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Teachers' Perceptions of Students' Creativity Characteristics

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TEACHERS' PERCEPTIONS OF STUDENTS' CREATIVITY CHARACTERISTICS

Teachers' Perceptions of Students' Creativity Characteristics

by

Serap Gurak Ozdemir

An Abstract of a Thesis
in
Creative Studies

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

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State University of New York
Buffalo State
Department of Creative Studies

ABSTRACT

Teachers' perceptions of an ideal student were investigated in terms of their FourSight preferences (i.e. Ideator, Clarifier, Developer, and Implementer). Based on these preferences, 275 teachers who were currently working in Western New York region described their "ideal" student with 66 adjectives of Torrance Ideal Child Checklist. Results showed that for each of FourSight preferences, teachers have a tendency to support characteristics associated with their own preference. More specifically, teachers with a stronger Ideator tendency encouraged the students' Ideator characteristics more compared to Developer and Implementer styles. Teachers with a Clarifier tendency do not seem to favor students' Ideator characteristics as much as those with an Ideator tendency. Significant findings also indicated that teachers with an Ideator tendency tend to define themselves as more creative than those with a Clarifier, Developer, or Implementer tendency. However, surprisingly, teachers who considered themselves as smart tend to encourage the Ideator student characteristics more in their classrooms than those who view themselves as creative. Results underscore the importance of creativity training in educational settings that emphasize cognitive style characteristics.

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Serap Gurak Ozdemir

Dedication

This thesis is dedicated to my 5 months old "baby-to-be".

Thank you for bringing me luck and being with me in this journey.

This is for you

Please remember that you are creative like every child.

And, don't forget that

"Creativity is contagious, pass it on."
Albert Einstein

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Table of Contents

List of Tables

Table

List of Appendices

CHAPTER 1

Introduction

Creativity is one of the most important life skills in this fast changing world in which the future is quite unpredictable (Puccio, Mance, Switalski, & Reali, 2012). Creativity gives individuals the ability to see things from new perspectives, generate novel and useful ideas, raise variety of questions, and come up with solutions to different types of problems (Sternberg & Lubart, 1999). It has, therefore, a critical potential to solve various types of problems such as social, economic, and political (Craft, 1999; 2011).

Everyone is born with creative potential (Guilford, 1967). The power of this potential can be influenced by various environmental factors either positively or negatively. Based on learning theories such as Piaget (1964), Vygotsky (2004), and Dewey (1959), creativity needs to be nurtured by the education system (Kampylis, 2010). Classrooms may not be seen suitable to foster creativity (Plucker, Beghetto, & Dow, 2004). It is because educational systems focuses excessively on critical thinking which allows student to react to knowledge that already exists; however, this approach makes it difficult for students to create new knowledge (Puccio, 2012).

Most educational systems are based on gathering knowledge. In the schools, teachers are forced to follow rigid curricula and deliver information, and students are tested to measure how much information they can retain. This is a constant circle. Knowledge and expertise are beneficial to creativity (Puccio et al., 2012). However, if teachers teach knowledge only, there would be little room for exploratory and inquisitive thinking in the schools and skills related to knowledge generation would stifle. As a consequence, even though Hays, Kornell, and Bjork (2012) emphasized that we retrain more when we first make errors and finish it successfully later, students might not find opportunities to fail and learn from their failures in most current

educational practices. Yet, the future is full of obscurities. It is not possible to determine what problems we will have and what knowledge will be still relevant in the future (Parnes, 1970). Therefore, creativity is an essential life skill to prepare individuals to survive with an uncertain future and creativity should be considered as a fundamental goal of current education system.

Teachers play an important role as a key component of the educational system to foster creativity in the classroom. They are responsible to provide creative learning opportunities for students to be aware of their creative potentials. Such learning opportunities require teachers to be aware of the creative students' characteristics, creative thinking process, creative products, and creative environment. The current study focuses on understanding and recognizing students' creativity characteristics. If teachers want to encourage students to develop their creativity, they need to be able to recognize characteristics that indicate creative personalities to release the students' creative potential (Aljughaiman, 2002).

Teachers should consider each student as a creative individual because all individuals are creative but in different styles (Isaksen & Dorval, 1993). Creativity style could be defined as how individuals prefer to use their creativity (Brinkman, 1999; Isaksen & Dorval, 1993; Selby, Treffinger, Isaksen, & Powers, 1993). Personality differences may explain what creativity styles individuals prefer to recognize their creativity potential (Gold, Rejskind, & Rapagna, 1992). It is important to understand individual differences to determine different creativity styles.

One of the useful creativity models based on the creativity style approach is FourSight (Puccio, 2002a; Puccio, Firestein, Coyle, & Masucci, 2006; Puccio, Wheeler, & Cassandro, 2004; Wheeler, 2001). Alex Osborn and his colleagues developed Creative Problem Solving (CPS) process over the last several decades (Isaksen, & Treffinger, 2004), and FourSight is a recent model based on CPS. This model has four distinct stages: (a) clarification, (b) ideation, (c)

development, and (d) implementation. FourSight identifies which stage or stages of the process a person naturally feels most comfortable (Puccio, 1999, 2002b). FourSight can be used as a practical creativity instrument to get a deeper understanding of relationship between teachers and students.

The relationship between teachers and students is a critical part of education. This relationship affects the students' creativity when teachers meet and interact with students (Selby Shaw, & Houtz, 1993). One way to enhance this relationship is to understand teachers' creativity styles and how these styles impact their approach and treatment creative students. The purpose of current study is to investigate teachers' perception of an ideal student in terms of the teachers' FourSight preferences and how their description of characteristics of an ideal student overlaps with students' creativity characteristics.

Research Questions

This study investigates two research questions, regarding teachers' description of an ideal student in terms of their own FourSight styles (i.e., teachers' preferences with the creative process):

1. What specific traits do teachers encourage in their students terms of their own FourSight styles and how do these behaviors overlap with creativity traits?

2. Do teachers favor students who possess the same characteristics as themselves as determined by FourSight?

Definitions

Creativity. A unique human characteristic that allows individuals to better respond to external changes, such as technological advances and social developments (Puccio, et. al, 2012).

Further, creativity is considered as a cognitive ability to produce something novel and useful (Runco & Jaeger, 2012).

FourSight. A model of creative styles that helps individuals identify the strength of preferences they have for each of these four fundamental stages of the creative process, called Clarifier, Ideator, Developer and Implementer, respectively (Puccio & Grivas, 2002).

Creative Problem Solving (CPS). "A process that provides an organizing framework or system for designing or developing new and useful outcomes. CPS enables individuals and groups to recognize and act on opportunities, respond to challenges, and overcome concerns" (Isaksen, 2005, p. 2).

CHAPTER 2

Literature Review

Creativity in the Classroom

The seminal address of Guilford (1950) was a turning point to recognize the need for creativity in the classroom. He emphasized the importance of nurturing creativity among school-age children and called on researchers to concentrate on creativity as a focal point of their studies. Research and practice on creativity in classroom has gained momentum since Guilford's address and infusing creativity into education has become a major area of study (Beghetto, 2010; Cropley, 2001). Torrance (1962) pioneered the research on the enhancement of creativity in the classroom. He highlighted the importance of teachers' guidance for creative students (Torrance, 1963, 1975; Torrance, & Gupta, 1964). Torrance suggested that both parents and the school must recognize that all children are creative in their own ways, and need to be guided by their teachers and parents to discover their ways of creativity (Torrance, 1962).

Empirical studies conducted over decades provided evidence that creativity can be enhanced. Parnes (1975) conducted a study to investigate the impact of creative problem solving process by using five-step process of fact finding, problem finding, idea finding, solution finding and acceptance finding regarding each participant's goal or objective. He designed different interactive week-long programs consisting of art, fantasy, body awareness, meditation etc. He found that the students were able to expand their imagination through the five-step of creative problem solving process. Another research indicated that there was a relationship between students' creativity with creative dramatics instruction (Schmidt, Goforth, & Drew, 1975). The experimental group of kindergarteners was given thirty-minute sessions of creative dramatics twice a week for eight weeks. There was a significant difference in students' creative thinking

skills by the instrument that was developed by Rotter (1975). Scott, Leritz, and Mumford (2004) conducted a meta-analysis study to investigate the impact of creativity training by reviewing 70 creativity training programs. They found that creativity training enhanced creativity in both organizations and school settings. These studies showed that the classroom can be a suitable environment to nurture creativity.

In spite of large body of research on the development of creativity with training, there is a rampant complaint about how schools shrink students' creativity. Such complaints stem from that assertion that schools are not the best environment to foster creativity because of teachers' biases (Scott, 1999; Westby & Dawson, 1995), traditional classroom settings with many constraints (Furman, 1998), and lack of originality in classroom-based settings (Beghetto, & Kaufman, 2010).

Why cannot schools actually support students' creativity given the large body of research showing that creativity can be taught? This dilemma between what could be done and what actually happens in classrooms need to be explained. Plucker, Beghetto, and Dow (2004) mentioned that there were some widespread issues in education about creativity. One of these issues is teachers' beliefs and perceptions of creativity and creative students.

Beliefs about Creativity

There are a limited number of studies about teachers' beliefs about creativity (Diakidoy & Phtiaka, 2002; Kampylis, 2010). Teachers tend to believe that creativity is a rare trait (Fryer & Collings, 1991). More specifically, teachers tend to associate creativity with gifted students only (Beghetto, 2010; Kampylis, 2010). Although creativity is part of giftedness (Renzulli, 1978), ascribing creativity to giftedness only may lead teachers to underestimate creative potential of

non-gifted students (Esquivel, 1995). This elitist view might prevent creativity from becoming an essential objective of general education.

All students are creative at some level and in their own way (Felder, 1996). Some students can easily learn from verbal materials such as books, whereas others can from visual materials such as pictures and schemas (Pashler, McDaniel, Rohrer & Bjork, 2008). Some prefer to work as a team; others are more comfortable to work individually. In this regard, most classrooms may not be the most favorable place to foster creativity because most typical classrooms fail to embrace such individual differences altogether (Furman, 1998; Plucker et al., 2004). Fortunately, teachers can use techniques that foster creativity their classrooms (Davies et al., 2013; Stein, 1974). "Power of efforts to nurture creativity arise from our ability to help individuals recognize, develop and realize their unique strengths and talents; to learn and to be creatively productive in their own ways, not just in our ways" (Isaksen, Murdock, Firestien & Teffinger, 1993, p. 20). Therefore, teachers need to be aware of characteristics of creative students, and in-class activities that foster creativity (Esquivel, 1995). To provide an environment for creativity in classroom, teachers are responsible to understand creative learning opportunities to help students discover their strengths and weaknesses in the classrooms (Torrance, 1976).

Westby and Dawson (1995) investigated the relationship between teachers' perspective of creative students and creativity characteristics. This investigation comprised two studies. In the first study, college students were asked to create a list of characteristics for a creative 8-year-old-child. Participants of this study were 16 female elementary teachers. Teachers were asked to rate ten most and ten least favorite students based on 20 characteristics as determined by pretest with college students. They expected teachers not to prefer creativity characteristics as favorite characteristics. There was a negative relationship between favorite students' characteristics and

creativity, and a positive relationship between least favorite student characteristics and creativity. The second study examined the discrepancy between the results from the first study and teachers' self-reports about how they promote creativity. Same participants, 16 teachers in first study took part in this study and asked to rate a "creative 8 year-old child" using the same scale in first study to generate a creative prototype. For second study, this prototype was compared with teachers' ratings for most and least favorite student from first study. The findings of second study indicated that ratings of the favorite students were more correlated with teachers' concepts of creativity than the ratings of least favorite students which supports they value creative characteristics according to their definition of creative prototype.

Guncer and Oral (1993) conducted a correlational study with 192 Turkish elementary students to understand teachers' perception of creative students in terms of conformity. Torrance Tests of Creative Thinking (TTCT) was used to evaluate students' creativity. Another instrument was Teacher Perception Scale (TPS), which was used to determine teachers' perception of students' conformity to school discipline. They found that conformity was negatively correlated with creativity based on teachers' rankings of creative students. Teachers described creative students as nonconformist and disruptive. Dawson (1997) also echoed it stating that teachers may view creative students as trouble-makers.

Scott (1999) explored teachers' biases toward creative children by comparing teacher rankings of their students in terms of creativity with those of undergraduate students using Scott Teacher Perception Skill (STPC). The author proposed three hypotheses: (a) creative children are more disruptive than their peers, (b) creative boys are more disruptive than creative girls, and (c) teachers find creative students more disruptive than undergraduate students. One of the findings was that creative students were more disruptive and hard to control in the classroom. There is a

tendency for teachers and college students to rate low-creative girls as more creative than low-creative boys. Additionally, teachers emphasized that these male students were least favorite students in their classrooms.

Additionally, a lot of teachers linked creativity with the arts (Craft, 2003; Fryer, 1996; Kampylis, 2010). This misunderstanding was mentioned as a symptom of *art bias* which means creativity for only individuals with artistic talent (Runco, 2007). Therefore, it can be thought that creativity was inappropriate for core subjects such as science or mathematics (Cropley, 2010). This finding pointed to a gap between the implicit perspectives of teachers and explicit theories of creativity given the current paradigm that suggests embedding creativity in all subject areas and fostering creative learning by all teachers (Kampylis, 2010; Starko, 2014). Previous studies have indicated a discrepancy between teachers' approach to the concept of creativity and their actual behaviors of creative students. Teachers valued creativity in the classrooms, but not students' creative behaviors (Westby & Dawson, 1995; Runco & Johnson, 2002; Scott, 1999).

Aljughaiman and Mowrer-Reynolds (2005) investigated the conflict between teachers' perception of creativity in the classroom and their description of creative students. Seven close-ended and seven open-ended statements were used to understand teachers' beliefs on creativity in the classroom. More than fifty percent of teachers responded that creativity can be taught to anyone and can be improved in the classroom. In their study with 1028 British teachers, Fryer and Collings (1991) reached the same conclusion that creativity can be improved in the regular classroom settings. Aljughaiman and Mowrer-Reynolds (2005) asked teachers to rate characteristics of creative students. Surprisingly, comparing to previous studies, teachers did not rank negative characteristics first such as disruptive, nonconformist. The first five characteristics of creative students were "thinks differently, imaginative, artistic, has rich vocabulary, and

intelligent". "Thinks differently" were ranked as number one of the list top five characteristics. This result matched their most frequently description of creativity which was "original ideas".

Teachers' attitudes influence students' creativity (Torrance & Gupta, 1964). Many studies have demonstrated that teachers tend to hold negative attitudes towards creativity-related behaviors and characteristics (Beghetto & Kaufman, 2010; Fasko, 2001; Runco, 2003; Westby & Dawson, 1995). However, most researchers argued that every person has creative skills, and it is important to educate these skills by providing appropriate opportunities (Cropley, 2001; Kampylis, 2010; Smith, Ward, & Finke, 1995). In this regard, understanding and changing teachers' attitudes on creativity are critical in education.

Unfortunately, most of teachers have limited knowledge about what creativity means in an educational context. Treffinger, Ripple, and Dacey (1968) conducted a study about teachers' attitudes to creativity. They used 14 items survey on teachers and analyzed the data by the use of pre-test and post-test. The result of this study showed that in-service teacher training program about creative problem solving could help teachers understand creativity and develop more positive attitudes to creative problem solving abilities. Although this is a quite old study, teacher's attitude to creativity is still an issue. As study of Simmons and Thompson (2008) indicated that creativity needs to be accepted by teachers as an academic discipline in education. The creativity was a booster to expand students' learning, thus creativity thinking skills need to be taught by the teachers explicitly (Cropley, 2001; Fasko, 2001). In this respect, teachers' influence on their students' learning can vary based on how they perceive creativity in their classrooms. It is also necessary to understand teachers' perception of creativity for providing impactful teacher trainings to foster creativity in education (Diakidoy & Kanari, 1999).

Csikszentmihalyi (1996) emphasized that knowing how to foster creativity in classrooms was important as much as knowing the creative process for teachers of gifted students. Hansen and Feldhusen (1994) conducted a study about training of gifted student teachers. They found that trained teachers had a vision to foster creativity in their classrooms. They also encouraged fluency, flexibility, originality, and elaboration skills among students. Compared to untrained teachers, trained teachers used more open-ended questions and encouraged more risk-taking (Hansen & Feldhusen, 1994). Mohan (1973) also conducted a study on teachers' needs for creativity training with 180 pre-service and 70 in-service teachers. Mohan surveyed this sample to determine their beliefs about creativity courses. His findings indicated (a) 94% of the participants said creativity courses for teachers were a need, (b) 90% would prefer to take a creativity course, (c) 83% believed that teachers who take a creativity course would be more effective on students. Previous studies indicated that knowledge about the creative process was a need for teachers to stimulate creativity in their classrooms.

In sum, teachers may have a stereotypical perception and misconceptions about creativity (Diakidoy, & Kanari, 1999). These perceptions may affect students' creative-hinking abilities (Kampylis, 2010). Studies about teachers' perceptions of creativity are quite limited in literature (Diakidoy & Phtiaka, 2002; Kampylis, 2010; Kampylis, Berki, Saariluoma, 2009). Therefore, it is important to investigate teacher perceptions and how it plays a role in development of students' creative thinking (Kampylis et al., 2009). In order to make this investigation, different creative characteristics have to be understood and determined comprehensively.

Creative Characteristics

Teachers' negative attitudes about creative students can be better understood with a closer glance at specific characteristics reported in the research. Torrance (1961) described the

creative personality traits as highly sensitive, disruptive, and divergent thinker. Other studies added more creative personality traits such as non-conformity, independence in thinking, determination, industriousness, sense of humor, risk-taker, willingness to grow, flexibility, psychoticism, rebellious, curiosity, tolerance of ambiguity, and playfulness (Dettmer, 1981; Kurtzman, 1967; Runco, 2014, Stein, 1962; Torrance, 1963; Westby, & Dawson, 1995).

Some of the characteristics of creative students, tolerance of ambiguity and sense of humor, showed that students who had these creative personality traits paid more attention to detail and independence (Mackinnon, 1965; Selby, Shaw, & Houtz, 2005; Westby, & Dawson, 1995). Harrington, Block, and Block (1987) also stated that creative people were in tendency to be less conforming and more independent and autonomous.

Moreover, Dowd (1989) noted that creative people can more easily adjust to new situation even though there was a stereotype about it. Nabi (1979) stated that creative people usually showed pleasant attitudes toward their daily lives. Cropley (1990) listed some characteristics of the creative personality such as openness, flexibility, autonomy, playfulness, humor, willingness to take risks, and perseverance, and related these characteristics to the healthy personality.

Feist (1998) conducted a meta-analysis study with 26 studies to compare characteristics of nearly 5000 scientists or science-oriented students to nonscientists. The researcher aimed to investigate the connection personality and creative achievement, to demonstrate a conceptual integration of potential psychological system. He used the Big Five model of personality structure which includes: (a) Extraversion, (b) Agreeableness, (c) Conscientiousness, (d) Neuroticism, and (e) Openness. These five factors are related to artistic and scientific creativity. The finding of this meta-analysis of the literature described creative people as more

"autonomous, introverted, open to new experiences, norm- doubting, self-confident, self-accepting, driven, ambitious, dominant, hostile, and impulsive" (p. 299). According this meta-analysis, it is safe to say that creativity personality is existed and its dispositions are linked to express creative individual's ideas and behaviors in society.

In addition to all abovementioned characteristics, the imaginative play is also related to creativity. Getzels and Jackson (1962) investigated the connections between humor and playfulness and children's creativity and found a relationship among them. Graham, Sawyers, and Debord (1989) also supported this relationship in their research. Russ (2003) mentioned that imaginative play encouraged creativity because it was not restricted by the rules and pressures of society. In this respect, play gives opportunities to take risks and encourages novelty and originality.

In most of the current classroom settings, students are educated to fit a particular description of "ideal" student (Murphy, 1984; Torrance, 1963, 1975), and unfortunately, the most of ideal students' traits do not overlap with creative students' traits (Dettmer 1981; Scott, 1999; Torrance, 1963, 1975; Westby & Dawson, 1995).

Teachers consider conformity as one of the most important traits for ideal student (Bachtold, 1974; Kaltsounis, 1978; Torrance, 1965). Conformity was also ranked first on Torrance Ideal Child Checklist by teachers and parents (Torrance, 1963). Accordingly, lack of conformity, which is one of the characteristics of creative individuals, may turn into a challenge for creative students. Most of the creative students were eager to think divergently and demonstrate these characteristics, and divergent thinking and these behaviors were perceived disruptive by teachers (Guncer & Oral, 1993; Scott, 1999; Torrance, 1963). Similarly, Williams, Poole, and Lett (1979) conducted a study on sixth graders to analyze this relationship and found

that these students dignified some qualities such as diligence, obedience, cooperation, and attentiveness. Even though these behaviors were essential for creative students, teachers may easily suppress and marginalize these traits. To this perspective, it is clear that teachers may misunderstand the creativity and creative students in their classrooms (Runco & Johnson, 2002). Therefore, it is crucial to understand how teacher characteristics can impact their perceptions of creative students.

Within the educational system teachers are a critical element. Their perspectives and behaviors highly contribute to student's development in the classroom. Knowing their characteristics would help to understand creative students and encourage creativity in the classroom. Whitlock and Ducette (1989) reviewed the literature and found that effective teachers had enthusiasm, empathy, dedication, flexibility, and imagination. Stein (1974) also noted that teachers who had good relationship skills had an impact on creative students. Additionally, Halpin, Goldernberg, and Halpin (1990) found that more creative teachers saw self-discipline capability for their students. Moreover, McGreevy (1990) surveyed students about their creative teachers and found that creative teachers demonstrate creative characteristics such as a sense of humor, open and accepting ideas, willingness to share, caring their students. On the other hand, less creative teachers tended to demonstrate authority, student control orientation, and impersonal relationship with students. These kinds of different characteristics form teacher-creative student interactions in the classroom. In this regard, knowing how teachers perceive creative students in terms of their creative styles could enhance effectiveness of teaching in the classroom.

Creativity Styles

Everyone is creative but in different ways or styles (Isaksen & Dorval, 1993). Creativity style is defined as the way in which individuals prefer to use their creativity (Brinkman, 1999; Isaksen & Dorval, 1993; Selby, Treffinger, Isaksen, & Powers, 1993). Personality differences may be considered a factor for different creativity styles (Gold, Rejskind, & Rapagna, 1992). Therefore, individuals with similar styles would have similar personality characteristics. It is important to understand individual differences to determine different creativity styles.

One of the well-known approaches to creativity styles Kirton's theory of Adaptation and Innovation. Kirton defined two major creativity styles: adaptor and innovator (Kirton, 1976, 1987). Kirton (1978) argued that both adaptors and innovators can creatively approach and solve a problem. However, there are different preferences and perceptions that distinguish adaptors from innovators in terms of the way they work on the problems, not their abilities (Kirton, 1978, 1980). Adaptors prefer to make improvements within existing frameworks and methods (Kirton, Bailey, & Glendinning, 1991). Kirton (1976) described adaptors as resourceful, efficient, organized, and dependable. In contrast, he defined innovators as original, undependable, and energetic individuals who are not comfortable to work with existing system and structures. Kirton developed Kirton Adaption-Innovation Style Inventory (KAI; Kirton, 1976) based on this theory, which consists of 32 items. Each item has a five-point Likert scale. KAI scores range from 32 to 160. Lower scores below the theoretical mean of 96 reflect Adaptor style and score higher than 96 reflect Innovator style.

Chilton, Hardgrave, and Armstrong (2005) investigated how individuals' cognitive styles affect problem solving performance in their work environment. They administered KAI to 123 software developers. Their findings indicated that a work environment with same conditions is not equally suitable for adaptors and innovators. These results indicated that certain types of

duties and work environments are feasible for certain styles. One of such environments is classrooms, and it consists of students and professionals with different creative styles.

KAI is helpful to understand individual differences among students and teachers to provide better educational environment along the adaption-innovation continuum (Kirton, 1976). Selby, Treffinger, Isaksen, and Powers (1993) studied effectiveness of KAI in describing students' behaviors and wanted to understand how students display their behaviors and how parents and teachers accurately describe their students/children by the use of KAI. Data collected from teachers, parents, and students indicated that students displayed more adaptive behaviors. Additionally, parents viewed slightly more adaptive than students' self-descriptions. They found that parents had an accurate view of their children. On the other hand, teachers were more adaptive than parents, and their results were different than those of students. The result showed that teachers must exercise more caution in their judgements about personalities of their students. Additionally, this difference requires further analysis about teacher styles as they affect students' behaviors.

Pettigrew and King (1993) conducted a study to compare nursing students with non-nursing major student in terms of their cognitive styles by using KAI as an assessment tool. The aim of this study is to examine if nursing students were more adaptor than non-nursing peers in problem solving. The participants were 60 nursing students and 73 non-nursing students. The results indicated the nursing students tended to be more "adaptive" and less "innovative" in problem solving comparing to the non-nursing student group.

Another educational study was conducted by McLead, Clark, Warren, Dietrich (2008). It was a five-year longitudinal study that investigated the relationship between cognitive styles of KAI and the learning curve when applied to new technology information. The participants were

368 paramedics working within the system from 2000 through 2004. In this study, the researchers determined the cognitive styles, individual learning curves, and medical records of participants. The results of this study indicated that, after implementing information technology as an intervention, these styles were different based on pattern of learning, task completion times, and the number of days to reach stable condition. The innovators performed better in completion time when they learn to use new technology information than the adaptors. Puccio, Talbot, and Joniak (1993) also used KAI among undergraduate students to investigate how their preferences interacted with their perceptions of the environment. Stress was determined as a dependent variable to understand relationship between person-environment fit. The findings showed that students considered adaptive behaviors more stressful than innovative behaviors as requirement of a course. Additionally, requirement of conformity caused more stress. In other words, stress was related with difference between what required behaviors for a course and what behaviors students showed in that course.

Other than KAI, another well-known creativity instrument is FourSight formerly named as Buffalo Creative Process Inventory (Puccio, Firestein, Coyle, & Masucci, 2006; Puccio, Wheeler, & Cassandro, 2004; Wheeler, 2001). Alex Osborn and his colleagues developed Creative Problem Solving (CPS) process over the last several decades (Isaksen, & Treffinger, 2004). FourSight is a recent model and instrument built off of the CPS. This model has four distinct stages: clarification, ideation, development, and implementation. The development of FourSight during the 1990s initially focused on assessing individual preferences against the six steps of the CPS process (Isaksen, & Treffinger, 2004; Puccio, 2002a; Puccio & Grivas, 2009). Puccio (2002b) found out that four stages were obtained from the major steps of the CPS after applying factor analysis on the measure. FourSight identifies which stage or stages of the process

a person naturally feels most comfortable and for which he or she expresses greater energy (Puccio, 1999, 2002b).

Stages of the FourSight Model:

1. Clarify: Explore the Vision, Formulate the Challenge

2 .Ideate: Explore Ideas

3. Develop: Formulate Solutions

4. Implement: Explore Acceptance, Formulate Action Plan

FourSight is a self-report measure consists of 36 statements related to the CPS process to determine individuals' creative style in terms of the strength of preference for four stages of creativity process (Puccio, 1999). For each statement, the person assesses statements with a Five point Likert scale ranging from "not like me at all" to "very much like me" (Puccio, 2002a). The scores obtained from each subscale determine the FourSight style (Puccio 2002a, 2002b). People may have one dominant preference or may have a combination of two or more preferences (Puccio 2002a, 2002b; Puccio & Grivas, 2009). Each preference has different characteristics. Puccio (2002b) described the characteristics of each preference.

Clarifiers prefer a clear understanding of the situation. Therefore, Clarifiers dig for more information that can help them understand the situation as detailed as possible. They spend most of their times to understand the challenge. Generally, Clarifiers approach solving a problem by creating steps from the beginning to the ending. Consequently, Clarifiers are known as organized, attentive, and elaborative. Unfortunately, they can be noticed as over-informative, inquisitiveness, and too realistic by others.

Table 1

Characteristics of Clarifiers

Clarifiers are...	Give Clarifiers...	Clarifiers annoy others by...
Focused	Order	Asking too many questions
Methodical	The facts	Pointing out obstacles
Orderly	An understanding of history	Identifying areas that haven't been
Deliberate	Access to information	well thought out
Serious	Permission to ask questions	Overloading people with
Organized		information
		Being too realistic

Note. Adapted from "*FourSight: The breakthrough thinking profile – Presenter's guide and technical Manual*." by Puccio, G.J., 2002, Evanston, IL: THinc Communications.

Ideators tend to use their imagination and take an intuitive approach to ideas and possibilities. Therefore, others may perceive them as playful. Ideators can come up with many ideas for the same situation and these ideas may be seen abstract and irrelevant by others. This trait makes them flexible and productive. However, it also causes to be perceived as inattentive by others. They prefer to look at the big picture. The best work environment for Ideators needs to be independent, playful, and social.

Table 2

Characteristics of Ideators

Ideators are...	Give Ideators...	Ideators annoy others by...
Playful	Room to be playful	Drawing attention to themselves
Imaginative	Constant stimulation	Being impatient when others don't
Social	Variety and change	get their ideas
Adaptable	The big picture	Offering ideas that are too off-the-
Flexible		wall
Adventurous		Being too abstract
Independent		Not sticking to one idea

Note. Adapted from "*FourSight: The breakthrough thinking profile – Presenter's guide and technical Manual.*" by Puccio, G.J., 2002, Evanston, IL: THinc Communications.

Developers go for analyzing potential solutions. They are good at investigating the pluses and minuses of an idea. Developers may get stuck in developing the perfect solution and not being able to implement the solution. Developers tend to work systematically. Therefore, they enjoy making plans and orders. They are perceived as elaborative. For this reason, the time they spend to evaluate possible ideas might be too much.

Table 3

Characteristics of Developers

Developers are...	Give Developers...	Developers annoy others by...
Reflective	Time to consider the options	Being too nit-picky
Cautious	Time to evaluate	Finding flaws in others' ideas
Pragmatic	Time to develop ideas	Getting locked into one approach
Structured		
Planful		

Note. Adapted from "*FourSight: The breakthrough thinking profile – Presenter's guide and technical Manual*." by Puccio, G.J., 2002, Evanston, IL: THinc Communications.

Implementers like to put their ideas in action. Implementers enjoy focusing on workable ideas. However, they may start early to implement. Implementers are persistent and determined. Correspondingly, others may perceive Implementers as pushy.

Table 4

Characteristics of Implementers

Implementers are...	Give Implementers...	Implementers annoy others by...
Persistent	The sense that others are moving	Being too pushy
Decisive	just as quickly	Overselling their ideas
Determined	Control	Readily expressing their frustration
Assertive	Timely responses to their ideas	when others do not move as
Action-oriented		quickly

Note. Adapted from "*FourSight: The breakthrough thinking profile – Presenter's guide and technical Manual.*" by Puccio, G.J., 2002, Evanston, IL: THinc Communications.

Puccio (2002a) reported Cronbach alpha coefficients for internal reliability for each scale as following: (a) Clarifier: 0.78, (b) Ideator: 0.81, (c) Developer: 0.83, and (d) Implementer: 0.81. Another study also reported the following alpha coefficients: (a) Clarifier: 0.79, (b) Ideator: 0.75, (c) Developer: 0.83, and (d) Implementer: 0.86 (Chan, 2004). Both studies used 6.0 version of FourSight. FourSight 6.0 version of internal reliability is considered to be good because they all are higher than .70.

Rife (2001) investigated the concurrent validity of FourSight with the Adjective Checklist (ACL) as the criterion reference. Findings indicated that FourSight scores were significantly related with creativity characteristics from ACL, which is a strong evidence of concurrent validity because all four FourSight scales (Clarifier, Ideator, Developer, and Implementer) represent different aspects of creativity. In another study, Puccio and Grivas (2009) investigated the relationship between FourSight preferences and their personality traits

based on the DISC Personal Profile System. The participants were 137 individuals from different job profile such as supervisors, managers, department heads, and senior administrators who attended the leadership development program. The findings of this study indicated that the Ideator scale related to dominance and steadiness where the Clarifier preference was significantly connected with influence personality traits according to DISC. This finding demonstrated that individuals who had a strong FourSight preference might show similar personality traits. In this respect, this may help to recognize individuals' creativity preferences with their characteristics. Additionally, Wheeler (2001) analyzed the correlation between people's preferences according to FourSight and how much they enjoyed the parts of Creative Problem Solving process. Six of nineteen High Ideators reported 'CPS as a Structured Process' which was the highest number comparing to other three FourSight preferences. The researcher concluded if leaders understand their preferences and the tools and process of CPS, they can make better decisions and increase their effectiveness.

Puccio and Acar (2015) conducted a study with 7280 participants from different professional backgrounds to explore the FourSight preferences in different organizational levels. One of the findings of this study was that individuals who hold a higher level of organizational leadership showed a higher ideator preference and this preference was more dominant in senior positions in private sector than public sector. Additionally, when organizational level increased, a higher implementer tendency was observed. Put together, it seemed that tendency to take action and generating ideas are both more common at higher levels of organizations. The conclusion of this study highlighted that ideators and implementers are critical preferences in the highest level of leadership in organizations.

Mann (2003) used FourSight in education context and focused on educational administrators and teachers from different educational subjects. Mann used investigated creative styles and determined whether there are similarities and differences across and within their subjects. Mann's findings indicated that one half of the teacher participants were "Clarifiers", and one third of teachers were low "Ideators" and low "Implementers". McClean (2004) also used FourSight to determine educators' creative problem solving preferences to understand the relationship with educators' evaluations for the creativity student collages. The findings indicated that Ideator collages were seen much more positively. In other words, the creativity scores correlated at highest level of significance to Ideators' works

Individuals with Attention Deficit Hyperactivity Disorder (ADHD) adults show significantly higher Ideator preferences than Clarifier, Developer or Implementer preferences compared to average non-ADHD population scores (Issa, 2015). Puccio and Grivas (2009) identified Ideator as who "likely to show such traits as willingness to challenge prevailing thought, need for change, and attraction to variety" (p. 247). It explains that Ideator Style characteristics are similar to description of an individual with ADHD.

There are some issues around how nurture and foster creativity in the classroom. One of these issues is teachers' beliefs and perceptions of creativity and creative students. The relationship between teachers and students is a critical part of education. This relationship affects students' creativity when teachers meet and interact with students (Selby et al., 1993). One way to enhance this relationship is to understand teachers' creativity styles and how these styles impact their approach and treatment of creative students. As mentioned above, FourSight was not extensively used in the educational context. In this respect, more studies are needed to understand the relationship between styles of teachers and students' creativity to foster creativity

in the classrooms. Therefore, this present study aims to understand teachers' perception of an ideal student in terms of their FourSight preferences and how their description of ideal students' characteristics overlap with students' creativity characteristics.

CHAPTER 3

Methods and Procedures

Sampling and Participants

In this study, the researcher worked with 275 teachers who are actively and currently working in Western New York region (WNY). Of these teachers, 27% of them were male, and 73% of teachers were female. These teachers were from different grade levels ranges pre-K to high school. Elementary teachers consisted of 40.4% of participants which was the highest participation part of the sample. In addition to this grade, 35% of teachers were in the high school and 20% of them were in the middle school. Their teaching experiences were wide-ranging.

The participants for this study were selected by using convenience sampling (Creswell, 1994). For this process, the researcher requested and secured an approval from the SUNY Buffalo State Internal Review Board (IRB) (see Appendix A for the IRB approval letter). The researcher invited potential participants to volunteer to participate in this study. In order to recruit participants, the researcher used social media, email, as well as personal contacts. The inclusion criterion of the study was that teachers were required to actively and currently work at the schools in WNY region. No restriction was applied on the basis of teaching experience, subjects taught, gender, race, or age.

Procedure

In this study, three paper survey questionnaires were used as research instruments as following: (a) Torrance Ideal Child Checklist (TICC), (b) FourSight, and (c) Demographic Questionnaire (see Appendices B, C, &, D). To prevent social desirability bias, the word creativity was never used on the surveys. The order of questionnaires was as the following: (a)

TICC, (b) FourSight, and (c) demographic questionnaire. It took approximately 20 minutes to complete all three questionnaires. The details of each questionnaire were explained below.

Instruments

FourSight. In this study, the FourSight version 6.1 was used. This self-report instrument included 36 items to assess how individuals approach problems through creative thinking. Each self-descriptive statement is ranged on a 5-point a scale from 'Not Like Me' to 'Very Much Like Me'. The scores of each four FourSight profile range from 9 to 45. This combination of four scores designed to reveal one of the four profiles: (a) Clarifier, (b) Ideator, (c) Developer, and (d) Implementer. These profiles are specified as single high profiles. There are also 2-way, 3-way, and 4-way combination of FourSight profiles. Thus, fifteen profiles in total can be specified with this instrument.

Puccio (2002) investigated the alpha coefficients of FourSight and found a range from .78 to .81 for all four scales. This indicated that strong internal consistency of four FourSight scales. Puccio compared the FourSight with four established measures: (a) the Kirton Adaption Innovation Inventory, (b) the Creative Problem Solving Profile Inventory, (c) the Myers-Briggs Type Indicator, and (d) the Adjective Check List. The researcher found that the validity evidence of FourSight by demonstrating significant correlations with four well-known measures.

Torrance Ideal Child Checklist. Torrance's Ideal Child Checklist (Torrance, 1965; 1970; 1975) is not an instrument to measure creativity, but it is an assessment tool to explore teachers' description of an ideal student (Kaufman, Plucker, & Baer, 2008). It is a 66 adjective checklist that "was developed to provide a criterion of the productive, creative person… [and] has been used extensively in studies involving perceptions of parents, teachers, and children of the ideal pupil" (Paguio, 1983, p. 571).

Torrance (1967) conducted the first large scale validation of the TICC with students and teachers from 10 diverse societies. Students administered The Torrance Test of Creative Thinking (1966) and their teachers administrated the TICC. The correlation coefficient between these sets of ranking was .94. Torrance (1975) conducted another study to examine two test of reliability with 43 students who enrolled a creative thinking class. Students were asked to complete TICC in both the checklist and Q-sort formats. After 8 weeks, they were asked to retake the ICC in the checklist format. Test-retest reliability correlation coefficient was .91. Paguio (1983) carried out a factor analysis of the Ideal Child Checklist that revealed four factors as Factor I-Confident, aggressive, well-adjusted; Factor II-Socially Virtuous; Factor III-Negativistic, Critical; and Factor IV-Creative-Intuitive. Reliability estimate for the total instrument was .83; for each of the four factors, .89, .78, .70, and .39. These studies revealed that the TICC was an appropriate instrument for this study to determine teachers' descriptions of an ideal student.

Demographic Questionnaire. In this study, a demographic questionnaire was created by the researcher to get deeper understanding on characteristics of the population. Characteristics such as gender, year of experience, school name, administrative role, and grade level were used to breakdown the overall survey data into meaningful groups of participants. Additionally, five self-descriptive statements were used in this study. Each statement is ranged for a scale from 1 to 10.

Data Analysis

In this study, internal reliability of the instruments are investigated via Cronbach Alpha. Additionally, Pearson correlation was used to test the association among the variables. The comparisons using TICC-Ideator and TICC-Socially acceptable composite scores based on gender and grade levels were tested via ANCOVA by controlling years of experience and self-perception. Individual TICC characteristics were compared between high and low FourSight groups through independent samples *t*-test. Finally, hierarchical multiple regression analyses were conducted to test the contribution of FourSight scales on TICC-Ideator characteristics and TICC-Socially acceptable characteristics.

CHAPTER 4

Results

Descriptive Statistics and Reliability Analysis

First set of analyses focused on general variable and participant characteristics and scale reliability. Participants rated themselves on different characteristics (i.e., considerate, successful, energetic, smart, and creative) on a 10 point-Likert scale. According to results of this scale, teachers scored themselves highest on considerate ($M = 8.61$) and lowest on creative ($M = 7.9$). Descriptive values for all characteristics along with all major scales and variables used in the present research were provided in Table 5. Internal reliability was found as .76 for this scale. The composite score for those ratings was defined as self-perception.

Then, participants have also taken FourSight. FourSight consisted of 36 items in total with 9 items in each of the four scales (i.e., Clarifier, Ideator, Developer, and Implementer). Internal reliability has been performed for 36 items of FourSight. Items 5, 7, 11, 14, 23, 33, and 35 of FourSight were reverse-coded. Cronbach Alpha was found as .79 for Clarifier scale, .79 for Ideator scale, .81 for Developer scale, and .66 for Implementer scale. Item 36 of FourSight was dropped because this item had a negative item correlation. After dropping item 36, Cronbach Alpha increased from .66 to .76. Based on those composite scores, four scales have been created as Clarifier, Ideator, Developer, and Implementer for the all the study instruments to use in the further analyses.

Table 5

Descriptive Statistics of Torrance Ideal Child Checklist, FourSight, Self-Perception, and

Demographic Questionnaire

Variables	*M*	*SD*
TICC-ID	1.10	.29
TICC-SA	.97	.32
Ideator Total	31.99	6.26
Clarifier Total	33.91	5.62
Developer Total	32.86	6.15
Implementer Total	31.25	4.99
Year of experience	14.11	8.9
Considerate	9.00	1.14
Successful	8.61	1.24
Energetic	8.29	1.50
Smart	8.33	1.19
Creative	7.9	1.72
Self-perception	41.58	7.04

Note: Self-perception is a composite scale of self-rated characteristics including considerate, successful, energetic, smart, and creative.
TICC-ID = Ideator characteristics from Torrance Ideal Child Checklist
TICC-SA = Socially acceptable characteristics from Torrance Ideal Child Checklist

Participants then rated "ideal child characteristics" using Torrance Ideal Child Checklist

(TICC). Before they complete the ratings, two expert reviewers have evaluated the adjectives of

Torrance Ideal Child Checklist (TICC) based on FourSight theory (Puccio, Miller, Thurber, &

Schoen, 2012). TICC adjectives associated with each of FourSight components have been

indicated in Table 6. Expert reviewers have found that 18 TICC items overlapped with Ideator

characteristics including: (a) Adventurous, testing limits, (b) Affectionate, loving, (c) Becoming

preoccupied with tasks, (d) Curious, searching, (e) Energetic, vigorous, (f) Guessing,

hypothesizing, (g) Independent in judgement, (h) Independent in thinking, (i) Intuitive, (j) Liking

to work alone, (k) Never bored, always interested, (l) Regressing occasionally, may be playful,

childlike, (m) Self-assertive, (n) Sense of humor, (o) Socially well-adjusted, (p) Spirited in disagreement, (r) Versatile, well-rounded, (s) Willing to take risks. These 18 Ideator characteristics from Torrance Ideal Child Checklist (TICC-ID) items have been examined in terms of reliability and alpha coefficient was .79.

TICC adjectives associated with Clarifier characteristics were as following: (a) Asking questions about puzzling things, (b) Desirous of excellence, (c) Doing work on time, (d) Domineering, controlling, (e) Fault-finding, objecting, (f) Neat and orderly, (g) Negativistic, resistant, and (i) Thorough. Internal reliability for TICC-Clarifier was .49. The Developer characteristics overlapped with three adjectives of TICC that were as following: (a) Doing work on time, (b) Neat and orderly, and (c) Thorough. Alpha coefficient was found .49 for these three adjectives. The last scale of FourSight, Implementer associated with five TICC adjectives which were (a) Stubborn, obstinate, (b) Self-assertive, (c) Persistent, persevering, (d) Domineering, controlling, and (e) Determined, unflinching. TICC-Implementer alpha coefficient was found as .14.

Only TICC-ID had sufficient internal reliability. Therefore, only TICC-ID will be used in the following analyses. Because of sufficient alpha, a composite scale has been created based on 18 TICC-ID adjectives.

Table 6

Descriptive Statistics of Torrance Ideal Child Checklist (TICC)

Variable	M	SD	Variable	M	SD	Variable	M	SD
(SA)Considerate of others	1.75	.44	(ID)Independent in judgement	1.22	.67	Physically strong	.50	.89
(SA)Courteous, polite	1.61	.52	(ID)Sense of humor	1.21	.52	(SA)Obedient, submissive to authority	.44	.96
Attempting difficult tasks	1.59	.51	Courageous in convictions	1.18	.56	(ID)Liking to work alone	.42	.89
Asking questions about puzzling things	1.58	.50	(ID)Affectionate, loving	1.17	.58	(SA)Popular, well-liked	.39	.89
Healthy	1.56	.58	(ID)Self-assertive	1.15	.58	Emotionally sensitive	.37	.94
Persistent, persevering	1.52	.56	(SA)Remembering well	1.15	.59	(ID)Regressing occasionally	.36	.93
Receptive to ideas of others	1.52	.59	Visionary, idealistic	1.13	.54	(SA)Reserved	.35	.90
(SA)Altruistic, working for good of others	1.51	.53	(SA)Neat and orderly	1.13	.59	Unwilling to accept things on mere say- so	.31	1.02
(ID)Versatile, well-rounded	1.49	.56	(ID)Guessing, hypothesizing	1.12	.66	Talkative	.30	.93
Self-starting, initiating	1.49	.54	Truthful, even when it hurts	1.11	.80	(SA)Quiet, not talkative	.01	.98
Self-confident	1.48	.52	Determined, unflinching	1.10	.68	(SA)Conforming	-.06	1.00
(ID)Independent in thinking	1.47	.54	(ID)Energetic, vigorous	1.09	.61	Haughty and self-satisfied	-.25	.98
(ID)Curious, searching	1.45	.55	(ID)(SA)Never bored, always interested	1.08	.74	(ID)Becoming preoccupied with tasks	-.31	.94
(ID)Willing to take risks	1.42	.55	Willing to accept judgement of authorities	1.04	.65	Timid, shy, bashful	-.38	.86
(SA)Doing work on time	1.42	.54	Industrious, busy	.99	.69	Fault-finding, objecting	-.44	.90
(ID)(SA)Socially well-adjusted	1.41	.52	Preferring complex tasks	.97	.62	Critical of others	-.57	.80
Sincere, earnest	1.41	.56	Adventurous, testing limits	.76	.81	Unsophisticated, artless	-.70	.65
Self-sufficient	1.40	.52	(SA)Refined, free of coarseness	.68	.76	Fearful, apprehensive	-.71	.67
(SA)Desirous of excellence	1.33	.60	Feeling, emotions strongly	.65	.78	Domineering, controlling	-.74	.65
(SA)Thorough	1.30	.58	(ID)Spirited in disagreement	.62	.84	Stubborn, obstinate	-.75	.63
(ID)Intuitive	1.28	.77	Sense of beauty	.55	.92	Disturbing procedures and organization of the group	-.82	.57
Striving for distant goals	1.25	.58	Competitive, trying to win	.55	.85	Negativistic, resistant	-.84	.54

Note: SA= Socially-acceptable characteristics; ID= Ideator characteristics

TICC consisted of many socially desirable and conforming characteristics of students that would allow teachers managing their classrooms without much challenge. These characteristics are (a) Altruistic, working for good of others, (b) Conforming, (c) Considerate of others, (d) Courteous, polite, (e) Desirous of excellence, (f) Doing work on time, (g) Neat and orderly, (h) Never bored, always interested, (i) Obedient, submissive to authority, (j) Popular, well-liked, (k) Quiet, not talkative, (l) Refined, free of coarseness, (m) Remembering well, (n) Reserved, (o) Thorough, and (p) Socially well-adjusted. Internal reliability (Cronbach's alpha) was .73. Another composite variable was created for socially acceptable characteristics from TICC (TICC-SA) to be used in the further analyses

Comparisons

First, a paired-*t* test was conducted to compare teachers' approach to Ideator (TICC-ID) as opposed to socially acceptable (TICC-SA) characteristics. This analysis used the average scale score rather than total because TICC-ID and TICC-SA had different number of items. Results indicated that teachers rated TICC-ID characteristics significantly higher than TICC-SA characteristics [$t(274) = 7.00$, $p < .001$, $\eta^2_p = .15$]. Descriptive values for both scales were provided in Table 5.

TICC-ID and TICC-SA composite scores were compared in terms of gender and grade level. These analyses controlled years of teaching experience and self-perception. The first two-way ANCOVA used TICC-ID as the dependent variable and found no significant differences across gender [$F(1,247) = 1.13$, $p = .29$, $\eta^2_p = .005$], grade level [$F(2,247) = .44$, $p = .65$, $\eta^2_p = .004$], and years of experience [$F(1,247) = .26$, $p = .61$, $\eta^2_p = .001$]. Teacher self-perception was significantly related to TICC-ID [$F(1,247) = 7.75$, $p = .006$, $\eta^2_p = .03$]. Teachers who have more

positive self-perception indicated higher appreciation of the TICC-ID characteristics (r = .168, p = .006).

The second two-way ANCOVA repeated the same analysis with TICC-SA characteristics as the dependent variable. There was no significant difference based on gender [$F(1,247)$ = .29, p = 29, η^2_p= .005], and grade level [$F(2,247)$ = .33, p = .72, η^2_p= .003]. Self-perception [$F(1,247)$ = 1.883, p = .17, η^2_p= .008] and years of experience [$F(1,247)$ = .005, p = .95, η^2_p= .001] were not significantly related.

Final comparative analyses used high versus low scores on Clarifier, Ideator, Developer, and Implementer scales on each of the individual TICC items. To this end, raw scores from the four FourSight scales were converted standardized z scores. Then, z scores larger than 0.5 was defined as high and scores lower than -0.5 was defined as low group for all four scales. High versus low groups were defined as the independent variables and individual TICC items were the dependent variables. Four round of independent t-tests were performed. Means and standard deviation values across high versus low groups were provided in Table 7.

The first round focused on high Clarifier (n = 88) versus low Clarifier (n = 91) groups. As expected, comparison of high and low Clarifiers indicated significant differences in doing work on time ($t(177)$ = -2.16, p = .032, d = .19), feeling emotions strongly ($t(177)$ = -2.04, p = .042, d = .09), refined, free of coarseness ($t(177)$ = -2.81, p = .005, d = .16), remembering well ($t(177)$ = -2.71, p = .032, d = .24), thorough ($t(177)$ = -2.04, p = .043, d = .33), and willing to accept judgment of authorities ($t(177)$ = -2.16, p = .032, d = .66). These analyses indicated that teachers who have a higher Clarifier tendency embraced students characteristics associated with Clarifier style more.

Same analyses were repeated for the high (n = 79) versus low Ideators (n = 78), comparison of high and low Ideator indicated significant differences in courageous in convictions (t(177) = -2.62, p = .010, d = .42), critical of others (t(177) = -2.30, p = .023, d = .37), curious, searching (t(177) = -4.04, p = .000, d = .63), guessing, hypothesizing (t(177) = -2.78, p = .006, d = .45), independent in judgment (t(177) = -1.97, p = .05, d = .31), intuitive (t(177) = -4.35, p = .000, d = .68), unwilling to accept things on mere say- so (t(177) = -3.27, p = .001, d = .52), and visionary, idealistic (t(177) = -3.65, p = .000, d = .59). This showed that teachers who have high Ideator style tend to encourage these students characteristics in their classroom settings. Additionally, this comparison resulted marginally significant differences in altruistic, working for good of others (t(177) = -1.90, p = .058, d = .29), asking questions about puzzling things (t(177) = -1.81, p = .072, d = .30), energetic, vigorous (t(177) = -1.76, p = .079, d = .27), independent in thinking (t(177) = -1.84, p = .067, d = .30), never bored, always interested (t(177) = -1.84, p = .067, d = .30).

Comparison of high (n = 95) and low Developer (n = 93) indicated significant differences in sincere, earnest (t(177) = -2.07, p = .039, d = .32), thorough (t(177) = -2.20, p = .029, d = .33), and willing to accept judgment of authorities (t(177) = -1.99, p = .047, d = .29). It indicated that these student characteristics are encouraged by teachers who have high Developer style.

Then, comparison of high (n = 95) and low Implementer (n = 79) indicated significant differences in considerate of others (t(177) = -2.23, p = .027, d= .26), self-starting, initiating (t(177) = -1.90, p = .039, d = .37), domineering, controlling (t(177) = -2.33, p = .021, d = .30), and truthful, even when it hurts (t(177) = -2.15, p = .032, d= .16). These results showed that

teachers who have high Implementer style are willing to embrace these characteristics in their

classrooms.

Teachers with higher scores across all four styles indicated a stronger support for certain

traits than those with lower scores. For example, industrious, busy was significantly different

among high versus low Clarifier ($t(177) = -2.95$, $p = .004$, $d= .13$), Ideator ($t(155) = -4.13$, $p =$

.000, $d= .64$), Developer ($t(186) = -3.01$, $p = .003$, $d= .44$), and Implementer groups ($t(172) = -$

2.89, $p = .004$, $d= .43$). Likewise, preferring complex tasks was significantly different between

the low and high Clarifier (t(177) = -2.95, p = .004, d= .26), Ideator ($t(155) = -3.41$, $p = .001$, $d=$

.55), Developer ($t(186) = -1.81$, $p = .072$, $d= .26$), and Implementer groups ($t(172) = -2.17$, $p =$

.031 $d= .32$). Lastly, striving for distant goals was significantly different between the high versus

low Clarifier ($t(177) = -3.73$, $p = .000$, $d= .15$), Ideator ($t(155) = -3.00$, $p = .003$, $d= .48$),

Developer ($t(186) = -2.05$, $p = .042$, $d= .31$), and Implementer groups ($t(172) = -2.75$, $p = .007$,

$d= .42$).

There were a few instances in which significant differences were not necessarily

meaningful from the perspective of FourSight such as significantly higher preferences for

energetic, vigorous ($t(177) = -1.78$, $p = .076$, $d= .04$), receptive to ideas of others ($t(177) = -2.08$,

$p = .039$, $d= .05$),visionary, idealistic ($t(177) = -2.57$, $p = .011$, $d= .15$) among Clarifiers;

desirous of excellence ($t(155) = -1.78$, $p = .077$, $d= .29$), healthy ($t(155) = -2.21$, $p = .028$, $d=$

.35) among Ideators; considerate of others ($t(186) = -1.90$, $p = .060$, $d= .26$), receptive to ideas of

others ($t(186) = -3.61$, $p = .000$, $d= .53$) among Developers; desirous of excellence ($t(172) = -$

3.24, $p = .001$, $d= .48$), healthy ($t(172) = -2.12$, $p = .036$, $d= .32$),intuitive ($t(172) = -4.83$, $p =$

.000, $d= .73$), receptive to ideas of others ($t(172) = -2.80$, $p = .006$, $d= .41$), remembering well

Table 7

Individual Item Analysis for each TICC item with FourSight Scales

TICC Items	Clarifier				Ideator				Developer				Implementer			
	High Clarifier		Low Clarifier		High Ideator		Low Ideator		High Developer		Low Developer		High Implementer		Low Implementer	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
1.Adventurous, testing limits	.85	.92	.70	.77	1.00	.77	.56	.82	.86	.85	.68	.78	.89	.78	.67	.76
2.Affectionate, loving	.92	61	.77	.60	1.33	.50	1.14	.62	1.25	.56	1.16	.56	1.23	.61	1.18	.59
3.Altruistic, working for good of others	1.31	.50	1.13	.52	1.59	.49	1.44	.55	1.53	.54	1.52	.52	1.57	.52	1.51	.55
4.Asking questions about puzzling things	.61	.49	.60	.50	1.66	.48	1.51	.53	1.58	.52	1.55	.50	1.58	.50	1.47	.53
5.Attempting difficult tasks	1.53	.48	1.49	54	1.68	.47	1.56	.52	1.62	.51	1.55	.52	1.65	.48	1.54	.50
6.Becoming preoccupied with tasks	.50	.97	.52	.93	-.20	.99	-.26	.93	-.22	.96	-.25	.95	-.33	.95	-.39	.87
7.Competitive, trying to win	1.60	.93	1.57	.82	.58	.93	.54	.82	.66	.85	.46	.87	.54	.91	.53	.86
8.Conforming	.50	1.07	.50	.98	-.18	1.01	-.17	1.00	.00	1.02	-.23	.97	-.14	1.02	-.09	.99
9.Considerate of others	1.65	.40	1.57	.46	1.82	.38	1.70	.49	1.81	.42	1.69	.47	1.82	.39	1.67	.50
10.Courageous in convictions	.48	.52	.54	.55	1.32	.59	1.08	.55	1.25	.50	1.15	.51	1.23	.51	1.18	.53
11.Courteous, polite	-.36	.50	-.25	.49	1.58	.50	1.67	.50	1.63	.48	1.60	.49	1.69	.46	1.58	.50
12.Critical of others	.97	.90	.93	.79	-.32	.97	-.63	.70	-.51	.86	-.60	.78	-.44	.90	-.63	.75
13.Curious, searching	.53	.59	.47	.52	1.63	.49	1.29	.56	1.48	.54	1.38	.53	1.49	.56	1.41	.57
14.Desirous of excellence	.93	.51	.82	.74	1.46	.50	1.29	.63	1.43	.54	1.29	.64	1.44	.50	1.15	.68
15.Determined, unflinching	-.02	.76	-.09	.71	1.13	.79	1.09	.70	1.20	.65	1.05	.68	1.14	.69	1.03	.68
16.Disturbing procedures and organization of the group	1.07	.58	.98	.49	-.85	.53	-.80	.54	-.79	.63	-.88	.41	-.82	.56	-.77	.62
17.Doing work on time	1.81	.50	1.70	.61	1.41	.49	1.38	.59	1.46	.50	1.31	.55	1.43	.56	1.34	.48
18.Domineering, controlling	.40	.67	.46	.68	-.61	.77	-.76	.63	-.68	.70	-.80	.58	-.65	.75	-.87	.40
19.Emotionally sensitive	1.27	.95	1.14	.91	.68	.83	.22	.92	.62	.87	.17	.93	.47	.93	.34	.92
20.Energetic, vigorous	.52	.63	.55	.58	1.16	.65	1.00	.51	1.13	.69	1.05	.52	1.13	.70	1.00	.55
21.Fault-finding, objecting	1.65	.97	1.59	.85	-.27	1.01	-.40	.92	-.42	.95	-.57	.79	-.39	.96	-.44	.87
22.Fearful, apprehensive	.50	.59	.49	.74	-.77	.60	-.71	.67	-.66	.72	-.73	.65	-.74	.62	-.73	.65
23.Feeling, emotions strongly	-.50	.75	-.57	.79	.70	.79	.51	.83	.78	.73	.59	.77	.74	.76	.66	.71

	Clarifier				Ideator				Developer				Implementer			
	High Clarifier		Low Clarifier		High Ideator		Low Ideator		High Developer		Low Developer		High Implementer		Low Implementer	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
24.Guessing, hypothesizing	.90	.70	.79	.58	1.31	.69	1.03	.56	1.16	.71928	1.02	.63	1.16	.70	.94	.69
25.Haughty and self-satisfied	1.53	1.01	1.42	.93	-.30	.99	-.18	1.02	-.19	1.04	-.35	.92	-.13	1.05	-.37	.92
26.Healthy	.59	.52	.52	.56	1.63	.62	1.41	.63	1.55	.66	1.55	.50	1.66	.61	1.48	.50
27.Independent in judgement	1.39	.75	1.25	.60	1.33	.73	1.12	.62	1.22	.73	1.23	.47	1.24	.70	1.18	.59
28.Independent in thinking	.51	.63	.74	.50	1.57	.50	1.42	.50	1.49	.56	1.37	.55	1.52	.50	1.39	.49
29.Industrious, busy	1.13	.57	1.04	.78	1.25	.57	.85	.67	1.15	.50	.87	.73	1.13	.59	.84	.74
30.Intuitive	.76	.50	.71	1.16	1.40	.49	1.08	.45	1.31	.51	1.24	1.12	1.40	.51	1.04	.47
31.Liking to work alone	-.82	.88	-.85	.87	.52	.86	.29	.94	.42	.93	.28	.93	.53	.87	.33	.90
32.Neat and orderly	.58	.63	.49	.55	1.15	.56	1.19	.51	1.13	.61	1.11	.54	1.17	.63	1.14	.47
33.Negativistic, resistant	1.50	.62	1.32	.55	-.80	.61	-.77	.62	-.84	.51	-.86	.46	-.74	.72	-.87	.43
34.Never bored, always interested	.50	.63	.61	.72	1.18	.73	.95	.82	1.13	.64	1.10	.71	1.09	.77	1.01	.76
35.Obedient, submissive to authority	-.73	1.05	-.74	.92	.37	1.01	.42	.99	.52	.98	.38	.93	.49	1.02	.49	.89
36.Persistent, persevering	.67	.57	.68	.54	1.56	.64	1.45	.55	1.52	.56	1.46	.54	1.51	.63	1.48	.50
37.Physically strong	.56	.95	.23	.91	.53	.87	.44	.93	.52	.89	.47	.87	.51	.92	.47	.89
38.Popular, well-liked	.95	.90	.91	.90	.34	.93	.35	.89	.42	.90	.40	.87	.34	.93	.39	.90
39.Preferring complex tasks	1.20	.53	1.04	.67	1.14	.61	.79	.65	1.08	.56	.92	.65	1.07	.59	.87	.63
40.Quiet, not talkative	.63	1.05	.58	.97	-.05	1.02	.03	.98	.03	1.01	-.04	.98	-.05	.99	.05	.97
41.Receptive to ideas of others	-.44	.56	-.47	.56	1.59	.59	1.45	.64	1.63	.51	1.35	.54	1.64	.48	1.41	.63
42.Refined, free of coarseness	.97	.64	.85	.83	.75	.69	.55	.83	.77	.71	.68	.74	.79	.68	.66	.80
43.Regressing occasionally, playful	-.80	.99	-.62	.88	.61	.82	.22	1.00	.35	.97	.35	.92	.48	.91	.30	.97
44.Remembering well	.59	.61	.74	.63	1.19	.51	1.03	.68	1.22	.53	.99	.67	1.22	.55	1.03	.68
45.Reserved	.80	.96	.56	.84	.30	.94	.38	.90	.35	.92	.33	.88	.16	.97	.39	.85
46.Self-assertive	.75	.69	.79	.45	1.10	.74	1.21	.47	1.12	.68	1.16	.42	1.12	.67	1.13	.46
47.Self-confident	1.22	.50	1.08	.50	1.47	.50	1.51	.50	1.49	.50	1.40	.55	1.54	.50	1.46	.50
48.Self-starting, initiating	.70	.55	.58	.54	1.51	.53	1.44	.59	1.54	.54	1.39	.55	1.54	.52	1.38	.56
49.Self-sufficient	-.33	.50	-.27	.48	1.43	.50	1.40	.52	1.37	.57	1.35	.48	1.45	.50	1.30	.49
50.Sense of beauty	1.01	.99	.93	.84	.61	.99	.44	.91	.56	.98	.57	.85	.60	.96	.54	.90

| | Clarifier | | | | Ideator | | | | Developer | | | | Implementer | | | |
| | High Clarifier | | Low Clarifier | | High Ideator | | Low Ideator | | High Developer | | Low Developer | | High Implementer | | Low Implementer | |
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
51.Sense of humor	1.66	.60	1.53	.51	1.25	.65	1.19	.54	1.20	.61	1.19	.49	1.31	.60	1.22	.52
52.Sincere, earnest	.52	.52	.56	.59	1.47	.53	1.40	.59	1.51	.54	1.34	.52	1.48	.52	1.33	.59
53.Socially well-adjusted	1.32	.50	1.2	.53	1.38	.51	1.37	.51	1.38	.51	1.41	.49	1.42	.50	1.46	.50
54.Spirited in disagreement	.75	.89	.60	.80	.80	.77	.56	.89	.72	.81	.65	.76	.67	.89	.59	.79
55.Striving for distant goals	1.51	.52	1.43	.55	1.41	.52	1.13	.63	1.36	.54	1.20	.48	1.38	.53	1.15	.56
56.Stubborn, obstinate	.63	.73	.50	.58	-.61	.79	-.79	.57	-.69	.72	-.78	.57	-.73	.68	-.71	.66
57.Talkative	1.16	.94	.86	.97	.38	.90	.22	1.00	.39	.90	.27	.95	.35	.91	.27	.97
58.Thorough	.57	.58	.78	.66	1.33	.57	1.33	.60	1.39	.57	1.20	.58	1.38	.57	1.19	.58
59.Timid, shy, bashful	1.35	.88	1.25	.80	-.32	.88	1.37	.85	-.36	.89	-.39	.85	-.43	.85	-.42	.84
60.Truthful, even when it hurts	.50	.79	1.16	.86	1.25	.69	1.10	.82	1.09	.83	.97	.51	1.26	.80	1.37	.51
61.Unsophisticated, artless	.51	.66	.40	.68	-.67	.67	-.71	.65	1.49	.72	-.67	.70	-.71	.65	-.62	.72
62.Unwilling to accept things on mere say- so	.88	1.09	.87	.97	.62	.90	.13	.99	.33	.50	.33	.99	.40	.99	.39	1.04
63.Versatile, well-rounded	1.22	.50	1.11	62	1.51	.50	1.46	.66	1.47	.52	1.51	.60	1.48	.52	1.53	.62
64.Visionary, idealistic	.63	.48	.55	.54	1.33	.50	1.00	.62	1.24	.48	1.12	.53	1.22	.55	1.06	.46
65.Willing to accept judgement of authorities	-.82	.64	-.82	.69	1.54	.68	.95	.68	1.15	.60	.97	.63	1.14	.59	.96	.65
66. Willing to take risks	.62	.52	.55	.54	1.05	.50	-.45	.61	-.63	1.03	1.40	.83	1.54	.50	1.00	.80

(t(172) = -2.10, p = .037, d= .30), sincere, earnest (t(172) = -1.83, p = .069, d= .29), thorough

(t172) = -2.17, p = .032, d= .33), visionary, idealistic (t(172) = -2.03, p = .042, d= .31) among

Implementers.

Correlations

Bivariate correlation analyses have been performed to investigate the nature of the

relationship among TICC-ID, TICC-SA, teachers' years of experience, individual self-evaluation

items, self-perception (composite of individual self-evaluation items), and their FourSight scores

on four scales (i.e., Ideator, Clarifier, Developer, and Implementer). As seen on Table 8, TICC-

ID student characteristics are significantly correlated highest with teachers' Ideator scores (r =

.24, p < .01) followed by Developer (r =.12, p = .049) and Implementer (r =.16, p = .008) scores.

The relationship was not significant with Clarifier scores (r = .12, p = .057).

This indicates that teachers with a stronger Ideator tendency encouraged the students'

Ideator characteristics more compared to Developer and Implementer styles. Teachers with a

Clarifier tendency do not seem to embrace Ideator characteristics as much as those with Ideator,

Developer, and Implementer tendency.

TICC-SA student characteristics are significantly correlated with Clarifier(r = .15, p =

0.52), Developer (r =.15, p = .013), and Implementer (r =.13, p = .024) scores but not with

Ideator scores (r = .05, p = .387). Teachers who considered themselves as considerate (r = .12, p

= .042) and successful (r = .15, p = .009) had strongest correlations with TICC-SA student

characteristics. This result indicates that these teachers tend to embrace socially acceptable

student characteristics more in their classroom.

Table 8

Correlations for Teachers' Ratings and Their FourSight Styles

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1.Clarifier												
2. Ideator	.434**											
3.Developer	.761**	.562**										
4.Implementer	.518**	.542**	.623**									
5.TICC-ID	.115	.241**	.119*	.160**								
6. TICC-SA	.154*	.052	.150*	.136*	.468**							
7. Creative	.131*	.525**	.233**	.313**	.107	0.12						
8.Considerate	.215**	.151*	.196**	.193**	.116	.124*	.262**					
9. Smart	.211**	.209**	.206**	.236**	.161**	.037	.348**	.364**				
10. Energetic	.182**	.242**	.177**	.264**	.117	-014	.463**	.340**	.386**			
11. Successful	.245**	.138**	.206**	.285**	.115	.159*	.419**	.438**	.528**	.474**		
12. Self-Perception	.264**	.377**	.282**	.364**	.168**	.078	.742**	.626**	.699**	.759**	.773**	
13. Experience	.022	.038	.049	-.003	.021	.005	.021	-.016	-.066	-.014	0.95	.007

Note: ** $p < .01$ level (2-tailed), * $p < .05$ level (2-tailed).
Self-perception is a composite scale of self-rated characteristics including considerate, successful, energetic, smart, and creative.
TICC-ID = Ideator characteristics from Torrance Ideal Child Checklist
TICC-SA = Socially-acceptable characteristics from Torrance Ideal Child Checklist

Four scores from FourSight were also related to teachers' individual self-evaluation. The strongest correlation was found between the Ideator scores with creativity ($r = .52$, $p < .01$) followed by Implementer ($r = .31$, p< .01), Developer ($r = .23$, $p < .01$), and Clarifier ($r = .13$, $p < .05$) scores. These findings indicate that teachers with an Ideator tendency tend to define themselves as more creative than those with Clarifier, Developer, or Implementer tendency.

Each FourSight scale nearly has the same correlation with smart ($.21 < r < .24$). In addition to this correlation, smart was the only teacher self-rated characteristic that has a positive correlation with TICC-ID ($r = .16$, $p < .01$). Interestingly, correlations with other self-rated characteristics including creativity were not significant (rs < .12, ps = ns). That shows that teachers who rate themselves as smart tend to encourage TICC-ID student characteristics more in their classrooms than those who view themselves as creative. Years of experience is not significantly correlated with any FourSight styles and teacher rating of students' characteristics ($p > .05$).

Predicting Support toward Ideator and Socially Acceptable Characteristics

A two-step hierarchical multiple was conducted with TICC-ID and TICC-SA characteristics as dependent variables respectively. In the first step, the self-perception was entered to control for teachers' ratings about themselves. In the second step, all individual FourSight scales (Clarifier, Ideator, Developer, Implementer) were added to the regression analysis. The regression statistics were reported in Table 9.

The hierarchical multiple regression analysis revealed that self-perception contributed to the regression model for TICC-Ideator ($F_{1, 269} = 7.818$, $p < .05$, $R^2 = .028$). The self-perception accounted for 2.8% of the variation in TICC-Ideator. FourSight scales (i.e., Clarifier, Ideator, Developer, and Implementer) explained a significant amount of variation in TICC-ID

characteristics ($F_{4, 265} = 2.831$, $p < .05$, $R^2 = .068$) even after controlling self-perception. This

indicated that all FourSight scales additively accounted for 4% of the variation in TICC-Ideator.

Among the FourSight scales, the only significant variable was Ideator-total ($\beta = .217$, $p < .05$).

Three other FourSight (i.e., Clarifier, Developer, Implementer) scales were not statically

significant ($p > .05$).

Table 9

Multiple Regression Analyses Predicting TICC-ID and TICC-SA Characteristics

Step	Dependent variables	Predictors	B	SE B	β	t	p
	TICC-ID						
1		Constant	.683	.150		4.541	.000
		Self-perception	.050	.018	.168	2.796	.006
2							
		Constant	.555	.166		3.344	.001
		Self-perception	.025	.019	.084	1.280	.202
		Clarifier Total	.018	.043	.039	.421	.674
		Ideator Total	.090	.032	.217	2.822	.005
		Developer Total	-.035	.044	-.083	-.795	.427
		Implementer Total	.020	.038	.042	.524	.601
	TICC-SA						
1		Constant	.755	.168		4.493	.000
		Self-perception	.025	.020	.078	1.282	.201
2							
		Constant	.559	.187		2.992	.003
		Self-perception	.013	.022	.039	.577	.564
		Clarifier Total	.044	.048	.086	.913	.362
		Ideator Total	-.036	.036	-.079	-1.001	.318
		Developer Total	.033	.050	.071	.671	.503
		Implementer Total	.037	.042	.072	.872	.384

Note: TICC-Ideator = Ideator characteristics in Torrance Ideal Child Checklist
TICC-Socially Acceptable = Socially-acceptable characteristics in Torrance Ideal Child Checklist

The same analyses were repeated for TICC-SA characteristics. This model indicated that neither self-perception ($F_{1, 269} = 1.644$, $p > .05$, $R^2 = .006$) nor FourSight scales ($F_{4, 265} = 1.783$, $p >.05$, $R^2 = .026$) explained a significant variation in TICC-SA characteristics.

CHAPTER 5

Discussion

The relationship between teachers and students plays an important role in education. This relationship affects students' creativity (Selby, Shaw, & Houtz, 1993). One way to improve this relationship is to understand teachers' creativity styles and how these styles impact their approach creative students. This current study aimed to investigate teachers' perception of an ideal student in terms of their FourSight preferences and how their description of ideal students' characteristics overlap with students' creativity characteristics. In this study, the following research questions were investigated: (a) what specific traits do teachers encourage in their students' terms of their FourSight styles and how do these behaviors overlap with creativity traits? and (b) do teachers favor students who possess the same characteristics as themselves as determined by FourSight?

To understand the relationship between each FourSight scale for teachers' preferences and TICC characteristics for teachers' description of ideal students, expert reviewers found 18 TICC characteristics associated with Ideator scale (See Table 7). Only TICC-ID had sufficient internal reliability. Therefore, TICC characteristics associated with Clarifier, Developer, and Implementer scales were not used. In addition to TICC-ID composite variable, expert reviewers determined 16 TICC characteristics as socially acceptable that would be manageable for teachers in their classroom without much challenging (See Table 7).

Second, the researcher compared teachers' rating of TICC-ID and TICC-SA and found that TICC-ID characteristics rated significantly higher than TICC-SA. The researcher also compared those composite variables in terms of gender, grade level, years of experience, and self-perception (composite of individual self-evaluation items) and found that only self-

perception was significantly related with TICC-ID student characteristics. This indicates that teachers who have more positive self-perception show higher encouragement of TICC-ID student characteristics in their classroom. Last comparison was conducted between high versus low scores on FourSight scales and each of TICC characteristics. Comparisons of high and low Clarifiers, Ideators, Developers, and Implementers indicated significant differences in TICC characteristics associated with each of FourSight scales. Teachers who have a higher Clarifier tendency embraced students characteristics associated with Clarifier style more. Teachers who have high Ideator style tend to encourage students characteristics associated with Ideators in their classroom settings. TICC characteristics associated with Developers are encouraged by teachers who have high Developer style. Teachers who have high Implementer style are willing to embrace TICC characteristics associated with Implementers in their classrooms. These findings addressed the second research question of this study which was "do teachers favor students who possess the same strengths as themselves as determined by FourSight?"

Third, the researcher investigated correlations to understand the nature of the relationship among TICC-ID, TICC-SA, teachers' years of experience, individual self-evaluation items, self-perception, and their FourSight scores on four scales (i.e., Ideator, Clarifier, Developer, and Implementer). Correlation between TICC-ID student characteristics and each of FourSight scale indicates that teachers with a stronger Ideator tendency encouraged the students' Ideator characteristics more compared to Developer and Implementer styles. Teachers with a Clarifier tendency do not seem to embrace Ideator characteristics as much as those with Ideator, Developer, and Implementer tendency. As a support of previous result, Ideator teachers do not prefer to embrace TICC-SA student characteristics. As expected, correlation findings indicated that teachers with an Ideator tendency tend to define themselves as more creative than those with

Clarifier, Developer, or Implementer tendency. However, surprisingly, teachers who considered themselves as smart tend to encourage TICC-ID student characteristics more in their classrooms than those who view themselves as creative.

Lastly, the researcher conducted the regression analysis. This analysis revealed that self-perception and FourSight scales explained the students' TICC-ID characteristics, but not for TICC-SA. In this regard, the researcher synthesized the findings in three areas: (a) teacher bias, (b) creativity training, and (c) the evidence of FourSight validity.

Teacher Bias

There are various variables that affect students' academic and personal development, but teachers are one of most crucial factors in the literature. Teachers have a considerable impact on their students' development (Foster, Algozzini, & Ysseldyke, 1980). As teachers intentionally or unintentionally affect their students, it is crucial to understand some of the factors that determine teachers' approach and attitudes toward their students. Once this knowledge is established, it would be possible to explain why some teachers connect better to some students more than others and vice versa. Teacher bias is an important area of research in this regard.

In the literature, gender and racial teacher bias was explored in terms of gender and ethnicity (Farkas, Grobe, Sheehan, & Shuan, 1990; Li, 1999; Podell & Soodak, 1993; Riegle-Crumb & Humphries, 2012; Siegle & Powell, 2004; Stake & Katz, 1982; Zucker & Prieto, 1977). For example, Dee (2007) mentioned that assigning opposite gender in the middle school decreased students' achievement, but Ammermueller and Dolton (2006) found positive gender interactions. The findings of the present study did not find any significant gender differences.

Past research into teacher bias has not investigated such biases in terms of teachers' creativity style characteristics. This research provides important clues about this particular form

of teacher bias showing that teachers who had different cognitive style preferences, as measured

by FourSight, encouraged different student characteristics in their classrooms. Although each

preference supported some common students' characteristics in their classroom, each FourSight

preference encouraged some specific student characteristics (See Chapter 4). More specifically,

teachers with Ideator preferences are more likely to embrace Ideator related characteristics in the

classroom. Additionally, investigating socially acceptable behaviors with FourSight preferences

showed that teachers with Ideator preference don't seem to support socially acceptable

behaviors. Since TICC-Ideator characteristics and TICC socially acceptable characteristics seem

opposite, this finding showed that teachers could support students' characteristics similar to their

preferences even though these characteristics could be not easily manageable in the classroom.

Each preference has a correlation with self-evaluation. But, the strongest relationship was

between Ideator and creativity. This showed that teachers with Ideator preference consider

themselves as more creative than other preferences because Ideator style reflects the most

obvious and traditionally conceptualized aspects of creativity.

In addition to that each preference was related to smart, but smart was the only self-rated

characteristic that has a relationship with TICC-ID. This showed that teachers who think

themselves as smart are more likely to embrace TICC-ID characteristics more in their classrooms

more than teachers who rate themselves as creative. This could be related teachers' implicit

definitions of creativity that are sometimes different from explicit definitions.

Creativity Training

The above findings point to the importance of teacher training for creativity that would

include conceptualizations of creativity and different forms and style of creativity. Teachers who

are more aware of their personal styles and those of their students are more likely to be aware of

their and their students' personal strengths and areas of growth. They can also recognize

potential areas of bias toward some students whose cognitive style preferences are not similar.

Creativity training has an effect on creative abilities. In other words, creativity could be

improved by training (Byrge & Thang, 2015). However, creativity training in an educational

context should go beyond enhancement of creativity and curricular modifications for nurturing

creativity. Teaching and learning entail student-teacher interaction and individual styles play a

significant role in the way such interactions. Once teachers and students know their natural

inclinations and preferences more, they would be better equipped with managing and preventing

conflicts and working with others.

The Reliability and Validity Evidence of FourSight

FourSight is a self-report measure to determine individuals' creative style in terms of the

strength of preference for four stages of creativity process (Puccio, 1999). Puccio (2002a)

reported Cronbach alpha coefficients for internal reliability for each scale as following: (a)

Clarifier: 0.78, (b) Ideator: 0.81, (c) Developer: 0.83, and (d) Implementer: 0.81. Another study

also reported the following alpha coefficients: (a) Clarifier: 0.79, (b) Ideator: 0.75, (c)

Developer: 0.83, and (d) Implementer: 0.86 (Chan, 2004). Both studies used 6.0 version of

FourSight. FourSight 6.0 version of internal reliability is considered to be good because they all

are higher than .70. In this study, the researcher used the 6.1 version of FourSight. The result

reported that Cronbach Alpha was found as .79 for Clarifier scale, .79 for Ideator scale, .81 for

Developer scale, and .66 for Implementer scale. Item 36 of FourSight was dropped because this

item had a negative item correlation. After dropping item 36, Cronbach Alpha increased from .66

to .76. It was clear that FourSight 6.1 was a reliable measure to use in education context. In

addition to the reliability of this measure, this study demonstrated a validity evidence for

FourSight. As expected, Ideator characteristics have been often supported by Ideator teachers. It showed that individual styles also impacted teachers in terms of how they operate in their jobs. It helped us to understand which teachers could be bias for which students. In this perspective, FourSight can successfully explain possible areas of bias for students based on their style. Therefore, it demonstrated a support of validity of FourSight.

Limitations and Implication for Future Research

Although this study was successful in demonstrating the connection between teachers' perceptions about students' characteristics, there are some limitation that future researcher should carefully consider when attempting to replicate or extend this investigation. First, this study was limited because of participant selection. In this study, teachers were only selected in Western New York region. Therefore, a larger sample and replication of this study with a different sample would be helpful for the generalizability of our findings.

In addition to the limitations, this study suggested some implications for future research. First, the findings clearly indicated another type of teacher bias, which was related to teachers' cognitive style. The teacher cognitive style bias explained 7% of students' characteristics in the classroom. Second, the findings clearly demonstrated the need of creativity training. It was clear that if teachers could be aware of their cognitive styles, they could better understand their students' characteristics and design the classroom settings. Future researchers should consider creativity training that focus on individual style preferences for teachers to perform high in the classroom context. Finally, future research may consider using another instrument for creative characteristics. In this study, the researcher used TICC instrument, which allowed construction of Ideator characteristics. Alternate forms that allow exploring other preferences would also be beneficial.

Conclusion

The purpose of this study was to investigate teachers' perception of an ideal student in terms of their FourSight preferences and how their description of ideal students' characteristics overlap with students' creativity characteristics. The findings revealed important results and contributed the literature in a unique way. First of all, this study introduced teacher cognitive styles as another possible source of bias. Additionally, this study showed the importance and need of creativity training in education. Considering the findings of this study, it is important to replicate this study with different creativity instruments in different populations to generalize the findings of this study.

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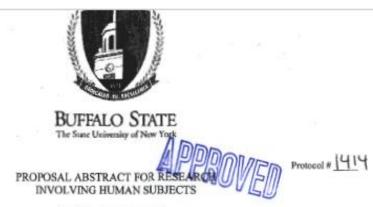
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Appendix A

IRB Approval Letter

BUFFALO STATE

The State University of New York

PROPOSAL ABSTRACT FOR RESEARCH
INVOLVING HUMAN SUBJECTS

APPROVED

Protocol # 1414

Certificate of Exemption

Researcher: Serap Ozdemir	E-mail: ozdemis01@mail.buffalostate.edu
Department: Creative Studies	Telephone No.: 216-767-3461
Faculty Sponsor (for student projects): Dr. Selcuk Acar	
Department: Creative Studies	E-mail: acars@buffalostate.edu

Project Title: The investigation of teachers' perceptions of creative students' characteristics as determined by FourSight

Project Dates: 10/25/2015 to 2/25/2015   Date of Submission: 10/26/2015

Check one: ☑ Thesis ☐ Dissertation ☐ Student Research ☐ Faculty Research ☐ Other _____

Project Funding Source: Not applicable

Research Involving Human Subjects Training Programs

All researchers who are involved in research that involves human subjects at Buffalo State are required to participate in a training program. If you completed human subjects training, please attach your certificate to this form. If you still require training, please refer to the Sponsored Programs Office website:
http://www.rf.buffalostate.edu/research-compliance/human-participants.html

REQUIRED INFORMATION

Please use the following format and place a √ next to each to indicate that the information is complete and attached to this form.

☑ A. PURPOSE, RESEARCH VARIABLES, AND POPULATION

Purpose of the study – State concisely and realistically what the study is intended to accomplish.

Background – Briefly state the background of the study and identify the main question the current study is intended to address.

Characteristics of the Subject Population – The following information should be provided:

IRB 002 – Rev 06/14

Appendix B

Torrance Ideal Child Checklist

Ideal Child Checklist

What kind of person would you like the children you teach to become?
Please describe the kind of person you would like for your pupil to become by using the checklist of characteristics on this sheet.
Indicate your ideas, using the list below:

(1) Check (✓) each of characteristics or behavior that you think is generally desirable and should be encouraged;

(2) Double-check (✓ ✓) the characteristic or behavior that you consider most important and should be especially encouraged above all others.

(3) Draw a line (–) through those characteristics or behavior that you consider undesirable and usually discourage or punish.

1. Adventurous, testing limits
2. Affectionate, loving
3. Altruistic, working for good of others
4. Asking questions about puzzling things
5. Attempting difficult tasks
6. Becoming preoccupied with tasks
7. Competitive, trying to win
8. Conforming
9. Considerate of others
10. Courageous in convictions
11. Courteous, polite
12. Critical of others
13. Curious, searching
14. Desirous of excellence
15. Determined, unflinching
16. Disturbing procedures and organization of the group
17. Doing work on time
18. Domineering, controlling
19. Emotionally sensitive
20. Energetic, vigorous
21. Fault-finding, objecting
22. Fearful, apprehensive
23. Feeling, emotions strongly
24. Guessing, hypothesizing
25. Haughty and self-satisfied
26. Healthy
27. Independent in judgement
28. Independent in thinking
29. Industrious, busy
30. Intuitive
31. Liking to work alone
32. Neat and orderly
33. Negativistic, resistant
34. Never bored, always interested
35. Obedient, submissive to authority
36. Persistent, persevering
37. Physically strong
38. Popular, well-liked
39. Preferring complex tasks
40. Quiet, not talkative
41. Receptive to ideas of others
42. Refined, free of coarseness
43. Regressing occasionally, may be playful, childlike, etc.
44. Remembering well
45. Reserved
46. Self-assertive
47. Self-confident
48. Self-starting, initiating
49. Self-sufficient
50. Sense of beauty
51. Sense of humor
52. Sincere, earnest
53. Socially well-adjusted
54. Spirited in disagreement
55. Striving for distant goals
56. Stubborn, obstinate
57. Talkative
58. Thorough
59. Timid, shy, bashful
60. Truthful, even when it hurts
61. Unsophisticated, artless
62. Unwilling to accept things on mere say-so
63. Versatile, well-rounded
64. Visionary, idealistic
65. Willing to accept judgement of authorities
66. Willing to take risks

Developed by E. Paul Torrance
Georgia Studies of Creative Behavior, College of Education
The University of Georgia
August, 1967

Appendix C

FourSight

Name: **Age:**   **Gender: M / F**   **Occupation:**

Directions: Every day, we all face challenges meet opportunities and solve problems from the simple to the complex: The statements below describe various activities associated with solving problems or dealing with challenges situations. For each statement indicate the extent to which you feel the statement describes you. Don't worry about how effective you are in that activity, just **indicate how descriptive each statement is of you by placing an "x" through on of the dots that follow it.** The response scale ranges from "Not like me at all" to "Very much like me." Remember there are no right or wrong answers, just your opinions about yourself.

Example:

	Not like me at all		Like me		Very much like me
I am a tall person.		x			
I enjoy eating salad.					x

	Not like me at all		Like me		Very much like me
I like testing and revising my ideas before coming up with the final solution or product.					
I like taking the time to clarify the exact nature of the problem.					
I enjoy taking the necessary steps to put my ideas into action.					
I like to break a broad problem apart and examine it from all angles.					
I find it difficult to come up with unusual ideas for solving a problem.					
I like identifying the most relevant facts pertaining to a problem.					
I don't have the temperament to sit back and isolate the specific causes of a problem.					
I enjoy coming up with unique ways of looking at a problem.					
I like to generate all the pluses and minuses of a potential solution.					
Before implementing a solution I like to break it down into steps.					
Transforming ideas into action is not what I enjoy most.					
I like to generate criteria that can be used to identify the best option(s).					
I enjoy spending time looking beyond the initial view of the problem.					
I don't naturally spend much time focusing on defining the exact problem to be solved.					
I like to take in a situation by looking at the big picture.					
I enjoy working on ill-defined, novel problems.					
When working on a problem I like to come up with the best way of stating it.					
I enjoy making things happen.					
I like to focus on creating a precisely stated problem.					
I enjoy stretching my imagination to produce many ideas.					
I like to focus on the key information within a challenging situation.					
I enjoy taking the time to perfect an idea.					
I find it difficult to bring my ideas to fruition.					
I enjoy turning rough ideas into concrete solutions.					
I like to think about all the things I need to do to implement an idea.					
I really enjoy implementing an idea.					
Before moving forward I like to have a clear understanding of the problem.					
I like to work with unique ideas.					
I enjoy putting my ideas into action.					
I like to explore the strengths and weaknesses of a potential solution.					
I enjoy gathering information to identify the root causes of a particular problem.					
I enjoy the analysis and effort it takes to transform a rough concept into a workable idea.					
My natural tendency is not to generate lots and lots of ideas for problems.					
I enjoy using metaphors and analogies to come up with new ideas for problems.					
I have little patience for the effort it takes to refine or polish an idea.					
I tend to look for a quick solution and then fly with it.					

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Appendix D

Demographic Questionnaire

1. School Name:

2. Gender:

3. Administrative role (Past and Current):

4. Grade Level:

5. Year of experience:

6. What grades have you taught so far?

7. Please rate yourself. (Indicate how descriptive each statement is of you by circling a number.)

	Not like me at all				Like me				Very much like me
I am considerate.	1	2	3	4	5	6	7	8	9	10
I am smart.	1	2	3	4	5	6	7	8	9	10
I am energetic.	1	2	3	4	5	6	7	8	9	10
I am creative.	1	2	3	4	5	6	7	8	9	10
I am successful.	1	2	3	4	5	6	7	8	9	10