidence and very few assumptions were made. Out of 193 total responses, 38 (20%) were titles or lists, 88 (46%) were brief descriptions, and 61 (32%) were highly detailed. The remaining 6(3%) reported that they did not have a point of pride to share. Percentages do not sum to 100 due to rounding.

After the third round of coding, when new codes no longer emerged from the data, the author wrote an initial codebook defining each code. The coders then met and simultaneously coded 43 randomly selected responses. Using the initial codebook, the coders showed 80-90% agreement for every item and discussed changes to the codebook to resolve differences, clarify the organization of the codes, and ensure relevance to the research questions and literature. The codebook was revised to have three categories of codes to be examined separately: Origin of Project, Content Area, and Audience. The Origin of Project category was set up with a two-level hierarchy: a parent code (Teacher Assigned or Student Directed) and four child codes under Teacher Assigned. The Content Area and Audience categories each contained one level of child codes. The coders then met to simultaneously code an additional 24 randomly selected responses using this new codebook, with 100% agreement on 21 responses and 90% agreement on the remaining responses (overall: 99% agreement). After discussing differences and further clarifying the codebook, the author completed this categorical coding for all of the responses and then identified themes that arose from the whole data set.

High and low support responses.

The goal of the qualitative analysis of the support item was to highlight how themes differ for the teachers who differed most on their predictions of student-reported opportunities for creativity. The sample to be analyzed for the support item was purposively selected to focus on the respondents with relatively extreme scores while retaining enough responses for data

saturation in each group. To identify relatively extreme scores, ICI Index scores were standardized and all responses above $z=1$ and below $z=-1$ were selected. This yielded 33 “low” scores (15%; range: -3.02 to -1.03) and 34 “high” scores (15.5%; range: 1.08 to 3.08). The majority of z scores in each selected group were between $z=|1|$ and $z=|2|$.

The support responses were first coded dichotomously as “positive” or “negative”, with positive indicating a description of support and negative indicating a description of an obstacle or the lack of support (e.g., “None”). Following this, open coding identified many common topics. Axial coding collapsed groups of open codes into categories, and selective coding was used to identify the primary themes underlying the categories.

Limitations and Delimitations

Several limitations exist in this study. First, the sample was a convenience sample from a four school districts whose leadership had previously expressed an interest in student creativity to the researchers. It was through this connection that the researchers initiated discussions about their participation in the study. It is possible that, due to this administrative interest in student creativity, these districts provided more support for student creativity than average districts. This means that the average ICI Index scores of this group could be higher than (and not representative of) teachers in general. The participating teachers taught in large, public school districts in the southwestern and southeastern parts of the United States. The needs, beliefs, and support that schools provide for student creativity may be different in smaller districts, private schools, or in districts in different regions. Additionally, examples of points of pride or supports in the qualitative data may reflect district or school initiatives that were specific to these districts and schools.

Additionally, because the qualitative items were presented as short-answer prompts with a positive valence (i.e., “Describe the supports that your school provides” as opposed to “Describe supports and/or obstacles that exist at your school”), it is unlikely that any response showed a complete picture of the supports and obstacles perceived by the teacher. It may be that obstacles were only reported by teachers in particularly difficult circumstances or those who had an especially negative view.

Although the author did not use hierarchical linear modeling for the quantitative analyses for the reasons given above, the fact remains that the assumption of independence of observations was violated in this sample. This calls into question the validity of conclusions from the *t* tests and linear regression analyses.

This study privileged the teacher’s perspective on school support for creativity and did not examine the students’ perspective or the degree the teacher was accurate in predicting student responses to the parallel questionnaire. The teacher’s perspective was privileged in this study because teachers are responsible for setting the tone of their classroom, including validating, dismissing, enabling, or punishing creative ideas (Beghetto, 2013). Yet teachers themselves are influenced by the greater school community, such as district goals and policies, administrator support, and support from parents and community members. A teacher’s perception of the support others provide for student creativity may in turn support or hinder his or her efforts to support student creativity in his or her own classroom.

Chapter 4: Results and Findings

In this chapter, data analyses for each research question are presented. First, quantitative results are presented for Research Questions 1 and 2 in the order that the various statistical analyses were conducted. Qualitative findings for Research Question 3 follow, ending with a summary that refers back to the research question. This chapter concludes with the mixed methods results and findings that address Research Question 4.

Quantitative Analyses

RQ1: Do elementary and middle school teachers differ with respect to the degree they believe their students will report support for creativity at school?

RQ2: Do teachers in general education settings differ from teachers in gifted education settings with respect to the degree they believe their students will report support for creativity at school?

T tests were conducted on the full sample ($n=220$) using IBM SPSS 25 to compare ICI Index scores by teacher assignment (gifted/talented or classroom teacher) and by school level (elementary or middle). ANOVA was not used due to cell size differences that would interfere with an analysis of a possible interaction.

Gifted and talented teachers' average ICI Index scores were .19, 95% CI [-.01, .39] points higher than classroom teachers' average scores, which does not represent a significant difference at the .05 level, $t(218) = 1.85$, $p = .065$.

Elementary school teachers' average ICI Index scores were .22, 95% CI [.02, .41] points higher than middle school teachers' average scores. This does represent a significant difference at

the .05 level, $t(218) = 2.21, p=.03$. Hedges' g , which accounts for different sample sizes, was used to calculate an effect size for this difference, $g=.35$ (Ellis, 2009).

Cell sizes were too unbalanced to investigate the possibility of an interaction between teacher assignment and school level with ANOVA, so stepwise linear regression was used to determine whether the observed difference by school level continued to be significant after accounting for teacher assignment. The model was as follows:

$$ICIIndexScore = \beta_0 + \beta_1TeacherAssignment + \beta_2SchoolLevel + e$$

The full model provided a significant prediction of ICI Index score, $F(2, 217) = 3.91, p=.02$, accounting for 3.5% of the variance. The predictors were then entered stepwise (teacher assignment and then school level) to determine the unique contribution of school level. As expected, teacher assignment was not a significant predictor of ICI Index score, $F(1, 218) = 3.43, p=.07$. After accounting for teacher assignment, school level continued to be a significant predictor of ICI Index score, $F(1, 217) = 4.88, p=.04$, accounting for 2% of the variance.

As a significant difference was found between elementary (grade 3-5) and middle school (grade 6-8), with lower scores at the middle school level, linear regression was conducted using IBM SPSS 25 to determine whether ICI Index scores declined by grade level. Teachers who indicated that they taught multiple grade levels were excluded because there was no way to determine which grade level they considered when responding. Most of the G/T teachers ($n=34$; 70%) taught multiple grade levels, so all of the G/T teachers were excluded. Therefore, this analysis only included responses from classroom teachers who taught one grade level ($n=158$).

The model was as follows:

$$ICIIndexScore = \beta_0 + \beta_1GradeLevel + e$$

This model shows a negative correlation between grade level and ICI Index score $F(1, 156) = 9.162, p=.002$, accounting for 5.9% of the variance. At each higher grade level from third to eighth grade, a teacher's ICI Index score is predicted to decrease by .1, 95% CI [.04, .16] point.

Qualitative Analysis

RQ3. How do teachers describe products, performances, and services that are “points of pride” at their school?

Findings.

When asked to describe at least one product, performance, or service performed by students at their school that they considered to be a point of pride, most teachers described projects from their own classroom. Donation drives, concerts, and art displays were the most common school-level points of pride. As described above, many teachers reported several points of pride.

Themes emerged related to the origin of the projects, content connections, and audiences. The core finding of this analysis was that *teachers report providing opportunities for student creativity through creative teaching practices in all subject areas, and the results are often shared with the school community*. A secondary finding is that *teachers report supporting student interests by providing time to learn about and then teach classmates about those interests*. A third finding is that *teachers frequently report their own creative teaching practices and opportunities for teacher-directed products and outcomes, but rarely report student-initiated, student-developed projects*.

Creative teaching practices.

Almost all of the teachers who responded to this item gave examples of products, performances, or service projects that appeared to be assigned rather than student-initiated. The majority of these assignments were their reported examples of their own creative teaching practices wherein students were given some choice and/or an opportunity to be creative, from the teachers' perspectives. Many of these described products or projects as something shared with the school community through display (e.g., in the hallway or library media center) or at exhibitions (e.g., at a PTO night or a "showcase"). Most teachers described either projects with classroom audiences or projects with an audience beyond the classroom, but not both. Fine arts, STEM, language arts, and social studies topics were represented approximately equally, and many projects were described as interdisciplinary. Most of the fine arts examples (other than visual art) were demonstrations of the students' skill (e.g., band and chorus concerts) rather than outcomes of students' creativity (e.g., students composing music; this is similar to findings by Fairfield, 2010). An example of student creativity in fine arts was, "One of the students won our Reflections contest by creating her own dance routine." The core finding of this analysis is that *teachers provide opportunities for student creativity through a variety of creative teaching practices in all subject areas, and the results are often shared with the school community.*

Most of the examples of creative teaching practices had an audience beyond the classroom, which was usually the school community. Some of these creative teaching assignments and products were presented at special events, such as, "a literacy night where students wrote poetry (and had a poetry contest), did artwork and literacy activities and presented to parents," and,

Last year students in my class participated in play about the Civil War and performed it for parents. This year students completed research, informational boards, and a wax

museum on important male/female scientists and shared with both parents/families and the whole school.

Other projects were passively presented to the school community, such as, “My third grade class takes care of, plants, maintains the butterfly garden at our school. We have also planted two avocado trees. This is an ongoing and ever changing project.” Teachers also discussed how they were able to display projects in various places, such as school hallways, to share projects with the school community. For example, a third grade teacher reported that, “Narrative writing pieces, informational writing was displayed in the hallways.” Another teacher described their school’s method of displaying student work for the school community as follows, “Students completed various research projects based on learning styles and multiple intelligences and displayed their work in an evidence of learning room for students, parents, and teachers to see.”

Renzulli and Reis (2014) described how a sense of audience was an important contributor to students’ high levels of task commitment and drive to develop high-quality Type III products. They explain that the school and local community should be considered a starting point and encouraged looking further afield to find authentic audiences for students’ work. In this study, school and local audiences were the most common audiences for products, performances, and services that teachers reported as points of pride.

Many teachers described creative teaching practices that did not appear to have any audience beyond the classroom. For example, “My math students had to submit a proposal for an expansion team in the NFL. They had to decide where the team would be located, the name of the team, the colors of the team, the mascot of the team, etc.,” and, “my students have completed many diverse projects utilizing common core standards, but with more rigor attached. recording each other, recording themselves, creating google slides, etc. to display each project.” Many of

these projects could easily have been shared with the larger school community or beyond, but it did not appear that they were. For example, the conservation project described below could have been presented to a wider audience by displaying the posters at a local recycling center or by passing them out as flyers at an Earth Day event.

This is my second year teaching. With that being said my students haven't produced a product or performance that has been on a large scale. However, they have created many products within the classroom based on our standards. Last year my students created posters and mobiles that expressed ways to conserve our Earth. For our economic standards, students created a good or a service they wanted to sell and then created a price, jingle, motto and more to advertise the project. I take pride in these products because they are student crafted and original work that each student worked hard for.

Even some digital products that could easily be shared with an audience of parents appeared to be presented only to the classroom. For example, “My students enjoy making films with a green screen that involve interviewing an author or presenting a novel in a newscast or entertainment show format” and:

Students are creating an interactive wall display using their webquest/infoquest findings while researching Georgia Regions. They are beginning their display by creating a map of Georgia, adding the region they are becoming an expert on and labeling their region. QR codes are on display to access websites for information gathering. Those QR codes will be replaced by QR codes linked to Student Work and digital product they will create throughout this unit.

In some cases, the products and performances were part of the creative teacher’s day-to-day instruction, as in this example:

Students take on authentic soldier identities during the Civil War Unit. Class starts with Reveille and a salute to Generals Grant or Lee, and ends with Taps. Journals are created and letters are written in character. Home identities are used for students to change voice and perspective. Casualty cards reveal final battle outcome, which is re-enacted in class in preparation for the unit test. Vocabulary/concept battle between Union and Confederate groups engage all in systematic review.

Teachers' perspectives of several types of creative teaching practices and assignments were reported, and in some cases they varied by subject area. In the following sections, the most prevalent types are summarized with examples.

Service projects and competitions.

Almost all of the projects with an audience beyond the school community were service projects or competitive activities. Most of the competitions involved student creativity in one domain, such as writing competitions, art competitions (usually facilitated by the school art teacher), and science fairs. Interdisciplinary competitions, such as Odyssey of the Mind and Creativity Olympics, were the least common type of creative competition reported.

About half of the service projects involved collecting donations, but there is evidence that teachers integrated content instruction into these. Therefore, they were coded as creative teaching practices, as exemplified here:

The Iron Giraffe Challenge is an annual fundraiser that the entire school is encouraged to participate in. We have raised almost \$6000 in two years and that money has gone to help fund building wells in South Sudan. Our students enjoy researching human rights issues and environmental issues, and then taking that knowledge and applying it in ways that actually make a difference. They take immense pride in finding ways to contribute and knowing their participation impacts the world.

Another creative integration of service learning and instruction was the following:

“Students had a video advertisement that was in support of the Humane Society. Students collected items the animals at the shelter needed and took them to the shelter.” Additional examples of donation projects were collecting crayons for a children's hospital, collecting socks for the homeless in a program called “Socktober”, and participating in canned food drives.

The other half of the service learning projects were teacher assignments that required more direct involvement on the part of the students, such as “Students wrote letters to families of servicemen,” and “We, as a school, cleaned and brought back to life our preserve.” Some also involved directly interacting with members of the local community, such as, “Service acts to help community (humane society, nursing homes, etc.),” and “Our students read to elderly people once a month.”

Service learning projects, including donation projects with complementary instructional activities, could be considered “Direct Involvement I” activities (Renzulli & D’Sousa, 2014). This is a recommended practice theorized to promote both executive functions and social capital.

Simulations in social studies.

Simulations were a common creative teaching practice, especially for social studies classes. In simulations, students take on roles and may perform or make decisions based on the role. For example, in history, students took on roles in “A Presidential Tea where students represent a historical figure of the turn of the century” and made decisions as they “[...] work in teams ‘aboard’ Spanish Galleon ships while learning about the exploration of the Americas in the 1500-1500s. Students are given the opportunity to choose a final product or performance at the end of our Feudal Japan Unit.”

“Wax” or living museums were also commonly-reported simulations that addressed history as well as language arts skills. A typical example of a wax or living museum was described as a “[p]resentation of a person the student has read about through biographies and

research on the web. After studying the chosen person, students become their person and present visuals and information about what they have learned during a PTO night.”

Simulations were also used to teach economics. “The students compete in an online Stock Market Game in which they control the research, purchases, and sales of stocks in real time. Students learn about the economy through real life application, and one of our teams has placed 2nd in the state.” An interdisciplinary simulation with several mentions was a market: “In third grade we have market day incorporated into our economics unit. Students are able to create a product of their choice to "sell" in their shop. Students are able to understand the concept of spending and saving as well as buying and selling in our economy.” The second-year teacher quoted above could modify the project she described to include this sort of simulation, or enable her students to sell their products at a schoolwide event to which parents are invited.

Creative teaching of science, technology, engineering, and math (STEM) content.

Creative teaching in STEM classes fell into three broad categories: science experiments, engineering projects, and imaginative or artistic products to demonstrate understanding of classroom content. Science experiments were reported in the form of science fairs or STEM fairs. Some engineering projects provided an opportunity for students to be creative by producing something novel within constraints, such as “Students had to use specified materials to create a vehicle that could move without power” and “Students created recycled projects from used products that were going to be thrown away. Products were items students created so someone could use again.” Another type of engineering project provided less of an opportunity for student creativity, but was still an example of creative teaching practices. For example, the following task could have been used as an assessment, which would be a creative teaching practice because it would go beyond a standard paper-and-pencil test of these skills. “The creation of scale model

homes is something done yearly here. Involves cost estimations, calculation of areas and proportion.”

Imaginative and artistic projects were often referred to by name only, such as “Bio Impersonations”, “Animal adaptations project [...] posted outside the classroom.” “Cell Organelle Wanted Posters”, and “choiceboard.” This type of creative teaching practice was used to reinforce or assess students’ understanding of curriculum in a way that likely offered some student choice and was probably fun for most students. Occasionally, this type of project was reported to be posted outside the classroom for the school community to see. Rarely, the teacher reported an audience beyond the school community, like, “My students created superheros using genetics to combine two different superheros. I then submitted the best work to a comic book company.” It was unclear whether this teacher told the students that some of their work would be submitted to the comic book company prior to the project. As suggested by Renzulli and Reis (2014), keeping an authentic audience in mind may have motivated the students to persevere through difficulties and to produce higher quality products than they might if they thought the teacher would be the only one to see their creations.

Teacher assignments that support student interests.

A secondary finding of this analysis was that *teachers support student interests by providing time to learn about and then teach classmates about those interests.* Teachers described required projects wherein students could choose both the topic and the presentation format. These projects often had exciting names, such as “Passion Project” and “Genius Hour”. In these projects, teachers provided the students with a structured opportunity to learn about a topic of interest and then create a presentation of their choice. A typical example is, “[...]Genius

Hour where students create a passion project. They are able to pick a topic or career that interest them, conduct research, and create a presentation of their choice to show off and inform other about their passion.”

Another teacher explained that during “Wonder Time-Students are given time to research a topic of their choice and choose their own means of presentation. When the student is ready, the information is presented the their classmates. The student becomes the expert for that topic.” Most of these responses did not provide an example of a student-developed project, but one example demonstrated that these assignments could provide students with an opportunity to develop creative products:

Each student has to come up with a Learning Project on their own about a topic they wonder about with open ended results. The requirements are to have a visual to help with their oral presentation. A student who is hearing impaired created an experience for his classmates to try to learn while having a hearing loss similar to his loss. This experience definitely gave the students a greater empathy for what he deals with daily.

Several teachers from one school described a student-led school “museum” as an assigned project that is mostly developed by the students: “Our school museum is a point of pride in our school system. Not only do students research and build their exhibits, but they also present their exhibits to elementary school visitors.” The school museum assignment was described as having several open-ended requirements that would allow students to be creative, as explained by this response:

The Museum is student led. Students are given a topic then they come up with what they want to focus on. They then create and display their topic in their own way. They research and create visuals for their booth. They have a hands on activity for visiting students. They are docents and present their ideas to students and adults.

Several teachers also reported that their students could choose a product to demonstrate their learning, or that they could choose an area of interest within the content and produce a project about that. For example, in reading, “Honors reading students used multiple modalities to connect to the books they read and present their ideas to the class” and in science, “Our students complete projects based on science standards based on their interest.”

Student-initiated, student-developed projects.

Creative teaching practices are common, but student-initiated, student-developed projects are rare. Teachers rarely reported projects that were clearly student-initiated. For those that were described, the teachers facilitated the student projects by allocating in-school time to work on the projects and by serving as liaisons to gatekeepers. It is likely that the teachers coached the students on many aspects of the projects they described, but in most cases they credited the students fully with the development of the project, as in these examples:

At the beginning of the school year, my seventh grade Language Arts students asked if they could perform the short story "Priscilla and the Wimps" as a "Fun Friday" event. I took their suggestions, asked them to develop the roles and scripts, students rehearsed, and then we filmed each class performing the story in their own way. I uploaded the video and edited it together to create a unique movie for each class.

At the end of last school year, we organized and facilitated a 5th Grade Talent Show where students volunteered their talents to run the whole production. Some students ran the Audio/Visual, announced, wardrobe/costumes, created programs, and etc. I coached performers to create their talents, but it was all student led.

Many of the student-initiated, student-developed projects arose out of enrichment clusters (Renzulli & Reis, 2014). For example, “my last cluster was "Shark tank", where students learned how to, and then created, their own business. At the culmination of the cluster, students had a market to sell their products / services.”

Often, enrichment cluster products had an element of service to them. These could be considered examples of Direct Involvement II activities, because the students both identified the need in the community and acted on it (Renzulli & D'Sousa, 2014). For example:

First and Second grade students participated in a drawing cluster. They produced Spring themed pictures for we framed them. The students elected to donate these pictures to the children's ward at the hospital so that they cheer up the patients when they are sick and in the hospital.

Each year, I run a enrichment cluster focused on community involvement. Last year two third grade students came up with the idea of honoring a school resource officer and his help in keeping their rough neighborhood safe. They researched literature and educational sites on safety for officers, and what contributions were accepted by the police department to utilize in the community. After months of work, they were able to create a "Keeping our officers safe" pamphlet, run a fundraiser totaling \$500 in profits (donated to the community outreach program the officer ran), and hold a ceremony of honor for the officer with the whole school, community members, officers, and district personnel, where the honored officer was presented with the donation and a plaque thanking him for his service. The speeches at this even where done by these students as well. They worked hard on something they believed in, and even when roadblocks came up, they found a way to get around them. I was proud to help facilitate this process.

Enrichment cluster-initiated projects sometimes extended beyond the influence of the school, as in these examples:

My cluster planned a Halloween Carnival for the children at a local homeless shelter. Their parents attended as onlookers and watched all the hard work the students went through to create the carnival. However, what was more exciting to see was the personal interactions between the two groups of children and the empathy that came from the experience. The experience also led to parents of my students planning monthly visits to the shelter to play with the students. The parents also donated a basketball goal and sports equipment to the shelter. This all took place 3 years ago, and to my knowledge, the families are still visiting the shelter regularly.

One of my students was so inspired by an enrichment cluster, he learned Morse code in 8 hours. He is currently on a path to become a licensed "ham" radio operator. When he completes this goal he will be one of the youngest in the southeastern United States. His aspiration is to use some of the foundational engineering and communications ideas to work in a career of space exploration.

Summary.

In summary, when teachers were asked to describe products, performances, and services completed by students at their school that are points of pride, they usually reported their own creative teaching practices and how those are shared with the school community. They described creative teaching practices in various subject areas, including fine arts, STEM, language arts, and social studies. Some types of creative teaching were more common in specific subject areas, such as simulations in social studies and competitions in art and writing. Teachers reported supporting student interests through structured independent study assignments, such as “Genius Hour.” Occasionally, teachers described projects that were initiated by students. These were most often associated with enrichment clusters, a dedicated time for student-developed projects.

Mixed-Methods Results and Findings

RQ4. Do teachers who predict their students will report relatively high levels of support for creativity in school differ from teachers who predict their students will report relatively low levels of support for creativity in school with respect to their descriptions of support for creativity that is provided by the school?

Results.

For the item “In the box below, describe the supports that your school provides for students to develop products, put on performances, or provide services to others,” 33 responses with a z-score below -1 ($M = 2.19$) and 34 responses with a z-score above 1 ($M = 4.14$) were coded. Initial coding sorted responses into positive (describing supports) and negative (describing obstacles or a lack of support). In the low-scoring group, 20 responses were positive

and 8 were negative, with 5 responses left blank (29% negative). In the high-scoring group, 33 responses were positive and 1 response was left blank (0% negative).

Findings.

When asked to describe supports that their school provides for students to develop products, put on performances, or provide services to others (i.e., for student creativity), these groups of teachers with relatively extreme scores wrote about some supports that were common and some that were more unusual supports. Only teachers in the low-scoring group wrote that they did not know of any support for these activities at their school. Teachers in the low-scoring group mostly wrote about having time as a support, whereas teachers in the high-scoring group wrote about time as well as the support the school community provided. Time was discovered to be an important support for teachers across the full sample. A major contrast between the high- and low-scoring groups was who the teachers indicated received support. Low-scoring teachers often discussed special groups, such as gifted students and members of the chorus, while high-scoring teachers often wrote about opportunities provided to all students. In this section, these findings are discussed with examples.

Low-scoring group.

The core finding related to support for the low-scoring group was *teachers consider time to be the primary resource their school provides that supports student creativity*. Positive comments referred to time frequently, using words like “time”, “during” and “every [day/week]”. Time was often mentioned first even when other supports were also mentioned. For example, “the schools provides time, space for publishing and show casing student work,” and “Our school provides the time, location, materials, and adult support needed to work on this service project.” Administrative support related to scheduling was another way that support came in the

form of time, as in this example: “We are given the flexibility to change our schedule within our team to allow time for these types of projects.” Several teachers also discussed the use of enrichment clusters or enrichment groups as the time that the school provides to support student creative productivity. For example, “Students are able to create different products during our 4th and 5th grade cluster groups.” Only one of the negative responses described a specific obstacle, which also reflected the importance of time:

There is little support due to time restraints. Due to our changing demographics and a change in our curriculum, it is increasingly taking more and more time to complete foundational work in Reading, Writing, Language, and Math, let alone get to all the content topics we are supposed to cover.

High-scoring group.

The core finding related to support for the high-scoring group was *the community works together to enable students to be creative producers*. Teachers in the high-scoring group frequently mentioned collegial collaboration, such as:

This school has Art and STEM classes that work with classroom teachers to integrate these skills into their projects. Our 6th-grade team uses project-based learning for all content areas and will be rolling out the initiative to 5th and 4th next year.

Other examples of collaboration with special area teachers were, “We work with our music teacher for our PTO for our Museum Night” and “In addition myself and our art teacher frequently involve as many student as possible in service learning projects and competitions.” This reflects Louis and Marks’ (1998) finding that schools with a strong professional community scored higher on observations of authentic pedagogy (e.g., connecting learning to the real world) and that an important feature of these schools was a strong sense of shared values about their goals for the children in their care.

Teachers with high ICI Index scores credited their school administration with creating a supportive environment. For example, “They greatly encourage thinking outside the box. They provide professional development that encourages teachers to plan student centered lessons.” A teacher reported that “PD Days for sharing and planning” were a support that his or her school provided. Another wrote, “[School] encourages us to do what is best for student learning with little restrictions.”

Several teachers with high ICI Index scores suggested that their local community provided support. One type of community support was a partnership, such as, “Our school is working to provide multiple opportunities for students to participate in different careers in the community.” Another type of community support was involvement with clubs, such as, “National Elementary Honor Society which provides service to our school and community.” Community members also provided students with an audience for their products, performances, and services, such as, “We have cluster nights that the students present to parents and others who visit the school,” and “Students also participate in service projects.”

Two teachers’ statements summarized this theme: “We have support from all stakeholders in completion of any project or performance. This expands from volunteering, assisting, or sending in supplies” and “The school and county supports all of the above by providing the materials, time, and teacher support to make them happen.”

Key similarities and differences.

Both high-and low-scoring teachers mentioned arts programs as supportive of student creativity. Visual arts, music, and drama were all mentioned by both groups of teachers. Music was more commonly mentioned in low-scoring teachers’ descriptions, and the three areas were

equally represented in the high-scoring teachers' descriptions of support. Time was also a common theme. A typical example of a high-scoring teacher's comment on time was, "Our school devotes time to creating projects [...]" The scheduling aspect of time was reflected in the high-scoring teachers' comments at the level of the school calendar, such as in this example, "Museum building days are built into the school year. We take 3 full school days." Time for enrichment clusters was also frequently mentioned by high-scoring teachers, such as "SEM Clusters every Friday" and "Our school has enrichment clusters once every three weeks for two hours."

The primary difference between high- and low-scoring teachers related to *who* had access to support for creativity. For high-scoring teachers, the supports described were generally for all teachers and all students, whereas for low-scoring teachers, supports were usually more limited in scope.

Teachers with high ICI Index scores frequently wrote about efforts that applied to all students or the entire school, such as, "We have so many amazing clubs that support and reach out to all children," "Our school encourages a school-wide science fair," and "IIM [Independent Investigation Method] projects for the entire school." Some teachers reported that the school's pedagogical model or theme was a form of support. For example, "Our school follows an inquiry model which allows multiple opportunities for students to make inquiries and discoveries on their own. We also have units that were created by staff that included project-based learning tasks" and "We are an arts based school; therefore, we try and create arts based lessons that help support the students creativity."

Teachers with low ICI Index scores reported that gifted students or members of specific clubs received support for creativity, but did not believe that the general student population had

support for creativity. For example, one low-scoring gifted and talented teacher wrote, “Currently, supports are provided by the gifted teachers at the school, we use our knowledge to best help the students.” Another low-scoring teacher listed only a few activities that students might participate in: “Chorus, Video Club, Softball Club, Drum Club.”

Even low-scoring teachers who made positive comments suggested that opportunities for student creativity were limited to certain groups, by indicating that even efforts to provide this opportunity to all students did not always meet that goal. For example, one teacher wrote, “We do this through some enrichment groups,” which suggested that not all of the enrichment groups provided students with an opportunity to be creative. Another teacher wrote, “Our school attempts to promote PBL [Project or Problem-Based Learning]. We have a choir, a rock band, violin and drumming concert for performance.” The use of the word “attempts” suggested that the teacher believed not all students actually had the opportunity to participate in project- or problem-based learning.

The importance of time.

Because time was important to teachers with both high and low ICI Index scores, the complete set of responses to the support item were examined for further evidence of this theme. Out of 191 responses that were not blank, 70 (37%) referred to time. Like the high and low responses, almost all of the responses from teachers with ICI Index scores within one standard deviation of the mean were positive (about support) rather than negative (about obstacles). This group also addressed flexible scheduling, such as in this response, “We have the time with an extra class period to work with. We have complete flexibility with our team schedules. We have title money to buy supplies.” Special time blocks for student projects were also common. For example, “Kinder through 3rd grade participate in grade level plays, we have CREATE classes

every Friday were our students our exposed to yoga, guitar classes, drama, playwright classes, and cooking classes.” Teachers listed enrichment clusters frequently as a support for student creativity. Often, enrichment clusters were one of several supports, as in this example:

The school provides enrichment classes once a month. Students get to choose two enrichments per year. The school also provides the students an opportunity to participate in several service learning projects, as well as a technology fair and other academic competitions.

Similar to the low-scoring teacher who mentioned time constraints related to curriculum, the obstacles related to time that the middle group reported had to do with meeting the demands of the required curriculum. For example, “I don't feel like we have county support to leave the scripted curriculum. We are admonished for being the slightest bit off from the pacing calendar which stifles student creativity.” Another teacher felt that even with a supportive atmosphere, there simply wasn't enough time to support student creativity. That teacher wrote, “I think the school WOULD provide the support if we had time (as classroom teachers) to develop such products, performances and services.”

Summary.

In summary, both high-and-low scoring teachers mostly wrote about supports rather than obstacles when asked about the supports their school provides. Out of the two groups, only the low-scoring teachers wrote that their school did not provide support for students' creative projects, and the only teacher from the two targeted groups who reported an obstacle was one with a low ICI Index score. The form of support that teachers described also varied between groups. Whereas time was important to all teachers, high-scoring teachers also indicated that the entire school community worked together to support student creativity. This whole-school support extended support for creativity to all students in the eyes of high-scoring teachers, while

low-scoring teachers generally reported that opportunities for student creativity were limited to certain groups, such as gifted students or those in the school choir.

Chapter 5: Discussion

Most of the teachers in this study reported using creative teaching practices in their own classroom to provide students with opportunities to be creative, which suggests that these teachers' classrooms are at least moderately supportive of creativity. Mean ICI Index scores around the middle of the scale suggest that teachers believe their schools are likewise moderately supportive of student creativity (represented by their predictions of students' reports). Time emerged as an important support for all teachers. Teachers predictions about students' reports of opportunities for student creativity differed in relation to school level and also in who teachers described as having access to support for creativity. In this section, the results and findings from this study are discussed.

School-Level Differences

Teachers at the middle school level predicted that their students would report a lower frequency of opportunities for creativity than teachers at the elementary school level, even after accounting for teacher assignment. For classroom teachers, predicted student report of opportunities for creativity decreased with every grade level. A box plot of the data (Figure 1) shows that while the ICI Index scores decreased across grade levels, the drop is most notable at 7th and 8th grade, where no teachers had an ICI Index score above 4 (*“most of the time”*). This is consistent with previous research and discussion about how an increased emphasis on conformity and academic achievement around middle school relates to lower scores on creativity tests (Albert, 1996; Beghetto & Dilley, 2016; Torrance, 1968; Yi, Hu, Plucker, & McWilliams, 2013).

Because there are few studies on teachers' perspectives of school support for creativity, Cohen's (1988) guidelines for interpreting effect size were used in this study (as recommended

by Sun, Pan, & Wang, 2010). Cohen’s guidelines label an effect size of .2 as having a “small” but meaningful level of practical significance. Therefore, the statistically significant difference between groups that was discovered in this study ($g=.35$) has a small-to-medium amount of practical significance.

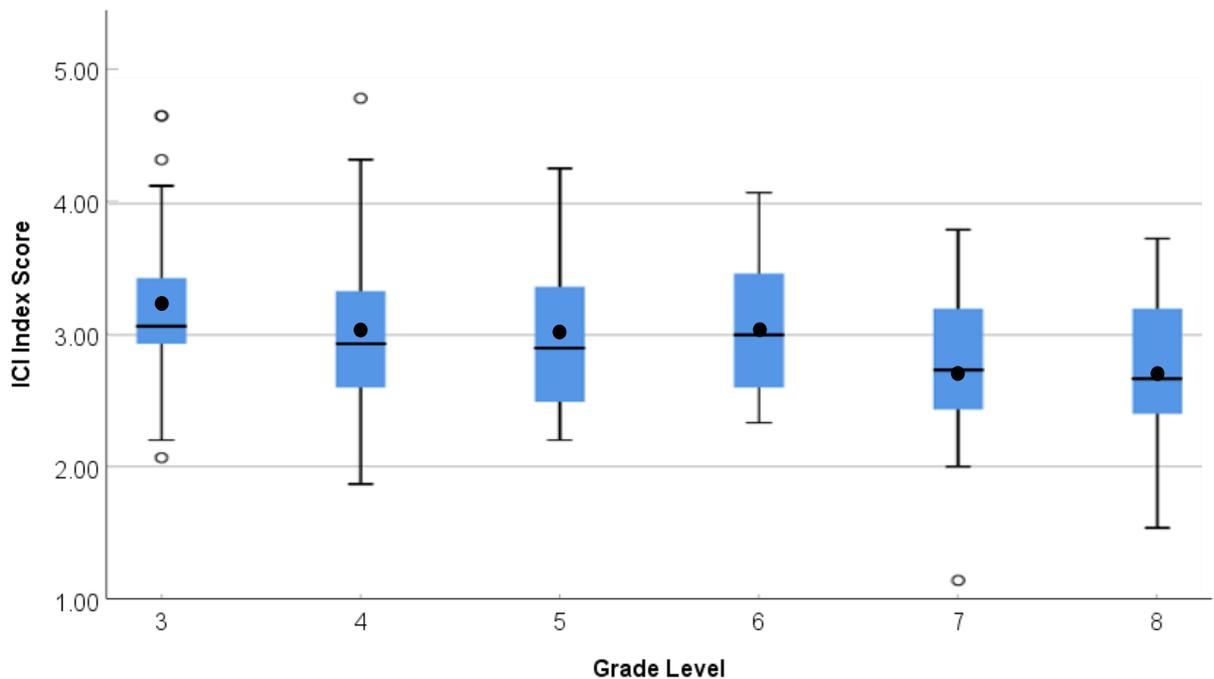


Figure 1. Box plot of ICI Index scores for classroom teachers who teach only one grade level. The mean score for each grade level is indicated by a filled dot.

One possible explanation for the school level difference could be that elementary teachers believe they have more control over their use of classroom time than middle school teachers (c.f., Anderson, 2002). Because elementary teachers generally teach all subjects to one group of students who they work with all day, rather than teaching a single subject to multiple of students on a tight daily timetable, they may be able to adjust their daily schedule to accommodate creative teaching practices that require a lot of time at once. For example, a pyramid-construction

project in social studies might be extended into the time slot usually allocated to math on one day, and the math lesson might be extended into the social studies time slot on another day to make up the instructional time.

No statistically significant difference was found between the ICI Index scores of classroom teachers and gifted and talented teachers, indicating that these two groups of teachers predicted that their students would report similar frequencies of opportunities for creativity at school. This study was unable to ascertain whether an interaction existed between grade level and teacher assignment, because the sample of gifted and talented middle school teachers was very small ($n=9$). An exploratory examination of the plot comparing elementary and middle school means with teacher assignments on separate lines (see Figure 2) suggested that such an interaction may have existed. In this sample, the middle school gifted and talented teachers' mean prediction of student ratings of opportunities for creativity was greater than the middle school classroom teachers' mean prediction and both types of elementary school teachers' mean predictions, which contrasted with the overall result that middle school teachers had lower ICI Index scores than elementary school teachers.

The main assumption behind the ICI instrument is that teachers' predictions about students' ratings reflect the teachers' perceptions of the opportunities they and their school provide. Middle school gifted and talented teachers may provide and/or become more aware of additional opportunities for student creativity than either type of elementary teacher, and middle school classroom teachers provide and/or are aware of fewer opportunities than either type of elementary teacher (as is suggested by Figure 2). Future research should include more balanced sample sizes and in particular recruit more middle school gifted and talented teachers to further investigate the possibility of a relationship between teacher assignment and school level.

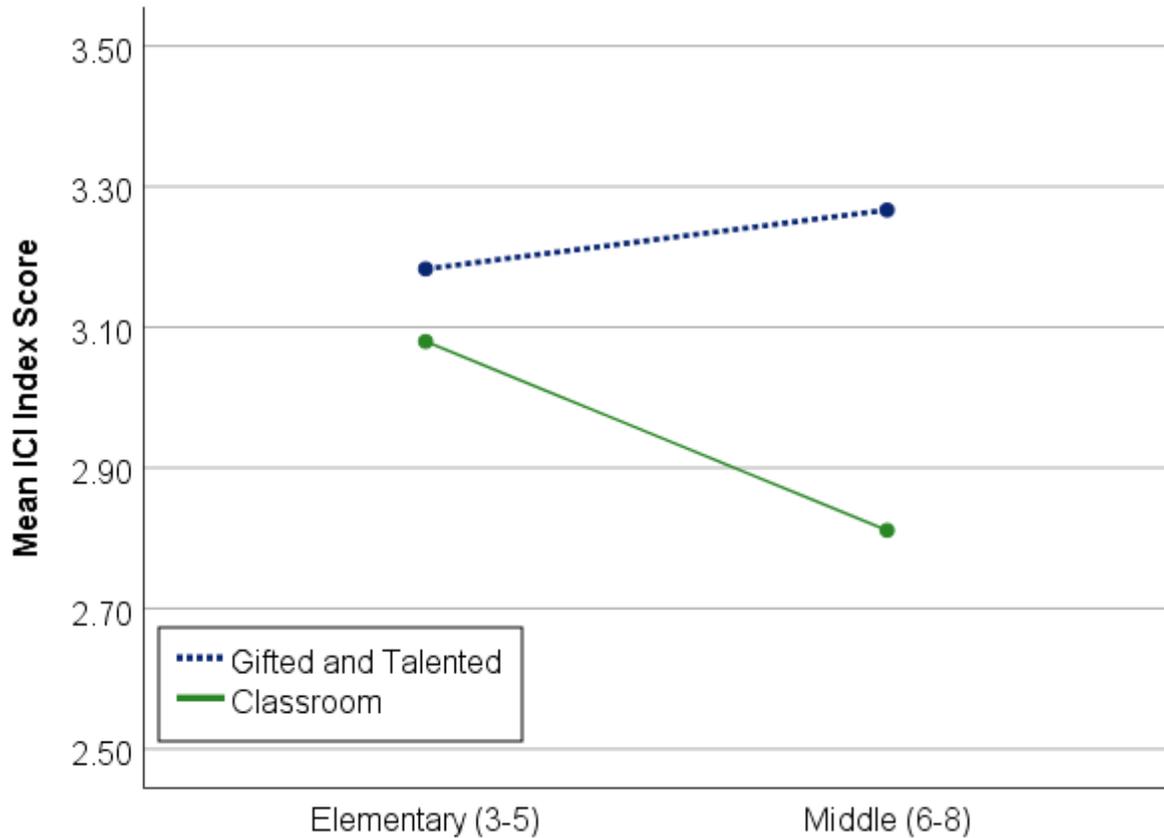


Figure 2. Graphical comparison of ICI Index Predict scores for elementary and middle school teachers, separated by teacher assignment. This possible interaction was not examined statistically due to inadequate and uneven sample sizes for the various groups.

The observed grade-level differences in predicted student report of opportunities for creativity are evident in schools whose leadership is interested in student creativity (as evidenced by their interest in this study; see limitations). This administrative interest in student creativity may explain the lack of significant differences between gifted and talented and classroom teachers. That is, there may be enough of a culture of supporting student creativity that both classroom teachers and gifted and talented teachers provide and/or are aware of similar opportunities. Future research should investigate whether differences exist between gifted and

talented teachers and classroom teachers in districts which espouse a greater emphasis on traditional skills for most students.

The complete ICI Instrument is a subjective self-report measure which captures the perspective of a teacher and his or her students. To strengthen conclusions drawn from this instrument about the actual processes in a classroom related to supporting student creativity, it would be beneficial for future research to triangulate these data with artifacts or observations. An observational instrument such as the Support for Creativity in a Learning Environment tool (Richardson & Mishra, 2018) could provide quantitative data to be correlated with ICI Index scores to better understand how well a teacher's ICI Index score aligns with observed practices. In future research using the ICI Instrument, modifying the open-ended questions to have a neutral valence may provide richer data on both supports and obstacles that teachers believe affect opportunities for student creativity.

Points of Pride

The products, performances, and services that teachers described in this study were mostly examples of creative teaching practices (Beghetto, 2017; Jeffrey & Craft, 2004; Renzulli & Waicunas, 2016) and only rarely appeared to be examples of student-initiated creative productivity (Renzulli, 1982; Renzulli & Reis, 2014). Bereczki and Kárpáti's (2018) report that teachers had high self-efficacy for supporting student creativity might be more related to creative teaching practices than to teaching for creativity. If the teachers believe that their creative teaching practices provide students with opportunities for creativity, but the students don't feel the same way, that could explain McLellan and Nicholl's (2012) contrasting results.

However, the examples in this study did reflect Cropley's (1995) recommendations for creating creativity-supportive classroom environments. Group projects, such as museums,

enrichment cluster projects, and simulations, were examples of *collaborative learning*. Student-interest-based project periods, such as Genius Hour and Wonder Time, suggest *autonomous, unstructured learning*. Many projects, including both projects based on student interests and projects based in content, involved *student choice*. Approximately one-quarter of the projects were related to *multiple disciplines*, and many projects had a *connection to the real world*. This real-world connection was most salient in service projects (which makes sense, as providing a service requires a recipient of the service). However, some content-based projects were also reported to have authentic audiences, such as in this example, “I have had my students read about the mayor's stance on an issue, determine their own opinion about it, write letters, and deliver them to him personally.” Competitions and enrichment clusters also often involved authentic audiences. These data are consistent with prior literature about how teachers describe classrooms that support student creativity (Adams, 2013; Fleith, 2000; Henriksen & Mishra, 2015; Liu & Lin, 2014). Cropley’s (1995) list of creativity-fostering behaviors also included *promoting student self-evaluation* and *helping students learn to cope with frustration and failure*. These data were not sufficient to draw a conclusion about whether teachers who facilitated student-directed projects and teacher-assigned projects with significant amounts of student choice may have done these things.

Supports and Barriers and Implications for Practice

In this study, teachers generally wrote about their own creative teaching practices rather than student-directed creative productivity. The teachers who predicted that students would report many opportunities for creativity also described supportive communities that worked together to enable student creativity. These teachers also described administrative decisions that supported them and their students in creative efforts. The results from this study suggest two

avenues for increasing students' access to opportunities for creativity at school: through teacher training and through school structures.

Teacher training.

Aish (2014) reported that teachers believed they lacked training in teaching for creativity, which prevented them from teaching students to be creative even though most teachers felt they had some responsibility for doing so. In this study, most teachers provided examples of creative teaching practices rather than examples of student creativity. One recommendation for teacher training would be to clarify the similarities and differences between these facets of creative pedagogy so that teachers understand the value and importance of each. This might have the effect of changing teaching practice, or it might simply help to align teachers' implicit definitions of creativity with researchers' explicit definition when they report examples, an ongoing mismatch that has been reported elsewhere (Andilou & Murphy, 2010; Bereczki & Kárpáti, 2018; Mullet, Wilkerson, Lamb, & Kettler, 2016). With an improved alignment between researchers' and teachers' definitions of creativity, future survey studies may yield data that researchers can have higher confidence in making practice recommendations from. In future research that requests examples of student products, performances, and services, teachers with this training might report more examples of student creativity instead of or in addition to their own creative teaching practices.

Another recommended topic for teachers' professional development would be creativity-enhancement techniques in the context of curriculum (Beghetto, 2017; Renzulli & Waicunas, 2016). Teachers who reported examples of creative teaching methods in this study may have intentionally taught students about creative thinking strategies as part of the preparation for the project (teaching for creativity within creative teaching; National Advisory Committee on

Creative and Cultural Education [NACCCE], 1999). For example, to prepare for the genetic superheroes project described above, the teacher may have demonstrated the technique of attribute listing to help students generate creative combinations. However, the teacher may also have simply presented the assignment without instruction in creative techniques, which would *allow for* but not *teach for* student creativity. The data for this study had limited description in most cases to determine which occurred. Nevertheless, professional development to expand teachers' repertoire of creative thinking pedagogy as it applies to curriculum should improve their ability to teach for creativity as part of their already common creative teaching practices (c.f. Tran, Ho, Mackenzie, & Le, 2017).

In this study, many teachers reported points of pride with an audience beyond the classroom, which was usually the school community. Renzulli and Reis (2014) wrote that this should be considered a "starting point" for finding appropriate audiences for students' creative works. A third recommendation would be to train teachers to identify authentic audiences and the products that interest those audiences. This training could result in creative teaching practices that are more motivating to students because of the students' awareness of a specific, relevant audience for their projects. It could also help teachers to work with students to refine and find audiences for their own creative ideas. This training could be accompanied by training in the types of process skills that teachers would need to introduce or coach students on as they work on authentic products (e.g., Type II skills; Renzulli, 2001). Future research on students' creative productivity could investigate whether producing authentic products for authentic audiences as part of classroom assignments results in students' producing more of their own creative products.

School structures.

Previous researchers have found that teachers consider time to be a key factor in whether they can support student creativity (Adams, 2013; Aish, 2014; Cheng, 2010; Eason, Giannangelo, & Franceschini, 2009; Edinger, 2008; Fairfield, 2010; Hansen and Feldhusen, 1994; Jones & Egley, 2004; Olivant, 2015). This study's results provide additional evidence for this conclusion, as approximately two in five teachers mentioned time when they responded to the support item. Examples of specific time allocations include flexible schedules, dedicating school days to specific activities, holding special events to showcase student work, and scheduling regular time periods for students to explore their interests and produce potentially creative products, services, or performances (e.g., in enrichment clusters or Genius Hour). Some teachers wrote specific measurements of time (e.g., every week, twice a year), but others just wrote that they were given time.

It could be that the school culture around the *use of time* is more important than the actual *availability of time* for determining teachers' perceptions of the school's support student creativity. Future research should investigate how the amount of time that is scheduled into the school day or school year specifically for students to produce or showcase their creative works relates to ICI Index scores and to the quantity and quality of students' creative products. Future studies that investigate schools' professional culture around how teachers use their instructional time may also provide insight into how teachers' perceptions of available time relate to actual and perceived opportunities and support for student creativity. This study's results suggest that school leaders can help teachers to perceive that they have time to support student creativity by setting up structures that make time for creativity clearly available. For example, when setting up the school calendar, administrators could schedule events for showcasing students' creative

works, such as the museums, science fairs, and literacy events described by the teachers in this study. When planning the day-to-day schedule, administrators could also build in a “class period” especially for enrichment clusters or other student-interest projects.

Another way that administrators can support a school culture of creativity is by providing teachers with autonomy as they create their classroom or team schedules, as recommended by Anderson (2002). With flexible scheduling, teachers might feel more comfortable planning projects with less-predictable time requirements or spending more time in one subject area on certain days so that students can work on special projects. Administrators can also encourage teachers to commit some regular classroom time to student-directed work, such as through a weekly “Genius Hour.”

Another school structure that many high-scoring teachers described as a support for student creativity in this study was the presence of a schoolwide event or initiative related to student creativity or higher-level thinking. Teachers frequently mentioned the use of enrichment clusters, which are a whole-school structure in which time is dedicated to student-directed creative productivity (Renzulli, Gentry, & Reis, 2004; 2014). Science fairs, markets, and museums are other whole-school or grade-level activities that administrators can promote that may encourage teachers to provide students with the opportunity to be creative. A school theme, such as being a problem-based learning school, an inquiry-based school, or an SEM school, may also encourage teachers to think of their school as supportive of student creativity. Future research should investigate what aspects of having a themed school contribute to teachers’ perceptions of its support for student creativity.

Conclusion

If school leaders want to increase support for student creativity, the results of this study suggest several avenues for reaching that goal. First, based on the finding that mostly reported examples of creative teaching and not teaching for creativity, teachers may need training in creative pedagogy (Beghetto, 2016; Lin, 2011). Second, this study found that teachers who predicted that students would report the greatest opportunities to be creative also wrote about how their schools commit time to providing creative opportunities for everyone. Accordingly, creating a schedule that devotes time to student creativity (Renzulli, Gentry, & Reis, 2004; 2014) and that enables teachers to collaborate (Adams 2013; Anderson, 2002; Edinger, 2008) should help teachers to feel like they have time to support student creativity. Finally, this study found that teachers considered a collaborative professional community to be supportive of student creativity. Administrators should create an encouraging, supportive school culture of creativity for the teachers as well as for the students (Adams, 2013; Beghetto, 2014; Cropley, 1995; Edinger, 2008; Louis & Marks, 1998; Renzulli & Reis, 2014; Selkrig and Keamy, 2017).

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Appendix A

Teacher Survey Items

The following prompts describe different ways a school might support imagination, creativity, and innovation in its students. For each prompt, consider what you consider to be the ideal degree of emphasis as well as what you predict students will report as the degree of emphasis the school places on each.

For each prompt, please answer **HOW OFTEN YOUR SCHOOL SHOULD IDEALLY DO THE FOLLOWING THINGS** and **PREDICT WHAT YOUR STUDENTS WILL SAY ABOUT HOW OFTEN THIS ACTUALLY HAPPENS**:

The following scale is provided:

Never – Rarely – Sometimes – Most of the Time – Almost Always

1. Encourages students to view topics from multiple perspectives
2. Encourages students to come up with their own ideas
3. Encourages students to consider new possibilities
4. Encourages students to develop their own perspectives
5. Encourages students to use their imagination
6. Provides time for students to develop their ideas
7. Provides support for students to develop their ideas into products (or performances)
8. Provides opportunities for students to receive feedback on their ideas
9. Provides opportunities for students to develop their creativity
10. Provides opportunities for creative expression
11. Expects students to submit their work for external critique
12. Expects students to publicly display their work
13. Expects students to submit their work to competitions
14. Expects students to make an impact with their work
15. Expects students to be innovative (i.e., make a contribution with their work).

Open-Response Items:

16. In the box below, describe a product, performance, or service completed by students at your school that is a point of pride. You may describe more than one.
17. In the box below, describe the supports that your school provides for students to develop products, put on performances, or provide services to others.
18. Enter any additional thoughts or comments here.

(table continues)