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**Understanding The Role of a Regional Magnet School in Creative Identity Development of  
Ethnically and Culturally Diverse Adolescents: A Case Study**

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of  
Philosophy at Virginia Commonwealth University.

by

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## **Abstract**

### **UNDERSTANDING THE ROLE OF A REGIONAL MAGNET SCHOOL IN CREATIVE IDENTITY DEVELOPMENT OF ETHNICALLY AND CULTURALLY DIVERSE ADOLESCENTS: A CASE STUDY**

By Preeti S. Kamat

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2023.

Director: Sharon Zumbrunn, Ph. D., Associate Professor,  
Department of Foundations of Education, School of Education

The purpose of this dissertation exploratory case study was to examine the creativity-supportive practices at an innovative regional magnet school shaping Ethnically & Culturally Diverse (ECD) students' creative identity development as perceived by different stakeholders including ECD students enrolled in the first three cohorts, teachers, and school administrators of RichTech Regional Magnet High School [RRMHS] (pseudonym). This single qualitative case study employed a small component of a quantitative survey, the results of which guided in part the design of interview protocols and sampling procedures for recruiting qualitative participants. Using a pragmatic research lens, I obtained and analyzed the diverse qualitative data including interviews with ECD students, teachers, and school administrators, open-ended qualitative survey responses, my field notes, and reflective memos. The findings of this dissertation study demonstrated that the creative identity development of ECD students can be supported in the context of an innovative regional magnet high school in three ways: (a) through facilitation of creative learning opportunities encompassing open-endedness and flexibility, non-linear synergy, student-centered future orientation as well as productive interactions of diverse perspectives; (b) through augmenting unique strengths of an innovative regional magnet school entailing limited size of student enrollment, intentional design of integrated diverse learning environment, as well as formulation of an innovative curricular and pedagogical model; and (c) through the promotion



of teacher autonomy, the sustainable rapport between teachers and school administrators, development of sound beliefs by teachers and school administrators about student creativity as well as through leveraging teachers' prior practical experiences of teaching ECD adolescent students. These key findings, recommendations, and implications for practice and future research are discussed in the light of the limitations of the present study. With the dearth of literature on the role of unique learning environments such as an innovative magnet school in promoting ECD adolescents creativity, this study is a small first attempt to better understand the magnet school-based salient opportunities for and experiences of ECD students' creative identity development.

*Keywords:* creative identity development, support for student creativity, creative self-beliefs, creativity-fostering opportunities, ethnically & culturally diverse adolescents, high-school students, an innovative regional magnet high-school, qualitative case study, exploratory case study, model of creative learning

## **Chapter 1. Introduction**

“When learning is purposeful, creativity blossoms. When creativity blossoms, thinking emanates. When thinking emanates, knowledge is fully lit” (Kalam A. A. P. J., July 29, 2005, p. 1). Dr. A. P. J. Abdul Kalam, the 11<sup>th</sup> President of India, who also happened to be a scientist, gave these guiding words in one of his speeches addressing the adolescent student community in India. While these inspiring thoughts of the world-renowned ‘Missile Man of India’ came from a developing country, they were mirrored years later in the “Creativity in Learning Report, 2019” of Gallup Inc. in the U.S. (Gallup, 2019), which found that creativity-focused learning leads not only to greater creativity skills, but also to positive K-12 student learning outcomes that are crucial for their progress in career and life (Gallup, 2019). While these findings signify creativity in learning as an educational imperative, they also bring forth several important yet understudied questions: How can creativity-focused learning be promoted for a growing community of ethnically and culturally diverse (ECD) adolescent students? In what ways do students view their development as creative learners? The present study seeks to provide insights on these key questions.

### **ECD Students’ Perspectives on Creative Identity Development**

Nikki Adeli, an example of a young creative, is an Iranian American policy analyst who was a former student of Science Leadership Academy (SLA) magnet high school and served as the Youth Commissioner to the mayor of Philadelphia at the age of 17. Ms. Adeli described her creative trajectory during a recent TEDx talk:

I know that as an SLA student as a teenager in Philadelphia, I come from a very diverse city... We want to be prepared to make our mark in this world and if you realize what [our SLA peer group] have all done -- we've done all these magnificent projects in our

community and none of it involved a number two pencil or scantron. All it took was a little bit of belief and a little bit of time and that's one of the two of the biggest things that I have gotten from SLA that I truly appreciate. [Nikki Adeli in her TEDx Talk] (TEDx, 2014)

Ms. Adeli further explained how her teachers' support and opportunities through her magnet school inspired her to pursue creative ideas and projects. Although Ms. Adeli's perspective of her creative trajectory has been acclaimed globally, the perspectives of millions of adolescents about their experiences and opportunities related to developing their creativity remain unheard of. Listening to student voices to better understand their experiences is especially important in the student-centric field of education, as such efforts have the potential to help educational policymakers, school districts, schools, and teachers improve educational practices (Withers, 2009; Brandon et al., 2021; Beghetto, 2021).

Ms. Adeli's TEDx talk signifies two additional important aspects of the students' creativity. First, people's creative abilities and their self-beliefs about those creative abilities are powerful drivers of their creative thoughts, actions, and achievements (Beghetto, 2006; Karwowski & Barbot, 2016; Karwowski & Beghetto, 2019). Next, adolescents' creative self-beliefs (CSBs) are important components of their creative identity and can be shaped by their experiences and interactions with others across different social environments (Beghetto 2006, 2019; Karwowski & Barbot, 2016; van der Zanden et al., 2020). A large volume of research indicates that a variety of factors may influence people's CSBs including (a) their prior creative performances in various social roles in different contexts, (b) the creative affordances derived from their social interactions (e.g., their perceptions of either facing obstacles hindering their creative expressions or gaining necessary social support for their creative activities in those

contexts), and (c) their experiences of influencing their social environment through their creative behavior (Beghetto, 2013, 2019, 2020a, 2021a, 2021b, 2021c; Beghetto & Dilley, 2016; Beghetto & Karwowski, 2017; Csikszentmihalyi, 1988, 1996; Glăveanu et al., 2020; Karwowski & Beghetto, 2019). To promote student creativity, it is essential to understand the experiences that shape students' CSBs across different social settings.

Whereas creativity scholars point to the need to explore the ways that multicultural social contexts influence the development of CSBs (Lubart et al., 2019), academic motivation scholars highlight the need to study the motivational processes and social experiences of ECD students (Kumar et al., 2018; Nolen, 2020; Usher, 2018). Further, much of the creativity research to date has been Eurocentric focusing on white students of European descent (Kaufman, 2006). As ECD students might interpret their social experiences in different ways (DeCuir-Gunby & Williams-Johnson, 2014; Gray et al., 2018; Yosso, 2005), research is needed to understand how ECD students' experiences and social interactions manifest and contribute to their creative identity development.

Understanding how adolescents from different ethnicities and cultures perceive and experience the development of their creative identity could help schools and teachers determine thoughtful strategies to nurture the creativity of their ECD adolescent students. The present study therefore has two primary goals. The first goal of the present study was to explore ECD adolescents' creative identity encompassing their CSBs in the context of a regional magnet high school. The second goal of the present study was to understand the experiences and social interactions that shape ECD adolescent students' CSBs within immediate social contexts (e.g., school, family, community).

### ***Defining Creativity***

As the field of creativity research has evolved to become transdisciplinary, there is no universal consensus on the conceptualization of creativity in the realms of scholarly research. The present study uses one of the comprehensive definitions of creativity developed by Plucker et al., (2004): “Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptual product that is both novel and useful as defined within a social context” (p. 90). This definition of creativity emphasizes the social context as an essential condition for creativity across various domains (e.g., mathematics, language, science) and environments (e.g., classrooms, schools, family, and community).

### ***Importance of Creativity as an Educational Goal***

Based on the widespread and positive impact of creativity, it is viewed as a crucial skill set in confronting various challenges in the society of the 21st century (Association of American Colleges and Universities, & National Leadership Council, 2007; UNESCO, 2006). The 2018 Future of Jobs Report recognized creativity as amongst the top ten most demanded skills in the future workforce and society (World Economic Forum Centre for the New Economy and Society, 2018). Consequently, there have been calls for schools and universities to educate students about creativity (Organisation for Economic Co-operation and Development, 2013). Cultivating students’ creative abilities is a valuable, yet unrealized challenge for the American educational system (Beghetto & Kaufman, 2014), as approximately 16 million adolescents are currently pursuing high school programs in diploma-granting secondary institutions in the U.S. (National Center for Educational Statistics [NCES], 2019). Developing adolescents’ creative identity comprising their creative self-beliefs could be an important pathway for building their creative competence (Beghetto, 2021c). Taken together, these trends underscore the urgency of

understanding the development of CSBs in adolescent students to ensure they are prepared for creative success within and beyond their future careers.

### ***Creativity-fostering Affordances and Practices in K-12 Education***

Considering the significant empowering role of creativity in students' academic and career trajectory, several reviews have explored factors that foster the development of creativity in K-12 education (Davies et al., 2013; van der Zanden et al., 2020; Willerson & Mullet, 2017). In one recent review, Willerson & Mullet (2017) explored international K-12 school-based practices and learning environments fostering student creativity. Their analysis revealed that adolescent creativity is an understudied topic as compared to that of younger student age groups, especially in the U.S. Specifically, they found that studies investigating adolescent creativity at the high school level were primarily quantitative in nature and most ignored factors related to creativity-fostering learning environments, teaching practices, and the impact thereof on the students' creativity.

In another review of adolescent creativity, van der Zanden et al. (2020) examined the factors enhancing or hindering adolescent creativity using international samples during 2010-2019. Although they found only five studies focusing on adolescent creativity in the U.S., overall analyses revealed three main moderators of adolescent creativity: (a) individual factors, including demographic and personal attributes, and beliefs; (b) parental factors, including parental support and involvement; and (c) educational factors, including the degree of balance between autonomy support and structure in instructional practices, the quality of teacher-student relationships, and the efficiency of using learning resources. Although creativity during adolescence is likely to entail social-emotional processes and co-cognitive factors such as CSBs, few studies have addressed these factors to date (van der Zanden et al., 2020). As such, there is a

need for researchers to consider social-contextual and social-emotional factors (e.g., CSBs) influencing adolescent creativity using dynamic and complex research designs such as qualitative case study or mixed methods.

### ***A Demographic Shift in the U.S.***

While developing adolescents' creativity has been recognized as a prominent educational goal in the U.S. educational system, it is a particularly important goal for the rapidly growing ECD student community in K-12 educational context. There have been massive racial/ethnic demographic shifts in the composition of students attending K-12 schools across the country. According to the annual report on The Condition of Education (May 2020), the percentage of European-American students reduced from 61% to 48% of the total K-12 public school student population and the percentage of students of color who come from ethnic minority student population increased from 39% to 52% during the period between 2000 and 2017 (Hussar et al., 2020). As a result, an increasing proportion of high school student populations is composed of racial/ethnic minority children (NCES, 2019). To promote student creative identity development and success in K-12 school settings, it is necessary to address the distinct academic, social, and cultural needs of this multicultural and multi-ethnic student population (Beghetto and Yoon, 2021; Glăveanu & Beghetto, 2017).

### ***Distinct Characteristics of ECD Youth and Gaps in Creativity Research***

It is important to consider the ways in which social contexts of ECD learners are favorable to the development of creative identity (Glăveanu & Tanggaard, 2014). However, developing the creative identity of ECD youth might look different from the European American youth that is widely studied in creativity research (Gajda, 2019). Findings from several studies demonstrated that different cultures conceptualize, and express creativity differently based on

their ways of being and knowing (Chua et al., 2015; Hofstede, 2001; Shane, 1992; Shane et al., 1995; Taras et al., 2010). For example, members of historically marginalized ECD adolescent student populations often share distinct characteristics such as collectivist orientations, preference for social interdependence, unique cultural assets, and resources gained from their family, friends, community, and heritage (DeCuir-Gunby & Williams-Johnson, 2014; Fong et al., 2019; Sablan, 2019).

Cultural and linguistic diversity can enhance people's creativity (Basset-Jones, 2005; Blomberg et al., 2017; Glăveanu, 2020; Hoever et al., 2012; Leikin, 2013; Ricciardelli, 1992). Glăveanu (2020) specifically argued that when people encounter phenomena from different cultures, languages, and perspectives in a diverse social setting, they often experience dissonance, ambiguity, and/or uncertainty. Finding opportunities within these social contexts that are autonomy-supportive, culturally sensitive, and responsive to their psychosocial needs can stimulate their courage, curiosity, empathy, and openness to difference (OtD) in their environment (Glăveanu & Beghetto, 2017). Uncertainty—when embraced with courage, curiosity, empathy, and OtD—can lead ECD learners to constructively challenge their own beliefs, knowledge, and perspectives, and create new meaning (Glăveanu, 2020; Glăveanu et al., 2019; Glăveanu & Beghetto, 2021). The resulting transformation in students' perspectives is a key mechanism that drives their creative learning processes by rendering new possibilities for their creative actions (Beghetto, 2020a; Glăveanu et al., 2019, Glăveanu, 2020).

Creativity research has yet to acknowledge and fully explore the role of diverse ethnic, cultural, and social contexts in developing ECD students' creative identity. This research gap signifies the need to understand how ECD adolescent students perceive the ways in which their social contexts motivate them for and contribute to their creative identity development. In



particular, it is important to understand what socio-cultural resources, interactions and influences those adolescent students say matter the most for their creative identity development.

### ***Magnet Schools***

Magnet schools have been considered champions of ethnic and cultural diversity and school integration in K-12 education, providing equitable, inclusive, and innovative academic opportunities to the ECD student population in the U.S. (Siegel-Hawley et al., 2019). These schools not only enroll ECD students across the boundaries of the school districts but also provide students with opportunities to make progress through innovative academic programs (Siegel-Hawley et al., 2019). Programs within magnet schools are usually designed based on specific thematic pedagogical models such as STEM, arts, or governance. These theme-based and innovative public schools are also settings that foster student diversity as well as students' competencies and skills.

A magnet high school specifically admitting ECD students and emphasizing student creativity as a key learning outcome faces a unique set of pedagogical challenges in its learning environment (Siegel-Hawley, 2020). Fostering ECD students' creativity and CSBs in such an intentionally diverse school setting requires intentional, focused, efforts to integrate and sustain culturally inclusive, responsive, and creativity-supportive instructional practices to address the psychosocial needs of ECD adolescent students (Mullet et al., 2016; Van der Zanden et al., 2020; Willerson & Mullet, 2017). A magnet school such as this presents the ideal setting for a study examining ECD student CSBs.

Determining the set of effective instructional practices for fostering ECD adolescent students' creativity and particularly their CSBs in the context of a regional magnet school remains an ongoing challenge. When other racial challenges faced by ECD adolescents in a

society are combined with the growing prominence of creativity as an educational goal in their school settings, it specifically underscores the need to study and understand ECD adolescents' experiences as well as perspectives about how their creative identity development is/can be fostered in their school environment. A large volume of research suggests that integrated schools such as magnet schools support ECD students' robust deep learning and development of 21st century-skills (including creativity) by promoting multi-ethnic, multicultural, diversity, and broadening equitable access to learning opportunities for them (Mickelson & Nkomo, 2012, Wells et al., 2016). While the literature indicates various factors including adolescents' individual differences, characteristics of their social context, and their social interactions with those immediate environments influencing their CSBs and creative identity development, little is known about how ECD adolescent students shape their creative identity in the context of a regional magnet high school.

### **Purpose of the Study**

The purpose of the proposed dissertation research study was to examine the creativity-supportive practices at an innovative regional magnet school shaping Ethnically and Culturally Diverse (ECD) students' creative identity development as perceived by different stakeholders including ECD students enrolled in the first three cohorts, teachers, and school administrators of RichTech Regional Magnet High School [RRMHS] (pseudonym). This qualitative exploratory single case study employed a small component of a quantitative survey, the results of which guided in part the design of interview protocols and sampling procedures for recruiting qualitative participants. Subsequent qualitative data collection and analysis explained the quantitative results by studying the selected participants' experiences in depth (Tashakkori & Teddlie, 2008). There was no consensus in the research literature regarding the ways in which

factors of social context such as a regional magnet high school may contribute to ECD adolescents' creative identity development. Therefore, I drew on the participants' voices regarding their views and experiences. The design chosen for this work will help me to draw a comprehensive picture of particular social and motivational processes that shape the creative identity of ECD adolescent students in the context of a magnet school environment.

### **Research Questions**

The present case study aims to bridge the gap in the educational psychology research on creativity development by exploring and understanding perspectives of key stakeholders including ethnically and culturally diverse (ECD) students, teachers, and school administrators of a regional magnet school about how the school-based supportive practices and opportunities shape the creative identity development of ECD adolescents in the context of a regional magnet high school setting. To address this aim, I examined the following three research questions:

1. How do ECD adolescent students perceive their creative identity and support for creativity in a regional magnet high school?
2. In what ways do ECD adolescent students describe their experiences of creative identity development in the context of a regional magnet high school?
  - a. What experiences at their school do ECD adolescent students perceive as helpful in developing their creative self-beliefs and identity?
  - b. How do ECD adolescent students describe the ways in which their classroom experiences and interactions in the regional magnet high school setting shape their motivation for and the development of their creative identity?

3. In what ways do teachers and administrators at the regional magnet high school describe their views about and their practices for fostering the creative self-beliefs/ creative identity of their ECD adolescent students in the regional magnet high school setting?
  - a. What practices and interactions at their school, teachers and administrators perceive as helpful in developing creative self-beliefs and identity of ECD adolescent students?
  - b. How do teachers and administrators describe the ways in which their classroom practices and interactions in the regional magnet high school setting shape their ECD adolescent students' motivation for and the development of their creative identity?

### **Significance of the Study**

With the limited research on the role of social context such as an innovative magnet school in promoting ECD adolescents creativity, this exploratory qualitative single case study is a small first attempt to better understand the magnet school-based salient opportunities for and experiences of ECD students' creative identity development. The present dissertation study extends the understanding regarding the perceived role of a magnet school context in the creative identity development of ECD adolescents enrolled in the RRMHS, an innovative regional magnet high school. By doing so, this case study offers to lend some insights into heretofore understudied topic of ECD students' creative identity development. It may help the participants' school to revisit and redesign their curricular model to promote ECD student creativity. It may also help RRMHS teachers and school administrators facilitate the supportive learning environment necessary for fostering healthy creative identity development of their ECD adolescent students. Additionally, the present study may contribute to creativity research by

illustrating ways to develop creative identities of ECD adolescents. Beside informing the future learning environment of RRMHS, this study also seeks to advance creativity research in education by implementing an unconventional qualitative case study research design incorporating a research dialogue between diverse perspectives of ECD students, teachers, and school administration of a regional magnet high school as well as through employing a granular analytical approach where results of a small quantitative survey component informed the qualitative interviews. Finally, this study seeks to contribute to understanding theoretical underpinnings of the salient qualities of creative learning opportunities relevant to ECD adolescent students creative identity development in the unique context of a regional magnet high school. The following chapters review the literature regarding creative identity development of ECD adolescents, describe the conceptual framework and the methodology used in this study. Subsequently, the key findings, recommendations, and implications for practice and future research are discussed in the light of the limitations of the present study.

## **Definitions of Key Terms**

### ***Blended Learning***

Christensen et al., (2013) defined blended learning as follows:

Blended learning is a formal education program in which a student learns: at least in part through online learning, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home; and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience. (p. 7).

### ***Creativity***

The present study uses the definition of creativity developed by Plucker et al., (2004): “Creativity is the interaction among *aptitude, process, and environment* by which an individual or group produces a *perceptible product* that is both *novel* and *useful* as defined within a *social context*” (p. 90).

### ***Creative Learning***

“*Creative learning* refers to the interrelated processes of developing new and personally meaningful understandings of academic subject matter, and how young people’s personally meaningful understandings can contribute to the learning and lives of others.” (Beghetto & Yoon, 2021, p. 2).

### ***Creative Self-Beliefs (CSBs)***

Creative self-beliefs can be defined as “a constellation of beliefs” (Beghetto, 2021c, p. 5) that people hold about their creative capacities (Beghetto & Karwowski, 2017; Karwowski & Barbot, 2016). Extant creativity research highlights that an individual’s sense of being creative and their social contexts play profound roles in predicting their creative behavior including creative thoughts and actions in many ways. First, a person’s sense of being creative, which can be considered as their sense of creative identity, particularly entails the development of their creative self-beliefs (Karwowski & Beghetto, 2019; Karwowski & Barbot, 2016). On one hand, people’s creative self-beliefs have been demonstrated to work as mechanisms helping them transform their creative potential into their creative performance. On the other hand, people’s creative self-beliefs have been shown to develop through several motivational processes and creative experiences.

### ***Creative Self-efficacy (CSE)***

*Creative self-efficacy* has been defined as the individual's belief that one is able to perform or act creatively on a particular task (Jaussi, et al., 2007, Tierney & Farmer, 2002).

### ***Creative Personal Identity (CPI)***

*Creative personal identity* refers to “personally identifying with creativity as an important part of one's own identity and viewing creative activity as a worthwhile endeavor” (Karwowski & Beghetto, 2019, p. 403).

### ***Creative Role Identity***

*Creative role identity* refers to the extent to which creativity is incorporated into a role self-identity of people in a particular social context (Farmer et al., 2003)

### ***Ethnicity***

Ethnicity can be defined as a construct that “allows individuals to identify (or be identified) with a group of people who share a common language, history, nation/region of origin, religion, names, physical appearance, and/or ancestry” (Kumar et al., 2019, p. 88).

### ***Ethnically and Culturally Diverse (ECD) Adolescent Students***

Ethnically and culturally diverse (ECD) adolescent students are students who are in the adolescent age group of 10 to 19 years and are members of different ethnic and cultural groups. The present study focuses on ECD adolescents who are 14-19 years old, are members of the first three cohorts enrolled in, and graduated recently from an interdistrict or regional magnet high school.

### ***Identity***

*Identity* refers to the self-representational system of an individual's identity that comprises their self-perceptions; self-beliefs about their own abilities and core personal values; their psychological needs, goals, and aspirations; their outcome expectations for various courses

of action to fulfill those needs, goals, and aspirations; the subjective value committed to them; and their perceptions regarding the environmental affordances that can be availed through their perceived opportunity structures situated in a particular context (Bandura, 2008; Eccles & Wigfield, 2020).

### ***Identity Development***

*Identity development* can be conceptualized as a process whereby a person endeavors to define their own sense of self including their self-beliefs, values, and perceptions of interconnectedness with significant others in their social context (Osborne & Jones, 2011, Schachter & Rich, 2011).

### ***Interdistrict or Regional Magnet High Schools***

Interdistrict magnet high schools or regional magnet high schools are the categories of public high schools established under a federal Magnet School Assistance Program (MSAP) grant award that explicitly enroll students from different school districts to learn together in magnet school settings (Connecticut State Department of Education, 2021).



## **Chapter 2. Literature Review**

The present study aims to advance creativity research by exploring ECD adolescents' perceptions and experiences about the contributions of their social contexts in developing their creative identity. The following literature review includes a discussion on creativity, identity and related theoretical constructs, identity development of adolescents, creative identity development of ECD adolescents given ecological considerations of their social contexts, the theoretical considerations, the conceptual framework for the proposed study, empirical research on ECD adolescents' creative identity, and identified gaps in the literature. This chapter concludes with the methodological considerations of the present study.

### **Creativity and Related Theoretical Constructs**

There is no universal consensus on the conceptualization of creativity in the realm of scholarly research. The present study uses the definition of creativity developed by Plucker et al., (2004): "Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptual product that is both novel and useful as defined within a social context" (p. 90).

### ***Creativity & Identity***

Research on creativity and identity has been mostly undertaken not only in the field of psychology but also in the fields of sociology, anthropology, and management. Although the creativity research and identity research has been interdisciplinary, the terminology, and the language used in every field has been different and particular to that field which restricted the scope of researchers from other fields in expanding the understanding of the related constructs. Acknowledging these differences and the interdisciplinary nature of the research on creativity and identity, scholars have also called for future studies on creativity, identity, and related

constructs to incorporate this interdisciplinarity in research (Glăveanu, Hanson, et al., 2020; Hennessey & Amabile, 2010, Kaplan & Garner, 2017).

Given the proposed study's focus on identity development and creativity in adolescence, I begin with a summary of the key constructs and frameworks in the following section based on my understanding of the available interdisciplinary literature in identity, and *creativity* research.

### ***Identity Development of Adolescents***

Identity development can be conceptualized as a process whereby a person endeavors to define their sense of self including their self-beliefs, values, and perceptions of interconnectedness with significant others in their social context (Osborne & Jones, 2011, Schachter & Rich, 2011). Eric Erikson (1963, 1980) is known for his theoretical work on identity and its development. He presented the developmental model of an individual's psychosocial identity comprising the eight stages. He is considered to be the first scholar who posited the theoretical trajectory of how changes and development in one's identity take place at different stages of one's lifetime (Kroger, 2007; Waterman, 1982). Although the detailed discussion on each stage of identity development is beyond the scope of this study, the fifth stage encompassing the issues of identity versus identity confusion during adolescence is particularly relevant to the present study. This is the stage during which adolescents explore possibilities of enacting different social roles, and start explicitly recognizing their strengths, weaknesses, skills, interests, beliefs, and attitudes to discover their future sense of self (Albert, 1990). Along the way, they try to figure out their special likings and their unique assets by interacting with significant others in their social contexts. Such explorations could also lead them to accomplish certain creative endeavors making them aware of their creative identity including their CSBs and creative competencies. Hence, the identity exploration or moratorium stage (Marcia, 1994) of the

adolescent period is crucial for people's identity development and therefore, is particularly important to the research aims of the present study.

In the discipline of educational psychology, a volume of scholarly research has investigated and advocated the role of identity in catalyzing adolescents' motivation and competence (e.g., Eccles, 2009; Faircloth, 2012; Kaplan & Flum, 2012). This emphasis on studying identity development during adolescence is because of the importance of this developmental stage for increasing the span of an individual's identity that may have long-term implications for their academic outcomes, a career as well as overall well-being outcomes (Barber, Eccles & Stone, 2001). Adolescence is the period during which the youth begin to manage activities and think critically about who they are and where they belong in the world. This is also the period during which they tend to form many social relationships and participate in multiple social contexts (e.g., family, school, friend circles, community, workplaces) in various roles. In and across these social contexts, they experience different values, norms, and expectations. It is through the identification or deidentification/disassociation of those social values, norms, and expectations, adolescents tend to change their values, beliefs, and behavior (Taubman – Ben-Ari, 2004). Thus, adolescents' perceptions about how they fit into their social contexts also become part of their identity (Matthews et al., 2014).

A large volume of multicultural educational psychology research on ethnic minority adolescent population highlights that the profound role of social interdependence in identity development is particularly evident in the ethnic minority adolescent population (Accapadi, 2012; Fong et al., 2019; Ibrahim et al., 1997; Iwamoto et al., 2013; Kodama et al., 2002; Matthews et al., 2014). Extant research on identity development also demonstrated that an individual identity is constructed by interacting with the psycho-social development mechanisms

prevalent in a particular culture (Erikson, 1980; Markus & Kitayama, 1991). This suggests that the study of ECD adolescent identity would require examination of the multiple dimensions of their identity—personal (e.g., personal self-beliefs, values, interests) as well as social (e.g., social interconnectedness, commitments)—to understand the process of their identity development. This is in line with the conceptualization of identity as a multi-faceted construct postulated by Ashmore et al. (2004) and Eccles (2009).

### ***Creative Identity Development during Adolescence***

The proposed study focuses on examining the ways the ECD adolescent students perceive that creativity has become an integral part of their identity as a whole. Adolescence has been considered a crucial period for creative identity development for the following two reasons. First, during this period adolescents experience rapid developmental changes in their physiological, neurological, meta-cognitive, and psycho-social systems which makes them more active and agentic in their lives. Second, adolescents also tend to develop their creative identities by participating in various creative activities, by experimenting with the materials, roles, and affordances available to them and perceived by them in various settings (Moran, 2015, Glăveanu, 2017, 2020; Glăveanu & Tanggaard, 2014). During their social, material, and cultural interactions, they gain various emotional, social, relational, cognitive, and metacognitive experiences that help them develop their autonomous motivation, interests, and aspirations in specific creative activities. These creative experiences and interests also support adolescents in internalizing the value of creative processes and skills involved in creative activities (Beghetto & Dilley, 2016). Along the way, their creative pursuits also help them develop competence beliefs, self-efficacy beliefs, implicit beliefs, meta-cognitive beliefs, and contextual knowledge concerning creativity that constitute their creative identities. Thus, adolescents' creative

identities can be considered emergent and developmental by nature. When adolescents attribute creativity as an important part of their overall definition of themselves, it is considered their “creative personal identity” (Jaussi et al., 2007, p. 248). People’s identity, creativity, and academic learning develop interactively thereby supporting each other’s development during adolescence (Barbot & Heuser, 2017; Gajda et al. 2017). Beghetto (2021c) defined creative identity development as “the crystallization of creative interests and aspirations into more stable beliefs about one’s broader creative identity and sense of creative self” (p. 2).

### ***Self-beliefs and Identity Development***

Beliefs are conceptualized as the enduring thoughts and perceptions that individuals hold about themselves, their environment, and about the different roles they play in it. These personal beliefs evolve to be a part of an individual’s self-system over some time and are considered to develop through interaction with the environment and through membership in various social groups (Usher, 2018). The self-system shapes adolescents’ sense of self or identity over some time. The way adolescents perceive themselves, in turn, influences the way they make judgments about themselves and their environment as well as their choices and quality of action in a particular context (Eccles, 2009, Usher, 2018). Thus, adolescents’ self-beliefs about a particular competency are crucial in understanding the development of their sense of self or identity.

### ***Creative Self-beliefs (CSBs)***

Creativity scholars have identified and empirically validated three overarching creative self-beliefs (CSBs) as primary constituents of people’s creative identity and hence I examined them as indicators of the ECD adolescent creative identity in the present study. Based on their distinct nature and scope, these self-beliefs have been organized into three distinct categories: Creative confidence (CC) beliefs, creative self-awareness (CSA) beliefs, and creative self-image

(CSI) beliefs. Anchored in the agentic perspective of the social cognitive theoretical (SCT) framework (Bandura, 2008), the creative identity of an individual is represented by these three primary CSBs held by that person (Beghetto, 2021c, Karwowski et al., 2019). Theoretically, CC belief is an overarching construct encompassing an individual's creative self-efficacy (CSE) beliefs and their creative self-concept (CSC) beliefs whereas CSA beliefs are comprised of two distinct self-beliefs- creative mindset (CM) and creative metacognition (CMC). Creative self-image (CSI) beliefs constitute the creative personal identity (CPI) beliefs held by an individual. These CPI beliefs are consistent with the CPI conceptualized by Jaussi et al. (2007).

CSE is defined as the individual's belief that one can perform or act creatively on a particular task (Jaussi, et al., 2007, Tierney and Farmer, 2002). Research on CSE demonstrated that it is a strong predictor of peoples' creative performance (Beghetto, 2006; Beghetto & Karwowski, 2017; Karwowski & Beghetto, 2019). For example, Beghetto (2006) conducted a research study to explore the correlates of CSE of middle school and high school students. Findings from this study illustrated that students' perceptions about support from their teachers predicted their CSE beliefs. These findings suggest that students' CSBs can be developed through their social interactions with supportive others in their social contexts.

The second primary self-belief under CC beliefs is the construct of CSC beliefs, a domain-general, retrospective judgment that people make about their creative ability and performance in a particular context. CSC beliefs are more stable than CSE beliefs which can vary across domains and tasks. Beghetto and Dilley (2016) found that CSC is less malleable than other CSBs and it can be developed through adolescents' self-reflections on specific creative activities as well as through social and developmental experiences.

The CSI belief has been operationalized as CPI and is aligned with the attainment value in the Situated Expectancy Value Theory (SEVT) of achievement motivation (Eccles & Wigfield, 2020). SEVT posits that one's attainment value of certain tasks plays a prominent role in their personal identity. There exists a bi-directional reciprocal relationship between CSE and CPI (Karwowski, 2016). However, the empirical research demonstrated that CPI explains variance in creative performance above and beyond CSE (Jaussi et al., 2007). CPI has also been recognized as a moderating or mediating variable between people's personal creative attributes, social factors, and creative performance (Wang & Zhu, 2011). In a series of three research studies, Karwowski & Beghetto (2019) found that CPI moderated the relationship between creative potential and creative performance, suggesting that adolescents can transform their creative potential into creative behavior only if they feel that creativity is important for themselves.

Creative self-awareness (CSA) beliefs are beliefs about peoples' creative strengths, weaknesses, and the overall nature of creative abilities (Karwowski et al., 2019). They can be disintegrated into two specific CSBs: Creative mindset (CM) and creative metacognition (CMC). These CSBs work in conjunction with the CC beliefs to shape an individual's creative actions. The CSA beliefs help people assess whether their efforts are sufficient to accomplish creative activities and regulate those efforts through metacognition. Specifically, CM beliefs represent the beliefs one holds about the nature of creativity (e.g., stable, or incremental creativity), fixedness, and/or malleability of creative abilities (Karwowski, 2014). Malleable CM beliefs are theoretically close to growth mindset beliefs (Dweck, 1999). The growing empirical research on CM beliefs demonstrates that people with fixed CM have lower creative confidence (Karwowski, 2014) and lower creative achievement (Puente-Diaz & Cavazos-Arroyo, 2017) whereas people

with growth CM have been found to have greater confidence in their creative abilities and positive creative self-image (Hass et al., 2016; Karwowski, 2014; O'Connor et al., 2013; Pretz & Nelson, 2017). Findings from Gajda's (2019) cross-cultural study indicated that young/emerging adults from different cultures are likely to perceive CM beliefs and their association with their self-perceptions of creative abilities in different ways which are yet to be investigated.

Findings across several studies have demonstrated that CSBs are malleable and influenced by an individual's intra-psychological factors (e.g., prior experiences, personality traits, emotions, motivational orientation) as well as by interactions with significant others in their social contexts (e.g., family, teachers, peers, community) (Anderson et al., 2020; Karwowski & Barbot, 2016; Karwowski & Lebuda, 2016, Karwowski et al., 2015). Taken together, research to date suggests that three overarching self-beliefs are a nested constellation of several interrelated CSBs. These three overarching CSBs (CC beliefs, CSA beliefs, and CPI beliefs) are important components of the creative identity of adolescents, and they can be developed through interactions between individuals and the affordances of their social environment (Beghetto, 2021c; Lebuda & Csikszentmihalyi, 2019, 2020). Understanding the development of ECD adolescents' CSE, CSC, CPI, and CM beliefs is of particular interest to the proposed study.

### **Theoretical Framework**

According to the principles of the social-cognitive theoretical (SCT) perspective, people's thoughts, beliefs, feelings, and actions are determined by the interaction between their personal, behavioral, and environmental aspects (Bandura, 1986, 1999, 2008). One of the fundamental tenets of the SCT is in the form of the model of triadic reciprocal determination (Bandura, 1999), which illustrates the mutual interactions between intrapersonal factors,



behavioral processes, and environmental influences of an individual. According to this model, reciprocal relationships exist between people's attributes (including cognitive abilities, and affective self-beliefs), their behavior, and their environment (social contexts), which may include the interactions students have with teachers, peers, family, and community members. These three aspects tend to influence one another through bi-directional interactions.

SCT (Bandura, 1986) has also accorded an agentic perspective to the study of people's psychosocial identity. According to this perspective, people's actions are situated in the social contexts, and they are manifested subject to their interpretations of the circumstances. Bandura (2008) posited that a person exerts their agentic sense of self to pursue various goals and purposes and perceives different sets of competencies as relevant for different contexts. As such, one's personal identity can be conceptualized as an agentic "self-representational system operating through their self-regulating processes" (Bandura, 2008, p. 21). This self-representational system of an individual's identity comprises their self-perceptions, self-beliefs about their abilities and core personal values; their psychological needs, goals, and aspirations; their outcome expectations for various courses of action to fulfill those needs, goals, and aspirations; the subjective value committed to them; and their perceptions regarding the environmental affordances that can be availed through their perceived opportunity structures situated in a particular context (Bandura, 2008). These components of one's identity interact with environmental experiences and agentic behavior during the process of identity development (Bandura, 2008).

### ***Bridging Creative Identity with Social Contexts***

Creativity researchers have long recognized that creative performance is a social process (Amabile 1988; Csikzentmihalyi, 1988). On the one hand, creative self-beliefs such as CSE and

CPI are believed to be the individual factors that play a prominent role in developing creative abilities. On the other hand, the interpersonal, social, and ecological factors existing in one's social contexts such as the learning environment, at work and/or at home, and in the community are also considered to influence the creativity of a person.

The agentic creative behavior of an individual is possible only by their co-construction of and interactions with the material, cultural, and social aspects of their world. Consistent with SCT (Bandura, 2008), the process of developing CSBs also entails interactional, relational, and motivational experiences involving perspective transformation during the creative learning process (Beghetto, 2020a; Glăveanu et al., 2020). People develop their personal and social identities through the continuous process of self-assessment and redefining their perspectives subject to their prior social experiences and their contextual and situational inferences co-constructed in interactions with various people through their multiple social roles over some time (Eccles, 2009). For example, an adolescent could be motivated to create something new and meaningful, when they assess and perceive their competencies, self-beliefs, and values coinciding with the opportunities and affordances available in that context as conducive to their creative behavior.

How the aforementioned self-assessment could take place is subject to one's perceived level of creative magnitude. One's creative magnitude ranges from the smallest level of mini-C creativity to the greatest big-C level as conceptualized in Kaufman and Beghetto's (2009) Four C model of creativity. At the mini-C level (Kaufman & Beghetto, 2009), an adolescent could come up with a way that is new and personally meaningful for themselves. At that level of personal creative magnitude, they might make contextual comparisons with the standards marked by their prior creative performance but would not necessarily make a social comparison. However, a

social comparison could be a part of their reflective process once they want to move forward from the mini-C level (Beghetto, 2019). To appraise their contextual perceptions about their creative abilities and to tap their other psychosocial competencies—such as empathy, resiliency, and communication skills—that are central to creative behavior, they could also reflect on their perceptions of their current environmental interactions as well as historical accounts of prior experiences attached to various sociocultural contexts and their perceptions about similar or related prior social encounters in those various social contexts (Bandura, 2008, 2018).

Additionally, this model takes into account not only a person's creative identity negotiations through various social interactions while playing various social roles but also the societal discourses in which they participate proactively to construct shared meanings and perspectives of their creative actions in a particular context. For example, a young girl who is an Indigenous high-school student is an athlete, participates in a STEM club, enjoys making fabric crafts, and often volunteers to participate in a local community service center might hold various social identities in different contexts. If her creative pursuit of making fabric craft gets positive validation from significant others such as her friends, teacher, or her family, and siblings, then she might further develop the confidence and the value for making such crafts as her intrinsic creative interest that might help her internalize her creative personal identity in making fabric craft. As a STEM club member, she might take up a project of making cost-effective, washable, hygienic fabric face masks for her science exhibit. Aligned with her indigenous identity, she might also perceive a sense of interconnectedness and reciprocity toward her indigenous community (Fong et al., 2019). Consequently, she is likely to come up with another creative idea of organizing a virtual craft and mask sale fundraiser event for helping the COVID-19-infected patients in their community or for creating a public awareness campaign regarding the COVID-

19 vaccine by collaborating with her friends at the local community center. All this could be possible for her by drawing on multiple perspectives from her multiple experiences interacting with multiple social contexts and combining them simultaneously as necessary to fulfill her goals for creative actions in a particular social context. Along the way, she might also develop her creative identity by appraising her creative aspirations, creative performance, and creative competencies against the standards set by her while progressing from mini-C to Little-C in her social world. Thus, it highlights that an individual's creative identity takes shape in interaction with their social contexts. As such, the socio-cognitive theoretical perspective coupled with ecological considerations representing ECD learners concerning their interdependent network of relationships could help articulate the agentic ways in which the creative identity of a person is evolved by interacting with their social, and cultural contexts.

Creativity has been considered a subjective experience that depends upon how it is interpreted and evaluated at a particular time and in a particular social context (De Dreu & Nijstad, 2017). However, research focusing on an in-depth articulation and examination of the role of social contexts in adolescent creativity has been comparatively sparse. Understanding the development of adolescent creative identity requires the examination of multiple complex and dynamic interactive experiences involved in that process. To this end, this work draws on the model of creative learning (Beghetto, 2016, 2020a) focusing on the reconceptualization of the socio-dynamic development of a learner's creativity as being “embodied, relational and developmental” (Glăveanu, 2020, p. 2).

### ***Theoretical Model of Creative Learning (Beghetto, 2016, 2020)***

Beghetto's (2016) Model of Creative Learning (MCL) serves as a theoretical foundation for the proposed dissertation study. MCL is a socio-cognitive theoretical framework of creativity

grounded in a sociocultural perspective (Beghetto, 2019; Glăveanu et al., 2019). This model of creative learning (CL; Beghetto, 2016; 2020a) aligns well with the concept of the dynamic interplay between novelty, utility, and social context described in the definition of creativity (Plucker et al., 2004). CL refers to “the interrelated processes of developing new and personally meaningful understandings of the academic subject matter and how young people’s personally meaningful understandings can contribute to their learning and lives of others” (Beghetto & Yoon, 2021, p. 2). This model articulates that student creativity and learning emerge in conjunction with each other. This model views a learner as situated within the nested levels of individual, social, cultural, and historical contexts, and proposes that students’ intentions to express their creativity in learning are shaped by their CSBs, which result from their academic, social, and cultural experiences in their learning environment. Experiences that provide positive affordances (supports) for creativity may lead to the development of CSBs, which in turn fosters student creative expression. Conversely, experiences that provide negative affordances (obstacles) for creativity may hinder the development of CSBs, which prevents student creative expression. Here, it is noteworthy that adolescents’ experiences of developing CSBs are relational (Glăveanu, 2020, van Der Zanden et al., 2020). These experiences do not exist within an individual or an environment independently. Rather, they entail interactions between an individual and their environmental factors. According to Beghetto’s (2016, 2020a) model, these interactional experiences are situated in *intra-psychological* (individual), *inter-psychological* (social), and *cultural-historical* contexts. Creative identity in the form of a constellation of CSBs plays a dual role in this model. On the one hand, it emerges as an outcome of CL and on the other hand, it drives the process of CL further, across the levels of contexts. These CL processes can be particularly instrumental for the creative identity development of ECD adolescent

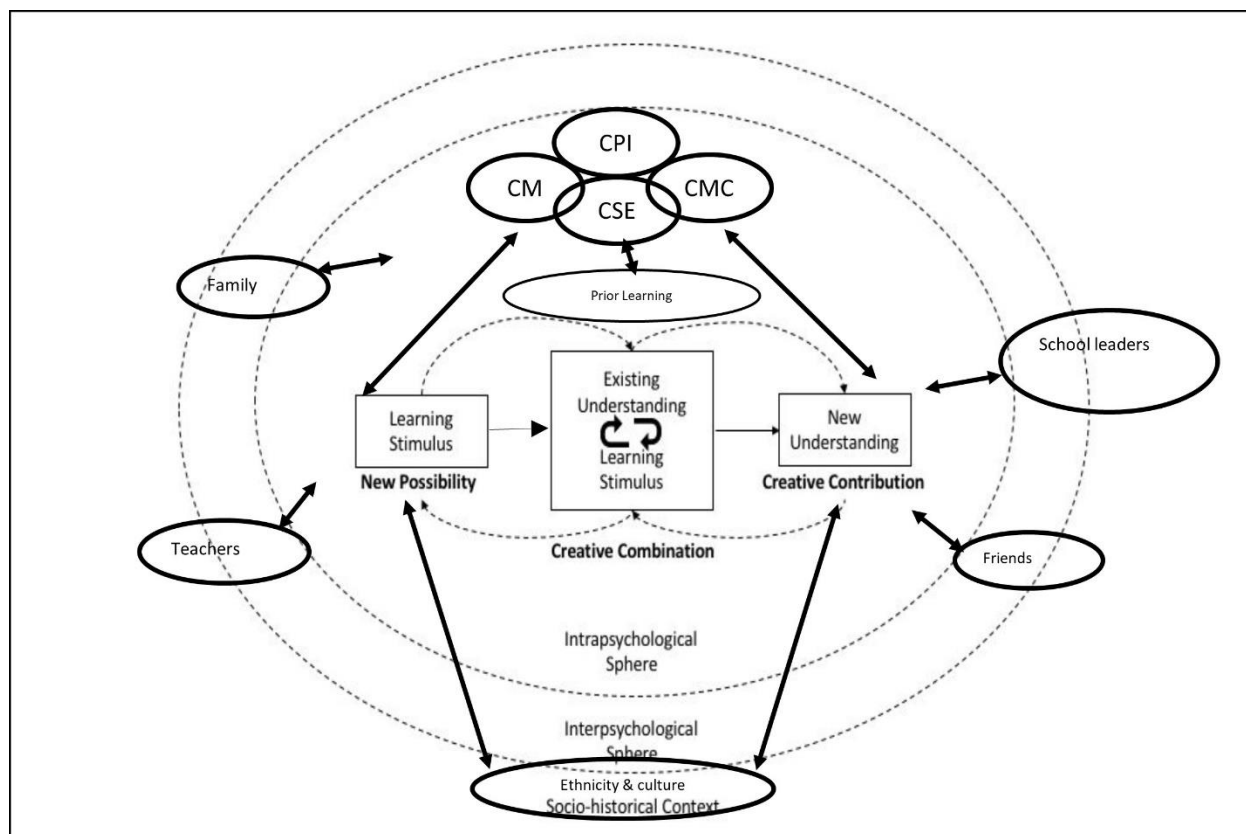
students learning in a multicultural setting such as a regional magnet school (Beghetto & Yoon, 2021). This model has been further discussed in detail in the next section.

### **Conceptual Framework**

The present dissertation study is based on an integrative conceptual framework wherein the social-cognitive model of CL (Beghetto, 2016) is situated in the sociocultural-historical theoretical perspective. This framework assumes that both learning, and creativity are interdependent, contextualized phenomena shaped by a complex mix of cognitive, psychological, social, emotional, and dynamic interactive processes nested in different contexts. These different levels of context are represented by the permeable ovals embedded in each other denoted by the dotted boundaries in Figure 1. Specifically, it indicates that an individual student influences their sociocultural contexts whereas the social-cultural, and historical contexts also shape the creative learning trajectory of that student (Beghetto & Schuh, 2020; Schuh, 2017). This theoretical assumption is consistent with the implications of extant educational research that all the learners construct knowledge and develop their creativity actively based on their experiences of and interactions with environmental factors (including relationships, and learning opportunities) in the social contexts (Darling-Hammond et al., 2020; Langer, 1997). The school is an integral part of adolescent learners' social contexts. Hence, the school became the social context of interest to this research. The conceptual framework based on Beghetto's (2016, 2021) model of creative learning was particularly helpful to this exploratory qualitative single case study in exploring and understanding the role of an innovative regional magnet school in fostering creative identity development of its ECD students. The following section describes the conceptual framework in more detail.

**Figure 1**

*Conceptual Framework of Creative Identity Development in the Model of Creative Learning*  
(Beghetto 2016, 2021)



The conceptual framework specifically denotes two phases of creative learning: Creativity-in-learning and learning-in-creativity. Creativity-in-learning takes place at the mini-C level of a student's creativity (Beghetto, 2016). Mini-C level of creativity involves creating personally meaningful expressions, insights, or interpretations that an individual has created and recognized by themselves as subjectively novel in the context of learning, at work, or in other domains of human life (Kaufman & Beghetto, 2009). In this phase, a student is exposed to a variety of social, cultural, and motivational experiences of *learning stimuli* that propels their creative ideation, and expression concerning a particular situation or problem in an academic

setting. Consequently, it encourages students to reorient their perspectives and to converge their prior learnings, and socio-cultural experiences with their newly developed understandings resulting in their *creative combination* in a particular context (Beghetto, 2016, Beghetto & Schuh, 2020). For example, a student comes up with a new idea for writing a story that was never thought of by that student before.

The second phase of creative learning is learning-in-creativity (Beghetto, 2016). This phase particularly takes place, when a student gets an opportunity to share their “creative insight, interpretation, or perspective that is recognized as contributing to the learning and understanding of others” such as their peers, and teachers (Beghetto, 2021c, p. 234). Thus, a student achieves a *creative contribution* by entering a perspectival dialogue with their peers and teachers in educational settings (Beghetto, 2016, 2021c). An authentic dialogue between different individual perspectives helps students recognize creativity, view things from many perspectives other than their own and see value in diverse creative ideas which enhances both their creativity and learning.

Additionally, this framework views creativity as a developmental, relational, and agentic ability and that it can be developed in any student to a certain extent. This is in line with the prior research on the Schoolwide Enrichment Model (SEM, Renzulli, 1977; Renzulli & Reis, 1985, 1997, 2014) of talent development which endorsed similar propositions for developing creative productivity of students in the school context. Renzulli et al.’s (2016) ICI index characterized the means of support for the creative productivity of students in school settings that are consistent with the conceptual framework of creative identity development described in Table 7 (See Table A1 under Appendix A) for the present study.



This conceptual framework acknowledges the complex and dynamic nature of creativity and creative identity development in social settings such as classrooms and schools. It also recognizes both the individual as well as sociocultural, interdependent, situational, and contextual underpinnings of creative learning. It underscores that creative outcomes are emergent and creative actions can be embodied through interactions with different creative experiences, people, and perspectives in social settings (Beghetto, 2019, Gajda et al., 2017). Thus, it allows researchers to view both individual creative action, and creative identity development as a meaning-making process as being situated in social-cultural-historical contexts. It requires people in the settings to reflect on their prior creative learning experiences and connect them with the present situation, and contexts while making judgments about their own present and future creative identity. Also, it implies that the judgments and expectations of significant others in the social context about one's creative actions are subject to change across the settings, the people, and the timings (Corazza, 2016). For example, it is possible that a poem written by a student could be ridiculed by their classmates and the same could later be appreciated by the audience in a literary club. In both situations, creative identity can be either hindered or developed depending upon how that student experiences the interaction taking place. Moreover, this approach offers a methodological pathway to gain holistic understanding by inquiring and considering the individual perspectives and experiences of creative identity development (Beghetto, 2021c).

## **Review of Literature**

Despite the volume of research suggesting the mutually supportive linkages between creativity and diversity, the research on ECD adolescent students' experience and perceptions of their creative identity development is sparse. The research on adolescent students in the U.S. is

widely centered around predominantly white cultural norms that would be insufficient to address the need of understanding the processes underlying the development of the creative identity of ECD adolescents (Gray et al., 2018; Glăveanu & Beghetto, 2017; Kumar et al., 2018, Usher 2018).

Prior cross-cultural creativity research has demonstrated that culture shapes people's creativity in three ways (e.g., Shao et al., 2019). First, culture influences how creativity is conceptualized by people (Gajda, 2019). Next, several cultural dimensions such as the degree of cultural tightness, individualistic/ collectivistic orientation, power distance, and uncertainty avoidance influence how people's creativity is manifested (Chua et al., 2015; Hofstede, 2001; Shane, 1992; Shane et al., 1995; Taras et al, 2010). Finally, this differential role of sociocultural dimensions also influences the development of an individual's competencies that are central to creative processes such as openness to difference (OtD), ability to draw on multiple perspectives, degree of risk tolerance and tolerance for ambiguity in creative processes (Glăveanu & Beghetto, 2017; Lubart et al., 2019). However, most research in this area has been conducted within adult populations. Although a handful of research studies have examined the role of diverse social-cultural contexts on adolescent students' creativity (see de Vries et al., 2014; Gajda, 2019), those were particularly cross-cultural investigations with international samples beyond the U.S. Consequently, cross-cultural studies to date lack findings regarding how U.S.-specific educational context supports or impedes ECD adolescent students' creativity.

#### Research on the Needs of ECD Adolescent Students in U.S. Schools

The U.S. educational system has been based on the monocultural, and predominantly Euro-centric manifesto (King, 2006). Consequently, it has failed to socialize adolescents from ethnic minority communities (who form a significant component of the ECD adolescent

population in the U.S.) in ways of knowing and being based on the value systems that could resonate with their own cultures and ethnicities (Asante, 1991). Although ethnic minority adolescents have been considered a historically marginalized student population in the U.S. K-12 schooling, adolescents from these marginalized groups acquire several resources including various skills, abilities, beliefs, values, and knowledge from their teachers, family, community members, other influential role models, and from their cultural heritage before entering high-school settings which are known as their community cultural wealth (Yosso, 2005). Although ethnic minority adolescents leverage these resources as essential elements in the process of their identity development, they are often not recognized by our schooling system and society as a whole (Sablan, 2019; Yosso, 2005). Additionally, their needs for respect and acceptance of their cultural distinctiveness, authentic inclusiveness, equal and equitable status in the social arena, and availability of empowering opportunities for positive intergroup relationships remain mostly unfulfilled and often may lead to adverse discriminatory issues such as disregard for minority students' strengths, intergroup conflicts in the high-school settings (Gray, et al., 2018; Kumar, et al., 2019). These issues may further intensify the ECD adolescents' experiences during their creative identity development.

### ***Creativity Research in K-12 Education***

Scholars in creativity research has demonstrated that creativity does not take place in isolation. Instead, physical, social, and psychological environments are powerful precursors to individuals' creative performance (Hunter et al., 2007). Some recent studies identified certain practices that are indicative of the creative climate in the classroom at the K-12 schooling levels (Harris & de Bruin, 2018; Richardson & Mishra, 2018). Other studies have focused on interpersonal relationships in the classrooms, determined by teachers' emotional support, trust,

and caring as these factors support students' creative performance (Alencar, 2014; Gajda et al., 2017; Karwowski 2019). Findings from a recent systematic review of studies examining CL environments in K-12 schooling in the United Kingdom (Davies et al., 2013), suggested that students' creativity is enhanced when teachers in K-12 schooling take strides for making adaptive curricular plans, maintain an optimal balance between providing autonomy and structure to their students, allow students flexibility to use of the open learning space, and establish a mutually respected, trusting relationships with their students (Davies et al., 2013). Other research also suggests that a student-centered learning environment promotes students' creative performance through developing their creative self-beliefs effectively (Karwowski, 2019; Moeller & Reitzes, 2011; Ovbiagbonhia et al., 2019; Richardson and Mishra, 2018).

### ***Role of Social Contexts in Creative Identity Development of Adolescents***

In the context of high schools and classrooms specifically, adolescent creativity can be fostered when students are provided with ample opportunities to (a) pursue open-ended, inquiry-based learning; (b) to consider new alternative perspectives by reflecting on their assumptions about creative tasks; (c) to work on authentic creative tasks that are meaningful and relevant to them in the real world settings; and (d) to make a positive impact on their social contexts (Beghetto, 2020a, 2020b, 2021a, 2021b, 2021c; Glăveanu & Beghetto, 2021). Distilled from the literature on creativity research in education, it can be implied that creativity-supportive opportunities that are available in their social, and educational settings can promote students' creative identities through the internalization of creative experiences, beliefs, values, aspirations, social roles, autonomous and/or intrinsic motivation for creative actions leading to the development of their creative identity. Social contexts also have a remarkable influence on adolescents' creative identity development. Previous research on creative identity suggests that

interactions with and support from significant others in people's social contexts play a particularly important role in developing the creative identity of an individual (Glăveanu & Tanggaard, 2014; van der Zanden et al., 2020). However, the extent to which individuals are susceptible to their social contexts differs across people and settings (Beghetto, 2006; Choi, 2012).

Only a handful of studies to date have investigated the social contextual factors hindering or supporting adolescents' creativity in the schools of the U.S. Indeed, educational research extending the understanding of ECD adolescent creativity is limited in general (Glăveanu, 2011; Kaufman, 2006; Lassig, 2013). To this researcher's knowledge, only four studies have investigated ECD adolescents' creativity in the U.S. (Anderson et al., 2020; Beghetto, 2006; Kaufman, 2006; Sullivan, 2011). These studies are detailed next.

In a qualitative study exploring early ECD adolescents' (10-12 years old) experiences and perceptions of creative engagement in the middle school contexts, Anderson et al. (2020) found that early adolescent students highlighted their needs to have choice and voice in their learning that helped them develop creative identity. They specifically emphasized that open-ended arts-integrated learning opportunities, sharing multiple perspectives with the peer students about creativity, and acceptance of mistakes as a learning resource helped them develop positive CSBs leading them to thrive in life beyond school. Some ECD students however felt undue pressure to conform to the classroom/school norms for creativity which prevented them from developing positive CSBs. Findings indicated the need to acknowledge and support the diversity and non-conformity of ECD adolescent students as well as the need for creating an inclusive, trustful learning environment for them in the context of the schools (Anderson et al., 2020).

Beghetto (2006) conducted a cross-sectional quantitative study examining the correlates of CSE including their perceptions of classroom experiences among 1332 ECD adolescent students studying in the Pacific Northwest middle schools and high schools. Findings showed that older adolescents, English speakers, and boys reported greater CSE perceptions than early adolescents, English language learners (ELL), and girls. On the one hand, the study revealed that students' perceptions of teacher recognition of being creative was the strongest predictor of their CSE. On the other hand, students reporting higher degrees of CSE were less likely to report that they felt their teachers listened to them. Further, students with high CSE reported to host both mastery goal orientation as well as performance goal orientation beliefs. These conflicting findings indicate that there could be other factors in social contexts (e.g., school, home, community) related to ECD adolescent CSE that remain yet to be examined. For example, although this study reported the ECD composition of their sample (69% being Hispanic-Latino, 16% White, 12% Russian, 1% African American & 1% Asian American), it did not examine whether and how ECD students' perceptions of CSE differ by their ethnicities and cultures. It is possible that adolescent students from different ethnic and cultural groups perceive their classroom experiences and their CSE in different ways. To that end, results of this study indicated the need for more in-depth study of ECD adolescents CSE, other self-beliefs, and their classroom experiences (Beghetto, 2006).

In another cross-sectional quantitative study of 3553 students (including 282 high school students) and community members Kaufman (2006) attempted to address the issues of ethnic, gender and domain-specific difference in ECD peoples' self-perceptions of creativity. They specifically assessed participants' creative self-perceptions in 56 different sub-domains distributed under five domain factors. Results of their study revealed many puzzling patterns.

African American participants reported higher self-ratings of creativity than participants from other ethnic groups on all the factors while Asian American participants reported lower self-ratings of creativity than all other ethnic groups on all the domains. Native American participants reported higher self-ratings of creativity than all other ethnic groups on the science-analytical domain factor. Although the results of Kaufman (2006) may be helpful as the starting point in understanding ethnic and cultural differences in the adolescent students' creativity, these findings lack clarity regarding the specific role of their social contexts (e.g., schools) in developing students' creative self-perceptions. Inclusion of adolescents as a small percentage (8%) of the total sample was another limitation of this study. These findings indicated the need to explore ECD adolescent students' experiences of the development of creative identity in the context of their school.

In a small qualitative case study, Sullivan (2011) examined how classroom interactions with a White teacher influences three early adolescent Latina/o students' collaborative creativity outcomes in a Northeastern middle school. Findings from their micro-genetic analysis demonstrated the importance of authentic, participative instructional discourse of the teacher. Additionally, they highlighted that teacher modeling of playful inquiry-based learning techniques, provision of open-ended, goal-oriented activities, availability of tools, and flexibility in the learning environment helped participant students to develop creative solutions. The study indicated the need for an ecological study investigating how other factors at different contextual levels influence the collaborative creativity of ECD adolescents (Sullivan, 2011).

Across these studies, several highlighted the importance of teachers' support for adolescent creativity (Anderson et al., 2020; Beghetto, 2006). Teacher effective instructional support for student creativity could manifest in terms of teachers modeling creative expression,

risk-taking and reflective work underlying creative processes (Sullivan, 2011). Many studies emphasized the importance of creativity-supportive teacher-student interactions including teachers offering encouragement and constructive feedback to adolescent students (Anderson et al., 2020; Beghetto, 2006; Sullivan, 2011). Provision of active learning opportunities provoking adolescent students' learning through experimentation and inquiry was another important theme of support for adolescent creativity (van der Zanden et al., 2020).

In summary, research indicates that social relationships are crucial for adolescents, as supportive relationships often have a great positive influence on their academic and developmental outcomes such as attitudes, motivational beliefs, achievement, and competence development (Graham, 2018, Sethi & Scales, 2020, Yu et al., 2018). Further, the social contexts in which adolescents learn and grow play an important role in influencing youth creativity (van der Zanden et al., 2020). Finally, it is likely that adolescents from different ethnic and cultural backgrounds experience social contexts differently (Crawford et al., 2020; Kumar et al., 2018) and bring their heritage experiences to inform their identities in diverse ways (Gray et al., 2018).

The lack of empirical research examining ECD adolescents' development of creative self-beliefs requires an in-depth exploration of the experiences and perspectives of ECD high school students contributing to their creative identity development. ECD adolescents may gain such creativity-fostering experiences and opportunities in their schools and/or at different levels of their social contexts. The present study specifically focused on understanding ECD adolescents' experiences and exposure to opportunities as well as teachers' and school administrators' practices facilitating such opportunities, resources, interactions, and influences are perceived as helpful to ECD students' creative identity development in the intentionally



diverse and student-centered learning environment of a regional magnet school setting in the U.S.

### **Chapter 3. Methods**

The present study aims to gain a rich understanding of how ethnically and culturally diverse (ECD) students, teachers, and school administrators of a regional magnet school perceive the school-based supportive practices and opportunities that shape the creative identity development of ECD adolescents in the student-centered learning environment. The following sections include an overview of the study context, research questions, an overview of the qualitative case study design, a summary of philosophical and methodological considerations for the proposed study including inquiry worldview and researcher's positionality, and a plan of qualitative, quantitative, and mixed methods data collection and analysis.

#### **Setting**

The context of the present case study is a highly innovative regional magnet school located in the Mid-Atlantic United States which implements the student-centered learning environment model, catering to students aged 14 to 19, respectively. To maintain the anonymity of the participating school, I am using the pseudonym RichTech Regional Magnet High School (RRMHS) for the school name of this case study. The RRMHS was established in 2017 as a part of a federal Magnet School Assistance Program (MSAP) grant award in a Mid-Atlantic state of the U.S. It is the first and only interdistrict magnet high school in the region designed explicitly seeking to address three focal areas: (1) To reduce minority group isolation in the state by fostering diversity, and equitable access to the inclusive STEM education; (2) to increase the rate of computer science related workforce development in the state; and (3) to reduce STEM talent and skills gap by providing innovative high school program to ECD adolescents located across the 14 school districts in the region. Promotion of ECD students' creativity skills by integrating

creative activities into their school curriculum is one of the key strategies adopted by the school to achieve the school's objectives.

The setting of RRMHS was chosen for the present study because of its unique characteristics. While eight magnet high school programs are operational in the metro region of the current study, RRMHS is the only interdistrict magnet high school in the region that enrolls ECD adolescents across the school districts without any gifted identification and facilitates education with an intentional focus to promote equity, diversity, and innovation (Siegel-Hawley, 2020).

### ***Participants***

For the present exploratory case study, I consulted adolescents including those who at the time of data collection were senior students ( $n = 67$ ) from the third cohort, and former students ( $n = 66$ ) from the first two cohorts that joined RRMHS in their first year of operation in 2017 (aged 17 to 19 years), their teachers, and the school administrators.

As noted above, I used a purposive sample of 133 ECD adolescent student participants enrolled in the RRMHS for the web-based survey to address the first research question because they share some unique contextual features. First, they represent diverse ethnicities and cultures. Second, they are adolescents in the 17-19 age-group, which is an understudied group in creativity research. Finally, they have experience of attending their classes and learning at RRMHS during the first 3-4 years of the development of the new magnet school because during this period, they witnessed and, to some extent, also participated in the dynamic process of developing and evolving the innovative learning spaces and environment in their school. Additionally, these students from the first two cohorts had the complete exposure to an intentionally diverse,

innovative, and student-centered learning environment of RRMHS for the maximum period of time, as compared to the students from all the subsequent cohorts.

Initially, I planned to recruit a purposive sample of all the former students ( $n = 66$ ) who were enrolled in RRMHS in the first year of the school's operation and have had maximum exposure to the school's learning environment since academic year 2017-18 to participate in the web-based survey component of the present study. Consistent with the recommendation of Dolinac (2002), a minimum sample of 32 was required for a cluster analysis with five variables according to my initial analytical plan. Hence, I sent an invite for participating in the web-based survey to all the eligible 66 former RRMHS students to make sure that a sufficient sample is available for both the quantitative as well as qualitative analysis. Although I initially started to recruit participants from the first two cohorts of RRMHS graduates in January 2022, only two participants completed the survey, of which only one agreed to participate in the follow-up interview. As such a limited number of participants would hinder my ability to address the research questions effectively, I sought IRB approval to amend and expand the inclusion criteria of study participants by recruiting senior students ( $n = 67$ ) of RRMHS. All senior students of RRMHS third cohort meeting the selection criteria were recruited for the present case study.

Hence, recruiting ECD adolescent participants from the first three cohorts of the RRMHS students allowed me to obtain rich and thick data in this qualitative case study for exploring the perspectives and experiences of RRMHS students regarding their creative identity development in their school context.

Students attending RRMHS share some common demographic and contextual characteristics (Corning, et al., 2020). As the interdistrict magnet high school, RRMHS admitted students from 14 different school districts in a Mid-Atlantic metro region including a city and 13

suburban school districts surrounding the city. RRMHS's innovative curriculum and pedagogical model are focused on the *Computer Science* (CS) thematic specialization. The school offers many basic to advanced level credit courses in the CS domain to the students who are interested in pursuing higher education and careers in the CS field. Diversity and equity have been the core goals of RRMHS since the inception of the school. This intentionally integrated school admitted and enrolled students from diverse racial/ethnic groups including African American or Black, European American, or White, Hispanic American or Latinx, Asian American or Asian, and others (Sigel-Hawley, 2020). The student composition of RRMHS reflects the racial/ethnic demographic distribution of the high school students in the corresponding metro region. Currently, 62% of the students attending this magnet high school are students of color (Trexler, 2021).

To answer the subsequent second research question, I planned to collect data through virtual student interviews. I had hoped that at least 10-12 students from those 133 would agree to participate in a follow-up virtual student individual interview. However, only two current senior RRMHS students were available and willing to participate in the 60-minute virtual individual interview. Specifically, Nick (Pseudonym), a European American student, and Rita (Pseudonym), an Asian American student participated in an hour-long individual Zoom interview. Both student interviewees were the senior students at the time of data collection.

To address the third research question, I also invited all the teachers and school administrators of RRMHS to participate in a virtual individual interview. At the time of data collection, a total of 33 teachers were employed at RRMHS out of whom four teachers (two Computer Science teachers—Mr. Kida and Mr. Heeler, one Math teacher—Mr. Max, one Physics teacher—Mr. Jamshed[all pseudonyms]) participated in a 60-minute virtual individual interview.

Additionally, two school administrators, Dr. Jane (pseudonym), the executive director (principal) and Mr. James (pseudonym), the associate principal of RRMHS, also participated in a 60-minute individual interview through Zoom.

## **Research Design**

A case study refers to a qualitative research approach in which a researcher undertakes an in-depth investigation of a “bounded system” consisting of a single real-world case or multiple cases (Creswell, 2014; Stake, 1995, p. 2). The present study used qualitative case study research design. The case study as a research method allows researchers to examine unique and complex phenomena, constructs of interest situated in a certain context in which “boundaries between phenomenon and context are not clearly evident” (Yin, 2009, p. 18). Although the case study approach is popular in qualitative research, it can incorporate both quantitative and qualitative research methods (Yin, 2012).

The present qualitative case study used an exploratory single case study approach to explore the perspectives of ECD students, teachers, and school administrators on how the learning environment at an innovative regional magnet high school program fosters their ECD students’ creative identity development, in order to understand how regional magnet school practices may support ECD adolescent student creative achievement (Lincoln & Guba, 1985). An exploratory case study approach examines “distinct phenomena characterized by a lack of detailed preliminary research” (Mills et al., 2012, p. 2). In the present study, “practices and opportunities fostering ECD students’ creative identity development in the context of a regional/interdistrict magnet high school learning environment” represented that distinct phenomena, research on which is almost absent from the literature. Such an exploratory case study can be useful to determine early in the research whether the phenomena is worthy of

further investigation, and it may serve as a pioneering research in the light of exploratory evidence (Guba, 1994; Yin, 2014). The exploratory case study design also facilitates making naturalistic generalizations about the research findings. Naturalistic generalizations refer to the “conclusions arrived at through personal engagement in life’s affairs or by vicarious experiences so well constructed that the person feels as if it happened to themselves” (Stake, 1995, p. 85).

There is no consensus in the research literature regarding how and which aspects of a regional magnet school environment are particularly helpful to the ECD adolescents’ creative identity development. Therefore, I drew on the voices of ECD students, their teachers, and school administrators regarding their views and practices supporting ECD students’ creative identity development. Doing so helped me to explore phenomena of particular social, motivational processes within the context of a magnet school environment that shape the creative identity of ECD adolescent students.

### *Case*

Merriam (2009) defined a qualitative case study as an investigation of “contextualized contemporary” (p. 31) one or more distinct phenomena. The qualitative case study research design has three primary case components: the phenomenon of the case to be studied, the context for the case study, and the boundaries or unit of analysis of the case study (Hatch, 2002; Merriam, 2009; Yin, 2018). In this case study, the phenomenon of the case to be investigated was supportive practices and opportunities offered by a regional magnet high-school environment to develop ECD students’ creative identity. The context for the present case study was RRMHS, a regional magnet high school program with an innovative model for STEM-computer science specialty education and the unit of analysis was RRMHS students’, teachers’, and school administrators’ perspectives. This case study was also bounded in time as data

collection took place from January to June, 2022. Yin (2018) posited that case study research methodology is most helpful where the phenomena under investigation would be difficult to separate from the context itself. Using qualitative exploratory case design, I was able to explore the distinct phenomena of school-based supportive practices and opportunities that help cultivate ECD students' creative self-beliefs within the context of a regional magnet high school.

I used a single case study research design for the present study. Yin (2009) posited five rationales of the single case study design: a critical case study to test a theory, a unique or extreme case to explore the distinctive characteristics, a typical case that represents a certain population, a revelatory case, and a longitudinal case. The present case study represents a unique case in the context of RRMHS because, as discussed in an earlier section, this federally funded innovative magnet high school program is a unique educational model justifying the single case study research design.

### **Inquiry Worldview**

As an educational researcher, I believe that a research inquiry is effective only when it is focused on addressing the purpose of research practically through flexible and purposeful usage of research methods. Hence, I adopt the pragmatic inquiry worldview for the proposed research study. Pragmatism as a research paradigm is specifically suitable for the investigation of complex social phenomena because it embraces the intersubjectivity of the social world in an empirical research inquiry. While it rejects the notion of dualism of objectivity and subjectivity that was prevalent in the Western research philosophy, it allows researchers to incorporate research methods with different philosophical assumptions in a research study (Biesta & Burbules, 2003). Thus, it orients a research study to achieve its goals rather than to adhere strictly to one singular methodology. Pragmatism gives primacy to human experience and action



as a basis of knowledge construction. According to the tenets of pragmatism, peoples' personal and social experiences shape their knowledge, beliefs, and actions that are inseparable from the context in which they take place. The goal of the present research was to better understand how and which supportive aspects of the learning environment that ECD adolescents' experiences shape their creative self-beliefs in the context of a regional magnet high school. My research questions warrant both an understanding of ECD adolescents' quantifiable perceptions and beliefs of creative identity as well as ECD adolescents' descriptions about their contextual experiences that shaped their creative self-beliefs. Pragmatism allows an effective combination of these different research methods in service of the research aim. Consequently, I used pragmatism as my research lens for the present qualitative exploratory case study.

### **Researcher's Positionality**

Case study research requires not only dialogue between multiple methodologies, disciplines, and paradigms, but also a self-reflexive transparency and openness to analytical inquiry of the research issues (Yin, 2012, 2017). Hence, I think it is important to provide my self-reflexive positionality in the context of the proposed research study.

I identify myself as a female South Asian Indian doctoral student-researcher in educational psychology who got to learn from mentors the values of critical reflection, intentionality for effective mixed methods research. Our research team discussions helped me understand the importance of diverse perspectives in educational research. As I started practicing critical self-reflections on my research approach early in my doctoral studies, it made me realize that being an educational researcher is an ever-dynamic learning experience about myself and other humans in the world. It also led me to understand that my epistemological, philosophical assumptions, and methodological preferences are subject to change as per the contexts and

complexities of the research topics of interest. Hence, I came to identify with the pragmatic worldview that helped me address my research questions in the present qualitative case study.

I am an educational practitioner with more than 12 years teaching experience facilitating undergraduate and professional courses in the higher educational sector of India. Because my practitioner background provided me the opportunity to teach ECD young students, I believe that my teaching experience offered me a different perspective of education as compared to my colleagues in academia. As an education practitioner, I know that schools, colleges, and teachers all over the world are talking about ways to enhance the creativity of their students. I am a creative person who believes strongly that creativity is a great human strength and that every person can develop their creativity. As an emerging researcher, I believe that educational psychology research can provide useful ways and techniques to help schools and teachers facilitate learners' creativity. Recognizing and understanding adolescent students' perspectives are essential steps in pursuit of enriching their learning experiences (Barker, 2018; Rennie Center for Education Research & Policy, 2019). However, ECD adolescents' voices about how they view their school support as contributing to their creative identity development are specifically lacking in the educational research. The present study was inspired by my own practical experiences of listening to ECD students' concerns about being creative in the school settings. During my doctoral externship work, I heard similar concerns from ECD students studying at the magnet high school in which this study took place. My practical experiences have provided me with some anecdotal evidence to pursue research inquiry into ways in which ECD students' sense of being creative is developed by understanding their perceptions, experiences, and interactions with their innovative magnet school learning environment in the school context.

Because of my practitioner background, I believe that both academic research and educational practice could enrich one another and move closer to augment effective means for enhancing ECD learners' creativity. Doing so, I believe that the present qualitative exploratory case study may help bridge the divide between educational research and educational practice. This belief has informed my research approach and research design in the present study.

### **Research Questions**

This section presents the research questions in this qualitative exploratory case study. The present case study aims to bridge the gap in the educational psychology research on creativity development by exploring and understanding perspectives of key stakeholders including ECD students, teachers, and school administrators of a regional magnet school about how the school-based supportive practices and opportunities shape the creative identity development of ECD adolescents in the context of a regional magnet high school setting. To address this aim, I examined the following three research questions:

1. How do ECD adolescent students perceive their creative identity and support for creativity in a regional magnet high school?
2. In what ways do ECD adolescent students describe their experiences of creative identity development in the context of a regional magnet high school?
  - a. What experiences at their school do ECD adolescent students perceive as helpful in developing their creative self-beliefs and identity?
  - b. How do ECD adolescent students describe the ways in which their classroom experiences and interactions in the regional magnet high school setting shape their motivation for and the development of their creative identity?

3. In what ways do teachers and administrators at the regional magnet high school describe their views about and their practices for fostering the creative self-beliefs/ creative identity of their ECD adolescent students in the regional magnet high school setting?
  - a. What practices and interactions at their school, teachers and administrators perceive as helpful in developing creative self-beliefs and identity of ECD adolescent students?
  - b. How do teachers and administrators describe the ways in which their classroom practices and interactions in the regional magnet high school setting shape their ECD adolescent students' motivation for and the development of their creative identity?

### **Sources and Collection Methods of Data**

The following sections describe details about the timeline, participants, data sources, data collection methods used, and data analysis for this qualitative case study.

#### ***Approvals***

While I received conditional approval from its executive director to conduct research at RRMHS in January 2021, subject to the approval from the institutional review board (IRB) of my university, it was in December 2021 that I actually obtained the formal approval from university IRB to conduct the present research study. As approved by the RRMHS school administration, the school served as a liaison for this case study research by sending all the recruitment and research material to the case study participants. The data collection began with the administration of a web-based questionnaire for ECD students soon after the Christmas holidays, when the new marking period at RRMHS started in January 2022.

#### ***Data Sources***

The present case study employed primarily qualitative data while also using some supportive quantitative data. Multiple sources of data were tapped into to address the research questions in this qualitative exploratory single case study. To explore and understand perspectives of key stakeholders including ethnically and culturally diverse (ECD) students, teachers, and school administrators of a regional magnet school regarding creativity-fostering practices and opportunities in that learning environment, I found it necessary to connect with a specific and diverse sample of each of those key stakeholders. Hence, by coordinating with the school coordinator and executive director of RRMHS, I employed various means such as administering a web-based survey, individual interviews, emails, research memos and field notes to ascertain data from the sample of key stakeholders of RRMHS. This section presents the sources of data along with the specific rationale for using them.

**Web-Based Survey.** The quantitative data were collected electronically using QuestionPro survey software and analyzed with an aim to address RQ1. Before administering the survey, I sent the survey recruitment email (See Appendix B) to the ECD students from the first three cohorts of RRMHS. I administered an online survey for assessing the indicators of self-reported demographic information, creative identity, and perceptions of support for the creativity of the purposeful sample of ECD students of RRMHS. All the questions in the survey were optional and they are presented in Appendix C.

**Demographics Questionnaire.** The self-reported demographic questionnaire includes questions regarding personal characteristics and information such as age, gender, academic grade level, and ethnicity.

**Creative Confidence Scale (SSCS).** The Short Scale of Creative Self (SSCS) was developed by Karwowski et al. (2018) to examine the creative self-beliefs including creative

personal identity and creative self-efficacy of people in various contexts. The scale consists of 11 items that are divided into two sub-scales: the creative personal identity sub-scale that includes five items (1, 2, 7, 10, 11) and the creative self-efficacy subscale that includes 6 items (3-6, 8, 9). Using a 5-point Likert-type format (1 = *definitely not*; 5 = *definitely yes*), the SSCS scale asks respondents whether they agree with statements such as “Being a creative person is important to me” (Karwowski, 2012, p. 217). The internal consistency of the creative personal identity subscale was high ( $\alpha = .90$ ), as was the creative self-efficacy subscale ( $\alpha = .81$ ). Confirmatory factor analysis established a two-factor structure and that finding was echoed by exploratory structural equation modeling (Karwowski et al., 2013).

**Creative Mindset Scale (CMS).** CMS is a 10-item self-report measure that assesses individual perceptions of the nature of creativity (Karwowski, 2014). The construct of creative mindset has been operationalized based on the theory of growth mindset (Dweck, 2006). It consists of two subscales: Growth creative mindset sub-scale (five items) and fixed creative mindset sub-scale (five items). Using a 5-point Likert-type format (1 = *definitely not*; 5 = *definitely yes*), the CMS asks respondents whether they agree with the statements such as “Anyone can develop their creative abilities up to a certain level” (Karwowski, 2014). The Cronbach’s alpha coefficient indicating internal consistency for this scale has been reported as  $\alpha = .66$  for the growth creative mindset and  $\alpha = .75$  for the fixed mindset (Gajda, 2019).

***The Imagination, Creativity & Innovation (ICI) Index.*** The Imagination, Creativity & Innovation (ICI) index (Renzulli et al., 2016; 2022) is an instrument developed to measure the perceived support for student creative performance in their learning environment. Specifically, this instrument has two versions: the student version and the teacher version. Both the versions have items capturing self-reported perceptions of students and teachers about the creativity

fostering opportunities in their classroom settings, respectively. I specifically used the student version of this instrument for the quantitative phase of the present study. The ICI instrument is based on the Enrichment Triad Model (ETM) (Renzulli, 1977), a widely studied pedagogical model for encouraging creative productivity in K-12 students.

Taken together, the ICI instrument focuses on measuring and assessing the teachers' and students' perceptions about the ways in which students' experiences of encouragement, opportunities, and teacher expectations for and recognition of their creative productivity or performance in learning at their school settings. I used the student version of the ICI instrument that includes 15 items to be measured on a 5-point Likert-type scale (1 = *never* to 5 = *almost always*) and three open-ended questions. There are five items for each of the three factors representing support for K-12 students' creative productivity respectively, encouragement for imagination (e.g., "My teachers ask me to come up with my own ideas"); opportunities for creative ideation (e.g., "My teachers give me a chance to develop my creativity"); and teacher recognition of creativity and teacher expectations for innovation (e.g., "My teachers want me to add something to the world with my work") in this instrument. The three open-ended questions are developed to prompt participant students to describe their own exemplary creative products and performances as well as the ways in which they could find support for creativity in their learning environment. The items in both, the teacher version and student version are parallel with only modified language in the student version for participants' clear understanding. The scores for each factor in the student version can be computed as an average of the five items and found to have high reliability (encouragement for imagination,  $\alpha = .77$ ; opportunities for creativity,  $\alpha = .81$ ; teacher expectations for innovation,  $\alpha = .73$ ) in a recent research confirmatory validation study (Renzulli et al., 2022). However, another recent study demonstrated that ICI Index scores

can be computed by taking the mean of all the fifteen items, because the three support factors were found to be highly correlated (Imagination-Innovation = .76; Imagination-Creativity = .83; Creativity-Innovation = .87) (Brandon, 2019). This suggests that the whole ICI Index scores rather than scale scores can be used for further statistical analyses. Cronbach's alpha for the whole ICI index is found to be high ( $\alpha = .94$ ; Brandon, 2019).

This instrument has two main strengths in particular to the present study. First, it is the first instrument specifically developed to measure the perceptions about support for K-12 students' creativity in their learning environment in the U.S. context. Thus, it is specifically aligned with the conceptual framework and the research questions of the present study focusing on the ECD adolescents' experiences and perceptions about the support they get for their creativity in the context of their magnet high school environment. Second, it is a promising instrument for in-depth research investigations capturing students' and teachers' perceptions about support for students' creative performance in their school settings. In quantitative terms, it asks for the frequency of the supportive experiences for creativity and in qualitative terms it includes open-ended questions prompting participants to explain the details about the quality of those experiences.

***Open-Ended Survey Questions.*** As discussed earlier, the web-based survey included two open-ended questions adapted from ICI inventory (Renzulli et al., 2016, 2022) for participating ECD adolescent students. The first open-ended question prompted ECD student participants to describe the point of pride in terms of creative products, performances or services accomplished by them at their school. The second open-ended question prompted ECD student participants to describe the support they got at RRMHS to develop/accomplish their creative 'points of pride'. Both the questions are presented in Appendix C.



**Virtual Semi-Structured Interviews.** One-on-one interviews are an important qualitative data collection technique that has been widely used to capture the powerful narrative of each unique case (Charmaz, 2006). Hence, the virtual semi-structured interviews were conducted in the present qualitative case study to address the research questions in more substantive ways. A purposive sample of ECD student participants, their teachers, and school administrators of RRMHS were invited to participate in individual semi-structured interviews through the Zoom platform. These 60-minute, virtual, one-on-one interviews facilitated exploring and understanding in-depth contextual nuances of opportunities and interactions in RRMHS' learning environment supporting ECD student's creative identity development.

Before starting each individual interview, I read an opening script to explain its purpose. This script offered another opportunity for participants to ask questions and get ready for the video and audio recording. Participants had the option not to answer a question or to end the interview if they felt uncomfortable with the questions during the interview.

**Research Memos.** Writing and reviewing research memos regularly is an important part of qualitative research (Maxwell, 2013). These informal reflective accounts of researcher's own research do not only provide miscellaneous information about research participants experiences and data, but also help the researcher reflect on their research work, refine the research design, and facilitate their own thinking throughout the study. I believe strongly that writing reflective, methodological memos is crucial to my own self-assessment as a researcher. I kept writing memos regularly during the present case study so that it could help me reflect back on my research methodology and analysis and refine the research study findings. I used those memos in either typed format in a running memo document, recorded within the Dedoose program, or in hand-written format. After data collection, I compiled all existing research memos in a running

document and assigned each memo a number and date for later reference. All the research memo data were not coded, but summarized using a strategy of data condensation recommended by Miles et al. (2014).

**Field Notes.** Whenever I visited RRMHS during the time of this qualitative case study, I took down field notes that I typed and maintained either in hand-written format or in a digital /electronic format in a password-secured drive. My field notes were based on my observations and interactions with ECD students, teachers, and school administrators of RRMHS during my visits to the school. I noted down what I experienced at RRMHS and how that could inform my case study through these field notes.

Using multiple sources of data helped me gain a comprehensive understanding of the support provided by RRMHS toward ECD adolescents' creative identity development.

### ***Sampling Overview***

Different sampling strategies were used to collect data from each different data source in this case study. Overall, I used a single case study approach as justified by the unique case rationale (Yin, 2009). Identifying the case in the context of RRMHS was the first case sampling step as noted earlier. I also used the purposive sampling strategy throughout this case study. The purposive sampling strategy helps study a group of people with particular contextual features (DeCuir-Gunby & Schutz, 2017; Teddlie & Yu, 2007). While purposive sampling is a non-probabilistic sampling strategy, it facilitated recruiting those participants who could provide rich data relevant to the research purpose of the present case study (Merriam, 2009). An overview of specific sampling strategies corresponding to each data source has been presented in Table 1.

**Table 1**

*Data Sources & Data Collection Methods for a Qualitative Case Study of RRMHS*

Research Questions	Data Collection Tool	Data Type	Data Sources/ Sampling	Collection Method	Analysis Method
1. How do ECD adolescent students perceive their creative identity and support for creativity in a regional magnet high school?	Web-Based Survey	Quantitative & Qualitative	Creative Identity Development Survey (including open-ended questionnaire) Complete Student Survey Responses ( $n = 17$ )	QuestionPro (Online Survey Software)	Quantitative Descriptive Statistics and Survey reliability statistics generated through Excel and SPSS, Qualitative thematic
2. In what ways do ECD adolescent students describe their experiences of creative identity development in the context of a regional magnet high school?	Semi-Structured Interviews	Qualitative	Student Interviews ( $n = 2$ )	Zoom (Online Meeting Software), Notes, Temi for transcription	Thematic
3. In what ways do regional magnet high school teachers and school administrators describe their views about and their practices for fostering the creative self-beliefs/ creative identity of their ECD adolescent students in the regional magnet high school setting?	Semi-Structured Interviews	Qualitative	Teacher Interviews ( $n = 4$ ), School Administrator Interviews ( $n = 2$ )	Zoom (Online Meeting Software), Notes, Temi for transcription	Thematic

### ***Data Collection Methods***

The details of each data collection event in the present case study are described in the following sections. To explore and understand the role of school support practices and interactions in shaping ECD student creative identity, I analyzed six distinct types of data: ECD student open-ended survey responses, two ECD student interviews, four teacher interviews, two school administrators' interviews, field notes, and reflective research memos.

**Web-Based Survey.** Through a virtual and an in-person meeting, I explained the research purpose and the research methodology of the present study to the RRMHS administrative team (including the executive director (principal) and the school coordinator). I also consulted them to brainstorm potential ways to uphold ecological validity and ethical integrity of my research methods in the present study. All former RRMHS students ( $N = 66$ ) who enrolled in and graduated from the first two cohorts of the school were contacted by an email sent from the RRMHS team (including the executive director -principal and the school coordinator) on behalf of the research team to participate in the web-based survey. The initial recruitment email (See Appendix B) was sent during the Winter 2021 semester along with a PDF of the information sheets (See Appendix D and Appendix E) that they were able to print or save. I sought the informed consent of the former RRMHS students to participate voluntarily in the present case study through active response to the invitation email. The recruitment email also contained the QuestionPro survey web link and URL. I placed the informed consent form on the 1st (opening) page before the survey questionnaire starts on the QuestionPro platform.

My research amendment plan was approved by the university IRB in April 2022 and soon I started recruiting survey participants who at the time of data collection were RRMHS senior students to participate in the web-based creative identity development survey. Participating

students' classroom teachers received written information about the study from their school administration team and were asked to contact the study team with any questions or concerns. The school administration team provided a list of students who are 18-years-old, which helped me identify those below 18-years-old and those who are 18-years-old.

The recruitment of senior students of RRMHS took place one week prior to the intended survey administration date, in collaboration with the school administration team. I sent a recruitment email (See Appendix B) along with a pdf of the information sheet to each current senior student and the parents of those students who are below 18 years. In the information sheet, I provided all the necessary information (describing my research purpose, research procedures, significance of the research study, the potential benefits and potential risks to the participants and the available safeguards thereof), in detail regarding the present study to the ECD student participants and their parents (See Appendix D and Appendix E). Through the school executive director, I also sent the link to the Google sign-up form for students' assent, and/or for 18-year-olds' consent to current senior students. As the present study was approved by IRB to be exempt in category 1, obtaining parental permission was not required. Additionally, the one-week period allowed ample time for current students' families to read and consider participation as well as contact me with any potential questions. The assent/consent form explained the assent/consent process to participating students as follows: "If you click the 'next' button below, it means that you have decided to be in the study, and you have read and understood everything on this page." Only those participants who chose to click the "next" button after reading the assent information, were able to access the survey questions.

On the two days of data collection, I visited RRMHS and set up a visiting desk in the open learning space near the senior section entrance of the school to personally greet each

participating senior student as they came for their recruitment meeting. I reviewed the research purpose and procedures with the current senior students who were willing to participate in the study during those recruitment meetings. After answering all the current senior student questions and obtaining verbal assent, data collection began at the school. Because RRMHS is a computer science specialty magnet high school, all the RRMHS students use their computers (Chromebook lent by the school) every day at school. Hence, they had access to their computers to complete the web-based survey at school. Therefore, in coordination with the school administration team, I provided the QuestionPro survey web link and URL to the senior students.

Senior students of RRMHS were informed that the web-based survey would remain active for three weeks, and I also sent two weekly reminders to them through the school administration team. In spite of receiving the reminders to complete the web-based survey, only 35 students provided their consent/assent and responded to the survey, out of which only 17 completed the survey using the QuestionPro platform.

**Student Virtual Semi-Structured Interviews.** To address RQ2 (“In what ways do ECD adolescent students describe their experiences of creative identity development in the context of a regional magnet high school?”) qualitative data collection through the semi-structured individual interviews took place in Spring 2022. Incorporated in the web-based QuestionPro survey was the last question about student’s willingness to be interviewed virtually for the present case study. I sent an email (See Appendix F) with a Google sign-up form link containing the consent/assent information to three students who indicated their willingness to participate in a virtual semi-structured interview out of which one declined to respond. Two senior RRMHS students provided their consent, signed up using the Google form and were then interviewed through the Zoom meeting platform. Those two students who were willing to be interviewed

were asked to choose their suitable time slots to meet through the Zoom web-conferencing platform. On the day of the interview, I went over the specific details of the interview process using an opening script (See Appendix G) with each participant, reviewed, and confirmed their verbal assent/consent before beginning the interview. After answering all student questions and obtaining verbal assent/consent, I conducted the student interview through Zoom.

Each student interview was recorded through Zoom. Audio recorded files were sent through a password-protected website to an online transcribing platform, Temi and converted them into transcripts. To ensure confidentiality and to mask the identity of each student participant, pseudonyms were assigned to each interview participant during the transcription. I verified each interview transcript with the Zoom audio files by listening to the audio files and reading the transcripts multiple times. I used a semi-structured interview guide (See Appendix G) for conducting each student interview. The interview guide included five thematic sections: creative identity development experiences, creative activity accomplished, perceived affordances, creativity-fostering support, and the opportunities at the magnet school. Student interview participants were asked to reflect on each meaningful creative event and phases of their creative identity development starting from their first memory of creative accomplishment at their magnet school. I took notes and made short entries adding the details regarding contextual features. Before analyzing, the transcripts of these interview recordings were emailed to each student participant to review for accuracy confirmation. After completing both the online survey and the virtual interview, if the participating students would like to learn more about developing their creativity and creative identity, they were offered more resources and coaching support for the same. Such resources were optional, and they were provided outside of their study participation. This semi-structured interview allowed me to explore and understand the ways

ECD adolescent students make meaning of their lived experiences during creative identity development in the context of RRMHS.

**Teacher & School Administrator Virtual Semi-Structured Interviews.** To address research question 3 (“In what ways do regional magnet high school teachers and administrators describe their views about and their practices for fostering the creative self-beliefs/ creative identity of their ECD adolescent students in the regional magnet high school setting?”), I conducted a virtual semi-structured interview of teachers and school administrators of RRMHS in Spring 2022. Network sampling was used to recruit teacher participants for a virtual individual interview. Although all the teachers of RRMHS were sent a recruitment email and study information sheet (See Appendix H) through the school administrators, only five teachers of RRMHS responded that they were willing to be interviewed for the present case study. I reached out to those teachers who were willing to be interviewed and sent a separate email to them containing a Google form to choose their suitable time slots for a virtual interview through the Zoom web-conferencing platform. I also invited the school administrators, specifically the executive director and associate principal of RRMHS to participate in a virtual semi-structured interview through the Zoom platform (See Appendix H). As both the school administrators indicated their willingness to be interviewed, I also sent a separate email to them containing a Google form to choose their suitable time slots for a virtual interview. On the day of the interview, I went over the specific details of the interview process using an opening script with each teacher and school administrator participant (See Appendix I and Appendix J), reviewed, and confirmed their verbal consent before beginning the interview. After answering all teacher/ school administrator questions and obtaining verbal consent, I conducted the teacher interview and school administrator interview through Zoom.



Each 60-minute teacher interview and school administrator interview were recorded through Zoom. Audio recorded files were sent through a password-protected website to an online transcribing platform, Temi, and converted into transcripts. To ensure confidentiality and to mask the identity of each student participant, pseudonyms were assigned to each interview participant during the transcription. I verified each interview transcript with the Zoom audio files by listening to the audio files and by reading the transcripts multiple times.

I used a separate semi-structured interview guide for conducting each teacher and school administrator interview. The interview guide included five thematic sections: teachers' and school administrators' professional background including their roles at RRMHS, their beliefs about creativity and creative learning, their perspectives about student creative identity development experiences and creative activity accomplished by their students, their practices to foster student creative self-beliefs, and the opportunities and challenges for ECD student creativity at the magnet school (Appendix G). I took notes and made short entries adding the details regarding contextual features. Before analyzing, the transcripts of these interview recordings were emailed to each teacher participant and school administrator participant to review for accuracy confirmation. After completing both the online survey and the virtual interview, if the participating teachers and school administrators would like to learn more about supporting their student creativity and creative identity development, they were offered more resources and coaching support for the same. Such resources were optional, and they were provided outside of their study participation. The semi-structured interview allowed me to explore and understand perspectives of teachers and school administrators about their practices to foster ECD student creative identity development in the context of RRMHS.

## Case Analysis

Although I used data collected from five different sources to answer the research questions by conducting quantitative as well as qualitative analysis in the present case study, its distinct nature as a qualitative exploratory single case study aligned with my pragmatic inquiry worldview required primacy of qualitative data over the quantitative data. This section presents an overview of the analytical approach and methods used in the present case study.

### *Quantitative Data Analysis*

The web-based Youth Creative Identity Development Survey was administered to the purposeful sample of 133 students including 67 current senior students and 66 recent graduates of RRMHS. A total of 35 responses were obtained through QuestionPro software. Out of these 35 responses, 18 were eliminated from further analysis due to incomplete responses, leaving only 17 complete survey responses for a response rate of 12.78%. All the quantitative data were analyzed by using SPSS 27 software. After cleaning the data, the appropriate items were reverse-coded, and the descriptive statistics procedures were conducted. To answer the first research question, (*“How do ECD adolescent students perceive their creative identity and support for creativity in a regional magnet high school”*), the descriptive statistics from the Short Scale of Creative self, creative mindset scale, ICI index, race/ethnicity, age and gender and the correlational analysis thereof were used. The measures of central tendency and variation (means, standard deviation, etc.) were reported for each of the scales, and the skewness as well as the presence of outliers were analyzed. Additionally, a correlation analysis was conducted to examine the relationships among each of the subscales.

For studies using a small sample of participants, such as the present study, it is likely that correlations may not adequately address outliers and hence may not provide reliable and

appropriate results for principal factor analysis of the scales. However, cluster analysis provides a desirable alternative to factor analysis in small sample studies (Henry et al., 2005). Cluster analysis is specifically helpful in classification of the participants “according to their similarity on one or more dimensions and producing groups that maximize within-group similarity and minimize between group similarity” (Henry et al., 2005; p. 121). Therefore, I had planned to use a hierarchical clustering analysis method to address the second research question (“*What homogeneous profiles of ECD adolescent students’ perceptions about support for creativity and their creative identity exist in the context of a regional magnet high school?*”). How ECD adolescent students’ creative self-beliefs and perceived support for creativity combine together to constitute unique homogenous profiles of creative identity development of ECD adolescents were to be examined by capturing those creative identity profiles formed by participants’ responses to SSCS, CMS scale items, and ICI index items. Particularly, participating ECD adolescent students were to be grouped by the two subscale scores of SSCS, the two subscales of CMS, and the one ICI index so that each cluster illustrates the student profiles having similar characteristics in creative self-beliefs and perceptions of support for creativity in their school setting. My hope was that the cluster analysis would help in reduction of the quantitative data, in understanding the common associations between the variables, as well as in determining the cases for the subsequent qualitative phase (Pastor & Erbacher, 2018). However, the limited number of survey responses ( $n = 17$ ) prevented any inferential statistical procedures. It also did not meet the minimum sample size of 20 to 30 per expected subgroup for cluster analysis as recommended by Dalmaijer et al. (2022). Therefore, cluster analysis was determined not to be appropriate in the present case study. Hence, I did not conduct the cluster analysis procedures.

### ***Validity of Quantitative Data Analysis***

Validity is an essential component of a research design. It refers to the degree to which the theory and evidence support the interpretations of a measurement score for a proposed use (Standards for Educational and Psychological Testing, 2014). While the elements of the survey instrument, including SSCS, CMS and ICI Index, have been validated previously, I took many steps to ensure evidence to support the survey instrument's use for the inferences to be made. The scores from the survey instrument was used to assess participants' creative self-beliefs in four subcategories and perceptions of support for creativity in the school setting in a single subcategory. The small sample size of web-based survey respondents (35 participants) presented a threat to the validity of any inferential statistics making any inferential technique inappropriate in the present case study. Because the web-based survey was employed primarily to reflect the ECD adolescent students' perspectives regarding their creative identity development in the context of RRMHS for the present case study and the survey data statistics were not intended to be generalizable across the other ECD student population, the threat posed by small size of the survey sample would be mitigated to some extent. Hence, I decided to use descriptive statistics for the ECD survey responses as the primary output of the web-based survey in the present case study. The subsequent qualitative case study data also provided the convergent evidence as participant ECD adolescents' explained their experiences of developing creative-self beliefs and perceptions about support for creativity in their magnet school setting.

### ***Qualitative Data Analysis***

Data analysis in qualitative research involves classifying, reviewing, and comparing the qualitative data gathered from a variety of sources with an aim to find emerging patterns or themes (Creswell & Poth, 2016). The qualitative data analyses in the present qualitative exploratory single case study were done using thematic analysis (Braun & Clarke, 2013; Clarke

& Braun, 2014; Yin 2017) informed by the constant comparison analysis (CCA) method (Charmaz 2006; Glaser & Straus, 1967). Thematic analysis is an organic qualitative analytical technique intended to capture the pattern/s of meaning in terms of the qualitative themes (Clarke & Braun, 2014). Thematic analysis in a single case study consists of identification, analyses, and interpretation of themes within qualitative data. CCA is an iterative and abductive analytical process that helps researchers to derive abstract meanings from the concrete data by moving back and forth comparing data with emerging codes, categories, and themes constantly (Charmaz, 2006; 2008). Therefore, CCA is an appropriate analytical tool to guide qualitative data analysis in the present qualitative case study rooted in the pragmatic research paradigm. Although the CCA method is an analytical hallmark of the grounded theory approach, it has also been widely adapted in other methodological approaches in qualitative and mixed methods studies (Fram, 2013). Thematic analysis is also a flexible analytic technique that guides the researcher through a process of familiarization, coding, and theme development (Clarke & Braun, 2014). It can be paired with or informed by other qualitative methods such as the CCA method. Using cross-case thematic analysis along with the CCA method provided me a greater opportunity to verify qualitative data, distinguish biases from the actual data, and make meaningful and relevant interpretations. I conducted a thematic analysis based on the constant comparative method (Thomas, 2016), the details of which are presented as follows.

All data collected during the qualitative phase were analyzed throughout the data collection and analysis process to ensure implementation of the CCA method in the present case study. First, all individual interviews were transcribed using the Temi web platform as soon as possible. Next, all the interview transcripts were reviewed in detail, and all the recorded video and audio files of interviews were compared with the transcripts. I entered all the transcripts into

the Dedoose software using which all the coding, organizing, and analysis of qualitative data were done. Next, I read the transcriptions of all the qualitative data multiple times and selected meaningful small chunks of data for further analysis. All open-ended responses from web-based survey were assigned the alphanumeric identifiers specifically created for the present study based on each of the ECD student participants' date of birth, program cohort, gender, and race/ethnicity, and the interview transcripts were assigned participants' pseudonyms to protect the confidentiality of data as well as to ensure streamlining data analysis process. Codes were developed to identify meaningful themes, categories, and patterns for qualitative data of each ECD student, teacher, and school administrator participant. The initial coding entailed the word-by-word-and line-by-line coding of individual interview transcripts by focusing on statements representing RRMHS teachers' and school administrators' perspectives about their practices shaping ECD students creative identity as well as the ECD students' experiences and interactions in the context of RRMHS during their creative identity development. This process of initial coding is also known as open coding because it allows researchers to stay open to the participants' interpretations of their experiences. All the open code categories were further organized to identify sub-categories by grouping similar statements related to RRMHS context together. All coded data was stored in an electronic codebook for further analysis. Next, I assigned codes and color codes to all the qualitative data chunks and compared them with each other using Dedoose software until no more similarities can be found. Different color-codes were assigned to the emerging subcategories by marking text in the interview transcripts, field notes, and research memos to identify distinct subcategories and emerging themes. Finally, I organized all the similar chunks together, figuring out the patterns of data, grouped them under the derived categories, and found meaningful themes.

### ***Summary of Open-ended Survey Responses***

The student survey questionnaire used for this study included two open-ended short-answer questions drawn from the ICI index inventory (Renzulli et al., 2016). An initial review indicates that 15 students responded to the following open-ended questions: *“Describe a creative product, performance, or service developed/ designed/ created or completed by you at the magnet school that is a point of pride for you”*, and *“Describe the supports that your school provides for students to develop creative products, put on performances, or provide services to others.”* I initially applied open coding to 15 responses three times randomly, then compared them to check whether those codes should be revised or combined and whether new codes emerge in the next iteration of coding. Based on the levels of detail, the responses fell into two categories. One type of response entailed a brief description of the creative product or project such as “I designed a prototype for a website that would help people of color find therapists that look like them. I completed this during an internship through my school.” The second type of response contained more detailed descriptions of the creative product, performance, or service performed by the students. For example, one student noted “During my internship, we were asked to make a website for our client. My team and I were asked to make a pizza website easily accessible to their consumers, so we work (*sic*) hard and designed a website up (*sic*) to their liking. Along with the website, we created our portfolio with all of our work from scratch using a website.” Such great detail helped me code this type of response with greater confidence.

Based on the description, the responses fell into two categories. One type of response was identified as the student internship assignment to complete a creative product or project such as “I designed a prototype for a website that would help people of color find therapists that look like them. I completed this during an internship through my school.” In the second type of

response a description of specific classroom assignment or homework to complete a creative product, performance, or service performed by the students was provided. For example, one student noted “One product of my creativity involved my senior year thesis essay on a topic of my choice. Since my grandfather has recently died at the time, I used the experience that I had personally gone through to create an essay that focused on the topic of grief and how to cope with it.” I open coded inductively these student survey responses describing their point-of-pride creative products, performances, and services based on their level of creative magnitude from Mini-C to Pro-C. After the third round of coding when no new codes emerged from the data, I created an initial codebook containing the codes and their definitions.

Next, these open-ended survey responses were compared with the codes developed based on the narrative transcripts to draw conceptual themes. Inductive analysis of open-ended survey responses involved a thorough examination of each descriptive response, determination of specific themes, patterns in them, and building a general explanation for such themes and patterns. Themes and patterns emerged from the analysis of descriptive responses to open-ended survey questions were then compared with the codes, categories and themes generated through interview transcripts. Emerging themes were analyzed further in the final codebook (See Appendix K) that capture dimensions of supportive practices, opportunities, and interactions shaping meaningful trajectories of creative identity development experiences for ECD adolescent students of RRMHS in the present study.

### ***Validity & Trustworthiness***

Maxwell (2013) suggested that in terms of qualitative research, validity refers to “the correctness or credibility of a description, conclusion, explanation, interpretation or other sort of account” (Maxwell, 2013, p. 122). According to Johnson (2005), validity in qualitative research



entails plausibility, credibility, trustworthiness of the research. To ensure plausibility, credibility, and trustworthiness in this work, I first checked the validity of my qualitative research hypotheses, research methods, and inferences in light of the research questions by anticipating alternative hypotheses and interpretations as to what could be the outcome if my inferences are wrong. Next, I addressed my personal bias in this work by using the bracketing strategy of memoing (Maxwell, 2013). Writing reflective methodological memos as well as reviewing them throughout the data collection and analysis process helped me clarify my biases and thought process regarding this research study.

A primary threat to the validity of this study was the lack of my prolonged professional engagement with the participants in the present study. As a researcher, I had a very limited time throughout the present case study to know participating RRMHS ECD students, teachers, and school administrators well. It is possible that their viewpoints were different from what I expected, which could possibly led me to make some misinterpretations about their experiences and perceptions. To address this issue, I continued building authentic research relationships with participants and I stayed connected with them throughout the process of this study. To eliminate the possibility of misinterpreting the participants' views and perspectives, I also solicited feedback from participants on their interview transcripts and my inferences through member checking (Maxwell, 2013).

### ***Ethical Considerations***

Throughout the data collection, I was careful to not include any identifiable information for any participant, their family members, or other stakeholders by using pseudonyms. Additionally, participants were free to decline their participation at any point of time during the study. During this case study I encountered many methodological challenges. The present study

offered minimal risk to participants beyond the time that they spent completing the surveys and interviews.

Unfortunately, due to lack of funding, I was not able to extend any financial incentives to the participants for participating in the study. However, I offered them the choice to attend one-on-one creative coaching sessions free of cost with me. I personally designed each creative coaching session as a module custom-built to the specific needs and creative identity profile of the attending ECD adolescent student and creative teaching needs of the teachers. Each session focused on the facilitation of research-informed strategies for developing healthy creative self-beliefs in ECD students and designing a personal creativity development plan to implement those strategies in future.

## **Chapter 4. Findings**

The purpose of this qualitative exploratory case study was to examine the creativity-supportive practices at a regional magnet school shaping ECD students' creative identity development as perceived by different stakeholders of RRMHS (pseudonym). The phenomenon under investigation in this case study was the regional magnet school support for shaping ECD students' creative self-beliefs. The context of this case study is the RRMHS, a regional magnet school in the mid-Atlantic/southeastern region of the United States. The unit of analysis of this case study was ECD students', teachers', and school administrators' perspectives. This chapter will present the findings of the study through the quantitative survey of ECD students' creative identity development in the regional magnet school setting and the qualitative data collected regarding the school practices and interactions shaping their creative self-beliefs. The qualitative findings were the primary findings with which the quantitative results were aligned during the final phase of the present study. This chapter addresses these three research questions: 1) How do ECD adolescent students perceive their creative identity and support for creativity in a regional magnet high school setting? 2) In what ways do ECD adolescent students describe their experiences of creative identity development in the context of a regional magnet high school? and 3) In what ways do teachers and administrators at the regional magnet high school describe their views about and practices fostering the creative self-beliefs/ creative identity of their ECD adolescent students in the regional magnet high school setting?

### **Quantitative Results**

Quantitative data were used to address the first research question: "How do ECD adolescent students perceive their creative identity and support for creativity in a regional

magnet high school setting?” The following section will present the findings of quantitative data analysis.

### ***The Youth Creative Identity Development Survey Findings***

The response rate to the web-based survey varied widely within the demographic groups based on the ethnicities of the students as indicated in Table 2. The following table presents the summary of response rates within the ethnic groups and for the entire sample.

**Table 2**

#### *Descriptive Statistics of Survey Responses*

Survey Factors / Sub-Scales indicating Creative Identity Development	Items	<i>N</i>	<i>M</i>	<i>SD</i>	Minimum Score	Maximum Score
Short Scale of Creative Self	11	17	3.68	.52	2.82	4.73
Creative Self-Efficacy (CSE)	6	17	3.52	.55	3	5
Creative Personal Identity (CPI)	5	17	3.85	.73	2.40	5
Creative Mindset Scale	10	19	3.36	.57	2.70	5
Creative Growth Mindset (CGM)	5	19	4.19	.72	3	5
Creative Fixed Mindset (CFM)	5	19	2.52	.97	1	5
Support for Creativity Factors ICI Index	15	20	3.36	.57	1.73	5
Support for Imagination	5	21	3.52	.77	2	5
Support for Creativity	5	20	3.60	.88	2	5
Support for Innovation	5	20	3.07	1	1	5

While the above Table 2 presents the summary of descriptive statistics for the responses to the Creative Identity Development Inventory in the web-based survey, Table 3 shows the

extent of each factor indicating creative identity development of ECD students at RRMHS as follows.

**Table 3**

*Means, Standard Deviations, Minimum Values, and Maximum Values of Scores Indicating Creative Identity Development across Ethnic Groups*

Creative Identity Development	Items	Ethnic Groups of Student Participants																
		African American ( <i>n</i> = 6)				European American ( <i>n</i> = 8)				Asian American ( <i>n</i> = 1)				Undisclosed ( <i>n</i> = 3)				
		<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	
Creative Identity Factors																		
	Creative self-efficacy (CSE)	6	3.94	.74	3.00	5.00	3.29	.21	3.00	3.67	3.67	N.A.	3.67	3.67	3.08	.12	3.00	3.17
	Creative personal identity (CPI)	5	3.73	.93	2.40	5.00	4.07	.66	2.60	4.80	3.80	N.A.	3.80	3.80	3.40	.57	3.00	3.80
	Creative growth mindset (CGM)	5	4.25	.71	3.00	5.00	4.36	.59	3.40	5.00	4.80	N.A.	4.80	4.80	3	0	3.00	3.00
	Creative fixed mindset (CFM)	5	2.21	.87	1.00	3.00	2.49	1.07	1.20	5.00	4.00	N.A.	4.00	4.00	3	0	3.00	3.00
Support for Creativity Factors (ICI Index)		15	3.72	1.11	1.73	5.00	3.33	.59	2.40	4.00	3.13	N.A.	3.13	3.13	3.13	.18	2.93	3.27
	Support for imagination	5	3.77	1.08	2.00	5.00	3.56	.59	2.40	4.20	2.80	N.A.	2.80	2.80	3.06	.12	3.00	3.20
	Support for Creativity	5	3.80	1.01	2.20	5.00	3.51	.92	2.00	4.80	4.00	N.A.	4.00	4.00	3.27	.64	2.80	4.00
	Support for innovation	5	3.56	1.32	1.00	5.00	2.76	.77	1.60	4.00	2.60	N.A.	2.60	2.60	3.07	.70	2.40	3.80

The above table shows that across the ethnic groups, ECD student participants of RRMHS more or less consistently reported overall development of their creative identity to be on the higher side, which is within the range of one standard deviation from the mean of each factor. Among the constituents of creative identity, CSE scores varied from the lowest score in those ECD students who preferred not to disclose their ethnicity ( $M = 3.08$ ,  $SD = .12$ ) to the highest in African-American ECD students ( $M = 3.94$ ,  $SD = .74$ ); whereas the CPI scores varied from the lowest score in those ECD students who preferred not to disclose their ethnicity ( $M = 3.40$ ,  $SD = .57$ ) to the highest score in European American ( $M = 4.07$ ,  $SD = .66$ ). Furthermore, CGM scores ranged from the lowest score in those ECD students who preferred not to disclose their ethnicity ( $M = 3$ ,  $SD = 0$ ) to the highest score in Asian-American students ( $M = 4.80$ ,  $SD = NA$ ), whereas CFM score ranged from the lowest score in African-American students ( $M = 2.21$ ,  $SD = .87$ ) to the highest score in Asian-American students ( $M = 4$ ,  $SD = NA$ ). The support for imagination, creativity, and innovation varied from the lowest in both groups, Asian-American students ( $M = 3.13$ ,  $SD = NA$ ), and ECD students who preferred not to disclose their ethnicity ( $M = 3.13$ ,  $SD = .18$ ) to the highest score in African-American students ( $M = 3.72$ ,  $SD = 1.11$ ).

Further analysis found a range of ECD students' survey responses for each scale indicating some fine-grained variations in the ECD students' development of creative self-beliefs across the survey participants' ethnic groups. For example, the minimum CSE score 3 was shared by African American, European American, and ECD students who preferred not to disclose their ethnicity, whereas the maximum CSE score 5 was found in the African-American student's response. Interestingly, both the minimum CPI score of 2.40 as well as the maximum CPI score of 5 was reported in African-American student group. While the minimum CGM score

of 3 was shared by the African-American, and ECD students who preferred not to disclose their ethnicity, the maximum CGM score of 5 was shared by the African-American, and European-American students. Similar to the CPI scores described above, the minimum CFM score of 1 and the maximum CFM score of 5, both were reported by African-American students. Furthermore, both, the minimum ICI index score of 1.73 and the maximum ICI index score of 5 both were reported by the African-American students. These granular variations in the ECD students' creative identity development within each ethnic group suggested that there could be other possible factors influencing the ECD students' development of creative self-belief in the context of their magnet school, that remained to be captured. Hence, these survey results made it worthwhile to further explore the ECD students' experiences and perspectives along with the perspectives of their teachers and school administrators through qualitative methodology to better understand the context of magnet school-based supports fostering ECD students creative identity development.

The small size of the sample and the varying sample sizes across student ethnic groups prevented the application of any inferential statistics. Although, they restricted the survey's generalizability across the ECD student population in other school settings, the survey results were not intended to achieve generalizability in this study. The survey results in the present study revealed a number of nuances in the creative identity development of ECD students in the context of RRMHS setting, that would have not been captured otherwise.

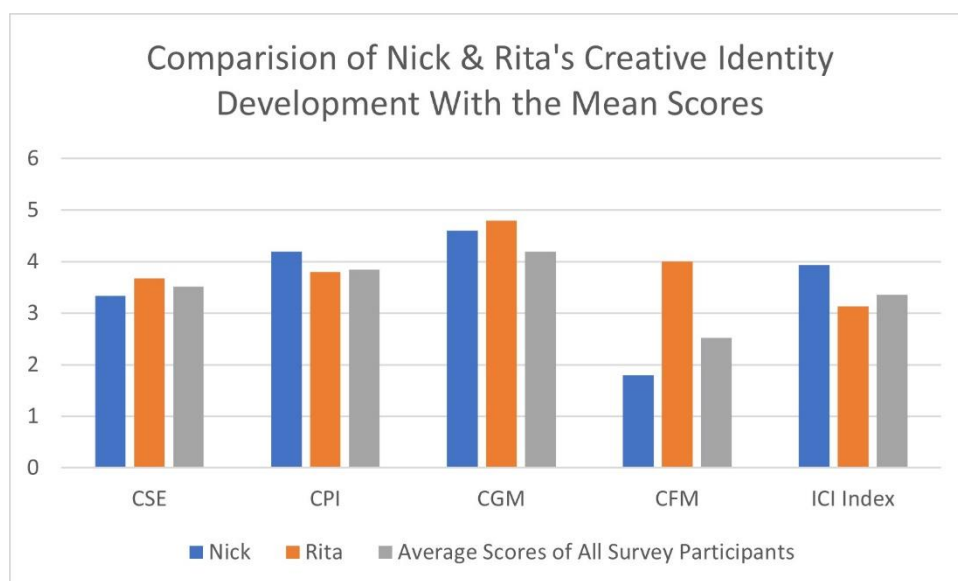
Specifically, the quantitative results captured a number of nuances in ECD students' creative identity development survey, that would have been lost if the study had depended only on descriptive statistics including survey mean scores. For example, this study found some granular variations in the creative identity development survey scores of two ECD students who



later also participated in the qualitative interviews namely, Nick & Rita, when compared to the average scores for each scale in the youth creative identity development survey, as presented in Figure 2 below.

**Figure 2**

Creative Identity Development Survey Scores for Nick, Rita, and Mean Scores of All ECD Students



The above Figure 2 shows the scores for each scale in the youth creative identity development survey reported by Nick and Rita vis-à-vis mean scores for each scale. Both Nick's scores, and Rita's scores are within the range of 1 standard deviation from the mean scores for each scale except Rita's CFM scores. Whereas Nick's CSE score of 3.33 was lower than the mean CSE score ( $M = 3.52$ ,  $SD = .55$ ), Rita's CSE score is higher than the mean CSE score. Conversely, Nick's CPI score of 4.2 was higher than both, Rita's CPI score of 3.80, and the mean CPI score of all ECD student participants ( $M = 3.83$ ,  $SD = .73$ ). Whereas CGM score of Rita was 4.80 which was higher than both Nick's CGM score of 4.60, and the mean CGM score ( $M = 4.20$ ,  $SD = .72$ ), Rita's CFM score of 4 was strikingly greater than both, Nick's CFM score

of 1.80, and the mean CFM score of all the ECD student survey participants ( $M = 2.52$ ,  $SD = .97$ ). Furthermore, Nick reported his ICI index score of 3.93 which was greater than both Rita's ICI index score of 3.13, and the mean ICI index score of all the ECD student survey participants ( $M = 3.36$ ,  $SD = .76$ ).

### ***Reliability of the Survey Instrument***

All the scales used in the survey were previously validated measures. However, Cronbach's alpha was used to examine the internal consistency of each factor subscale in this study. Although the minimum sample size recommended for assessing Cronbach's alpha varies in the research literature (Bonett & Wright, 2015), a sample size as small as 15 to 20 has been suggested as sufficient to measure the reliability of survey scales using Cronbach's alpha (Fleiss, 1999/2011). While the current sample size of 17 may restrict the power of quantitative analysis, it fulfills the minimum requirement suggested by Fleiss (1999/2011). Hence, assessing Cronbach's alpha for the current sample ( $n = 17$ ) was deemed reasonable for the present study. Table 4 presents the scale reliability scores for each of the sub-scales and the entire survey instrument.

**Table 4**

#### *Survey Scale Reliability*

Scale	Items	Responses *	Cronbach's $\alpha$
Entire Instrument	36	17	.83
SSCS	11	17	.82
CSE	5	17	.79
CPI	5	17	.79
CM	10	19	.71
CGM	5	19	.82

Scale	Items	Responses *	Cronbach's $\alpha$
CFM	5	19	.85
ICI Index	15	20	.93
Support for Imagination	5	21	.89
Support for Creativity	5	20	.89
Support for Innovation	5	20	.88

\*Listwise deletion for missing values

The above table (Table 4) presents the internal consistency of each factor subscale and the entire survey instrument in terms of Cronbach's alpha. It is noteworthy that the present study examined ICI Index scores, which is the mean of all 15 items ( $\alpha = .93$ ) rather than factor scale scores because the factors in the ICI Instrument were found to be strongly correlated (Support for Imagination-Support for Creativity  $r(18) = .61, p = .004$ ; Support for Imagination-Support for Innovation  $r(18) = .64, p = .002$ ; Support for Creativity-Support for Innovation  $r(18) = .63, p = .003$ ).

While the alpha coefficients for factors varied from .79 to .93, they were well above the .70 threshold of acceptable alpha coefficients (Tavakol & Dennick, 2011). Cronbach's alpha of .83 for all the items ( $n = 36$ ) in the Creative Identity Development survey instrument indicates a high internal consistency score. Hence, it suggested that the survey instrument as a whole seemed to be a reliable measure of the construct of creative identity development of ECD students.

### **Qualitative Theme-Based Findings**

The following two research questions were addressed by analyzing qualitative data: In what ways do ECD adolescent students describe their experiences of creative identity

development in the context of a regional magnet high school? and In what ways do teachers and administrators at the regional magnet high school describe their views about and practices fostering the creative self-beliefs/ creative identity of their ECD adolescent students in the regional magnet high school setting?

Through thematic analysis of qualitative data, three overarching themes emerged: (a) unique features of a regional magnet high school; (b) facilitation of creativity-fostering opportunities experienced by ECD students during creative learning in the context of RRMHS; (c) Affordances /factors specific to teachers and school administration. In the following sections, I have described the categories and subcategories (See Appendix K) under each of the above-mentioned main themes.

### ***Unique Features of a Regional Magnet High School***

One of the primary theme emerged from the analysis of qualitative data including ECD students' open-ended survey responses, my field notes, reflective research memos, and interview transcripts of ECD students, teachers as well as school administrators was unique features of RRMHS as a regional magnet high school. Three main categories were found under this theme: (a) small student population, (b) a multi-racial multi-cultural setting, and (c) an innovative curriculum & pedagogical model. Findings represented by each of these categories are described as follows.

**Small Student Population.** In the context of the present study, the RRMHS is a small school in terms of the student population. The first three student cohorts of the school that were invited to participate in the present study had only 133 students. As per the MSAP award document, the school has the maximum capacity to enroll 400 students. The principal of the

school (executive director) Dr. Jane noted in their interview how the small size helped the school to support their students effectively:

Unlike a large school where students may feel like they are just a small, tiny piece of a very big thing, at [RRMHS], because we're so small students have direct access to leadership and to teachers regularly, and so they should feel like they have opportunities to influence what happens in the school and that they can bring their opinions to people easily and, unlike, say, a 2,000 kids school. They can just ask to meet with me, or they can stop me in the hallway, or they can stop the associate principal. All of those things should be open communication between students and teachers, students, and leadership.

**A Multicultural-Multiracial Setting.** The RRMHS is the only magnet school in the region that has intentionally maintained the student cohort composition approximately matching the percentage proportion of the ethnic and racial composition of the state. Since one of the goals of the magnet school described in its mission statement is to address racial, economic, and gender inequities in STEM-related education, the RRMHS takes pride in being the only multi-ethnic, multi-cultural regional magnet school without high-level entry barriers for the ECD students coming from 15 different school divisions in the area. The very existence of ethnic and cultural diversity of students makes it an important and unique magnet high school setting.

**An Innovative Curriculum & Pedagogical model.** Qualitative data from ECD students as well as from interviews with teachers and school administration indicated that there are three main features of RRMHS' innovative pedagogy. First, as Mr. James, the associate principal cited the computer science content and the application of digital technologies have been embedded across all content areas of the curriculum through a blended learning approach at the magnet high school. Christensen et al., (2013) defined blended learning as follows:

Blended learning is a formal education program in which a student learns: at least in part through online learning, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home; and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience. (p. 7).

At RRMHS teachers and students alike reported about the regular facilitation of blended learning practices. Mr. Jamshed, the physics teacher who participated in the interview described his regular blended classroom teaching:

So, the class will go where I'll introduce the [learning] objectives. Objectives are always on the Google Calendar. I can review the objectives and I can introduce the assignment. If it's the first time with beginning of the assignment. I'll give them some time to get their minds around it. I give them some space to work on it in the class then I'll follow back up with individual students, walk around and check on them. Then I give them some time to work on it on their own. Then I'll provide some closure before we end the breakout.

The use of blended learning across the curricula was evident in the ECD students' open-ended survey responses where multiple ECD students reported how blended learning helped them become proficient in various content areas such as coding, website development, photography, 3-D model designing, astronomy, geometry, and mathematics. The clear evidence of blended learning as a helpful innovative learning approach was also noted in the ECD students' interview data. For example, Nick described in the interview how blended learning helped them:

"Definitely the coding and because I had access to a computer, I learned how to do Photoshop [that] could extend then in the 3-D modeling stuff [that] I did on my own ...". Rita noted her experience of gainful blended learning: "But with my teachers, when it comes to creativity skills

or projects, it was definitely [making] the Odyssey [career] plan. Or later it was about how to make an app for that company.” The gains of blended learning reported at RRMHS were consistent with the findings of past research demonstrating that the blended learning approach enhances students’ academic autonomy, engagement, and achievement as well as helps strengthen student-teacher relationships (Ceylan & Kesici, 2017).

Next, students’ hands-on project-based learning is highly valued and incorporated across all the grade levels at RRMHS. This finding was clearly evident in the ECD students’ qualitative data including multiple open-ended survey responses as well as individual interviews. Several ECD students ( $n = 7$ ) reported completing at least one hands-on project and internship experiences each resulting into creative outcomes during their high school years at RRMHS. Such survey responses were found to be ranging from making “a small game that will keep little kids entertained while teaching them.” to students completing a water filtration project as a creative solution to fix water supply issue at the RRMHS campus where a group of ECD students with the help of their teacher “managed to come up with a way to filter water that would cost pennies.” Another survey respondent noted the internship project experience where their team got to develop a real website for a restaurant chain company:

My team and I were asked to make a pizza [company] website easily accessible to their consumers so we work (*sic*) hard and designed a website up (*sic*) to their liking. Along with the website, we created our portfolio with all of our work from scratch using a website.

Similarly, ECD student interview participants also highlighted their hands-on projects experiences as means to develop creative mastery and creative confidence. For example, Rita described gaining creative mastery experience through accomplishing hands-on projects “over

the years” by practicing computer programming in html, CSS that helped Rita “built websites for companies during internship, [and] during school assignments.” Further, Rita went on to describe her internship project experience in the interview:

All of us [internship team members] worked together. And no one from our team knew how to make a website except me, because earlier I've made a website from my restaurant. So, at that point everyone was leading back to me that I knew what I needed to do. But knowing that the project was not only for me, but for everyone else. So, I became the leader on how to leave that there or how to make go outside like the basic layouts and stuff like this. And slowly, gradually I distributed plans, and I told them how to do certain things, and then told them to do the rest of the things. So, like the opening slide ..basically out of the website I showed them how to change colors in them and how to make it more fancy the wording and other stuff, and then I told them to make the other pages too. So slowly that way I showed my creative skills.

Finally, the regional magnet high school has developed an intentional system to provide differential instructions based on student needs such as personalized learning instructions, and small group instructions by highly trained and innovative teachers. The executive director described:

Different differences. So, the difference at [RRMHS] is that our teachers and students are allowed to schedule studies each week based on their own student needs. So, teachers should use formative data based on the products that students engaged in and those could be tested, it could be projected, it could be class discussions, could be any type of formative data, and the teachers then send out calendar invites for the students the next



week to group them based on their needs, and those groups may change every week.

(executive director interview)

### ***Facilitation of Creativity-fostering Opportunities in Magnet High School Learning***

#### ***Environment***

The synthesis of the analyzed data (responses to student survey questions, student interviews, teacher interviews, field notes, and reflective memos) revealed several categories under the theme of creativity-fostering opportunities facilitated and experienced by ECD students in a magnet high school learning environment. Aligned with the extant body of research on creative educational experience (CEE), ECD students of RRMHS were provided with open-ended, non-linear, pluri-perspectival, and future-oriented learning opportunities (Beghetto & Zhao, 2022; Glăveanu & Beghetto, 2021). The detailed description and examples of each of these opportunities are provided below.

#### ***Open-ended Learning Opportunities***

Open-endedness, the primary marker of CEEs, entails dynamic and agentic learning opportunities and interactions that are by nature emergent and open. In the intra-psychological sphere, open-endedness can be manifested in a variety of ways such as flexibility and structured uncertainty incorporated in subject domains, content, method, time, and spaces of learning. ECD students reported many open-ended learning opportunities in the context of RRMHS.

**Open & Flexible Learning Space.** The large open area at the RRMHS campus is the hallmark of its innovative pedagogy as it is used as an open and flexible learning space by ECD students. Data from students, teachers, and the school administration interviews highlighted the provision of such open learning area as a unique and helpful feature that allowed students to plan and implement their learning independently, helped them take ownership of their learning, and

provided sufficient autonomy to ECD students in deciding when to learn, what to learn, how to learn, and where to learn. Consequently, ECD students were able to learn independently developing agency and autonomy for completing creative learning tasks during their school time. Nick described the open learning spaces:

Usually, the classes are for about an hour each, either in the classrooms or in this place called the open space, which is sort of like a large open office area with a bunch of tables. And when we're in the classroom, we'll learn things from the teacher, but when we're in the open space, we're allowed to do our own work. (Nick, Student Interview)

**Agentic and Authentic Learning Opportunities.** The data shows that several agentic learning opportunities were provided to ECD students throughout their schooling in RRMHS settings. First, students had the option to choose their preferred learning pathways (e.g., regular coursework or dual enrollment pathway). Next, authentic learning opportunities were provided at RRMHS through various project-based learning tasks such as hands-on 3-D printing projects. Finally, the students also had the option to choose an organization/company to complete the school internship projects. Examples of such authentic opportunities were described by the ECD students and teachers alike.

**Dynamic Creative Opportunities.** As responses to the online anonymous student survey indicated, students were provided opportunities to choose their creative ways and encouraged to come up with their creative ideas and solutions while completing their assignments:

There have been several times where my classes have presented options in how to go about certain projects. For instance, during my junior year, there was a project in my Ecology class where the students were to create their own planets and describe their differences from the earth. The planet we made could be something completely new and

unique or it could just be the same as earth but with one change. (Participant 5, Student Survey)

The survey responses such as the above one indicated that ECD students had been offered dynamic creative opportunities in their learning environment at RRMHS.

### ***Non-linear Learning Opportunities***

Non-linearity is another prime feature of creative learning experiences, that entails iterative processes and multiple ways to demonstrate creativity in education. Such non-linearity manifests particularly in creative processes rather than creative products/outcomes. It means that there is hardly any fixed, definite singular process to achieve student expression of creativity. Sometimes students' failure and setbacks could be a part of creative learning due to the uncertainty and messiness brought on by open-endedness. Such creative failures can be productively used to redesign novel solutions to creative problems if the non-linearity of creative learning is acknowledged. Non-linearity can be addressed in three ways in creative learning: (a) by incorporating creativity in the curriculum as a complementary objective of academic content; (b) by pushing the limits of students' creativity through optimal challenging opportunities; (c) by helping students monitor and reflect on their creative learning beliefs and processes. ECD students and teachers of RRMHS reported various ways in which non-linear creative processes were integrated into their curriculum as complementary to the process of developing domain knowledge.

**Creative Curricular Opportunities.** ECD Student and teacher data revealed that creativity has been integrated into the RRMHS curriculum across all the content areas. Acknowledging the nonlinear nature of creative learning, the curricular tasks at the RRMHS do not focus only on student creative outcomes, but also on the creative processes that students

undertake to accomplish those curricular tasks. ECD students' creativity thus has been accounted for in their curricular assessment as complementary to their academic outcomes. Mr. Jamshed, a science teacher, described how such a curricular assessment worked to alleviate student fear of creative failure and to promote RRMHS students' creative confidence.

Their worry is, if you are creative, you may fail and fall in your face. So, the students are told that a part of the rubric says, "Keep a record of your creative process. So, if your product does not turn out the way it's supposed to, and you fail at it, I can still give you a credit for the creative process, even if the product didn't turn out the way it's supposed to" So, right there the student's fear of failure disappears, and the student gets comfortable. They get confident, and when you get comfortable and confident your creativity just soars. (Jamshed, Teacher Interview)

Non-linear learning opportunities also help in reframing creative failures as productive lessons for students. Teachers at RRMHS noted various ways in which they facilitated such reframing of student creative failures. Curricular practices such as providing hands-on multi-modal creative projects and simulation internships at RRMHS, developing mastery-based learning trajectory with informative feedback for each student, and providing students with low-stake creative assignments along with access to advanced computer technologies and applications were a few notable examples in this respect. As Mr. Heeler, a computer science teacher at RRMHS noted about providing multiple ways to demonstrate creative learning:

If I have you, make a product or pitch me a new company, and give me your ideas of what you want to have the company do, or give a presentation or... I mean there are so many different choices in different ways to have the kids show their learning. (Heeler, Teacher Interview)

Although such nonlinear opportunities offer diverse ways to achieve academic outcomes, the iterative and emergent nature of such learning experiences make ECD students struggle. When teachers promoted student productive discomfort with uncertainty in creative learning tasks and provided sufficient time and adaptive opportunities to explore alternatives sufficiently calibrated for a student to engage with the non-linear creative challenges, they indeed facilitated positive reappraisal of a student's creative effort as "productive struggle" which helped students complete those challenging tasks confidently (Beghetto, 2018; p. 14). Rita learned programming languages such as HTML and CSS in the 9<sup>th</sup> grade at RRMHS and developed a website for her own family business. Rita's internship coordinator teacher knew that app development could be the logical next step for Rita to try their hands on. However, developing an app seemed like a big challenge for Rita as she had not learned it in school. When Rita was asked to develop an app for a Pizza company during the senior year internship assignment, she felt discomfort at first. Describing how the internship coordinator teacher had helped reframe those creative struggles with uncertainty by providing clear criteria and an adaptive plan, Rita noted:

Now, an app is something [that] is out of my comfort zone. I've never made an app, I don't know how to make an app. So, my teacher originally told me that "Rita, you need to make this app", and my initial question was, "how do you make an app?" So, for two weeks I tried to figure out that and struggled on that. He told me 'You work for this for two weeks and try to figure it out. If you don't figure it out in 2 weeks, we'll find out to an alternative plan', so we did. (Rita, Student Interview)

**Optimal Challenge & Growth Opportunity.** ECD adolescent students believed that when they got a challenging creative task calibrated with their prior knowledge and skills, and built on their interests, they strive harder to complete that task. Such optimal challenges seemed

to drive students' creative self-beliefs in two ways. When teachers encouraged ECD adolescent students to push their creative limits by designing exploratory learning opportunities, those students were motivated to pursue creative challenges. Mr. Jamshed, a science teacher explained:

So, for example, their medium... they had to either come up with a game or to present the data on black holes if they were doing an astronomy presentation, or if they came up a physical game where they were playing like Monopoly, or they have to come up with an app that they had to create that students would use as a medium to share their research on black holes. So, the rubric had a point on there that said they were going to be graded on the creativity of their medium. They could not use Google slides. It could not use Google decks because they had [already] used Google slides at the beginning of the year. They used that before, and so later I started measuring other different parts of presentation skills. Then, later on, they advanced to not using Google slides and using other creative technologies and media, so that they're testing out their new skills. So, a student who is interested in virtual reality used his oculus goggles, and he went into the metaverse and created a presentation on his research. (Jamshed, Teacher Interview)

Accomplishing such challenges helped ECD students grow and increased their confidence in their creativity when their teachers showed clear and high expectations for ECD students' performance. Rita, an Asian student, reported how her physics teacher expressed high expectations for the students:

...And something I like about him, as he calls his classes, the dream team. He always calls it. When I was in tenth grade and I had him, and he would enter the classroom, he would say, "Okay! Dream team, so this is what I've been doing today, and this is what ..." So, the motivation and that confidence it gives you to just be called the dream team is

another thing. It hits differently at some point. Yeah, and when you remember, you were the dream team. (Rita, Student Interview)

Optimal challenges along with the high teacher expectations for performance experienced by ECD students at RRMHS seemed helpful to them in developing creative mastery, which in turn led to the development of their creative self-beliefs.

**Opportunities for Self-Regulation of Creative Learning.** According to the extant research on non-linear CEEs, uncertainty, and volatility are natural ingredients of non-linear learning opportunities which require active flexibility (Beghetto & Zhao, 2022; Glăveanu & Beghetto, 2021). To harness the power of such unpredictable learning experiences, the students need to self-monitor and self-reflect on their beliefs about and implementation of creative learning processes as well as using creative metacognition beliefs (CMC) (Kaufman & Beghetto, 2013; Zielinska et al., 2022). Kaufman and Beghetto (2013) conceptualized creative metacognition as a creative self-belief that refers to “a combination of creative self-knowledge (knowing one’s own creative strengths and limitations, both within a domain and as a general trait) and contextual knowledge (knowing when, where, how, and why to be creative)” (p. 160). The synthesized analysis of ECD students and teachers of RRMHS indicated that ECD students were provided plenty of learning opportunities to develop CMC beliefs and self-regulate their creative learning in various ways. Teachers at RRMHS facilitated creative self-awareness in ECD students by helping them challenge their assumptions and understand that creativity is as malleable as learning, thereby promoting their creative mindset. For example, Nick, a student, noted in his interview how his beliefs about creativity got transformed at RRMHS, “So, for an example, someone likes cats and then starts drawing cats and they get better [at] drawing cats. I think that's creativity.” Additionally, teachers and students reported using real-life technological

tools to self-monitor and self-regulate their creative projects. Nick described that RRMHS started using technology to plan class schedules well before the COVID-19 pandemic hit. He noted:

...we had a bell schedule, but all of our classes are put on the calendar. So, we knew where to be for each class. We got the Google calendar and then all our assignments were online on this program called Canvas. (Nick, Student Interview)

Many teachers also noted how they introduced and facilitated using *Agile Project Management* methodology and related software to keep track of student project assignments in their high school classrooms. Agile is a well-known project management approach mostly used to manage non-linear real-life projects in the corporate world. Using the software platform for ECD students to plan, self-monitor, and self-regulate their project-based creative learning tasks seemed helpful in promoting student creative confidence as reported by students and teachers alike.

While most of the elements of open-ended and non-linear learning experiences take place in the intra-psychological sphere, they are essential, but insufficient to implement creative learning without the interpersonal and/or social interactive learning experiences in the inter-psychological sphere (Glăveanu & Beghetto, 2017). Such interactive learning experiences most likely involve dialogues between different perspectives and future-oriented opportunities that may expand student creative learning to aspirational creative contributions made by them (Beghetto, 2018; 2020a). The following section describes the elements of those pluri-perspectival and future-oriented interactive learning experiences that are reported to motivate ECD students to develop creative identities.

### ***Future-oriented Creative Learning Opportunities***

Research on creative learning long illustrated that future orientation is another important marker of CEEs (Beghetto and Zhao, 2022; Glăveanu & Beghetto, 2021). The creative learning



framework is characterized by processes involving combining students' past knowledge and ideas with new learning to come up with ideas, actions, and solutions that are new and meaningful to themselves and others in their social context (Beghetto, 2020a). The features of novelty and meaningfulness are thus part of creative learning goals. The goal orientation to develop novel and meaningful ideas and actions in the future drives the creative learning process of students, making the entire creative learning trajectory a future-oriented affair. The present synthesis brought forward future-oriented creative learning experiences of ECD students at RRMHS particularly through optimally challenging relevant learning opportunities encouraging students to make a creative impact as well as institutional/community level empowering learning opportunities to help students connect their creative learning with their future career and life aspirations.

**Career-Oriented Opportunities.** As RRMHS is a computer science specialty regional magnet school, ECD students gained several career-focused learning opportunities related to new computer technologies such as coding, 3-D design, data analytics, web development, and other advanced digital technologies. The synthesis of data revealed that students got free access and opportunities to explore digital technologies such as 3-D printers, Virtual Reality (VR) headsets, drones, Google workspace, and the Canvas learning management system (LMS) platform in creative ways at RRMHS. Students were provided with opportunities to work on interdisciplinary hands-on creative projects through the integration of these digital technologies across all the academic content areas. Additionally, data indicated that students got multiple mastery-based experiences of using digital technologies in creative ways ranging from developing architectural layouts, and printing various 3-D models to designing spaces in the metaverse using VR. ECD students were encouraged to keep track of their digital creations and

design their own portfolios to present their creative digital work to their prospective colleges or employers. All these career-focused creative learning opportunities were reported to increase ECD students' confidence and metacognition in their digital creativity.

**Relevant Creative Learning Opportunities.** When ECD students experienced growth in creative learning opportunities that helped them move closer to their life aspirations and aligned with the goals that are personally relevant and meaningful to them, they were reported to build their creative self-beliefs. ECD student survey responses and student interviews described getting ample creative learning opportunities such as participating in school-based game design club, and architectural club, as well as leadership opportunities such as running a National Honor Society chapter in RRMHS settings, which helped them take their creativity to the next level based on their own interest and goals. Data from students, teachers, and school administration of RRMHS similarly revealed student participation in the school clubs and creativity-focused service-learning events in which they got to make meaningful and relevant creative products and work. Describing a service-learning project completed by the National Honor Society student chapter at the RRMHS, Rita, the student leader of the chapter, highlighted how the teachers helped them in connecting with a nearby hospital to gift student-designed motivational cards along with flowers to the COVID-19 patients. Such creative “communal learning opportunities” were noted as relevant and meaningful to the ECD adolescent students like Rita (Gray et al., 2020b, pg. 59). These opportunities not only helped students develop a close bond with the community, but also helped them gain creative mastery experiences which in turn led to enhance their creative confidence beliefs.

ECD students also got multiple opportunities to connect with and receive feedback on their creative projects from the innovators, creative professionals, and leaders in the region and

to present student creative work to them on the school campus. When students' creative work got appreciation and/or recognition from their real-world role models, it boosted their creative confidence. While describing their favorite creative activity at the school, Nick noted that getting a personal appreciation from the governor of the state for designing and presenting the proportionate digital models of stars, an astronomy class assignment, became the most memorable moment of their school life at RRMHS. Nick's experience of presenting the creative work to the governor made him feel their creativity being appreciated by the governor. Consequently, this experience seemed to enhance Nick's sense of belonging to creativity and their creative self-concept.

**Creative Empowerment.** As a newly developed regional magnet school, RRMHS school administration and teachers encouraged student voice and choice in the day-to-day school management. ECD students were provided with many self-advocacy opportunities to participate in the decision-making process and were encouraged to design alternative solutions for implementing effective school practices. School administration and teachers shared power with the students through pluri-perspectival interactions in many ways and took timely steps to resolve student issues and concerns in consultation with students and their families. Practices of empowering students range from inviting students to participate in annual school evaluations to accepting student petitions for making changes to the school policies, as well as inviting student suggestions for making the emergency transition to remote teaching due to the COVID-19 pandemic. Nick (student) noted in the interview:

The students here have a reputation for creating petitions and getting most of the school signed if they don't like something. That's happened several times... The first time I remember we did our first petition was in 10th grade when they changed the schedule for

the first time really. Back then, we really liked the old schedule. A lot of people liked it, liked the old schedule. So, we signed a petition, we had a petition which was like pretty close to 100 people signed. And then they ended up changing something in the schedule that year.

Data from ECD students, teachers, and school administration revealed that such student-empowering experiences of designing and presenting alternative solutions to the issues relevant to students' life made them feel heard and respected for their "creative contribution" to their school community (Beghetto, 2020a, pg. 10).

**Making Creative Impact Beyond The School.** ECD students also got immersive internship opportunities such as simulated work internships and real-world work internships based on their interests and career goals during both the 11<sup>th</sup> and 12th-grade levels. Such experiential creative learning opportunities and encouragement provided by RRMHS helped them connect with prospective employers and make real-world professional creative impact taking their creativity to the next, Pro-C, level. Students of RRMHS reported that they developed board games, digital games, prototypes of apps, as well as fully functional websites for the organizations and companies in the region as a part of their internship assignments. Thus, ECD adolescent student experiences of making a real-world positive impact of creativity in the form of designing products and digital services useful to their clients helped them develop a sense of agency and a sense of life purpose in addition to getting the required course credits to fulfill their graduation requirements. All these aspects of future-oriented creative learning opportunities at RRMHS were noted to have increased ECD students' creative self-beliefs along with their creative skills.

### *Pluri-Perspectival Learning Opportunities*

Creativity research demonstrates that the social interactions between different people with diverse perspectives taking place in their inter-psychological sphere are integral constituents of creative learning (Beghetto, 2020; Beghetto and Zhao, 2022; Glăveanu, 2015; Glăveanu and Beghetto, 2021). However, making such interactions of perspectives possible is not an easy feat in an academic setting. It requires both students and teachers to practice perspective-taking in the context of their school. Glăveanu and Beghetto (2017) defined such learning opportunities “that encourage and reinforce perspective-taking” as polyocular opportunities. When students are encouraged to acknowledge, understand, and respect the diversity of perspectives in the school setting, this pluri-perspectival engagement can lead to creative learning. In the present study, the ECD student population of RRMHS served as a hallmark of diversity in the context of school. The analysis of data showed that the pluri-perspectival engagement of ECD students was facilitated through relational and inclusive learning opportunities at RRMHS, which I describe in detail in the following sections.

**Relational Opportunities.** Experiences of ECD adolescent students regarding their creative identity development seemed to indicate the following relational elements experienced by them during the interactions at the regional magnet school that shaped their creative self-beliefs. These elements were also reflected in the teacher perspectives regarding the practices supporting ECD student creative identity development. Two main sub-categories were found under the theme of the relational opportunities at RRMHS are represented as the following sub-categories: (a) expression of care, trust, and respect; (b) balance of autonomy-supportive encouragement and structure.

***Expression of Care, Trust & Respect.*** Aligned with extant research on adolescents, present study findings indicated that relational experiences of care, trust, and mutual respect played a great role in ECD adolescent students' creative identity development at RRMHS. ECD students experienced care from the teachers and counselors who expressed positive attitudes and developed trusted relationships with them. A student noted her experience of how a teacher demonstrated trust in the following ways:

We had the trust and a thing that I think I still remember. In senior year we went up to him, and we were just talking about generally, and my friend and I went up to him and we were like got into punching each other, and I was like actually punching. We were like just punching each other that got straight up to him, and it went like this, and his eyes did not blink. You know, normally, when you do that, just (*sic*) even for one second, a person is not going to punch you back but if you have this at least you just blink your eyes. He did not blink his eyes. And I asked him, why didn't you blink your eyes, and he told me, "Rita, I know I have that trust in you and your friend that you would never punch me. That trust that you would never punch me did not make my eyes go (*sic*) blink." But I'm like it's not even about the truth like I trust you. But if you go and do this to me, I would still blink, right?. But he would never blink [his eyes]. He was like I had the trust that you would never punch me. That thing just stuck into my head. I told this to everyone I've met after that. These small things that teachers do make a huge impact on you. (Rita, Student Interview)

Teachers who expressed trust and care for students showed students how much they believed in them. Consequently, ECD students felt respected and more confident and comfortable discussing their creative ideas with the caring, trusted teachers who got to know them well.

When ECD students experienced care, trust, and respect from peer students, they felt safe to converse and collaborate with those peers. This sense of relational safety motivated them to discuss their creative ideas, receive feedback from peer students, and encourage each other's creative performance which also resulted in peer ECD students promoting each other's creative self-efficacy. For example, Nick noted how their ECD peer students helped each other to accomplish creative tasks:

...When I came here, I think the thing that most freshman creativity for my classmates and the teachers, is that even if the drawing or a model is just not okay, they would say, it's good, but you could do better. And it, I think it definitely pushed us, not just me, but everyone to continue to do better creativity... I think they influenced it a lot because I can, I can go up and ask like any of my classmates, my friends or how they think...What's wrong or how this writing is and they'll give an opinion and, and they'll, say it's good. And they'll give like some criticism, or they'll say you do a really good job. And everyone is very, very pro creativity, I guess what you would call it. And everyone is helpful about that. (Nick, Student Interview)

Through these caring and trustful experiences, ECD students got connected with peer students, provided constructive feedback on each other's creative work, and helped one another to move from mini-C to Little-C building creative confidence along the way.

***Autonomy-Supportive Encouragement & Structure.*** ECD students reported greater interest in creative tasks when they experienced a blend of autonomy-supportive encouragement and structural support for creative learning at their magnet school. Jamshed, a science teacher, noted in the interview their strategy to provide such balanced autonomy-supportive encouragement and structure to ECD students at RRMHS worked:

We purchased two 3-D printers. I had the students put the printers together. So, I grabbed students. I grabbed a group. Yep, boys, girls, white, black, Hispanic, mixed race, all were in that group. The group brought it over, and I said, I need these printers installed. I need them to put together. They're like "what?" And I was like "Here's a manual. I'm gonna stand with you. I'm gonna give you the tools, I'm gonna watch you. I'm gonna encourage you, But I want you to put the printers together. I'm not gonna be the one using this, you guys are. So, I need you to understand the pro how to [fix the] problem." So, I coached them a little bit through it. They put the 3-D printers together. We used them for physics.

I encouraged them to use them for other classes. (Jamshed, Teacher Interview)

Such optimal balance of autonomy supportive encouragement and structure provided ECD students with hands-on exposure to 3-D printing technology, made students feel ownership of 3-D printers, and sparked their interest in learning 3-D printing/designing. Consequently, many ECD students went on to complete 3-D creative design projects successfully as a part of their curricular pathways. Another way in which ECD students got optimal autonomy support and structure was the selection of their preferred academic pathway. Students at RRMHS had the autonomy to choose their own pathway (e.g., anyone from the applied pathway, dual enrollment pathway, advanced placement pathway) and sometimes even to change their academic pathways in consultation with their teachers, counselors, and parents. Optimal autonomy support was



reported in terms of teachers' availability for consultations as needed, which encourages students to decide what to learn, where to learn, and how to learn in the open and flexible learning spaces in the RRMHS school setting.

**Inclusive Opportunities.** When the student body of a school is composed of ECD students, valuing cultural diversity through the provision of inclusive opportunities becomes important for the entire school. Inclusive opportunities may entail respectful practices of responding to ECD students' cultural needs, promoting sensitivity to ethnically and culturally diverse ways of knowing, and being in the context of the school. In the present study, experiences of ECD adolescent students regarding their creative identity development seemed to indicate following inclusive learning opportunities experienced by them during the interactions at the regional magnet school that shaped their creative self-beliefs. These experiences were also reflected in the teachers' perspectives regarding the practices supporting ECD student creative identity development. Two main sub-categories were found under the theme of the inclusive creative learning opportunities: (a) opportunity to sustain cultural identity in creative expression; (b) sensitivity to minority experiences of students.

***Opportunity to Sustain Cultural Identity.*** As a regional magnet high school with a mission to serve students from culturally diverse backgrounds, RRMHS enrolled ECD students. However, mere enrollment to RRMHS did not help ECD students alleviate their “belongingness uncertainty” (Gray et al., 2018, p. 97). When ECD students were encouraged to express their creativity in ways aligned with their cultural values and heritage, they reported feeling confident about their creative work. Rita, an Asian-American student, noted their creative project experience for the history class:

Because coming to [RRMHS] being the only Indian in the entire school, as a freshman was a little scary because there was no one I could really connect with as culturally. So, I had to make that scale my own, where I just presented ideas and did projects related to my culture, which mainly stood out in some way. So, definitely confidence in originality, and then self-reflection would be just reflecting on your own. Today, when I go back and reflect on my projects and stuff, I feel proud that I represented my own ethnicity and my own culture. When others were just doing something that we all know today living in America, either it's like the Civil war or maybe, maybe it's the Civil War maybe it was world war 2 when I was in a history project, whereas I presented an Indian part of history then maybe no one knew about. (Rita, Student Interview)

Such culturally sustaining experience provided positive recognition to ECD students for their cultural distinctiveness, that not only helped them in attaining a cultural continuity, but also seemed to provide a sense of belonging to the school and creativity. Consequently, ECD students like Rita experienced an enhanced level of creative confidence through effective pluri-perspectival social interactions.

*Sensitivity to Minority Experience.* When ECD students perceived support and sensitivity for their diverse cultural identities and experiences at their school, they experienced inclusion in creative learning. Teachers reported various mindful ways they used to develop sensitivity to the cultural diversity of an ECD student who came from a minority community. Jamshed, a science teacher, who comes from a minority community themselves, noted their practice of making an intentional, open-minded conversation to find common ground with ECD students while valuing their diverse cultural identity and experience:

When I interact with that child, I can guarantee you I can find a common ground between that child's background and mine. So, the conversation will not be about the assignment, the conversation will be about the child. What they're working on with their day-to-day life is when they're talking to me. They'll really share something where I can build common ground because I've experienced that piece. It's very difficult for somebody who is not in the minority to experience what a minority student feels like. right? (Jamshed, Teacher Interview)

Such sensitivity to students' cultural distinctiveness helped ECD students feel a sense of inclusion and trust which in turn helped them in perspective-taking during the conversations at school. As students developed the practice of perspective-taking, they felt greater comfort in engaging with multiple and diverse perspectives in their creative learning. When ECD students made such pluri-perspectival dialogues effectively with a focus on creative learning tasks, they experienced a high level of motivation for creative learning, which resulted in an enhanced level of creative confidence in them. Rita, the only Asian-American student in her cohort, noted how she got inclusive support and motivation to develop confidence in her creative abilities at RRMHS:

Let me say this. I immigrated to America in 2015 where I came out of situations where people didn't really like me, and that decreased my confidence a little bit because there was a phase in my life when I started thinking badly like I wasn't worthy, or I couldn't achieve anything... There was a part of me in middle school...and when I came to high school I started developing a little bit where I started relying on my confidence more than someone else's. I was like, 'I don't know if this is right or wrong, but I think I'm confident about it, I'm just gonna go and hit submit it.'... I can't tell you a moment that I was, but there were several small-small moments that gave me that confidence that I could do it, and part of it was just motivation from my peers and teachers. (Rita, Student Interview)

### ***Affordances Specific to Teachers and School Administration***

The final theme emerged from the analysis of teachers and school administration interview data was the affordances or factors specific to the teachers and school administration only that were supportive to ECD student creative learning. Three main categories were found under this theme: (a) teacher autonomy, (b) teacher and school administration beliefs about creativity, (c) teacher prior experience with ECD students. Each of these categories is presented in detail as follows.

**Teacher Autonomy.** The teachers were able to facilitate open-ended, flexible, autonomy-supportive creative learning experiences of ECD students at RRMHS because teachers enjoyed a lot of autonomy not only in pedagogical planning, instructions, and assessment but also in designing school policies across all the grade levels. The greater sense of teacher autonomy was evidenced through the analysis of qualitative data generated through teachers' interviews and school administrators' interviews. All four teachers who participated in the

individual interview noted that the RRMHS school administration placed a great level of trust in them by providing an immense level of autonomy in their teaching practice at the regional magnet school. Specifically, all four teacher participants highly appreciated how having great autonomy at the school helped them to design and conduct innovative lessons and adapt assessment structures and rubrics to suit students' learning needs. For example, Mr. Heeler, a CS teacher described their experience of autonomy in assessing student learning; "We are given that latitude, that freedom to assess in whatever way we feel is the best. And so, I can assess a child just by having a conversation with them." Moreover, interviewed teachers reported that they had a say in almost every matter at RRMHS. Teachers' perceived autonomy at RRMHS was found to be well-aligned with the perspectives of the school administrators. The RRMHS executive director Dr. Jane emphasized that providing autonomy to the teachers help them in creative teaching:

...When it comes to instruction there's just a couple of minimums that you have to meet with. Teachers meet with students at least twice a week, as with our innovative learning model. But beyond that teachers should have complete creative control of their classrooms. And I think that encourages teachers to experiment and to try new things and to understand that failure is okay.

Altogether, the data presented clear evidence of teacher autonomy in their teaching practice at RRMHS. This finding highlighted the importance of the school administration's support and trust in extending autonomy to teachers leading to the development of creative pedagogical leadership and innovation among teachers at RRMHS. These findings are aligned with recommendations for school administrators to offer autonomy to teachers so that they can practice creative teaching (Anderson, 2002; Brandon, 2019; Richardson and Mishra, 2016).

**Teacher and School Administration Beliefs About Creativity.** The data from both teachers and school administrators interviews further revealed that the beliefs held by teachers and school administrators of RRMHS about student creativity played a significant role in shaping their creativity-fostering teaching practices. Specifically, the following Table 5 shows the evidence of beliefs held by all four teachers and two school administrators about creativity:

**Table 5**

*Examples of Teacher and School Administrators' Beliefs about Creativity*

Beliefs about Creativity	Exemplar Quotes
Creativity is a malleable competency.	"So, when it comes to the creativity point, the creation is a difficult thing, so they need to have that that [growth] mindset, and that forward thinking to go from nothing to something in math, especially." (Mr. Max, Math teacher)
Anyone can develop creativity by practicing it in their learning environment.	"It can be taught. So, you have to make the time for it, and you have to create an environment in your classroom. I think that allows children to feel comfortable to take on the risk.." (Mr. Kida, CS teacher)
Creativity is not restricted to the arts, but it can develop in any domain area.	"So, it's not such a narrow view of like 'Oh, it's writing short stories, or something like' ..no, no, it could be anything." (Mr. Max, Math teacher)
Creativity manifests itself differently in different disciplines.	"It's not creativity in the traditional sense of painting and sculpting and music. It's not a fine arts creativity, it's much more a 'Can I get this job done' type and a lot of times you really have to be creative to maneuver around some of the obstacles that some of your structures present." (Mr. Heeler, CS teacher) "Everyone is creative in their own right. It manifests itself differently depending on who the student is and who you are personally," (Mr. James, Associate Principal)
Creativity is an essential 21st-century skill that can be incorporated into academic learning.	"I think that creativity is an important part being able to be a problem-solver, and ..it does include being able to know certain facts that have already occurred, or certain methods that are already there, but also resiliency for being able to solve problems that you've not faced before, which takes creativity, so I do think that it does have a place within every teacher's classroom." (Mr. Kida, CS teacher)

Beliefs about Creativity	Exemplar Quotes
	“I think Creativity is essential in learning in terms of I mean both ways right? Like students need to have opportunity to express creativity in their products, and in the way that they learn.” (Dr. Jane, Executive Director)
Exposing students to creative tasks can help them learn not only to develop creative ideas, and products but also to master the creative process.	“So, the students are told ..., Keep a record of your creative process. So, if your product does not turn out the way it's supposed to, and you fail at it, I can still give you a credit for the creative process, even if the product didn't turn out the way it's supposed to..” (Mr. Jamshed, Physics teacher)

Several creativity research studies previously presented strong evidence confirming the teachers' beliefs about creativity that are reported in the Table 5 as key affordances of their creative teaching practices (Burnett & Smith, 2019; Cropley & Cropley, 2008, Gajda et al., 2017; Karwowski, 2014; Kaufman & Beghetto, 2013). Because all the aforementioned beliefs of teachers about creativity were consistent with the findings of the past creativity research, it indicated that RRMHS teachers seemed to have fundamental knowledge about the conception and the nature of creativity that was well-grounded in the creativity research. This finding was interesting because no teacher reported having professional development specifically designed for creative teaching and pedagogy, although all of them reported having completed one or more professional development programs regarding incorporating technology in teaching, teaching for 21st century learning, culturally responsive teaching, and anti-racist pedagogy. However, teachers also reported that they hardly discussed with their students explicitly about students' beliefs about creativity.

**Teachers' and School Administrators' Prior Teaching Experiences.** All the participating teachers and school administrators had fairly seasoned teaching careers with teaching experience of more than a decade in traditional public schools. Additionally, all of them

had worked at demographically diverse public schools in the region and had a lot of experience in teaching ECD students before joining the RRMHS campus. Although, the ECD student enrollment at RRMHS was as diverse as aligned with the demographic composition of the region, developing an innovative and inclusive CS-specialty regional magnet school environment for ECD youth coming from 15 different school divisions was a great challenge in front of the school administration and the teachers who joined at the time of inception of the school. The primary reason for this challenge was that the context of RRMHS was novel and totally different from that of the public schools in which teacher participants had taught before. The present data indicated that this challenging opportunity coupled with autonomy support from the school administration was likely to have inspired RRMHS teachers to co-construct and experiment innovative curricular and instructional strategies at the newly developing regional magnet school.



## **Chapter 5. Discussion, Conclusions, and Recommendations**

This qualitative exploratory case study aimed to examine the support experienced by ethnically and culturally diverse (ECD) students in shaping their creative identity development in the context of RRMHS, a regional magnet school. I was able to draw a comprehensive picture of the creative identity development of ECD students in the RRMHS context by embedding a quantitative ECD youth creative identity development survey within a primarily qualitative case study. Doing so helped me build a nuanced understanding of stakeholder group perspectives on the supportive role of RRMHS context in shaping its ECD students' creative self-beliefs. In this chapter, I will provide a detailed discussion of the findings presented in the previous chapter: (a) the unique features of a regional magnet high school; and (b) the facilitation of creativity-fostering opportunities experienced by ECD students during creative learning in the context of RRMHS. Following the discussion of the findings, I will present the limitations of the present study, and the implications of the findings. I will also offer a few recommendations for future research at the end of this chapter.

### **Overview of the Study**

When other racial challenges faced by ECD adolescents in society are combined with the growing prominence of creativity as an educational goal in their school settings, it specifically underscores the need to study and understand ECD adolescents' experiences as well as perspectives about how their creative identity development is/can be fostered in their school environment. Although extant research demonstrated that the development of creativity and creative identity of ECD youth looks different from that of European American youth, the former remains an understudied topic. The research gap discussed in Chapter 2 signifies the need to examine the supports in terms of interactions and opportunities that motivate ECD students and

contribute to their creative identity development in a social context of a school. While a magnet school setting presents such an intentionally diverse, innovative, social context, determining the set of effective opportunities and practices for fostering ECD adolescent students' creativity and particularly their CSBs in the context of a regional magnet school remains an ongoing challenge. A large volume of research suggests that integrated schools such as magnet schools support ECD students' robust deep learning and development of 21st century-skills (including creativity) by promoting multi-ethnic, multicultural diversity, and broadening equitable access to learning opportunities for them (Mickelson & Nkomo, 2012, Wells et al., 2016). While the literature indicates various factors including adolescents' differences, characteristics of their social context, and their social interactions with those immediate environments influencing their CSBs and creative identity development, little is known about how ECD adolescent students shape their creative identity in the context of a regional magnet high school. There is no consensus in the research literature regarding how and which aspects of a regional magnet school environment and social contexts were beneficial to ECD adolescents' creative identity development.

The present study aims to bridge this gap in research on creativity development by exploring particular social and motivational processes within the context of a magnet school environment that shape the creative identity of ECD adolescent students by drawing on the participant ECD students' voices, their teachers and school administrators regarding their views and practices supporting ECD students' creative identity development.

### **Synthesis of Findings**

Synthesized data analysis in this exploratory single case study presented notable overarching findings that I will discuss in the following sections. Using a pragmatic lens, I draw on Beghetto's (2016, 2021) model of creative learning as a conceptual framework for this study.

As the context of RRMHS was important to the research aims discussed in Chapter 3, the small purposive sample of primary stakeholders in the RRMHS setting including the ECD students from the first three cohorts ( $n = 17$  for the student survey and  $n = 2$  for student interviews), four teachers, and two school administrators was sought for this case study.

### **Summary of Quantitative Results**

To better understand what social and motivational supports were helpful to ECD students in developing their creative identity, I felt it was important to understand ECD students' perceptions of the current state of their creative identity, particularly the perceived level of their creative self-beliefs. Hence, I employed a small quantitative survey segment assessing how they perceive their creative identity. The quantitative data were analyzed for descriptive statistics and the reliability of the survey measures was confirmed. The quantitative survey scores for creative self-beliefs such as creative self-efficacy (CSE), creative personal identity (CPI), creative mindsets (CM), and support perceived by ECD students were mostly around the mean level of scores for each scale in the measure indicating that participating ECD students of RRMHS had reported having a moderate to a high level of creative identity. Overall, ECD student participants of RRMHS more or less consistently reported overall development of their creative identity to be on the higher side, which is within the range of one standard deviation from the mean of each factor across all the ethnic groups self-reported by them. However, the fine-grained variations in the survey scores across the ethnic groups as well as within each ethnic groups described in Chapter 4 indicated possibility of a number of factors at play in developing ECD students' CSBs in the context of RRMHS. It warranted further qualitative exploration of perspectives of those ECD students who had reported the lowest and the highest scores for all the survey scales representing the maximum variation in the survey scores.

Furthermore, innovative methodological strategies were used intentionally in this case study to reduce the drawbacks of the traditional quantitative research design. The survey results were used as probes in the follow-up interviews with the student survey participants in the present case study. For example, Rita's CFM scores of 4 and CGM score of 4.80, both were greater not only than that of Nick's scores, but also than the corresponding mean scores of aggregate student survey data. Rita's example of holding higher degree of both the CSBs, the creative growth mindset and creative fixed mindset was informed by Dweck's (2015) argument that the growth mindset and fixed mindset co-exist in every individual. However, it warranted further explanation regarding the contextual nuances in the development of Rita's creative identity because both her CGM and CFM scores were not only remarkably greater than her other CSBs but also were greater than the mean scores of all ECD students who participated in the survey. Consequently, the survey results helped me to develop nuanced interview questions to Rita by using her CGM scores and CFM scores as probes. While traditionally the quantitative survey results help answer the research questions, the resulting variations in the survey scores as described above, provided an opportunity to ask informed and nuanced questions based on these survey results during the follow-up interviews of Nick and Rita in this qualitative case study. On asking an interview question using Rita's survey scores (CGM score and CFM score) as probe, her response provided interesting data points partially explaining the co-existence of higher degree of Rita's, both CGM and CFM scores. Specifically, Rita's unique response was that she could develop confidence in her creativity in particular domain such as website development wherein she could also develop high CGM beliefs with practice through social support that she got at RRMHS. However, Rita also added that she held CFM beliefs with regard to some other domains in which she was yet to explore her creativity. According to her, her cultural influence

made her believe that creativity in some domain areas had to be innate and she held that fixed mindset CSB unless she would experience otherwise with practice. While I did not intend to generalize or tokenize any finding relying on one student participant's interview data in this case study, this response by Rita provided some fine-grained insights into possible cultural influence in shaping CM beliefs of ECD adolescents which was consistent with the findings of Gajda (2019) described in chapter 2. It could be that ECD students' different ways of knowing and being might play a role in determining why their CSBs such CM beliefs manifest in certain ways. Such unique insight might not have been captured if this study had depended only on the aggregate survey data. Although Rita's unique case of holding high degree CGM and CFM beliefs and her nuanced interview response are aligned with the emerging research evidence (Dweck, 2015, Gajda, 2019), it signified the need for the future research to also explore the contextual nuances further in the development of ECD students' CSBs.

### **Summary of Qualitative Findings**

Using the model of creative learning (MCL) (Beghetto, 2016, 2020a, 2021a) as the conceptual framework, I analyzed the qualitative data collected through the open-ended ECD student survey responses, interviews of two ECD students, four teachers, and two school administrators as well as my field notes from the RRMHS visits. Particularly, the views of participating ECD students, teachers, and school administrators of RRMHS with regard to supportive practices shaping the creative identity of ECD students were aligned with each other. Three major themes emerged from the qualitative data analysis: (a) the facilitation of creativity-fostering opportunities experienced by ECD students in the context of RRMHS, (b) the unique strengths of a regional magnet high school, and (c) affordances specific to teachers and school administrators.

***Theme 1: Salient Strengths of Creativity-fostering Opportunities Facilitated in Magnet High School Learning Environment.***

The primary finding of the present exploratory case study entails several prominent strengths manifested in creativity-fostering opportunities facilitated in the context of the participating regional magnet high school environment. There were several school-based opportunities facilitated to support the creativity of ECD students in the regional magnet high school environment of RRMHS. The analysis of qualitative findings specifically suggested that RRMHS augmented the following four salient strengths of these creativity-fostering opportunities: (a) open-ended and flexible learning opportunities embedded across all the levels, (b) non-linear synergy of creativity and learning, (c) Productive Pluri-Perspectival Engagement, and (d) focus on the future of the ECD students. Each of these strengths are discussed in detail as follows.

**Open-ended & Flexible Learning Opportunities Embedded Across all Levels.** Since its inception as a regional magnet school, RRMHS positioned itself as a promoter of the open learning environment. The open, collaborative lounge area is the hallmark of RRMHS's innovative campus. The ECD students from 9th grade to 12th grade used the open lounge area at RRMHS in various ways to work on their multidisciplinary creative projects either independently or collaboratively, develop creative prototypes, brainstorm creative ideas with peer students, reflect on their creative process, discuss the feedback on creative work with teachers and/or classmates, rehearse creative presentations, undertake mixed-grade cooperative reciprocal learning, and even to enjoy the 15 minutes study-breaks incorporated in their class schedule, rendering it to be a multi-grade, multi-purpose open learning space. The school-wide expectations and encouragement for all the ECD adolescent students to use the big open

“coworking office style” space equipped with multimedia devices and collaborative seating arrangement in various ways for their learning for almost half of their school day with minimal restrictions is an apt example of such an open learning environment at RRMHS campus. While past research demonstrated that the availability of open exploratory learning space promoted student creativity in the college student population (Robinson & Kakela, 2006), and in elementary student population (Richardson & Mishra, 2018), the present synthesis illustrated that having an open and flexible exploratory learning space promoted creativity and creative confidence in ECD adolescent population in a regional magnet high school.

Openness can be manifested in both ways in creative learning, namely, openness to uncertainty and openness to difference (Beghetto, 2019; Glăveanu and Beghetto, 2017). The former encourages students to explore and take creative risks without fear of early evaluation. The latter helps students value diversity as a resource for creative learning. Prior creativity research demonstrated that striking a balance between offering structured instructions and intentional open-ended learning opportunities help students develop curiosity and courage to navigate uncertainty in creative learning (Beghetto, 2019; Beghetto & Zhao, 2022; Evans, et al., 2022; Jirout & Klahr, 2012; Jirout, et al, 2020). Beghetto (2019b) specifically defined such “opportunities to work through uncertainty in a well-planned learning environment” as “structured uncertainty” (p. 34). The finding of this study suggested that ECD students at RRMHS were offered several exploratory creative learning opportunities regularly through intentionally designed open learning space infused with the *structured uncertainty* as well as through agentic, authentic, learning activities such as PBL and hands-on internship assignments that were seamlessly integrated into their curriculum.

At RRMHS, ECD students were also encouraged to pursue personalized academic pathways of their choice. These agentic learning opportunities combined with the intentionally open and flexible, autonomy supportive learning spaces conducive to students' independent learning and exploration helped ECD students feel greater ownership of their learning, develop curiosity and courage to embrace uncertainty in creative learning that propelled ECD students' creative mastery experiences shaping their creative self-beliefs. Consistent with the prior research that showed having an open explorative learning space, greater meaningful personalized choices in learning, autonomy-supportive learning environment enhanced students' curiosity (Jirout et al, 2020; Robinson & Kakela, 2006; Richardson & Mishra, 2018; Schutte & Malouff, 2019) and intrinsic motivation for putting more efforts in learning and developing mastery (Ryan & Deci, 2020). A line of research suggested student curiosity drives their creativity and creative self-efficacy (CSE) (Carr et al., 2016; Karwowski, 2012; Puente-Diaz & Cavazos-Arroyo, 2018; Schutte & Malouff, 2020). Moreover, it is well-established in the creativity research literature based on the Social-Cognitive theoretical framework (Bandura, 1986; 1997), that meaningful creative mastery experience gained by individuals is an important source of their CSE. ECD students' creative mastery experiences were one of the highly emerging codes in the qualitative data of the present study.

While prior research has demonstrated how open, exploratory learning experiences infused with uncertainty stimulate student curiosity, thereby enhancing creativity and creative self-beliefs of students at various developmental age groups such as preschool children (Evans et al., 2022; Jirout, et al, 2022), early adolescents (Anderson, et al., 2020; Karwowski, 2012), and college students (Puente-Diaz & Cavazos-Arroyo, 2018; Schutte & Malouff, 2020), the present



study is the first to examine linkages between ECD adolescents' creative self-beliefs and creative learning opportunities in a U.S. magnet high school context.

**Non-linear Synergy of Creativity and Learning.** The creative process is iterative and multi-faceted by nature (Beghetto, 2019; Cropley & Cropley, 2008; Glăveanu & Beghetto, 2021). For creative learning to take place, it requires learners to embrace this creative non-linearity in their learning process. Unlike traditional learning where conformity to standards, high-stake assessment, and sequential trajectory of student learning prevail over creativity, creative learning trajectory is flexible, evolving, and nonlinear.

Navigating through a non-linear creative learning process, however, is possible for students when the creativity is treated as an academic goal complementary to students' learning (Beghetto, 2018; 2019a; 2020a). Since its inception as a regional magnet school, RRMHS emphasized *student creativity and innovation skills* as one of its important goals as cited by the school administrators in their interviews. The findings of the present study suggested that the non-linear synergy between creativity and the learning process was achieved at RRMHS in various ways, such as (a) incorporating the creative process in the curriculum across all the content areas; (b) developing optimally challenging creative learning experiences for ECD students; and (c) facilitating ECD students' self-regulation of the creative learning process.

Some prior creativity research posited that student creativity in learning would be fully captured by moving beyond creative outcomes and by accounting for creative processes, person, and context as well, in a creative experience as a whole (Glăveanu & Beghetto, 2021). At RRMHS the curricular tasks do not focus only on student creative outcomes, but also on the creative processes that students undertake to accomplish those creative curricular tasks. When the focus is extended to the creative process in learning, its nonlinear nature might bring

ambiguity and confusion in learning. For example, a creative learning task could result in more than one correct answer or there could be multiple ways to answer a question. Students might fail to accomplish the anticipated results in a learning task. Unanticipated failures and delays might prolong the creative learning projects. A line of research postulated creative failures as productive lessons and a useful step in a successful learning process (Anderson, et al., 2020; Beghetto, 2021d). Such positive reframing of failure helps students reduce their fear of failure and enables them to develop resiliency as well as tolerance for ambiguity in creative learning (Beghetto, 2021d; Cropley & Cropley, 2008).

A line of research by Callan & colleagues (2019) demonstrated how processes of creative problem-solving are closely aligned with Zimmerman and Moylan's (2009) model of self-regulated learning in adolescent students' population (Callan, et al., 2019; Rubenstein, et al., 2020a; 2020b). Prior creativity research also posited that *assessment for creativity* enables students to self-regulate their creative performance thereby enhancing their creative confidence (Beghetto & Karwowski, 2017; Kaufman and Beghetto, 2013). In a study examining adolescents' self-regulation strategies in creative processes Zielinska and colleagues (2022) found that adolescents with greater willingness to revise their creative tasks were those having greater CPI and creative mindset. It is likely that positive reappraisal of mistakes helps adolescents appreciate the malleability of creativity, value their efforts to develop creative mastery, and raise the subjective task value of creativity learning to higher creative confidence. RRMHS school administration and teachers were instrumental in normalizing students' creative failures by providing them with ample opportunities to make mistakes, reflect on their mistakes, and take corrective actions in their creative learning. Digital technological softwares and tools

such as Google workspace and Trello were employed to help students self-regulate their creative learning tasks from planning to reviewing the projects.

Additionally, ECD students at RRMHS were exposed to new ideas, and places through opportunities such as field trips, and organizing community partnership events. In fact, such exposure to new ideas, technologies, and experiences was highlighted as one of the highly emerging codes in the qualitative data of the present study. These cross-curricular, multi-disciplinary opportunities served a dual purpose: On one hand, they acquainted ECD students with the non-linear nature of creative processes in different fields. On the other hand, these experiences stimulated ECD student imagination resulting in interdisciplinary creative curricular projects (Renzulli et al., 2022).

Csikszentmihalyi (1996) conceptualized how optimal challenges are important in creativity and learning performance, highlighting that such optimal learning challenges when calibrated with student interest, prior knowledge, and skills stimulate their curiosity and enhance creativity in learning. As discussed earlier, a line of creativity research in education illustrated that student curiosity, when sparked, motivates them to engage in creative explorations thereby building creative mastery and leading to enhanced creative self-beliefs (Jirout et al., 2022; Puente-Diaz & Cavazos-Arroyo, 2018; Schutte & Malouff, 2020).

Consistent with the findings of the previous research, RRMHS school administration and the teachers were instrumental in upholding this nonlinear synergy by co-creating rubrics with ECD students to conduct assessments for creative learning, incorporating low-stake creative challenges based on student prior learnings and interests, providing time and feedback to ECD students for a productive reappraisal of their creative failures as well as offering multiple ways to assess ECD student creative learning. Taken together, the provision of optimal creative

challenges aligned with student interests, values, and prior learning combined with the use of dynamic assessment for student creativity were instrumental strategies in developing synergies of creative learning at RRMHS.

**Productive Pluri-Perspectival Engagement.** The diversity of the ECD adolescent student population was another hallmark of the RRMHS context. A large volume of creativity research posited that diversity is a valuable resource for creative learning as the social interactions between different people with diverse perspectives taking place in their inter-psychological sphere are integral constituents of creative learning (Beghetto, 2020; Beghetto & Yoon, 2021; Beghetto and Zhao, 2022; Glăveanu, 2015; Glăveanu and Beghetto, 2017; 2021). As I noted in Chapter 2, adolescence is the period during which people tend to expand their social network as well as various facets of their social identities through socialization, hence social support, and encouragement they get are vital for adolescents' identity development. It is also well established in education research that adolescents' positive social interactions are important determinants of their healthy identity development. Such mutual interactions of different perspectives can be facilitated through polyocular learning opportunities (Glăveanu and Beghetto, 2017) discussed in earlier Chapter 4.

Glăveanu and Beghetto (2017) conceptualized polyocular opportunities as “ situations that encourage and reinforce perspective-taking” (p. 49) and Openness to difference (OtD) as “those situations in which differences in perspective are made salient and experienced in ways that lead to the emergence of new ideas, objects, or practices” ( Glăveanu and Beghetto, 2017, p. 45). Specifically, polyocular learning opportunities help teachers and students acknowledge, understand, and respect diverse perspectives in a school context. When a school administration, teachers, and students make genuine, and intentional efforts for such pluri-perspectival

engagement, OtD emerges which in turn leads to students' creative learning in an academic setting (Beghetto, 2020). The findings of the present study suggest that RRMHS school administration and teachers were intentional and genuine in offering several pluri-perspectival engagement opportunities to ECD students.

Due to their facilitation, two notable categories emerged for this main theme of productive pluri-perspectival engagement opportunities, namely, relational opportunities and inclusive learning opportunities. The first category of relational opportunities manifested into two sub-categories: (a) Expression of care, trust, and respect; (b) autonomy-supportive encouragement for creativity.

A huge body of extant research illustrated that ECD students who have interpersonal experience of care, trust, and mutual respect from teachers and peers in the context of a school, feel a greater sense of belonging to school (Gray et al., 2018; 2020; Maloney & Matthews, 2020; Matthews, 2014). A sense of belonging is defined as "students' perceived social support on campus, a feeling or sensation of connectedness, and the experience of mattering or feeling cared about, accepted, respected, valued by, and important to the ... community" (Strayhorn, 2012; p. 4).

In light of the findings from previous research, the evidence from the present study suggests that the enhanced sense of belonging resulting from ECD student experience of care, trust, and respect might lead to a greater sense of OtD and rising creative self-beliefs motivating them to discuss their creative ideas with each other (Beghetto, 2006; Gajda et al., 2017; Glăveanu & Beghetto, 2016; Richardson & Mishra, 2018). Further, evidence from the present synthesis also suggests that ECD students experiencing a greater sense of trust, care, and respect for their creative endeavors are likely to feel an enhanced sense of belonging to creativity that is

likely to shape their creative self-beliefs. At present, however, there is a dearth of research on the student's sense of creative belonging and its linkages with developing student self-beliefs in education. The present case study is the first such attempt to fill this research gap by providing qualitative evidence of such linkages between ECD students' sense of creative belonging and their creative self-beliefs.

Data from field notes, research memos, interviews with RRMHS school administrators, teachers, and students indicated that the school administration and teachers took strides to develop a responsive learning environment infused with relational trust, respect, and care by encouraging authentic, responsive interactions among students and teachers leading to creativity-fostering climate (Karwowski, 2019; Singer et al., 2020). In attempting to build such creativity-fostering OtD and responsive trust, a teacher highlighted the importance of finding common ground with ECD students:

so, I can find that common ground. And that common ground can then help me start a kind relationship, where I can get them to look at the creative piece by trusting me that if they fail, no hammer is coming down. So, I think that would be it – to overcome the challenge if they're not being creative is by building trust and the trust will only come if the child sees that there's actually common ground they and you share. That's the starting point. (Mr. Jamshed- Teacher interview)

Finding common ground led to the development of mutual trust and respect among the teachers and ECD students that helped them express care and develop OtD at RRMHS. Additionally, the school ran a positive behavioral intervention & support (PBIS) program at the time of the present study. The PBIS program seemed to help improve ECD students' quality of pluri-

perspectival engagement through the provision of rewards and encouragement for making positive interactions and building positive relationships across the campus.

This synthesis also suggested that a greater level of trust, respect, and care expressed, greater was the level of comfort ECD students found to open up about their original ideas in the RRMHS settings. Originality entails uniqueness and non-conformity which takes courage to face the risk of standing out. Given that originality is an integral component of creativity, ECD students faced risks of standing out and failure. When ECD students experienced OtD in their interactions with teachers and peer students, they were noted to reduce the fear of exclusion and failure in a creative learning task.

Another prominent sub-category that emerged was the responsive autonomy support and encouragement for creative learning that ECD students experienced in the context of RRMHS. Data from teachers and students alike indicates that teachers at RRMHS offered responsive support and encouragement to students to participate in creative learning activities in various ways. First, ECD students were offered a balanced blend of autonomy support and structure based on their learning needs (van der Zanden, et al, 2020). The teachers had made plenty of autonomy-supportive interactions in terms of listening to students' diverse and novel ideas, holding back early evaluation of ECD students' creative tasks, letting ECD students choose projects and internships that are relevant to them, encouraging independent creative explorations by students, clarified their expectations and criteria for assessment to ECD students, and even co-created rubrics along with the ECD students. It is well-established in the motivation research that autonomy support can be facilitated by teachers through effective perspective-taking for which a mutual dialogue of perspectives is required to take place (Ryan & Deci, 2020).

Next, RRMHS teachers consistently held high expectations for all ECD students and never gave up on any students in spite of the difficulties and failures that ECD students faced during creative learning. For example, the school administration and teachers were optimistic and intentional about promoting ECD student creativity for which they made their expectations clear and let ECD students know what they can expect in the context of RRMHS through a week-long orientation program highlighting abovementioned unique contextual features at the beginning of the school year. Clarifying expectations and understanding ECD students' needs at the beginning helped the teachers and school administrators paved the way for the successful facilitation of creative learning opportunities across all levels at the school setting (Beghetto, 2019; Richardson & Mishra, 2018). It is well-established in the motivation literature based on the social-cognitive theoretical perspective that teachers' high expectations for students' performance were found to be a vital source of student competence motivation (Scales et al., 2019; Sethi & Scales, 2020; Wentzel, 2012; Wentzel et al., 2010) and were found to be rather more important for students from minority ethnic populations (Pianta et al., 2003). Creativity literature in education also demonstrated that teachers' clear and high expectations are related to students' creative outcomes (Craft et al., 2014; Meyer & Lederman, 2013; Sullivan, 2011, van der Zanden, et al., 2020) and their CSBs (Beghetto, 2006; 2019). The finding of the present study is consistent with that of the extant research in terms of clarity and a high degree of teacher expectations for ECD students. While some evidence from previous educational research suggested that teachers hold lower expectations and provision of limited optimally challenging learning opportunities for students from minority ethnic groups (Delpit, 2012; Lynn et al., 2010, Skinner et al., 2012), the present case study found no evidence of differential teacher



expectations based on students' or their own ethnicity. This finding tends to be a unique contribution to education research.

Finally, ECD students were not only encouraged to come up with creative ideas but also provided with task-specific, process-oriented, constructive, and timely feedback to improve their creative ideas. Feedback plays a vital role in the creative learning process. A student's magnitude of creative learning can be advanced from mini-C to the little-C level when their creative efforts are validated through task-specific, authentic, constructive, and timely feedback leading to the development of creative self-beliefs (Beghetto, 2006; 2016; 2018; 2020, Gajda et al., 2017; Hung et al, 2008; Karwowski & Barbot, 2016; Richardson & Mishra, 2018). The importance of effective feedback in students' learning is well-established in education research (Hattie & Timperly, 2007; Koenka, et al, 2021). The school administration and the teachers at RRMHS integrated several opportunities for ECD students to get feedback on their creative activities through various sources and channels. For example, ECD students were engaged in a number of collaborative learning experiences whereby they received elaborate feedback on their creative tasks from each other through peer assessment. Such collaborative learning and reciprocal peer feedback were noted as helpful sources of ECD adolescent students' sense of belonging and CSE.

With regard to these findings, the distinct contexts of the study population should be noted. These findings from the present case study are consistent with the previous research findings. While in the present study, student participants were either current high school seniors or fresh high school graduates, the previous research findings on peer feedback are related to the emerging adult college student population. A body of extant research on emerging adult college

students' peer feedback and its influence illustrated that collaborative learning and reciprocal feedback from peer students helped enhance college students' sense of belonging, and academic STEM self-beliefs (Panadero et al., 2023; Singer et al., 2020) as well as creative self-beliefs (Liu et al, 2016).

Moreover, ECD students were also regularly provided opportunities to interact with and receive feedback on their creative learning projects from real-world innovators, experts who were internship mentors, and dignitaries such as the senators, the state governor who visited the RRMHS school as guest speakers from time to time. The qualitative findings revealed that ECD students highly appreciated such real-world feedback opportunities as those experiences in the RRMHS context not only helped students widen their social network but also helped enhance their creative self-beliefs and creative performance. Extant creativity research also showed that students who perceived overall greater responsive support for creativity in the context of a school tended to hold greater creative self-beliefs (Beghetto, 2006; Karwowski, 2019; Kaufman 2009).

Prior motivation research based on SCT also shed light on the role of perceived support in developing self-beliefs. Specifically, Bandura's (1986; 1997) conceptualization of sources of self-efficacy lends important insights regarding the linkages between students' perceived support for creativity and their self-beliefs. Social persuasion from "significant others," who are trustworthy sources of efficacy-related information, is one of the primary sources of an individual's self-efficacy (Bandura, 1997, p. 101). It is evident from extant empirical research that social persuasion in the form of feedback can be a key source of self-efficacy in adolescents (Usher et al., 2018; Sethi & Scales, 2020). Sethi & Scales (2020) examined how perceived relational practices are related to adolescent academic motivation. They found that students who experienced encouragement for learning tasks and built caring, trustful relationships with

teachers tended to accept teachers' "healthy criticism" as a source of academic motivation (Sethi & Scales, 2020, p. 12).

Additionally, prior creativity research highlighted that getting negative feedback without any elaborate, task-specific direction for improvement in students' creative performance from teachers discourages students from creative learning tasks and leads to "creative mortification" (Beghetto & Dilley, 2016, p. 89) for those students. Beghetto & Dilley (2016) further posited that on the one hand, such creative mortification results in adolescent students experiencing disengagement from creative tasks if the feedback they received about their creative performance is personally shameful and unresponsive to students' creative learning needs. On the other hand, students may be motivated to exert more creative efforts if the feedback they receive from trusted sources on a negative creative outcome is elaborate, task-specific, and focused on students' improvement.

Consistent to these prior research findings, the present case study also revealed findings that ECD students who experienced respectful, caring, and trusted relationships with their teachers, as well as peers, were more likely to accept negative feedback on a creative task from those teachers and peers provided that such feedback is task-specific, process-oriented, authentic, and constructive. The findings from ECD students data also revealed that such adverse feedback from a trusted source when accepted by ECD students in a healthy way enhanced ECD students' sense of belonging to creativity. However, it was not clear if such adverse feedback directly influences other types of creative self-beliefs such as CSE, CPI, and /or CM. It is likely that negative feedback about creative tasks from a trusted source could emphasize the malleability of creativity in learning and may provide ECD students with a meaningful rationale for exerting

efforts in creative learning tasks promoting their creative growth mindset beliefs and CSE through a unique social persuasion.

The second category of inclusive learning opportunities manifested into two subcategories: (a) opportunities to sustain ECD students' cultural identity and (b) sensitivity to minority experiences. The RRMHS intentionally maintained its ECD students body as aligned to its vision and mission since its inception. Therefore, promoting inclusive learning opportunities for ECD adolescent students was rather important for the school.

The context of a school is characterized by a complex social network composed by interactions between diverse social, cultural perspectives and identities because all the students, teachers, school staff, and school administrators bring their previous learnings as well as their socio-cultural-historical perspectives and identities along with them in the educational setting. While most of these interactions in the school context aim at dissemination of knowledge among its students, those interactions are prone to the biases and power disparity held by people involved. A productive, mutual dialogue among those diverse perspectives can be possible in the school context only when powerful people (school administration and teachers) in the school attempt to reduce their biases and share power with students by respecting their socio-cultural identities. When historically marginalized ECD students' heritage, their unique cultural assets are valued, and when ECD students get opportunities to sustain their cultural identity in the school setting, it tends to boost their overall motivation/identity development (Gray et al, 2018; Kim et al., 2021; Kumar, et al., 2019; Nishina et al., 2019) and their development of CSBs (Mullet et al., 2016; Van der Zanden et al., 2020; Willerson & Mullet, 2017) as evidenced by the volume of research noted in Chapter 2.

Qualitative findings of the present study also showed that ECD students' ethnic, cultural, and intellectual diversity was being celebrated and respected at RRMHS through various opportunities and interactions. Several culturally sustaining learning opportunities were offered to ECD students at RRMHS such as the opportunity to work on and present various creative projects based on the diverse cultural history and heritage of ECD students. While RRMHS is a computer science (CS) specialty regional magnet high school, it took pride in integrating ways to celebrate ECD students' ethnic and cultural assets into its pedagogical model alongside CS across all the content areas. When ECD students were encouraged to express their creativity in ways aligned with their cultural values and heritage, they reported feeling confident about their creative work. ECD students' cultural distinctiveness seemed to be appreciated through such culturally sustaining experiences at RRMHS. that not only helped them in attaining a cultural continuity but also seemed to provide a sense of belonging to the school and creativity. Consequently, ECD students experienced an enhanced level of creative confidence through effective pluri-perspectival social interactions. This was consistent with the extant research findings noted in Chapter 1, that cultural and linguistic diversity can enhance people's creativity (Basset-Jones, 2005; Blomberg et al., 2017; Glăveanu, 2020; Hoever et al., 2012; Leikin, 2013; Ricciardelli, 1992).

While pluri-perspectival interactions bring together different cultures, languages, and perspectives in a diverse social setting, doing so often adds dissonance, ambiguity, and/or uncertainty to the social context as posited by Glăveanu (2020). Finding autonomy-supportive, culturally sensitive learning opportunities within a social context can stimulate an individual's courage, curiosity, empathy, and OtD in their environment (Glăveanu & Beghetto, 2017). It is likely that the courage, curiosity, empathy, and OtD emerged from aforementioned types of

pluri-perspectival opportunities at RRMHS helped ECD students embrace uncertainty, and ambiguity resulting into constructively challenging and transforming their own beliefs, knowledge, and perspectives while learning in the school (Beghetto, 2020; Glăveanu, 2020; Glăveanu et al., 2019; Glăveanu & Beghetto, 2021). The resulting transformation in ECD students' perspectives was likely to help those students gain creative mastery experiences, as well as make creative contributions to their own and others' creative learning process through pluri-perspectival engagement (Beghetto, 2016; 2020a; Glăveanu et al., 2019, Glăveanu, 2020).

Taken together, such pluri-perspectival engagement opportunities at RRMHS were productive in rendering transformative, mutual interactions among multiple diverse perspectives of ECD students, teachers, and school administration to shape the development of ECD students' CSBs.

**Focus on the Future of ECD Students.** The findings of the present synthesis revealed that RRMHS had demonstrated a strong emphasis on providing future-oriented creative learning experiences to ECD students during the first five years of its operation. As noted in the conceptual framework of the present case study, creative learning takes place when an individual's past learning and experiences link with their present perspectives to generate novel ideas, knowledge, as well as creative products either in the form of mini-C "creative combination" or little-C "creative contribution" to self and others' creative learning in future (Beghetto, 2021, p. 4).

Thus, creative learning is essentially future-oriented. Beghetto and Zhao (2022) conceptualized future-oriented creative learning experiences as "opportunities to explore new possibilities of what could or should come into being rather than remaining fixed on what is already the case" (p. viii). Future orientation manifested at RRMHS, particularly through

creative learning opportunities that were relevant to ECD students' career interests, encouraging students to make a creative impact in their school as well as institutional/community level empowering learning opportunities to help students connect their creative learning with their future career and life aspirations.

As a CS specialty regional magnet school, RRMHS proudly aims at building the school's ECD students' learning trajectories and competencies so as to enable them for CS-based careers in the future. Through the career-oriented creative learning experiences, ECD students were offered free access and opportunities to use various digital technologies such as Chromebooks, various coding software suites, 3-D printers, Virtual Reality (VR) headsets, drones, Google workspace, and the Canvas learning management system (LMS) platform in creative ways. These digital technologies were integrated across all the academic content areas through which ECD students worked on various interdisciplinary hands-on creative projects during their high school years. Findings from the present case study are aligned with the extant research findings which illustrated that opportunities to work on technology-enabled interdisciplinary projects help adolescent students to enhance creative self-perceptions (Eow et al., 2010; Harris & de Bruin, 2018; Richardson & Mishra, 2018). Additionally, the findings noted that all the ECD students completed hands-on internship assignments during both their junior and senior years. The junior-year internship assignments were highly simulated with real-world creative careers in digital technologies and the senior-year internship program provided ECD students with first-hand immersive experiences in real-world digital technology-based creative careers.

Bandura (1997) postulated four key sources of one's self-efficacy beliefs: mastery experiences, vicarious learning, social persuasion, and emotional interpretations. Through the aforementioned hands-on internship opportunities, ECD students were able to gain first-hand

creative mastery experiences, vicarious learning through observing real- world innovators' digital technology-based creative process, and received persuasive feedback from their internship bosses as well as teachers. There was clear evidence of the presence of three main sources of CSE in the internship experiences of ECD students that not only shape their creative learning trajectory from low-stake to high-stake, but also enhanced their creative self-beliefs (Beghetto & Karwowski, 2017; Karwowski et al, 2019; Karwowski & Beghetto, 2018). On completion of internships, ECD students also got the opportunity to present their creative projects to a large audience including their teachers, families, community partners, and companies in the region. When ECD students' creative projects were appreciated by such a wider audience, they felt respected for their creativity which enhanced their sense of belonging to creativity.

Here it is also highly likely that ECD students enrolled in RRMHS, the CS specialty magnet high school because they were interested in pursuing computer science-related creative careers in the future. Hence, CS career-oriented creative learning opportunities at RRMHS (e.g., projects involving 3-D printing, game development, website development, blogs, and production of videos), were likely to provide a meaningful rationale for ECD students aligned with their future career aspirations. Prior education research findings suggest that when students are provided with such a meaningful rationale, students feel more agency in learning that fuels students' motivation to put efforts into the related learning tasks by helping students see greater value in those tasks (Patall & Zambrano, 2019; Steingut et al., 2017). Consistently finding greater value in creative learning tasks helps students perceive creativity as an important part of their identity (Beghetto, 2019; Beghetto & Karwowski, 2017).

The analysis of data from ECD students, teachers, and school administration touched on similar points highlighting future-oriented creative learning experiences that helped ECD



students develop a meaningful life purpose and empowered them to make a creative impact. Martela and Steger (2016) defined life purpose as “having direction and future-oriented goals in life” (p. 534). Such a purpose requires an individual’s intentional commitment to personally meaningful goals for the long-term and focus on making a positive impact on their life as well as other lives (Moran, 2009; 2015). Past research showed that creativity helps people build and achieve such meaningful life purpose by making a positive creative impact in the world (Kapoor & Kaufman, 2020; Kaufman et al., 2020). It is well-established in education research that in the adolescents’ quest for developing various competencies, identity self-beliefs as well as a meaningful life purpose of youth becomes salient during the period of adolescence (Eccles, 2009; Eccles & Roeser, 2009; Moran, 2015). Hence, ECD adolescents love to make a purposeful creative impact on the world around them. Past research also indicated that when a purposeful creative impact of ECD youth is acknowledged and valued by others as their “creative contribution” (Beghetto, 2021, p. 5) through productive pluri-perspectival interactions, it helps ECD adolescents develop an enhanced sense of belongingness to the school and creativity (Beghetto & Anderson, 2022; Beghetto & Zhao, 2022; Gray, 2014; 2018; Gray et al, 2020).

Consistent with the prior research findings, RRMHS teachers and school administration offered several empowering opportunities to ECD students encouraging them to make a purposeful creative impact in the context of their school and beyond in many ways. The school administration engaged not only teachers but also ECD students in the school-wide decision-making processes at RRMHS. The voices of ECD students were invited to contribute and taken into consideration as valuable inputs from time to time for designing the school policies related to the class schedules, and norms of the RRMHS learning progression reward system, as well as for making the emergency transition to remote teaching due to the COVID-19 pandemic.

Furthermore, ECD students were provided opportunities to contribute to the wider community beyond the school through various extra-curricular clubs and leadership development service-learning programs that existed at RRMHS. The ECD students of RRMHS made some notable creative impacts in their community by helping COVID-19 patients recover in the city hospitals and helping architects design sustainable models of city planning. While such future-oriented learning opportunities inspired ECD students to build their meaningful life purpose, doing so also helped those students develop a strong sense of belongingness to the community and creativity. When ECD adolescent students experienced these creative learning opportunities at RRMHS that helped them develop personally meaningful goals and move closer to their life aspirations, they were reported to build their creative self-beliefs. This finding of the present case study in the context of the regional magnet school was thus well-aligned with the aforementioned previous research findings.

***Theme 2: Unique Strengths of a Regional Magnet High School.***

The analysis of qualitative data including all eight interviews of RRMHS stakeholders, and my field notes revealed the second key finding of the present case study which entails several unique strengths of the RRMHS regional magnet school environment. These strengths included: a small student population, an intentionally integrated diverse learning environment, an innovative curriculum, and a pedagogical model at the RRMHS campus. It is important to note that at the time of the study, RRMHS was just three years into its school setting. The following sections will discuss each of these unique features of the RRMHS context.

**Small Student Population.** Contrary to the extant research suggesting that public schools are characterized by a large student population, the size of the student population served by RRMHS has been intentionally maintained small to promote individualized instruction and

learning. At the time of this study, the maximum enrollment capacity of the magnet high school was much smaller ( $n = 400$ ) than the state average ( $n = 672$ ) and the national average ( $n = 514$ ) pertaining to the public school system (NCES, 2022). Such small student composition has proven to be a boon for the ECD student body of RRMHS as it allowed teachers to offer differentiated instruction as per the need of each student such as personalized instruction, small group instruction as noted by almost all four teacher participants during their interviews. Additionally, the school administration interviews ( $n = 2$ ) highlighted that the small size of the student body also helped RRMHS teachers facilitate and model creative tasks by opening up lines of communication for one-on-one interaction with ECD students, thereby encouraging them to ask questions and discuss creative solutions.

**Intentionally Integrated, Diverse Learning Environment.** The RRMHS administration interviews reported taking strides to maintain an intentionally integrated, diversity-friendly learning environment at the campus. Unlike other magnet schools, an ECD student body of RRMHS is enrolled through a computerized lottery reflecting the diverse demographics of the region in which the school is located. Thus, the ethnic, cultural, and socio-economic diversity of students has been promoted at RRMHS. Additionally, students at RRMHS can choose to take college credit or associate degrees through a community college while pursuing their high school classes. It results not only in heterogeneous classes wherein students of all ability levels learn together but also in improving the accessibility of STEM college programs to ECD students. Such an integrated school also offers a multiethnic and multicultural academic setting promoting equitable learning opportunities to all the students, which was reflected in the teacher and student interviews and my field notes. The past education research reviewed by Nishina, and colleagues (2019) revealed that an inclusive learning environment helps ECD students develop motivation

and healthy identity. The intentional diversity resulting from the ECD student composition aligned with the demographic composition of the region, is the first step in developing an inclusive learning environment (Nishina et al., 2019).

**An Innovative Curriculum & Pedagogical Model.** Aligned with the three primary goals mentioned in the mission statement of RRMHS, the school aims to redesign the high school experience to better meet the needs of today's students, address inequities in STEM-based education, and increase the pool of potential employees in computer science for the state. To achieve these essential goals, RRMHS has opted to develop its innovative curriculum and pedagogical model of student-centered instruction in line with the state standards, vivid descriptions of which were reflected in almost all the interviews conducted and the field notes. Several research studies to date illustrated that pedagogical innovations in terms of blended learning, transdisciplinary integrated instructions, hands-on project-based learning, and personalized learning slots propel creative learning in academic settings (Fixson, 2009; Fleith, 2000; Hanif et al., 2019; Harris and de Bruin, 2017; Lasky and Yoon, 2011; Powell et al., 2015; Schuh, 2017). However, the present study is the first to highlight the ways an innovative pedagogical model and curriculum promote ECD adolescent students' creativity and creative self-beliefs in magnet school settings.

The 14 founding school divisions in the region advertised and promoted RRMHS from time to time and informed the students in the school divisions about the school's unique strengths and program offerings. Hence, the teachers and students were aware of the school's novel context. It is likely that knowing about the aforementioned unique features of RRMHS its teachers and students were inspired from the beginning to explore and experiment with its innovative setting, practice openness to difference, and take creative risks in the context of teaching and learning at

RRMHS. The aforementioned unique features of the RRMHS context were found to be leveraged by the school administration and teachers to promote ECD students' creativity and creative identity through engaging in mutual interactions of their diverse perspectives.

***Theme 3: Affordances /factors specific to teachers and School Administration***

The affordances or factors specific to the teachers and school administration only that were supportive of ECD students' creative learning emerged as the final secondary theme from the analysis of teachers and school administration interview data. These affordances entail three main categories: (a) teacher autonomy, (b) teacher and school administration beliefs about creativity, (c) teacher prior experience with ECD students. Although, the ECD student enrollment at RRMHS was as diverse as aligned with the demographic composition of the region, developing a sustainable, innovative, and inclusive CS-specialty regional magnet school environment, and promoting creative learning for ECD youth coming from 15 different school divisions was a great challenge in front of the school administration and the teachers who joined at the time of inception of the school. The primary reason for this challenge was that the context of RRMHS was novel and distinct from that of the public schools in which teacher participants had taught before. The findings specific to teachers and school administration indicated that the RRMHS teachers and school administration were proactive in fulfilling the aforementioned challenging opportunity. The school administration ensured that the teachers of RRMHS were seasoned in teaching ECD youth in their earlier careers. Additionally, the school administration and teachers underwent a special professional development program focused on anti-racist pedagogy and culturally responsive teaching (CRT) practices. Past research demonstrated that participating in professional development regarding CRT helped teachers and school leaders effectively incorporate inclusive and equitable opportunities for ECD students in their schooling

(Gray et al., 2018; Kumar et al., 2018; 2019; Paris & Alim, 2012). While the evidence from the findings of the present case study indicated that the RRMHS school administration and teachers did not take any professional development program focused on creative teaching, they took strides to design their pedagogy and instructional practices focusing on an innovative high school environment; inclusive and equitable access; as well as computer science specialty integration, the strategies that were firmly grounded in the objectives highlighted in their mission statement as discussed earlier. To create a unique sustainable inclusive and innovative CS-specialty learning environment at a newly started regional magnet high school, the school administration consistently partnered with the teachers through an ongoing mutual conversation by building respectful, trustful relationships with each other. Consequently, the shared language focusing on mutual goal-setting and co-curricular collaborations evolved among the school administrators and teachers over the first five years which helped them integrate inclusive, innovative CS-based instructional practices across all the content areas at RRMHS. The great rapport between the RRMHS school administration and teachers when coupled with teacher and school administrators' sound beliefs about student creativity as well as the school administration's autonomy support to teachers was likely to have inspired RRMHS teachers to co-construct and experiment with innovative curricular and instructional strategies at the newly developing regional magnet school (Anderson, 2002; Beghetto, 2020; 2021; Brandon, 2019).

Taken together, the synthesis of the qualitative findings discussed here suggested that at the time of the present case study, some unique and robust motivational supports existed at RRMHS that shaped ECD students' creative identity in the context of a regional magnet school. Overall, the aforementioned findings were in tandem with the creative educational experiences (CEEs) posited by Beghetto and Zhao (2022) when mapped onto the model of creative learning

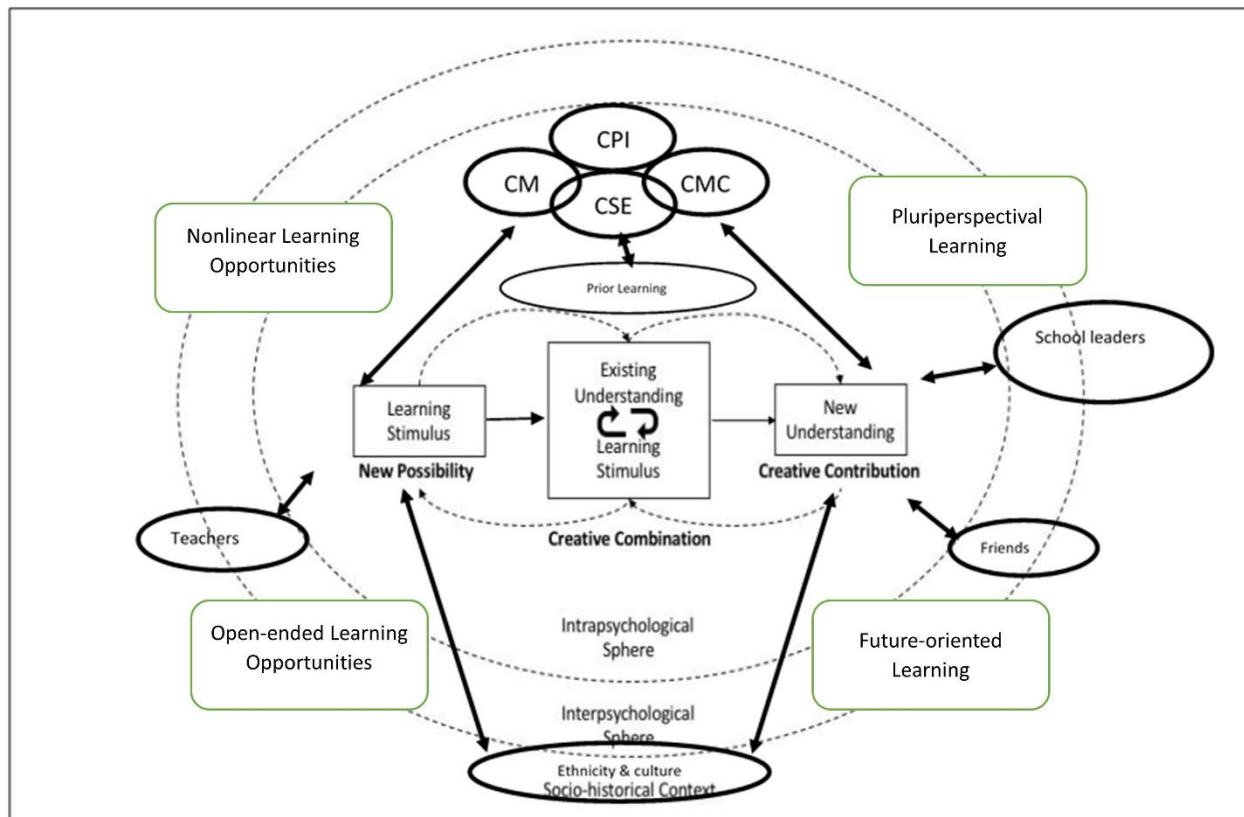
(Beghetto 2016; 2021a) in the context of RRMHS (See Figure 3). As discussed in Chapter 2, the conceptual framework of the present study based on Beghetto's (2016, 2021a) model of creative learning denoted possibilities for various supportive practices and interactive experiences that propelled ECD students' creative learning trajectories. Beghetto and Zhao (2022) conceptualized the CEEs as represented by four fundamental principles respectively: (a) the principle of open-endedness representing acceptance of the uncertain and evolving nature of creativity in learning, (b) the principle of non-linearity representing the flexible and iterative quality of CEE, (c) the principle of pluri-perspectives representing dialogue of diverse perspectives constituted in a CEE, and (d) the principle of future orientation representing the CEE's focus on the future. All four principles denote four essential and diverse qualities of a CEE (Beghetto & Zhao, 2022). Additionally, the aforementioned four qualities are intertwined to constitute effective creative learning experiences for students. The vital qualities of the school-based creative identity-fostering experiences of ECD students that emerged from the analysis of qualitative data closely resonated with all the above four principles of CEEs that worked together to promote their creative self-beliefs in the context of the RRMHS. Therefore, these vital qualities of the creative-identity fostering experiences were summarized as the strengths of the RRMHS-based opportunities for ECD students' creative identity development. All four strengths discussed were essential constituents of school-based creativity-fostering learning opportunities that seemed so closely entangled with each other in each creative learning experience. They represent the major thrust areas of motivational support for ECD students that evolved in the context of the regional magnet high school. The synthesis of the present case study findings underscored the importance of robust creative learning experiences available to ECD students in the context of RRMHS in the following four ways: First, the school administration and teachers were intentional and

proactive in maintaining a balance between integrating openness, non-linear synergies, pluri-perspectival mutual interactions, and student-centered future-orientation in creative learning opportunities as this balancing act proved helpful in fueling ECD students' creative self-beliefs. Whereas, open-endedness manifested in the use of open collaborative learning space for ECD students' creative explorations, authentic and agentic learning opportunities, and dynamic creative opportunities; nonlinear synergies in creativity and learning manifested in exploratory interdisciplinary cross-curricular creative opportunities, optimal challenging opportunities leading to student creative growth mindset, growing enjoyment and confidence in creative efforts; as well as opportunities for creative metacognition and self-regulation in creative learning. Specifically, focus on ECD students' future manifested in student-centered creative opportunities relevant to students' interests, career goals, and cultural assets, creative communal learning opportunities that empowered ECD students to make a creative impact in school and community. The productive pluri-perspectival interactive engagement manifested in relational opportunities as well as inclusive learning opportunities. It is noteworthy that the present case study was the first to find the salient strengths of school-based creativity-fostering opportunities at RRMHS as the primary theme emerged closely aligned with the conceptualization of Beghetto & Zhao's (2022) CEEs.



**Figure 3**

*Integrated Conceptual Framework of School-based Supportive Opportunities Fostering ECD Students Creative Identity Development in the Context of an Innovative Regional Magnet High School.*



*Note.* This figure shows the integrated conceptual framework of school-based supportive opportunities fostering ECD students' creative identity development in the context of an innovative regional magnet high school based on principles of Creative Educational Experiences mapped onto the Model of Creative Learning (Beghetto 2016, 2021) Adapted from "Democratizing Creative Educational Experiences." By R. A. Beghetto, and Y. Zhao, 2022, *Review of Research in Education*, 46(1), vii–xv. <https://doi.org/10.3102/0091732X221089872>; and from "Creative Learning" by R. A. Beghetto, 2021, *The Palgrave Encyclopedia of the Possible* (pp. 1–8). Springer International Publishing. [https://doi.org/10.1007/978-3-319-98390-5\\_57-2](https://doi.org/10.1007/978-3-319-98390-5_57-2)

Second, while there was clear and strong evidence of mutual interactions between diverse perspectives involving ECD student exposure to relational opportunities highlighting positive student-teacher relationships and relationships with peer students, the emergence of inclusive

learning opportunities in the pluri-perspectival engagement category was an interesting finding of the present study. The relational experiences exposed ECD students to authentic care, mutual respect, and trust, as well as responsive support balancing autonomy and structure in their creative learning trajectories. Through inclusive learning opportunities, ECD students were exposed to sensitivity to their cultural diversity and experiences leading to their perceptions of inclusion in the context of creative learning at RRMHS (Kumar et al., 2018; 2019). Furthermore, inclusive learning opportunities at the regional magnet high school motivated ECD students to use their cultural assets as means of creative learning as well as encouraged them to sustain their cultural identities through creative expressions (Beghetto & Yoon, 2021; Gray et al., 2019; Kumar et al., 2018). The clear evidence of the above finding regarding inclusive creative learning opportunities made it more important in the context of magnet high school serving ECD students as it remains an understudied topic in education and creativity research. Through integrating relational practices and inclusive interactions, they advanced the other three thrust areas such as open-endedness, non-linearity, and future orientation across the creative learning opportunities. These productive mutual interactions among diverse perspectives of school administration, teachers, and ECD students forged the bridge between ECD students' intra-psychological sphere and inter-psychological sphere which helped ECD students to move forward from making mini-C creative combination to little-C and/or Pro-C creative contributions on the continuum of creative accomplishment in learning (Beghetto, 2016; 2021; Beghetto & Zhao, 2022; Beghetto & Yoon, 2020; Glăveanu & Beghetto, 2021; Kaufman & Beghetto, 2009).

Third, it was evident from the findings of this case study that ECD youth felt a sense of psychological membership to the school as well as to the creative community which enhanced their creative self-beliefs when they experienced authentic care and trust in their creative

learning, responsive support in their creative efforts, a feeling of being respected for their creative impact, a sense of inclusion for sustaining their cultural identity in creative performance, as well as a sense of appreciation for their cultural distinctiveness and unique creative contributions in the context of creative learning, (Beghetto & Zhao, 2022, Beghetto & Yoon, 2021; Richardson & Mishra, 2018; Sethi & Scales, 2020). In other words, the present synthesis suggested that exposure to relational and inclusive opportunities made ECD students feel a sense of belonging to creativity further fueling their creative confidence. Although past research demonstrated that trusting, respectful and caring relationships as well as responsive support promote student creativity (Gajda et al, 2017; Karwowski, 2019; Richardson & Mishra, 2018; Robinson & Kakela, 2006), the evidence of linkages between the relational experiences and ECD adolescent students' creative self-beliefs in a magnet high school context were understudied and sparse in the research literature till date. Emerging evidence of a sense of belonging to creativity was found for the first time in creativity research. Hence, the abovementioned finding regarding ECD students' sense of belonging to creativity is the unique conceptual contribution of the present case study.

Next, the greater sense of autonomy support permeating across the school administrators, teachers and ECD students was clearly evident in the findings of this case study. While findings related to affordances specific to teachers and school administration revealed that all interviewed teachers felt being supported in their needs of autonomy, competence, and relatedness in their teaching practices at RRMHS, findings related to ECD students highlighted the ways in which teachers supported ECD students' needs of autonomy, competence, and relatedness. This need-supportive linkages were consistent to the prior research suggesting profound role of autonomy support in promoting student learning (Patall & Zambrano, 2019; Ryan & Deci, 2020). The Self-

Determination Theory (SDT), the metatheory of motivation (Ryan & Deci, 2017) described autonomy as one of its primary tenets and one of the important basic psychological needs determining human motivation to learn. Ryan and Deci (2020) defined autonomy as “a sense of initiative and ownership in one’s actions” (p. 1). Patall and Zambrano (2019) in their review of research on autonomy supportive practices in education, specifically demonstrated that teachers who experienced fulfillment of their needs of autonomy, competence, and relatedness through getting greater autonomy support were more inclined to provide autonomy support to their students. In the context of the present study, all interviewed teachers felt that getting a high level of autonomy support enhanced their pedagogical flexibility and autonomy in teaching. The data showed that greater autonomy in teaching practice helped teachers find ways to understand diverse needs of ECD students, to take ECD students’ diverse perspectives, and to offer adaptive instructions and assessment in tandem with ECD students’ needs, values, and interests. In other words, greater teacher autonomy invigorated their OtD and openness to uncertainty, which in turn, helped teachers create several open-ended learning opportunities for ECD students, provide autonomy-supportive instructions responsive to ECD students’ needs (Anderson et al., 2019; Beghetto, 2020a; Glăveanu, 2020; Glăveanu & Beghetto, 2017, 2021; Glăveanu et al., 2019; Patall & Zambrano, 2019; Ryan & Deci, 2020). The resulting fulfillment of ECD students’ psychosocial needs in their interpsychological sphere did not only foster healthy CSBs in their intrapsychological sphere, but also stimulated their creative learning trajectory from mini-C creativity-in-learning phase to little-C and further learning-in-creativity of those ECD students, as aligned with the conceptual framework described in chapter 2.

Finally, several theoretical linkages that the integrated conceptual framework discussed earlier had with the *Self-Determination Theory* (SDT) framework were evident from the findings

of this case study. SDT is Specifically, the motivational supports in the form of creative learning opportunities fostering ECD students creative identity development in the context of RRMHS were found to be well-aligned with the research-based strategies supporting the basic psychological needs of autonomy, competence, and relatedness, the primary tenets of SDT determining the motivation to learn (Ryan & Deci, 2000; 2017; 2020).

### **Limitations of the Study And Recommendations for the Future Research**

Although the present study led to some significant findings that I discussed earlier, it had encountered considerable limitations. Hence, the findings of this exploratory case study should be considered in the context of the following limitations. First, the research methods that I employed had certain drawbacks. The student survey measures included self-report instruments responses to which might result in response biases on the part of the participant ECD students.

The next limitation was the non-response bias in the study because ECD students and teachers who were already interested in creativity were more likely to participate in the present study. Particularly, only 20 out of 133 ECD students who enrolled in the first three cohorts of RRMHS participated in the online student survey, indicating only a 13% response rate. Those ECD students who did not participate in the study might have caused some noise/distortions in the findings of the present study. Future research should recruit a larger and more diverse sample of students from more than one school to replicate the quantitative survey component of the present study. Although I ran the descriptive statistics and the reliability measure of each subscale, the limited response rate to the quantitative measures was inadequate to run any inferential statistics in the present study. Hence, I could not run the cluster analysis as per the initial analytical plan. Consequently, I had to reframe the research design for the present study as a qualitative single case study with a small quantitative survey component.

Additionally, the present explorative case study had a small sample of ECD adolescent students ( $n = 2$ ), their teachers ( $n = 4$ ) and school administrators ( $n = 2$ ) who participated in the qualitative interviews. While the ECD student survey results warranted further qualitative exploration of perspectives of those ECD students who had reported the lowest and the highest scores for all the survey scales representing the maximum variation in the survey scores, and I tried to recruit ECD students representing several diverse ethnicities and cultures present at RRMHS, no ECD students other than a European American student and an Asian American student participated in the qualitative interviews. Anyone from the six African-American student survey responses and three ECD student survey responses who undisclosed their ethnicity, did not choose to participate in the follow-up interviews. Consequently, the findings drew on limited experiences of participating ECD adolescent students related to their creative identity development because the voices of ECD students reporting maximum variation (highest and the lowest scores) in the survey scores were absent from the qualitative data. Had African-American students and ECD students who did not disclose their ethnicity participated in the interviews, it could have lend more insights in explaining the within ethnic group variations in developing student participants' CSBs and could possibly have captured more fine-grained nuances in the context of RRMHS-based support fostering their creative identity. Future research should make sure to invite more diverse voices of ECD students representing varied levels of creative identity development in qualitative data collection.

One plausible reason for the limited response to the student survey and student interviews was the timing of data collection in this study. It was when the in-person classes at RRMHS resumed just after the second phase of COVID-19 pandemic, I started collecting data for this case study. Additionally, the data collection took place at around the end of the academic year.

While my purposive sampling strategy of recruiting senior ECD students involved less risk for them to present their honest views about experiences at RRMHS, it could be that the senior students had limited time in hand before their graduation, and participating in this retrospective case study might have become less relevant for them as compared to other future-oriented priorities. Future studies may yield more student participation if they can collect the data during the first half of the academic year or if they can expand the sampling criteria to include non-senior students of a magnet school.

Next, brevity of my relationship with the ECD student participants could be another limiting factor in collecting student data. Prior research on adolescent motivation suggested that the trusted and caring relationships are key forces of motivation for high school students (Sethi & Scales, 2020; Scales et al., 2020). However, I had very limited time to develop such trust and care in my relationship with ECD students at RRMHS which might have prevented several students from participating in this case study. Lack of time to build trusted and caring research partnership with students could have particularly made African-American students disengaged from this research. Prior research on African-American adolescents suggested that increasing awareness of societal injustice, stigmatization, and marginalization may make African-American adolescent students perceive stereotype vulnerability and belongingness uncertainty in situations lacking relational trust and care relevant to those students (Gray et al., 2018; Gray et al., 2020a; Walton & Cohen, 2007). Future researchers may consider building long-term collaborative and trusted relationships especially with the prospective adolescent student participants from historically marginalized ethnic groups that may help reduce the potential vulnerability and discomfort of those ECD adolescent students, and may encourage them to participate in the research.

Another plausible reason for the limited participation of ECD students could be the distorted design of the survey instrument. While I used reliable quantitative measures that were previously validated in research, the placement of the scales in the survey design might have caused some distortions for the participants. Specifically, I had placed the questions from the ICI Index scale (Renzulli et al., 2016; 2022) just after the first section of demographic questions asking participants regarding their demographic details including their ethnicity, and before the questions examining the participants' creative self-beliefs. Although 35 participants started taking the survey initially, only 27 (77% approximately) responded to the demographic questions, and only 20 (57% approximately) of them chose to respond to the items from ICI Index resulting in about 43% survey participant attrition. It is possible that ECD adolescent students felt less comfortable answering demographic questions (e.g., questions regarding gender and ethnicity) at the beginning of the survey which made them leave the online survey incomplete. Additionally, it is also possible that the ECD students found a lack of clarity, relevance, or alignment between the questions regarding the school-based support for imagination, creativity, and innovation included in the survey and the types of support that ECD students' experienced in the unique context of an innovative regional magnet school setting. For example, the ICI instrument does not include any reference to the inclusive creative learning opportunities such as school-based recognition or opportunity for ECD students to present their cultural assets and cultural identity as a vital resource in their creative projects which is found to be one of the key qualitative findings of the present case study. Consequently, the ECD students were likely to feel less interested in answering further questions in the survey.

Acknowledging the lack of ethnic diversity in prior research using the ICI Index instrument, Renzulli, and colleagues (2022) explicitly recommended using a diverse



demographic sample in further research. Hence, future research examining ECD students' creative identity development in the context of a magnet school should use such quantitative measures that incorporate the voices of magnet school students from diverse ethnicities and cultures. The conceptual framework, the key findings, and the theoretical implications of the present case study can lend some insights for the development of a survey instrument relevant to ECD students' creative identity development in the context of a regional magnet school.

The qualitative nature of this single case study led to the researcher's bias in the present study due to my involvement in the data collection and analysis. While I addressed my personal bias by employing the bracketing strategy of reflective memoing, researcher bias is likely to persist in this qualitative case study. As Tutty and colleagues (1996) suggested, with qualitative research, "researchers do not remain indifferent to the lives of the people they talk with, and such personal involvement is welcomed and not distrusted" (Tutty et al., 1996, p. 9). To eliminate the possibility of misinterpreting the participants' views and perspectives, I also solicited feedback from participants on their interview transcripts and my inferences through member checking (Maxwell, 2013).

## **Implications**

Despite the aforementioned several limitations, the present exploratory case study presents several potential practical and theoretical implications. The findings of the present exploratory case study have implications specifically for RRMHS to make further progress in augmenting powerful supportive practices to foster ECD students' creative identities in the future. Broadly, the implications of the present study may also apply to educational researchers for conducting future research in creative learning of ECD adolescents.

### ***Practical Implications for the RRMHS***

This study is likely to produce rich narratives and powerful explanations regarding the role of a magnet school context in the creative identity development of ECD adolescents enrolled in the RRMHS, an innovative regional magnet high school. Although the findings of this study were not representative of all the ECD adolescent students attending regional magnet schools, the small and purposefully selected sample of the proposed study limiting itself to the first three cohort of one regional magnet high school provided some unique contextual insights. It will help the participants' school to revisit and redesign their curricular model to promote ECD student creativity. It will also help participants' teachers to facilitate the supportive learning environment necessary for fostering healthy creative identity development of their ECD adolescent students. At the time of the present case study, the RRMHS was in the fifth year of its operation. The regional magnet high school expanded its ECD student enrollment from 133 in the academic year 2020-21 to 345 in 2022-23 studying in grades 9th to 12th during the period of this study. This growth in its ECD student population led to not only an increase in the size of the student body but also increasing demographic diversity at the RRMHS campus. As a result, the unique features of the RRMHS context that helped facilitate the creative learning experiences of ECD students may be subject to change in the future. These evolving changes are likely to add certain challenges in the RRMHS setting. Specifically, the school might require an intentional review and redesign of its innovative pedagogical practices to fulfill the creative learning needs of ECD student body commensurate with its growing size and diversity. As the state department of education reoriented its policy for secondary public schools to incorporate creativity as an essential competency in their graduate profile, the regional magnet high school might need to build school-based systems of support focused on the creative identity development of ECD

adolescents. During the era of the growing emphasis on the cultivation of student creativity in the state's secondary education system, the findings coupled with the conceptual framework and implications of the present case study would be helpful to RRMHS in reviewing and redesigning its learning environment. Moving forward, the RRMHS would need to augment its unique strengths such as intentionally integrated diverse learning environment, an innovative curricular and pedagogical model as well as leverage the salient strengths of the creativity-fostering opportunities designed for ECD students that are summarized below (See Table 6). Table 6 represents a chart showing key findings and recommendations that emerged from the present exploratory case study.

**Table 6**

*Summary of Key Findings and Recommendations for RRMHS*

Qualitative Research Questions	Key Findings	Recommendations
<p>In what ways do ECD adolescent students describe their experiences of creative identity development in the context of a regional magnet high school?</p> <p>In what ways do teachers and administrators at the regional magnet high school describe their views about and practices</p>	<p>Salient Strengths of Creativity-fostering Opportunities facilitated in Magnet High School Learning Environment</p> <ul style="list-style-type: none"> <li>● Open-ended &amp; Flexible Learning Opportunities Embedded Across all Levels <ul style="list-style-type: none"> <li>○ Open collaborative learning space</li> <li>○ Authentic &amp; Agentic creative learning through student-led PBL</li> <li>○ Dynamic creative opportunities</li> </ul> </li> <li>● Non-linear Creative Learning <ul style="list-style-type: none"> <li>○ Cross-curricular learning opportunities</li> <li>○ Providing optimal challenge and promote growth mindset</li> <li>○ Opportunities to self-regulate creative learning <ul style="list-style-type: none"> <li>■ Mastery-based learning progression</li> <li>■ Failures as learning resources</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Conduct regularly occurring and intentional review and reflective conversation on promoting ECD students' creative identity development: Past, present &amp; future</li> <li>● Continue maintaining an appropriate balance between open-ended, non-linear, pluri-perspectival, and future-oriented opportunities</li> <li>● Augment relational and inclusive practices at all levels among students, faculty, staff, and school administrators</li> <li>● Provide opportunities for teachers and students to explicitly discuss creative</li> </ul>

Qualitative Research Questions	Key Findings	Recommendations
fostering the creative self-beliefs/ creative identity of their ECD adolescent students in the regional magnet high school setting?	<ul style="list-style-type: none"><li>■ Providing time to practice and modeling for creative metacognition</li><li>● Productive Pluri-Perspectival Engagement<ul style="list-style-type: none"><li>○ Building relationships through care, mutual trust, respect</li><li>○ Balancing Autonomy-support &amp; Structure in instructions</li><li>○ Inclusive, culturally sustaining creative opportunities</li><li>○ Sensitivity to culturally diverse experiences of ECD students</li><li>○ Recognition of the cultural assets and identity of ECD students as a vital resource in their creative work</li><li>○ Modeling openness to diversity</li><li>○ Encouraging positive interactions among students</li><li>○ Opportunities to feel a sense of belonging to the school and creativity</li></ul></li><li>● Focus on the Future of ECD Students<ul style="list-style-type: none"><li>○ Career-Oriented Opportunities:<ul style="list-style-type: none"><li>■ Dual enrollment college credits</li><li>■ Hands-on internship opportunities</li></ul></li><li>○ Meaningful &amp; relevant extracurricular creative activities ECD students’ interests</li><li>○ Empowering ECD students to co-create learning environment</li><li>○ Opportunities to make a positive creative impact on community</li></ul></li></ul>	<p>learning</p> <ul style="list-style-type: none"><li>● Consult teachers to design dynamic opportunity structures adapting to changes in student enrollment</li><li>● Align creativity-focused opportunities with the state policy regarding high-school graduate profile</li><li>● Bring alumni onboard to mentor current/new ECD students</li></ul>
Unique Strengths of a Regional Magnet High School	<ul style="list-style-type: none"><li>● Small student population</li><li>● Intentionally integrated, diverse learning environment<ul style="list-style-type: none"><li>○ Lottery-based ECD enrollment</li><li>○ Diverse academic pathways as per student choice</li></ul></li></ul>	<ul style="list-style-type: none"><li>● Expand student orientation programs with an added focus on creativity</li><li>● Review curricular and pedagogical practices in the light of changes in ECD student enrollment</li><li>● Adapt curricular and</li></ul>

Qualitative Research Questions	Key Findings	Recommendations
In what ways do teachers and administrators at the regional magnet high school describe their views about and practices fostering the creative self-beliefs/ creative identity of their ECD adolescent students in the regional magnet high school setting?	<ul style="list-style-type: none"> <li>○ No tracking students' for ability groups</li> <li>● An Innovative Curriculum &amp; Pedagogical Model               <ul style="list-style-type: none"> <li>○ Blended learning: Integration of CS-content and digital technologies across all content areas</li> <li>○ Project-based learning,</li> <li>○ Student-Centered Differential instructional practices</li> <li>○ Competency-based performance assessment for learning, and</li> <li>○ Promotion of mixed-grade cooperative learning</li> </ul> </li> </ul> <p>Factors specific to teachers and school administration</p> <ul style="list-style-type: none"> <li>● Teacher autonomy</li> <li>● Teachers and school administrators held sound foundational beliefs about creativity</li> <li>● Teachers with prior experience in teaching ECD students.</li> <li>● Clear expectations</li> <li>● Great rapport and mutual trust among teachers and school administrators</li> <li>● Shared language and mutual goal-setting to accomplish cross-curricular collaborations</li> </ul>	<p>pedagogical strategies to increase in student enrolment</p> <ul style="list-style-type: none"> <li>● Continue promoting openness to diversity at all levels</li> </ul> <ul style="list-style-type: none"> <li>● Continue providing Autonomy-support and pedagogical flexibility to teachers to facilitate creativity-focused instructional practices</li> <li>● Engage teachers, and school administrators in a bespoke professional development program with a focus on facilitating student creative identity development</li> <li>● Recruit more ECD teachers to promote ECD students' creativity</li> <li>● Open reflective conversations about strategies to realize challenges in extending innovative and inclusive pedagogical practices moving forward.</li> </ul>

Taken together, the instructional practices such as blended learning, differential instructions, project-based learning, hands-on internship assignments, competency-based performance assessment for learning, and open, exploratory, cooperative learning which were the important markers of the innovative and inclusive pedagogical model at RRMHS will need to be maintained and/or adapted to changes in student enrollment moving forward. The quality of open and authentic interactions among ECD students, teachers, and school administration will need to be augmented in the future. The professional development explicitly focused on fostering creative learning of ECD students will be helpful to the teachers and school administrators in overcoming the aforementioned challenges in the context of RRMHS.

### ***Theoretical Implications for Educational Researchers***

The present case study presents an elaborate account of how key stakeholders including ethnically and culturally diverse (ECD) students, teachers, and school administrators of a regional magnet school perceive the school-based supportive practices and opportunities that shape the creative identity development of ECD adolescents in the context of an innovative regional magnet school. With much of the empirical research in creativity and education focusing on examining creativity outcomes of Eurocentric students of either elementary schools or colleges, the research is scarce on the ways that an innovative magnet school provides a supportive learning environment to promote ECD adolescent students' creativity and creative self-beliefs (Beghetto & Zhao, 2022; Richardson & Mishra, 2018; Zanden et al., 2020). Much more research is yet to be undertaken to better understand the school-based supportive opportunities focused on cultivating adolescent creativity in general and an innovative magnet school-based opportunities shaping ECD students' creative identities in particular. However, this case study is a small attempt to contribute to the creativity research literature in education by

identifying the themes and the integrated conceptual framework related to the magnet school-based opportunities fostering ECD students' creative identity development which can be examined in future research. The present study advances the creativity research in education in the following four ways.

**Research Focus on the Social Context.** The present study addressed the research call of van der Zanden et al. (2020) to consider the social context in the educational research investigating adolescent creativity. This single exploratory qualitative case study explored the role of an important and understudied social context such as an innovative magnet school setting in shaping ECD students' creative identities. Additionally, the present study contributes to creativity research by illustrating ways the magnet high schools such as RRMHS could support development of ECD adolescents' CSBs. As the setting of the present study is unique, the experiences of participating students, teachers, and school administrators from this innovative regional magnet high school may not be identical to experiences in any other school setting in the region.

**An Integrative Conceptual Model of Creative Learning Opportunities.** This case study advances our understanding of the theoretical underpinnings of the salient qualities of CEEs that are relevant to ECD adolescent students in the unique context of a regional magnet high school. Specifically, the findings of the present case study revealed that open-ended, non-linear, pluri-perspectival, and future-oriented learning opportunities provided at RRMHS which seemed to help ECD adolescent students develop their creative self-beliefs. Further, the unique characteristics of an innovative regional magnet school context such as its innovative pedagogical model, and affordances specific to teachers and school administrators such as greater teacher autonomy worked in tandem in facilitation of the above-mentioned opportunities.

The qualities of creative learning opportunities were found to be attuned to the CEEs posited by Beghetto & Zhao (2022) and the model of creative learning (Beghetto, 2016, 2020 a, 2021a). The resulting integrative conceptual model of creative learning opportunities could be further operationalized in the future research. Developing a quantitative instrument measuring the qualities of creative learning opportunities focused on ECD adolescents would be another step forward in advancing creative learning research. Although the ICI instrument was a validated and helpful tool in measuring the school-based support for creativity in present study, it was difficult to adapt the existing validated measure to a unique context of this study. Specifically, ICI instrument seemed to lack the reference of supportive practices and opportunities relevant to ECD students such as culturally sustaining creative opportunities. This drawback underscores the need to develop a comprehensive measure of creative learning opportunities for ECD students based on the themes identified in the present study and informed by the principles of CEEs.

Furthermore, the key findings of the present study render foundational insights into the conceptualization of inclusive creative learning opportunities for ECD students as well as that of the ECD adolescents' sense of belonging to creativity which is the unique contribution of the present research. The former concept of inclusive creative learning opportunities entails ECD students' exposure to sensitivity to cultural diversity and opportunities to sustain cultural identity in creative tasks in a social context such as a regional magnet high school. The later concept of ECD students' sense of belonging to creativity can be defined as a type of ECD student's creative self-belief encompassing an experience of perceived social support, getting respected for, and feeling a sense of trust, care, as well as appreciation for their creative endeavors. The qualitative evidence from the present findings suggests that ECD students feeling a greater sense of belonging to creativity are likely to have an enhanced degree of other creative self-beliefs.



With a dearth of research on the student's sense of belonging to creativity and its linkages with developing student self-beliefs in education, the present case study is the first such attempt to fill this research gap by providing qualitative evidence of such linkages between ECD student sense of creative belonging and their creative self-beliefs. These foundational insights may inform future research leading to a better understanding of creativity-fostering school contexts for and creative identity development of ECD adolescents.

**Theoretical Linkages with SDT.** The findings of this case study reflected Ryan & Deci's (2020) recommendations to create need-supportive learning environments, firmly grounded in the research based on SDT framework (Ryan & Deci, 2017, 2020). Encompassing six mini-theories of motivation, SDT is a macro-theory of motivation that emphasized on identifying "factors, both intrinsic to individual development and within social contexts, that facilitate vitality, motivation, social integration, and wellbeing" (Ryan & Deci, 2017, p. 3).

This meta-theory addresses issues such as the motivation for agentic actions, development of an individual's personality, self-regulation, psychological needs, goals, and the impact of social environments. According to SDT (Deci and Ryan, 1985, Ryan & Deci, 2017), individuals become motivated through fulfillment of the psychological core needs of autonomy, competency, and relatedness that drive their autonomous motivation to take any agentic action. Need of autonomy refers to a basic psychological need of humans to feel "a sense of initiative and ownership in one's actions" (Ryan & Deci, 2020, p. 1). Need of competence refers to another basic psychological need of individuals to perceive oneself as effective to exert meaningful impact on one's environment (Deci & Vansteenkiste, 2004). Need for relatedness refers to an innate psychological need of human to feel "a sense of belonging and connection" (Ryan & Deci, 2020, p. 1). In SDT research, these three psychological needs were postulated as

fundamental drivers of and were to found play dual roles in human motivation (Ryan & Vansteenkiste, 2023; Vansteenkiste et al., 2020). On one hand, satisfaction of one's psychological needs may give rise to intrinsic motivation to act in a way attuned to their intrinsic goals and interests, when these needs are supported adequately in one's social context. On the other hand, lack of need-supportive experiences in one's social context may lead to frustration of these basic psychological need resulting into loss of motivation or amotivation in people. According to empirical SDT research (Reeve & Cheon, 2021; Ryan & Deci, 2017, 2020), the need of autonomy can be supported when individuals experience a sense of agency and ownership to their action, and are provided meaningful choices of actions that are relevant to their values and interests. The need of competence can be supported through experience of structures constituting optimal challenges, and mastery experiences in certain domains. The need of relatedness can be supported when individuals feel accepted, connected, cared for, and being valued by others in a social context. Hennessey (2019) reviewed empirical research based on SDT that examined motivation research for creativity. Their review not only underscored the importance of the social-cultural contexts in cultivating creative abilities of people, but also illustrated the interdependence of individual s' creativity and multiple levels of social contexts that may shape peoples' creative self-beliefs and creativity. An educational environment supporting basic psychological needs namely, autonomy, competence, and relatedness enhances student intrinsic motivation. When acting with intrinsic motivation, students feel rewarded for completing tasks related to their interests and participation in the activity itself (Ryan & Deci, 2017).

It is noteworthy that the constituents of the integrated conceptual model of creative learning (Beghetto, 2016; 2021) found in the present case study were in tandem with

Hennessey's (2019) illustration of "a web of interrelated forces operating at multiple levels impact individuals' motivation for and cultivation of creative abilities" (p. 388). Furthermore, open-ended learning opportunities such as provision of open learning space, authentic and agentic student-interest-based PBL, provision of meaningful choices in creative learning tasks were closely aligned with the autonomy-supportive teaching strategies in a school setting (Patall et al., 2013; Patall & Zambrano, 2019; Reeve & Cheon, 2021; Ryan & Deci, 2020). Non-linear learning opportunities such as optimal creative challenges, curricular focus on creative process, opportunities to develop self-regulation in creative learning entailing revision of creative works, provision of task-specific, process-oriented constructive feedback in the creative learning tasks were examples of competence-supportive structures in a learning environment (Cheon et al., 2019, Legault, 2020; Reeve & Cheon, 2021, Ryan & Deci, 2020, Vansteenkiste, et al., 2012). Pluri-perspectival engagement opportunities such as relational opportunities encompassing expression of care, trust, and respect as well as inclusive learning opportunities encompassing opportunities to sustain ECD students' cultural assets in creative learning and sensitivity for ECD students' socio-cultural experiences were aligned with the relatedness-supportive practices in a school setting (Reeve & Cheon, 2021, Ryan & Deci, 2017; 2020). Availability of future-oriented creative learning opportunities such as creative tasks attuned to ECD student career goals, opportunities to make creative impact on the school environment and community were related to autonomy-supportive practices based on SDT framework (Patall et al., 2013; Patall & Zambrano, 2019; Reeve & Cheon, 2021; Ryan & Deci, 2017; 2020).

Prior research in SDT also suggested that need-supportive facilitating conditions in a learning environment are inter-twinned (Ryan & Deci, 2017). For example, Ryan and Deci (2017) demonstrated the ways autonomy-support can be facilitated by understanding a student's

perspective or point of view, whereas such perspective-taking can take place through developing responsive relationships when relatedness-supportive strategies are facilitated in a learning environment. In an educational context, high-quality student-teacher relationships serve as the foundational stone for developing greater levels of motivational mechanisms such as a sense of belongingness/relatedness, competence, autonomy, autonomous motivation, and self-regulation according to SDT perspective (Ryan & Deci, 2014, 2020). Consistent with the prior research about importance of interpersonal relationships in SDT framework of motivation (Ryan & Deci, 2017), this case study also found that productive engagement in pluri-perspectival relatedness-supportive opportunities was an essential key thread weaving the experiences of open-ended, non-linear, and future-oriented learning opportunities together to enhance ECD students' CSBs.

Teachers' interview data in this case study also revealed that all the participating teachers took strides to maintain balance particularly, between offering the open-ended, non-linear, and future-oriented creative learning opportunities. Balancing such creative learning opportunities was consistent with the prior research on adolescent creativity (van der Zanden et al., 2020) and research on need-supportive teaching practices in SDT-based motivation research (Cheon et al., 2019, Reeve & Cheon, 2021, Ryan & Deci, 2020). Additionally, greater teacher autonomy was found as helpful to teachers in facilitating these creative learning opportunities which was well-aligned with the SDT research (Patall & Zambrano, 2019).

Finally, ECD students interview data also suggested that process of creative learning (See Figure 3) entailing the development of CSBs, and creative magnitude were aligned with the process of internalization in the SDT research. Internalization is one of the primary motivational processes in the SDT that "reflects the extent to which people truly assimilate or take in ambient values or practices" (Vansteenkiste et al., 2020). Internalization takes place when an individual

finds value in some activity and hence, perceive ownership to that activity (Ryan & Deci, 2017). ECD students' qualitative data in this case study indicated that those students could move forward from mini-C to little-C on the continuum of creative magnitude, and could develop CSBs along the way, when they felt that creativity and creative tasks were important to them (Karwowski & Beghetto, 2019).

Taken together, the findings of this case study suggested that the SDT framework could serve as a complementary theoretical model to the integrated conceptual framework of the school-based supportive opportunities fostering ECD students' creative identity development in the context of an innovative magnet high school. Future research may explore the above-discussed theoretical linkages between the integrated conceptual model of ECD students' school-based creative identity development and the SDT framework of motivation empirically.

**Use of Unconventional Qualitative Case Study Methodology in Studying ECD Adolescents' Creativity.** This case study pushed forward methodological boundaries in creativity research by charting a new and innovative research pathway. This single qualitative exploratory case study employed an unconventional methodological approach using explanatory sequential procedures in which the web-based survey was followed by the qualitative interviews. The results of the quantitative survey guided in part the design of interview protocols and sampling procedures for recruiting qualitative participants. Specifically, the survey helped me understand the ECD students perspectives about school-based supports fostering their creative identity development in the context of an innovative regional magnet high school to some extent. The follow-up interviews with two student survey participants, Nick and Rita helped me disentangle and better understand the contextual underpinnings of their creative identity development and the variations in their survey scores, whereas the individual interviews with

four teachers and two school administrations provided corroborating evidence of school-based opportunities supportive to ECD students' development of creative identity. Consequently, multiple diverse perspectives of ECD students, teachers and school administrators were brought together in interaction with each other in extracting findings of this qualitative exploratory case study. Thus, the novel granular and pluri-perspectival methodological approach was helpful in this study to better understand the context of ECD students' creative identity development, that was absent in creativity research. Future research studying the school-based supports for ECD students' creative identity development may be enhanced by using or adapting this unconventional qualitative case study design due to its ability to provide rich and in-depth case description by forging the research dialogue between multiple diverse perspectives.

## **Conclusion**

The purpose of this dissertation exploratory qualitative single case study was to examine the creativity-supportive practices at an innovative regional magnet school shaping ECD students' creative identity development as perceived by different stakeholders including ECD students enrolled in the first three cohorts, teachers, and school administrators of RRMHS. Using a pragmatic research lens, I obtained and analyzed the diverse qualitative data including interviews with ECD students, teachers, and school administrators, open-ended qualitative survey responses, my field notes, and reflective memos.

The findings of this dissertation study demonstrated that the creative identity development of ECD students can be supported in the context of an innovative regional magnet high school in three ways: (a) through facilitation of creative learning opportunities encompassing open-endedness and flexibility, non-linear synergy, student-centered future orientation as well as productive interactions of diverse perspectives; (b) through augmenting

unique strengths of an innovative regional magnet school entailing limited size of student enrollment, intentional design of integrated diverse learning environment, as well as formulation of an innovative curricular and pedagogical model; and (c) through the promotion of teacher autonomy, the sustainable rapport between teachers and school administrators, development of sound beliefs by teachers and school administrators about student creativity as well as through leveraging teachers' prior practical experiences of teaching ECD adolescent students. With the dearth of literature on the role of unique learning environments such as an innovative magnet school in promoting ECD adolescents creativity, this study is a small first attempt to better understand the magnet school-based salient opportunities for and experiences of ECD students' creative identity development. This exploratory qualitative case study advances creativity research in education (a) by exploring the role of understudied social context of an innovative regional magnet high school in fostering creative identity development of an understudied population of ECD adolescents; (b) by crafting and implementing a granular and pluri-perspectival methodological approach that put together perspectives of diverse research participants and different types of data in interaction with each other in understanding magnet-school-based opportunities fostering ECD students' creative self-beliefs, (c) by presenting an integrated conceptual model of ECD students' school-based creative identity development that could be helpful in understanding supports and challenges in ECD adolescents' creative identity development in the context of a regional magnet school; (d) by illustrating the theoretical linkages between the integrated conceptual model of ECD students' school-based creative identity development and the SDT framework of motivation.

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## Appendix A

Table A1

*Conceptual Framework for Understanding ECD Adolescents' Creative Identity Development*  
*Using the Model of Creative Learning (Beghetto, 2016, 2019, 2021).*

Beghetto's (2016) model of creative learning	Focal constructs to be investigated in the present Study
<p>Processes:</p> <p>Creativity-in-learning:</p> <ul style="list-style-type: none"> <li>● Subjective meaning-making</li> <li>● Learning is stimulated by agency, social interactions, and reflection.</li> <li>● Creative combination</li> </ul> <p>Learning-in-creativity:</p> <ul style="list-style-type: none"> <li>● Intersubjective creative contribution</li> <li>● Perspectival dialogue with others</li> <li>● Openness to creative difference and openness to cultural diversity</li> </ul>	<p>Creativity-in-learning and support for creativity-in-learning:</p> <ul style="list-style-type: none"> <li>● Motivation through encouragement and opportunities for channelizing imagination, curiosity by experiencing flow, through interactions with others and self-reflection.</li> <li>● Creative combination: Using previous learning experiences, and cultural assets.</li> </ul> <p>Learning-in-creativity and support for learning-in-creativity:</p> <ul style="list-style-type: none"> <li>● Creative contribution through encouragement and opportunities for perspectival dialogue with others, openness to creative difference and openness to cultural diversity as well as recognition of student creative work.</li> </ul>
<p>Person: Age, race, ethnicity</p> <p>Creative self-beliefs (domain-general &amp; domain-specific)</p>	<p>Person: Race &amp; ethnicity, age, ECD adolescents' creative self-beliefs (domain-general): Creative self-efficacy, creative personal identity, creative mindset</p>
<p>Context:</p> <p>Intra-psychological sphere, Inter-psychological sphere, Sociocultural context</p>	<p>Context:</p> <p>ECD adolescents' diverse learning environment of the regional magnet school,</p>
<p>Time:</p> <p>Past, present, and future (e.g., prior creative experiences, social interactions, present creative thoughts, and ideas, forward-looking aspirations)</p>	<p>Time: Past perceptions of the role of their learning environment in their creative identity; Present creative self-beliefs, Future: Future-orientated creative learning</p>

## **Appendix B**

### **Survey Recruitment Email**

Hello Students,

My name is Preeti Kamat, and I am a doctoral student here at Virginia Commonwealth University, pursuing a degree in Educational Psychology. I am writing to you about a study I'm conducting, in the hopes that you will be willing to participate in it. The study I am conducting focuses on ethnically and culturally diverse adolescents' perceptions about their creative identity development. Specifically, the purpose of this study is to understand better how regional magnet high school students view the role of their social contexts in developing their creativity and identity of being a creative person. It's important to note that your participation in the study is completely voluntary. The study will take place in two parts, the survey that will take approximately 5 – 20 minutes to complete and then a follow-up virtual interview at a later date that will take approximately 60 minutes. Even if you choose to participate in the survey, you do not necessarily have to participate in the interview. Students who choose to participate in the follow-up interviews will be contacted in a separate email.

The questions ask about your perceptions, views, and experiences about how your identity of being a creative person has been developed and about the ways in which various social settings support this process of developing your creative identity. All the questions ask you to select between multiple options that best represent your personal beliefs during your schooling. To be eligible for this study, you must be enrolled in the first two cohorts of students at the regional magnet high school.

Information gathered from this study will be used to inform teachers of creativity-fostering instructional practices for ethnically and culturally diverse students in the regional high school. Additionally, your participation can provide the school with information about ethnically and culturally diverse students' perceptions about their creative identity development, the challenges they tackle, and the support they get in various social settings in developing their creative abilities. This information can be used to improve magnet high school program for ethnically and culturally diverse students by focusing on developing their creative abilities.

The link to the survey is provided below. As you access the survey, you will be provided with information about the study to keep for your records. Again, your participation is strictly voluntary. However, I sincerely hope you will choose to participate. Your ideas and perceptions are very important to me, and I appreciate your willingness to share them as part of this study. If you have any questions or concerns, please email me using my email id that is attached below.

After completing both the online survey and the virtual interview, if you would like more information about how to develop your creativity and creative identity, please feel free to reach out for more resources and coaching support.

Sincerely,

Preeti Kamat

[pskamat@vcu.edu](mailto:pskamat@vcu.edu)

To begin the short survey, click this [link] or copy the following into your browser: [URL]

## Appendix C

### The variables and the Survey Questions

Table C1

*Constructs of Interest & Variables examined in the present study.*

Variables influencing creative identity development of adolescents in their learning environment	Scale
Support for creativity in the School	ICI Index (15 items)
Creative Identity (Creative self-beliefs)	
Creative Self-efficacy (CSE)	SSCS Instrument -CSE subscale (6 items)
Creative personal identity (CPI)	SSCS Instrument- CPI subscale (5 items)
Creative mindset (fixed)	Creative Mindset Scale- Fixed mindset subscale (5 items)
Creative mindset (growth)	Creative Mindset Scale- Growth mindset subscale (5 items)
Other related variables	
Race/ethnicity	Demographic questionnaire (1 item)
Program status (Cohort)	Demographic questionnaire (1 item)
Gender	Demographic questionnaire (1 item)
Age	Demographic questionnaire (1 item)

### Survey Instrument

#### Section 1 Demographics

Q. 1 What is your date of birth?

Q. 2 What gender do you most strongly identify with?

a) Male

- b) Female
- c) Transgender male
- d) Transgender female
- e) Nonbinary
- f) Other not listed: \_\_\_\_\_
- g) Prefer not to answer

Q. 3 What is your age?

- a) ☐ 16 b) ☐ 17 c) ☐ 18 d) ☐ 19 e) ☐ 20-25

Q. 4 Since when have you been studying at the Regional High School?

- ☐ since the school year \_\_\_\_\_\*.

Q. 5 With which ethnicity do you most strongly identify?

- ☐ African American
- ☐ European-American
- ☐ Hispanic/Latino
- ☐ Asian
- ☐ Native American
- ☐ Hawaiian/ Pacific Islander
- ☐ Mixed Race (Please specify)
- ☐ Prefer not to answer

## Section 2 Regional Magnet School Environment

Q. 6 The following prompts describe different ways a school might support students'

imagination, creativity, and innovation. For each prompt, please answer HOW OFTEN YOUR SCHOOL DO THE FOLLOWING THINGS

The following scale is provided:

1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Most of the Time, 5 = Almost Always

Modified ICI instrument (Adapted from Renzulli et al., 2016; 2022)

Modified ICI Survey Instrument of Experiences Supportive to Creative Learning	ICI Survey Instrument Original Items	Rationale for changes
Experience of Encouragement for Imagination in the School	Experience of Encouragement for Imagination in the School	
1. My teachers ask me to look at things in different ways.	1. My teachers ask me to look at things in different ways.	No change
2. My teachers ask me to come up with my own ideas.	2. My teachers ask me to come up with my own ideas.	No change
3. My teachers ask me to think of different things that might happen while working on my tasks.	3. My teachers ask me to think of things that might happen.	Modified language for clear understanding
4. My teachers ask me to think of my own way to look at things.	4. My teachers ask me to think of my own way to look at things.	No change
5. My teachers ask me to imagine things while learning.	5. My teachers ask me to imagine things.	Modified language for clear understanding
Opportunities for creativity in the School	Opportunities for creativity in the School	
6. My teachers give me time to develop my ideas.	6. My teachers give me time to develop my ideas.	No change
7. My teachers support me when I want to develop my ideas into products (or performances).	7. My teachers support me when I want to develop my ideas into products (or performances).	No change
8. My teachers give me constructive feedback on my ideas.	8. My teachers give me feedback on my ideas.	Modified language for clear understanding

9. My teachers give me a chance to develop my creativity.	9. My teachers give me a chance to develop my creativity.	No change
10. My teachers give me a chance to express my creativity.	10. My teachers give me a chance to express my creativity.	No change
Experience of Expectations for Innovation in the School	Expectations for Innovation in the School	
11. My teachers want me to show my projects to people who know about the topic.	11. My teachers want me to show my projects to people who know about the topic.	No change
12. My teachers want me to show my projects to people other than classmates, teachers, and family.	12. My teachers want me to show my projects to people other than classmates, teachers, and family.	No change
13. My teachers want me to enter my work into competitions.	13. My teachers want me to enter my work into competitions.	No change
14. My teachers want me to share my work with others.	14. My teachers want me to share my work with others.	No change
15. My teachers want me to add something to the world with my work.	15. My teachers want me to add something to the world with my work.	No change

### Section 3 Creative Identity

Q. 7 The statements below describe various feelings people have about how they experience creativity. Please indicate the extent to which **you** feel the statement describes you by clicking on the appropriate dot. The response scale ranges from “**1 = Definitely not**”, “**2 = Often not**”, “**3 = Sometimes**”, “**4 = Often yes**”, and “**5 = Definitely yes.**” There are no right or wrong answers, only your opinions.

### Creative Identity Questionnaire (Adapted from the Short Scale of Creative Self (SSCS)

(Karwowski, Lebuda, & Wiśniewska, (2013, 2018))

Construct of Interest	Survey Question used in the present study	Short Survey Creative Self (SSCS)	Rationale for Alteration
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		(Karwowski et al., 2013, 2018)	
Creative Personal Identity	1. I think I am a creative person.	1. I think I am a creative person.	- No change
Creative Personal Identity	2. My creativity is important to who I am.	2. My creativity is important to who I am.	No change
Creative Self-efficacy	3. I know I can efficiently solve even complicated problems.	3. I know I can efficiently solve even complicated problems.	No change
Creative Self-efficacy	4. I trust my creative abilities.	4. I trust my creative abilities.	No change
Creative Self-efficacy	5. Compared to my friends, I am not distinguished by my imagination.	5. Compared to my friends, I am not distinguished by my imagination.	No change
Creative Self-efficacy	6. Many times I have proven that I can cope with difficult situations.	6. Many times I have proven that I can cope with difficult situations.	No change
Creative Personal Identity	7. Being a creative person is important to me.	7. Being a creative person is important to me.	No change
Creative Self-efficacy	8. I am not sure I can deal with problems requiring creative thinking.	8. I am not sure I can deal with problems requiring creative thinking.	No change
Creative Self-efficacy	9. I am good at proposing original solutions to problems.	9. I am good at proposing original solutions to problems.	No change
Creative Personal Identity	10. Creativity is an important part of myself.	10. Creativity is an important part of myself.	No change
Creative Personal Identity	11. Ingenuity is a characteristic which is important to me.	11. Ingenuity is a characteristic which is important to me.	No change



Q. 8 The statements below describe various feelings people have about how they experience creativity. Please indicate the extent to which **you** feel the statement describes you by clicking on the appropriate dot. The response scale ranges from “**1= Definitely not**”, “**2 = Often not**”, “**3 = Sometimes**”, “**4 = Often yes**”, and “**5 = Definitely yes.**” There are no right or wrong answers, only your opinions.

Survey items from Creative Mindsets Scale Karwowski (2014) with rationale for alteration and initial question used in the pilot study.

Survey Question used in the present study	Creative Mindsets Scale (Karwowski, 2014)	Rationale for Alteration
Fixed Creative Mindset	Fixed Creative Mindset	
You are either creative or you are not – even trying very hard you cannot change much	You are either creative or you are not – even trying very hard you cannot change much	- No change
You have to be born a creator – without innate talent you can only be a scribbler	You have to be born a creator – without innate talent you can only be a scribbler	- No change
Creativity can be developed, but one either is or is not a truly creative person	Creativity can be developed, but one either is or is not a truly creative person	- No change
Some people are creative, others aren't – and no practice can change it	Some people are creative, others aren't – and no practice can change it	- No change
A truly creative talent is innate and constant throughout one's entire life	A truly creative talent is innate and constant throughout one's entire life	- No change
Growth Creative Mindset	Growth Creative Mindset	
Everyone can create something great at some point if they are given appropriate conditions	Everyone can create something great at some point if he or she is given appropriate conditions	- “He or she” altered to encompass gender spectrum

Anyone can develop their creative abilities up to a certain level	Anyone can develop his or her creative abilities up to a certain level	- “His or her” altered to encompass gender spectrum
Practice makes perfect – perseverance and trying hard are the best ways to develop and expand one’s capabilities.	Practice makes perfect – perseverance and trying hard are the best ways to develop and expand one’s capabilities.	- No change
Rome wasn’t built in a day – each creative work requires effort and work, and these two are more important than talent	Rome wasn’t built in a day – each creative work requires effort and work, and these two are more important than talent	- No change
It doesn’t matter what creativity level one reveals – you can always increase it	It doesn’t matter what creativity level one reveals – you can always increase it	- No change

#### Section 4 Open-Response Items

(Adapted from ICI survey developed by Renzulli et al. (2016)):

Q. 9. Describe a creative product, performance, or service developed/ designed/ created or completed by you at your magnet school that is a point of pride for you. You may describe more than one. Think of some things you have done during this school year, at school or with a school group, that you are proud of doing. Maybe you made something, put on a performance, or provided a service to help others. It may have been something you did by yourself or something you did with others. Briefly describe what it is below:

Q. 10. Describe the supports that your school provides for students to develop creative products, put on performances, or provide services to others.

## Appendix D

### Information Sheet for Students

**VCU Student Investigator:** Preeti Kamat, M.M.S., [pskamat@vcu.edu](mailto:pskamat@vcu.edu)

**VCU Principal Investigator:** Dr. Sharon Zumbrunn, Ph.D., [skzumbrunn@vcu.edu](mailto:skzumbrunn@vcu.edu)

**Purpose:** You are invited to participate in a research study to understand better how ethnically and culturally diverse students of the regional magnet high school view, perceive and experience the process of developing their creativity as well as their identity of being a creative person and about the ways in which various social settings support this process of developing their creative identity. You are asked to be in this study because you are a student of the regional magnet high school. Your participation is voluntary.

**Description of your involvement:** If you agree to be part of this study, to participate in the following research events:

1. To complete an online survey of your perceptions, views, and beliefs about your creative identity development throughout your schooling years. You will spend approximately 5-20 minutes completing the online questionnaire at a place and time that is convenient for you. The online survey will include in a final question an option of volunteering to be part of a virtual interview and thus surrendering anonymity. This final question would also explain how I would choose participants in the interviews to ensure there was varied representation (e.g., of opinions and ethnicities).
2. To participate in one virtual individual interview (through Zoom) that should last approximately 60 minutes each and will be video and audio recorded to ensure that I accurately capture what the participants say. Approximately 4 to 6 individuals will participate in this part of the study. The individual interview questions will relate to your child's thoughts, and lived experiences about their creative identity development throughout their schooling years. Transcripts of these recordings will be emailed to all participants to review for accuracy confirmation. Your child will be able to change their responses should they feel that it does not accurately reflect their views. Initial findings will also be emailed to your child to review for accuracy confirmation. No identifying information will be included in either the recordings or the transcripts.

**Benefits to you and others:** After completing both, the online survey, and the virtual interview, if you would like to learn more about developing your creativity and creative identity, you will

be offered an opportunity to get more resources and coaching support for the same. Information gathered from this study will be used to inform teachers of creativity-fostering instructional practices for ethnically and culturally diverse students in the regional high school. Additionally, your participation can provide the school with information about ethnically and culturally diverse students' perceptions about their creative identity development, the challenges they tackle, and the support they get in various social settings in developing their creative abilities. This information can be used to improve magnet high school program for ethnically and culturally diverse students by focusing on developing their creative abilities.

**Costs and compensation:** There are no costs for participating in this study other than the time you will spend completing the online survey and follow-up interviews. No compensation or reward will be offered for participation in this study.

**Alternatives:** Because participation is voluntary, and there are no costs or consequences of not participating, there are no alternatives for participation.

**Confidentiality:** Your email address and name will be collected for a follow-up interview. Electronic data files of responses to the survey items will be secured using password protection. The information may be published in scientific journals or presented at professional meetings, but the data will not identify any individual.

**Voluntary participation and withdrawal:** Your participation in this study is your choice. You are free to decide not to participate at any time without penalty. You may also choose not to answer particular questions that are asked in the study. Your decision to participate or not to participate will not affect your grade in any subject area or your relationship with any teachers, the school, or Virginia Commonwealth University.

**Questions:** If you have any questions, complaints, or concerns about this research, you may call Preeti Kamat at (804).387.2545 or email at [pskamat@vcu.edu](mailto:pskamat@vcu.edu) or Dr. Sharon Zumbrunn at (804).827.2625 or email at [skzumbrunn@vcu.edu](mailto:skzumbrunn@vcu.edu). If you have any questions about your rights as a participant in this study, you may contact the VCU Office of Research at (804).827.2157. You may also contact the VCU Office of Research for general questions, concerns, or complaints about this research. Please call this number if you cannot reach the research team or wish to talk to someone else. Additional information about participation in research studies can be found at <http://www.research.vcu.edu/irb/volunteers.htm>.

## **Appendix E**

### Information Sheet for Parents

**VCU Investigator:** Preeti Kamat, M.M.S., [pskamat@vcu.edu](mailto:pskamat@vcu.edu)

**VCU Principal Investigator:** Dr. Sharon Zumbrunn, Ph.D., [skzumbrunn@vcu.edu](mailto:skzumbrunn@vcu.edu)

Your child's high school has been chosen to participate in a research study entitled, "Understanding the Ethnically and Culturally Diverse Adolescents' Social Contexts in Shaping Their Creative Identity Development in a Regional Magnet School". The study is being conducted by VCU investigator, Preeti Kamat, as a doctoral dissertation under the supervision of Dr. Sharon Zumbrunn.

**Purpose:** Your child is invited to participate in a research study to understand better how ethnically and culturally diverse students of regional magnet high school view, perceive and experience the process of developing their creativity as well as their identity of being a creative person and about the ways in which various social settings support this process of developing their creative identity. Your child is being asked to be in this study because your child was a student of the regional high school. Your child's participation is voluntary.

This information sheet is meant to share with you the information about this research study.

Please contact the investigators to explain any information in this document that is not clear to you. You may print a copy of this information sheet to think about or discuss with family or friends before making your decision.

**Description of your child's involvement:** Your child will be asked to participate in the following research events:

1. To complete an anonymous online survey of their perceptions, views, and beliefs about their creative identity development throughout your schooling years. Your child will spend approximately 5-20 minutes completing the online questionnaire at a place and time that is convenient for them. The online survey will include in a final question an option of volunteering to be part of a virtual interview and thus surrendering anonymity. This final question would also explain how I would choose participants in the interviews to ensure there was varied representation (e.g., of opinions and ethnicities).

2. To participate in one virtual individual interview (through Zoom) that should last approximately 60 minutes each and will be video and audio recorded to ensure that I accurately capture what the participants say. Approximately 4 to 6 individuals will participate in this part of the study. The individual interview questions will relate to your child's thoughts, and lived experiences about their creative identity development throughout their schooling years.

Transcripts of these recordings will be emailed to all participants to review for accuracy confirmation. Your child will be able to change their responses should they feel that it does not accurately reflect their views. Initial findings will also be emailed to your child to review for accuracy confirmation. No identifying information will be included in either the recordings or the transcripts.

Your child may or may not be contacted to participate in a follow-up interview. Students who choose to participate in the follow-up interviews will be contacted in a separate email.

Benefits to your child and others: There is no guarantee that your child will receive any benefits from being in this study. However possible benefits include the following. We hope the information learned from this study will provide more information to your child about their development of being a creative person. Additionally, if your child would like to learn more

about developing their creativity and creative identity, they will be offered an opportunity to get more resources and coaching support for the same after completing both, the online survey, and the virtual interview. Information gathered from this study will be used to inform teachers of creativity-fostering instructional practices for ethnically and culturally diverse students in the regional high school. Additionally, your child's participation can provide the school with information about ethnically and culturally diverse adolescent students' perceptions about their creative identity development, the challenges they tackle, and the support they get in various social settings in developing their creative abilities. This information can be used to improve magnet high school program for ethnically and culturally diverse students by focusing on developing their creative abilities.

**Costs and compensation:** There are no costs for participating in this study other than the time your child will spend completing the online survey and interviews. No compensation or reward will be offered for participation in this study.

**Alternatives:** Because participation is voluntary, and there are no costs or consequences of not participating, the alternative to participating in this study is to not participate in this study.

**Confidentiality:** Your child's email address and name will be collected for a follow-up interview. There will not be any identifiable information about your child in the interview notes, transcripts, or write-up of the study. Your child will be given a fake name for the interview transcript and any quotes from their interview that may be included in the write-up of the study. Interviews will be video-audio-recorded, but no names will be used. The lead researchers will have access to the data once it is collected and electronic data files of responses to the survey items will be secured using password protection. Additionally, the school will have access to anonymous data. The information may be published in scientific journals or presented at professional meetings, but the



data will not identify any individual student. Personal information about your child might be shared with or copied by authorized representatives from the following organizations for the purposes of managing, monitoring, and overseeing this study: Representatives of VCU, Officials of the Department of Health and Human Services.

In the future, identifiers might be removed from the information your child provide in this study, and, after that removal, the information could be used for other research studies by this study team or another researcher without asking you for additional consent.

Voluntary participation and withdrawal: Your child's participation in this study is voluntary.

Your child is free to decide not to participate at any time without penalty. They may also choose not to answer particular questions that are asked in the study. Their decision to participate or not to participate will not affect their grade in any subject area or their relationship with any teachers, the school, or Virginia Commonwealth University.

Questions: You may have questions about your child's participation in this study. If you have any questions, complaints, or concerns about this research, you may call Preeti Kamat at 804.387.2545 or email at [pskamat@vcu.edu](mailto:pskamat@vcu.edu) or contact Dr. Sharon Zumbrunn at 804.827.2625 or [skzumbrunn@vcu.edu](mailto:skzumbrunn@vcu.edu). If you have any questions about your rights as a participant in this study, you may contact the VCU Office of Research at 804.827.2157. You may also contact the VCU Office of Research for general questions, concerns, or complaints about this research. Please call this number if you cannot reach the research team or wish to talk to someone else. Additional information about participation in research studies can be found at <http://www.research.vcu.edu/irb/volunteers.htm>.

## Appendix F

### Follow up for Interview Email and Text Message

Good [time of day], [name],

My name is Preeti Kamat, and I am a doctoral student at Virginia Commonwealth University. I would like to thank you for your recent participation in the survey about creative identity development. At the end of the survey, you volunteered to participate in a follow-up interview to discuss your experiences. The interview will discuss your experiences and perspectives related to creative identity development. This portion of the study is being conducted to gain a better understanding of your answers from the survey you completed. Participation is voluntary and you are able to participate as little or as much as you wish. You are free to not answer questions. You can discontinue participation in this study at any point without consequence and without giving the researcher notice. If you wish to withdraw your participation any data that was collected will be destroyed.

Precautions will be taken to keep your identity confidential; you may choose a pseudonym to go by or a random name will be assigned to you. The interview will be video recorded, audiotaped, and transcribed. The video and audiotaped data will be stored in a password protected file, which only the primary investigator will have access. The video files, audio files and transcriptions will be destroyed once the study is completed.

If there are any questions or concerns at any point during the study you are able to contact the primary investigator, Preeti Kamat at [pskamat@vcu.edu](mailto:pskamat@vcu.edu) If you have questions about your rights as a subject/participant in this research study, or if you feel you have been placed at risk, you can contact: Office of Research Virginia Commonwealth University 800 East Leigh Street, Suite 3000 P.O. Box 980568 Richmond, VA 23298 Telephone: 804-827-2157.

Please fill out the Google Form [link] with possible times to complete the interview through Zoom or suggest a different time if you are interested but none of the times work for you.

Thank you,

Preeti Kamat, M.M.S.

Educational Psychology Doctoral Student

Virginia Commonwealth University

**Text Message:** Hello [name]! This is Preeti Kamat from VCU. You took a survey recently about creative identity development. (Thank you!) I've sent you an email about a voluntary follow up interview, and you can schedule a time that works best by clicking [link] or replying to this text with a good day/time for us to talk. Thank you again for your time!

## Appendix G

### Final Semi-Structured Individual Interview Guide

[Anticipated Duration: 50-60 minutes]

#### Opening Script:

Thank you for agreeing to participate in today's interview. You are here because you have expressed an interest in creativity. The purpose of this interview is to better understand who you are, what you think about your creative identity, and how your experiences and interactions in your school setting have influenced your creative abilities.

I will be video and audio recording today's interview to make sure that I do not miss anything that you say. What you talk about today may be included in research reports, presented at conferences, and used in interventions to help other students who want to become creative.

Although we will not be using your real name in any of these reports, we will use a fake name called a pseudonym to share your story without anyone knowing that it is you. That way we can protect your confidentiality. There are no right or wrong answers to any of these interview questions and I hope you will feel comfortable sharing your honest perspective today. Do you have any questions?

1. How did you find participating in this research?
  - a. Is it helpful for you in any way?
  - b. Is it worth it?
  - c. Did the school support you being involved in this research? Teachers? Students? Administrators?
  - d. Do you feel safe to share your perspectives?
2. How would you define creativity?
3. How much creativity is important to you? (RQ1)
  - a. What did happen that made you feel creativity is more important to you?
  - b. What did happen that made you feel creativity is less important to you?
  - c. What skills do you think you need to be successful beyond your class?
  - d. Prompt: Do you think creativity is an important skill for you? Why do you think so?
4. What skills and/or competencies are important to be creative? (RQ. 2a) Prompt: (Drop in the chat)
5. The following is a list of some skills/ competencies related to creativity. (Drop in the chat) Q. 1)
  - a. Openness to difference
  - b. Imagination
  - c. Risk-tolerance
  - d. Resiliency
  - e. Visualization
  - f. Focus
  - g. Mind-wandering
  - h. Empathy to others

- i. Sensitivity to the surroundings
  - j. Confidence
  - k. Playfulness
  - l. Originality
  - m. Novelty
  - n. Self-reflection
  - o. Domain-knowledge
- 6. How do people develop creative skills and competencies? (RQ1)
- 7. Do you consider yourself as a creative person? (RQ 1)
  - a. If yes, why do you consider yourself a creative person?
  - b. What creative skills and competencies do you have? (RQ1)
  - b. If not, why don't you consider yourself a creative person?
  - c. If sometimes, when do you consider yourself a creative person?
  - d. If sometimes, when don't you consider yourself a creative person?
- 8. Are you confident about your creative abilities? (RQ1)
  - e. What did happen that made you feel more confident about your creativity?
  - f. What did happen that made you feel less confident about your creativity?
- 9. How did you develop creative skills and competencies? (RQ1)
- 10. Describe yourself as a student at the magnet school. How was that different from your middle school? What are/were your classes like? What are/were some projects you involved in at the school? What is it like to be a RRMHS student who is creative? (RQ1, b)
- 11. What are some environmental, curricular, structural and/or pedagogical aspects that you think are unique or different at the RRMHS school?
- 12. If you think back on the beginning of your schooling up until today, how did you feel about developing your creative confidence and enjoyment that you experience by participating in creative activities? Can you try to recall this as precisely as possible and describe how your creative confidence and enjoyment that you experience by participating in creative activities have changed over time? (RQ1)
- 13. What opportunities did you get in your magnet school for developing your creative skills and competencies? (RQ1)
  - a. What opportunities did you get to develop creative skills and competencies?
  - b. What kind of learning environment do you think you have at RRMHS that supported you develop creativity?
  - c. What kind of teaching approaches at RRMHS do you think help people to develop creativity?
- 14. What additional opportunities at your magnet school could have been helpful to you in cultivating your creativity? (RQ1)
- 15. How do people at your magnet school influence your creativity? (RQ1)
  - a. How do these people at the magnet school influence your creativity?
    - i. For example, your teachers?
    - ii. For example, your classmates?
    - iii. For example, your counselor or support staff?
    - iv. For example, your school administrator?
  - b. Tell me about the conversations you have had with your teachers, your classmates, friends at magnet school about your creative skills, your creative

projects, and creativity. How do you think these conversations have influenced what you think about being creative? (RQ1)

- i. What do other students at this school say about you being creative?
- ii. Who supports you in your pursuit of creativity at the magnet school?

16. Please reflect back on each meaningful creative event in which you participated at your magnet school. What are some experiences at the magnet school that encouraged your creativity? (RQ1, b)

- a. What are some examples of interactions that encouraged your creativity at the magnet school?
- b. What is/are your most memorable creative experiences?
- c. What skills were important for completing your most memorable creative activities?
- d. Why did you feel most creative at that time?
- e. Do you think that you can be creative in one class but not in another?
- f. Do you feel being creative particularly in subjects you enjoy (or vice-versa)?
- g. Why do you feel that way?
- h. What influences did you draw on for accomplishing this/these creative task/s?
- i. How did you feel after accomplishing the creative task/s?

17. What are some experiences at the magnet school in which your creativity was discouraged? (RQ1)

- a. What are some examples of interactions that discouraged your creativity at the magnet school?
- b. When in the magnet school do you think you felt being less creative?
- c. How did you overcome the challenges in accomplishing the creative tasks?
- d. What influences did you draw on for accomplishing this/these creative task/s?
- e. How did you feel after accomplishing the creative task/s?

18. What other thoughts do you have about being a creative student of the RRMHS magnet school that we have not talked about so far?

## Appendix H

### Information Sheet for Teachers & School Administrators

**VCU Investigator:** Preeti Kamat, M.M.S., [pskamat@vcu.edu](mailto:pskamat@vcu.edu)

**VCU Principal Investigator:** Dr. Sharon Zumbrunn, Ph.D., [skzumbrunn@vcu.edu](mailto:skzumbrunn@vcu.edu)

**Purpose:** You are invited to participate in a research study to understand better how ethnically and culturally diverse students of the regional magnet high school develop their creativity as well as their identity of being a creative person, and the support they get at their school for developing their creative identity. You are asked to be in this study because you are a teacher/school administrator of the regional magnet high school. Your participation is voluntary.

**Description of your involvement:** If you agree to be part of this study, you will be asked to participate in a virtual individual interview (through Zoom) that should last approximately 50-60 minutes. All interviews will be video, and audio recorded to ensure that I accurately capture what the participants say. The individual interview questions will relate to your ideas, thoughts, and lived professional experiences including your teaching practices fostering student creativity and creative identity development at the regional magnet school. Transcripts of these recordings will be emailed to all participants to review for accuracy confirmation. You will be able to change your responses should you feel that it does not accurately reflect your views. Initial findings will also be emailed to you to review for accuracy confirmation. No identifying information will be included in either the recordings or the transcripts.

Teachers who choose to participate in the Zoom interviews will be contacted in a separate email.

**Benefits to you and others:** After completing the virtual interview, if you would like to learn more about developing the creativity-focused teaching strategies, you will be offered an opportunity to get more resources and a research-based, personalized coaching support for the same. Information gathered from this study will be used to inform teachers of creativity-fostering instructional practices for ethnically and culturally diverse students in the regional magnet high school. Additionally, your participation can provide the school with information about professional experiences as well as views of teachers facilitating ethnically and culturally diverse students' creative identity development, the challenges teachers tackle, and the support they get in the magnet school settings in helping their students' develop creative abilities. This information can be used to improve magnet high school program for ethnically and culturally diverse students by focusing on developing their creative abilities.

**Costs and compensation:** There are no costs for participating in this study other than the time you will spend in a virtual interviews. No compensation or reward will be offered for participation in this study.

**Alternatives:** Because participation is voluntary, and there are no costs or consequences of not participating, the alternative to participating in this study is to not participate in this study.

**Confidentiality:** Your email address and name will be collected for a virtual interview. Only the lead researchers will have access to the data once it is collected and electronic data files of the interview items will be secured using password protection. The information may be published in

scientific journals or presented at professional meetings, but the data will not identify any individual teacher or student.

**Voluntary participation and withdrawal:** Your participation in this study is your choice. You are free to decide not to participate at any time without penalty. You may also choose not to answer particular questions that are asked in the study. Your decision to participate or not to participate will not affect your grade in any subject area or your relationship with any teachers, the school, or Virginia Commonwealth University.

Questions: If you have any questions, complaints, or concerns about this research, you may call

Preeti Kamat at (804) 387-2545 or email at [pskamat@vcu.edu](mailto:pskamat@vcu.edu) or Dr. Sharon Zumbrunn at

(804).827-2625 or email at [skzumbrunn@vcu.edu](mailto:skzumbrunn@vcu.edu).. If you have any questions about your rights

as a participant in this study, you may contact the VCU Office of Research at 804.827.2157. You

may also contact the VCU Office of Research for general questions, concerns, or complaints

about this research. Please call this number if you cannot reach the research team or wish to talk

to someone else. Additional information about participation in research studies can be found at

<http://www.research.vcu.edu/irb/volunteers.htm>

## Appendix I

### Semi-Structured Teacher Interview Protocol

[Anticipated Duration: 50-60 minutes]

Participant Preferred Pseudonym:

Date of Interview:

Interview Number:

### Draft of Semi-Structured Teacher Interview Protocol

[Anticipated Duration: 50-60 minutes]

**Participant Preferred Pseudonym:**

**Date of Interview:**

**Interview Number:**

#### **Opening Script:**

Before we begin, I'd like to thank you for taking the time to participate in this interview! The next part of this interview will focus on exploring your views on and practices for fostering ethnically and culturally diverse (ECD) adolescent students' creative identity in a regional magnet high school setting. I will be video and audio recording today's interview to make sure that I do not miss anything that you say. What you talk about today may be included in research reports, presented at conferences, and used in interventions to help other students who want to become creative. Although we will not be using your real name in any of these reports, we will use a fake name called a pseudonym to share your story without anyone knowing that it is you. That way we can protect your confidentiality. There are no right or wrong answers to any of these interview questions and I hope you will feel comfortable sharing your honest perspective today. Do you have any questions before I start recording the interview? (Wait for the response)

#### Section I: Opening Ice-breaker questions:

1. What pseudonym or fake name do you prefer to go by for this interview?
  - a. Do you feel safe to share your perspectives in this interview?

#### Section II: Background Information

1. What gender do you most strongly identify with?
  - a) Male
  - b) Female
  - c) Transgender male
  - d) Transgender female
  - e) Nonbinary
  - f) Other not listed: \_\_\_\_\_



g) Prefer not to answer

2. With which ethnicity do you most strongly identify?

African American

European-American

Hispanic/Latino

Asian

Native American

Hawaiian/ Pacific Islander

Mixed Race (Please specify)

Prefer not to answer

3. Please tell me a little about what you teach and how you came to be teaching here.

Prompts:

- a. How long have you been in the teaching profession?
- b. In what area was your highest degree earned?
- c. Since when have you been teaching at RRMHS Regional Magnet High School?
- d. Have you ever taught in other schools?

4. Describe yourself as a teacher at the magnet school.

- a. What is your role at RRMHS?
- b. What is it like to be a RRMHS teacher?
- c. What are/were your typical classes like?
  - i. What does that look like? Can you give an example?
  - ii. What grades do you teach?
  - iii. What classes do you teach?
  - iv. What is your focal class?

### Section III: Creativity-General Information

- d. Based on your teaching experience, what skills do you think your students need in order to be successful beyond your class? Do you think creativity is an important skill for your students?
- e. Why do you think so?
5. How would you define creativity?
  - a. What do you think the role of creativity is in learning?
  - b. Do you think being creative makes a difference?
6. Can everyone be creative? If not, who can be creative? (RQ 2a)

- a. Can one learn to be creative? Why so?
  - b. To what extent it is possible for teachers to help students develop creativity?
  - c. Do you think that your students can be creative in one class but not in another? Why so?
7. Can you describe to me what a creative student looks like?
- a. How do creative students behave in the classroom? How and when can you tell that they are creative?
  - b. What skills and/or competencies are important to be creative? Do any of your students stand out as particularly creative?
- The following is a list of some skills/ competencies related to creativity. (Drop in the chat)
- i. Openness to difference
  - ii. Imagination
  - iii. Risk-tolerance
  - iv. Resiliency
  - v. Visualization
  - vi. Focus
  - vii. Mind-wandering
  - viii. Empathy to others
  - ix. Sensitivity to the surroundings
  - x. Confidence
  - xi. Playfulness
  - xii. Originality
  - xiii. Novelty
  - xiv. Self-reflection
  - xv. Domain-knowledge
8. In your view, how do adolescent students develop the abovesaid creative skills and competencies? (RQ. 2a)

#### Section IV: Teachers' Practices for Fostering Student Creativity

9. Should creativity be incorporated into the curriculum? YES [ ] NO [ ]
10. If you answered yes, please explain how creativity should be incorporated into the curriculum.
11. Do you consider yourself a creative teacher? (RQ 2a)
- a. Why or why not?
  - b. If yes, in what ways do you consider yourself a creative teacher?
  - c. Prompts: What does that look like? Can you give an example?
12. What are some environmental, curricular, structural and/or pedagogical aspects that you think are unique or different at the RRMHS school? (RQ2 a, b)
- a. What do you think are your school's goals related to encouraging student creativity?
  - b. What type of teaching culture / pedagogy is being used at the RRMHS?
  - c. Prompts: What does that look like? Can you give an example?
13. What does the concept of fostering student creativity in the classroom mean to you?

14. From your perspective, what are the key components of fostering ECD adolescent students' creative self-beliefs and creativity in the magnet high school setting? (RQ2 a, b)
  - a. What are some of the strategies that you use in your classroom to nurture / foster ECD student creativity?
    - i. Prompts: What does that look like? Can you give an example?
15. Describe how you think student creativity is encouraged at RRMHS (RQ 2)
  - a. What opportunities are being offered in your school for developing ECD adolescent students' creative skills and competencies? (RQ2b)
  - b. What are the characteristics of the school learning environment that support or encourage student creativity at RRMHS? (RQ2b)
  - c. What are the characteristics of the learning environment that might hinder or discourage student creativity at RRMHS? (RQ2b)
  - d. Do you think RRMHS assessment criteria value student creativity? Why or why not?
  - e. Prompts: What does that look like? Can you give an example?
16. What additional opportunities at the magnet school could have been helpful to the ECD adolescent students in cultivating their creativity and creative self-beliefs? (RQ1)
17. How do others at RRMHS influence ECD adolescent students' creativity? (RQ1)
  - a. Prompts:
    - i. For example, your peer teachers?
    - ii. For example, other students?
    - iii. For example, your counselor or support staff?
    - iv. For example, your school administrator?
18. Tell me about the conversations you have had with your students at the magnet school about their creative skills, their creative projects, and creativity.
  - i. How do you think these conversations have influenced what your students think about being creative? (RQ1)
  - ii. What are the characteristics of these conversations that support ECD students in their pursuit of creativity?
  - iii. What are the characteristics of the conversations that might hinder student creativity at your school?
19. Please reflect back on each meaningful creative event in which your students participated at your magnet school and describe a product, performance, or service completed by students at your school that is a point of pride to you. You may describe more than one. (RQ1, b)
  - a. Describe the supports that your school provides for students to develop creative products, put on creative performances, or provide creative services to others?
  - b. What skills were important for your students in completing these memorable creative activities?
  - c. How did you feel after your students accomplished the creative task/s?
  - d. What are some examples of interactions that you had with your students after accomplishing creative tasks?

20. What challenges have you faced in fostering your ECD students' creativity and creative self-beliefs at RRMHS?
- a. When do you think your ECD students felt less creative? Why did you feel this way?
  - b. In what ways were you able to overcome the challenges in fostering your ECD students' creativity and creative self-beliefs?
  - c. How did you feel after overcoming those challenges?
  - d. What personal/ professional experiences and /or influences did you draw on for fostering/ encouraging your ECD students to be creative at RRMHS?
  - e. Did you get any PD focused on creative teaching?

Section V: Closing

21. What other thoughts as a teacher do you have about fostering ECD students' creativity at RRMHS that we have not talked about so far?

## Appendix J

### Semi-Structured School Administrator Interview Protocol

[Anticipated Duration: 50-60 minutes]

Participant Preferred Pseudonym:

Date of Interview:

Interview Number:

#### Opening Script:

Before we begin, I'd like to thank you for taking the time to participate in this interview! The next part of this interview will focus on exploring your views on and practices for fostering ethnically and culturally diverse (ECD) adolescent students' creative identity in a regional magnet high school setting. I will be video and audio recording today's interview to make sure that I do not miss anything that you say. What you talk about today may be included in research reports, presented at conferences, and used in interventions to help other students who want to become creative. Although we will not be using your real name in any of these reports, we will use a fake name called a pseudonym to share your story without anyone knowing that it is you. That way we can protect your confidentiality. There are no right or wrong answers to any of these interview questions and I hope you will feel comfortable sharing your honest perspective today. Do you have any questions before I start recording the interview? (Wait for the response)

#### Section I: Opening Ice-breaker questions:

1. What pseudonym or fake name do you prefer to go by for this interview?
2. Do you feel safe to share your perspectives in this interview?

1.

#### Section II: Background Information

1. What gender do you most strongly identify with?

- 1) Male
- 2) Female
- 3) Transgender male
- 4) Transgender female
- 5) Nonbinary
- 6) Other not listed: \_\_\_\_\_
- 7) Prefer not to answer

2. With which ethnicity do you most strongly identify?
  - 1) African American
  - 2) European-American
  - 3) Hispanic/Latino
  - 4) Asian
  - 5) Native American
  - 6) Hawaiian/ Pacific Islander
  - 7) Mixed Race (Please specify)
  - 8) Prefer not to answer
3. Please tell me a little about what you teach and how you came to be teaching here.  
Prompts:
  - a. How long have you been in the teaching profession?
  - b. In what area was your highest degree earned?
  - c. Since when have you been teaching at RRMHS Regional Magnet High School?
  - d. Have you ever taught in other schools?
4. Tell me a little about your experiences as an administrator at the magnet school.
  - a. What is your role at RRMHS?
  - b. What is it like to be a RRMHS executive director?
  - c. How long have you been an administrator? Tell me about your educational leadership philosophy. What are the principles that guide you as you lead a school?
  - d. How do you think your philosophy affects how you shape the culture and climate of your school?
  - e. In your opinion, what are the essential qualities an executive director should have to effectively shape a school culture and climate that encourages creativity?
  - f. Based on your teaching and administrative experience, what skills do you think your students need in order to be successful beyond your class? Do you think creativity is an important skill for your students?
  - g. Why do you think so?

### Section III: Creativity-General Information

5. How would you define creativity?
  - a. What do you think the role of creativity is in learning?
  - b. Do you think being creative makes a difference?
6. Can everyone be creative? If not, who can be creative? (RQ 2a)
  - a. Can one learn to be creative? Why so?
  - b. To what extent it is possible for teachers to help students develop creativity?
  - c. Do you think that your students can be creative in one class but not in another? Why so?
7. Can you describe to me what a creative student looks like?
  - a. How do creative students behave in the classroom? How and when can you tell that they are creative?
  - b. What skills and/or competencies are important to be creative? Do any of your students stand out as particularly creative?

Prompts: Following is a list of some skills/ competencies related to creativity.  
(Drop in the chat)

- i. Openness to difference
- ii. Imagination
- iii. Risk-tolerance
- iv. Resiliency
- v. Visualization
- vi. Focus
- vii. Mind-wandering
- viii. Empathy to others
- ix. Sensitivity to the surroundings
- x. Confidence
- xi. Playfulness
- xii. Originality
- xiii. Novelty
- xiv. Self-reflection
- xv. Domain-knowledge

8. In your view, how do adolescent students develop the abovesaid creative skills and competencies? (RQ. 2a)

#### Section IV: Teachers' Practices for Fostering Student Creativity

9. Do you consider yourself a creative administrator? What does it mean to you for an executive director of a magnet school to seek to encourage creativity? (answered) or (RQ2a)
  - a. Why or why not?

- b. If yes, in what ways do you consider yourself a creative teacher?
  - c. Prompts: What does that look like? Can you give an example?
  - d. What does the concept of fostering student creativity in the classroom mean to you?
- 10. What are some environmental, curricular, structural and/or pedagogical aspects that you think are unique or different at the RRMHS school? (RQ2 a, b)
  - a. What do you think are your school's goals related to encouraging student creativity?
  - b. How do you communicate those with others associated with the school?
  - c. What type of school culture and/or pedagogy is being used at the [RRMHS]?  
  
Prompts: What does that look like? Can you give an example?
- 11. From your perspective, what are the key components of fostering ECD adolescent students' creative self-beliefs and creativity in the magnet high school setting? (RQ2 a, b)
  - a. What are some of the strategies that you use in your classroom to nurture /foster ECD student creativity? Prompts: What does that look like? Can you give an example?
- 12. Describe how you think student creativity is encouraged at RRMHS (RQ 2)
  - a. What opportunities are being offered in your school for developing ECD adolescent students' creative skills and competencies?
  - b. What are the characteristics of the school learning environment that support or encourage student creativity at RRMHS?
  - c. Tell me about a time that you intentionally sought to foster creativity in your school's climate.
  - d. Do you think RRMHS assessment criteria value student creativity? Why or why not?



- e. Prompts: What does RRMHS assessment criteria look like? Can you give an example? Tell me about a time when you have worked to strengthen those areas.

13. What additional opportunities at the magnet school could have been helpful to the ECD adolescent students in cultivating their creativity and creative self-beliefs?

- a. What are the characteristics of the learning environment that might hinder or discourage student creativity at RRMHS?
- b. How are you planning to strengthen an area of your school's climate?

14. How do others at RRMHS influence ECD adolescent students' creativity? (RQ2b)

- a. Prompts:
  - i. For example, your peer teachers?
  - ii. For example, other students?
  - iii. For example, your counselor or support staff?
  - iv. For example, your school administrator?

15. Tell me about the conversations you have had with your students at the magnet school about their creative skills, their creative projects, and creativity. (RQ2b)

- a. How do you think these conversations have influenced what your students think about being creative?
- b. What are the characteristics of these conversations that support ECD students in their pursuit of creativity?
- c. What are the characteristics of the conversations that might hinder student creativity at your school?

16. Please reflect back on each meaningful creative event in which your students participated at your magnet school and describe a product, performance, or service completed by students at your school that is a point of pride to you. You may describe more than one. (RQ1, b)

- a. Describe the supports that your school provides for students to develop creative products, put on creative performances, or provide creative services to others?
- b. What are the rituals, ceremonies, awards, traditions, phrases everyone uses, etc. that you have at the school?
- c. What are the stories someone might tell me about encouraging creativity in the school?
- d. What physical artifacts in the school show that creativity is encouraged here?
- e. What are some examples of interactions that you had with your students after accomplishing creative tasks?

17. What challenges have you faced in fostering your ECD students' creativity and creative self-beliefs at RRMHS?

- a. When do you think your ECD students felt less creative? Why did you feel this way?
- b. What role do you think resources play in your ability to encourage creativity?
- c. Tell me about a time when you were able to secure resources for a creative endeavor.
- d. Tell me about a time when you were not able to secure resources. How do you think that situation affected your ability to encourage creativity?
- e. What personal/ professional experiences and /or influences did you draw on for fostering/ encouraging your ECD students to be creative at RRMHS?
- f. Did you get any PD focused on creative teaching?
- g. Walk me through how you monitor the culture and climate of your school to see if creativity is being encouraged. (daily, monthly, yearly). We've talked some about what you do to encourage creativity in your school. Prompts: How do you monitor if your actions are having an effect? What do you look for/listen for? How have you sought to motivate teachers and students in the school to be more creative? How do you go about coaching/mentoring the teachers and students in order to encourage creativity? Can you give me a specific example of a teacher who needed encouragement and how you went about it? What about a student?

#### Section V: Closing

18. What other thoughts as executive director do you have about fostering ECD students' creativity at RRMHS that we have not talked about so far?

#### Semi-Structured Associate Principal Interview Protocol

[Anticipated Duration: 50-60 minutes]

Participant Preferred Pseudonym:

Date of Interview:

Interview Number:

Opening Script:

Before we begin, I'd like to thank you for taking the time to participate in this interview! The next part of this interview will focus on exploring your views on and practices for fostering ethnically and culturally diverse (ECD) adolescent students' creative identity in a regional magnet high school setting. I will be video and audio recording today's interview to make sure

that I do not miss anything that you say. What you talk about today may be included in research reports, presented at conferences, and used in interventions to help other students who want to become creative. Although we will not be using your real name in any of these reports, we will use a fake name called a pseudonym to share your story without anyone knowing that it is you. That way we can protect your confidentiality. There are no right or wrong answers to any of these interview questions and I hope you will feel comfortable sharing your honest perspective today. Do you have any questions before I start recording the interview? (Wait for the response)

Section I: Opening Ice-breaker questions:

1. What pseudonym or fake name do you prefer to go by for this interview?
2. Do you feel safe to share your perspectives in this interview?

1.

Section II: Background Information

1. What gender do you most strongly identify with?

a) Male

b) Female

c) Transgender male

d) Transgender female

e) Nonbinary

f) Other not listed: \_\_\_\_\_

g) Prefer not to answer

2. With which ethnicity do you most strongly identify?

African American

European-American

Hispanic/Latino

Asian

Native American

Hawaiian/ Pacific Islander

Mixed Race (Please specify)

Prefer not to answer

3. Please tell me a little about what you teach and how you came to be teaching here.

Prompts:

- a. In what area was your highest degree earned?
  - b. How long have you been in the teaching profession?
  - c. Since when have you been teaching at RRMHS Regional Magnet High School?
  - d. Have you ever taught in other schools? What were those?
4. Tell me a little about your experiences as an administrator at the magnet school.
- a. How long have you been an administrator? Tell me about your educational leadership philosophy. What are the principles that guide you as you lead a school?
  - b. What is your role at RRMHS?
  - c. What is it like to be a RRMHS associate principal?
  - d. How do you think your philosophy affects how you shape the culture and climate of your school?
  - e. In your opinion, what are the essential qualities an associate principal should have to effectively shape a school culture and climate that encourages creativity?

### Section III: Creativity-General Information

- f. Based on your teaching and administrative experience, what skills do you think your students need in order to be successful beyond your class? Do you think creativity is an important skill for your students?
  - g. Why do you think so?
5. How would you define creativity?
- a. What do you think the role of creativity is in learning?
  - b. Do you think being creative makes a difference?
6. Can everyone be creative? If not, who can be creative? (RQ 2a)
- a. Can one learn to be creative? Why so?
  - b. To what extent it is possible for teachers to help students develop creativity?
  - c. Do you think that your students can be creative in one class but not in another? Why so?
7. Can you describe to me what a creative student looks like?
- a. How do creative students behave in the classroom? How and when can you tell that they are creative?

b. What skills and/or competencies are important to be creative? Do any of your students stand out as particularly creative?

The following is a list of some skills/ competencies related to creativity. (Drop in the chat)

- i. Openness to difference
- ii. Imagination
- iii. Risk-tolerance
- iv. Resiliency
- v. Visualization
- vi. Focus
- vii. Mind-wandering
- viii. Empathy to others
- ix. Sensitivity to the surroundings
- x. Confidence
- xi. Playfulness
- xii. Originality
- xiii. Novelty
- xiv. Self-reflection
- xv. Domain-knowledge

8. In your view, how do adolescent students develop the abovesaid creative skills and competencies? (RQ.2a)

#### Section IV: Teachers' Practices for Fostering Student Creativity

9. Do you consider yourself a creative administrator? What does it mean to you for an associate principal of a magnet school to seek to encourage creativity? (RQ2a)

- a. Why or why not?
- b. If yes, in what ways do you consider yourself a creative teacher?  
Prompts: What does that look like? Can you give an example?
- c. What does the concept of fostering student creativity in the classroom mean to you?

10. What are some environmental, curricular, structural and/or pedagogical aspects that you think are unique or different at the RRMHS school? (RQ2 a, b)

- a. What do you think are your school's goals related to encouraging student creativity? How do you communicate those with others associated with the school?
- b. What type of school culture and/or pedagogy is being used at the RRMHS?
- c. Prompts: What does that look like? Can you give an example?

11. From your perspective, what are the key components of fostering ECD adolescent students' creative self-beliefs and creativity in the magnet high school setting? (RQ2 a, b)

- a. What are some of the strategies that you use in your classroom to nurture / foster ECD student creativity?

Prompts: What does that look like? Can you give an example?

12. Describe how you think student creativity is encouraged at RRMHS (RQ 2)

- a. What opportunities are being offered in your school for developing ECD adolescent students' creative skills and competencies?
- b. What are the characteristics of the school learning environment that support or encourage student creativity at RRMHS?
- c. Tell me about a time that you intentionally sought to foster creativity in your school's climate.
- d. Do you think RRMHS assessment criteria value student creativity? Why or why not?
- e. Prompts: What does RRMHS assessment criteria look like? Can you give an example? Tell me about a time when you have worked to strengthen those areas.

13. What additional opportunities at the magnet school could have been helpful to the ECD adolescent students in cultivating their creativity and creative self-beliefs?

- a. What are the characteristics of the learning environment that might hinder or discourage student creativity at RRMHS?
- b. How are you planning to strengthen an area of your school's climate?

14. How do others at RRMHS influence ECD adolescent students' creativity? (RQ1)

- a. Prompts:
  - i. For example, your peer teachers?
  - ii. For example, other students?
  - iii. For example, your counselor or support staff?
  - iv. For example, your school administrator?

15. Tell me about the conversations you have had with your students at the magnet school about their creative skills, their creative projects, and creativity.

- i. How do you think these conversations have influenced what your students think about being creative? (RQ1)
- ii. What are the characteristics of these conversations that support ECD students in their pursuit of creativity?

iii. What are the characteristics of the

conversations that might hinder student creativity at your school?

16. Please reflect back on each meaningful creative event in which your students participated at your magnet school and describe a product, performance, or service completed by students at your school that is a point of pride to you. You may describe more than one. (RQ1, b)

a. Describe the supports that your school provides for students to develop creative products, put on creative performances, or provide creative services to others?

b. What are the rituals, ceremonies, awards, traditions, phrases everyone uses, etc. that you have at the school?

c. What are the stories someone might tell me about encouraging creativity in the school?

d. What physical artifacts in the school show that creativity is encouraged here?

e. What are some examples of interactions that you had with your students after accomplishing creative tasks?

17. What challenges have you faced in fostering your ECD students' creativity and creative self-beliefs at RRMHS?

a. When do you think your ECD students felt less creative? Why did you feel this way?

b. What role do you think resources play in your ability to encourage creativity?

c. Tell me about a time when you were able to secure resources for a creative endeavor.

d. Tell me about a time when you were not able to secure resources. How do you think that situation affected your ability to encourage creativity?

e.

f. What personal/ professional experiences and /or influences did you draw on for fostering/ encouraging your ECD students to be creative at RRMHS?

g. Did you get any PD focused on creative teaching?

Walk me through how you monitor the culture and climate of your school to see if creativity is being encouraged. (daily, monthly, yearly)

We've talked some about what you do to encourage creativity in your school.

How do you monitor if your actions are having an effect? What do you look for/listen for?

How have you sought to motivate teachers and students in the school to be more creative?

How do you go about coaching/mentoring the teachers and students in order to encourage creativity?

Can you give me a specific example of a teacher who needed encouragement and how you went about it?

What about a student?

What personal/ professional experiences and /or influences did you draw on for fostering/ encouraging your ECD students to be creative at RRMHS?

Did you get any PD focused on creative teaching?

#### Section V: Closing

18. What other thoughts as associate principal do you have about fostering ECD students' creativity at RRMHS that we have not talked about so far?



## Appendix K

### Final Codebook

**Table K1**

*Final Code book* Theme 1. Salient Strengths of Creativity-fostering Opportunities facilitated in Magnet High School Learning Environment

Categories	Sub-categories	Example Quotes	Participant	Source
Open-ended Learning Opportunities	Open collaborative learning space	“Usually, the classes are for about an hour each, either in the classrooms or in this place called the open space, which is sort of like a large open office area with a bunch of tables. And when we're in the classroom, we'll learn things from the teacher, but when we're in the open space, we're allowed to do our own work.”	Nick	Student Interview

*Final Code book* Theme 1. Salient Strengths of Creativity-fostering Opportunities facilitated in  
Magnet High School Learning Environment

Categories	Sub-categories	Example Quotes	Participant	Source
		<p>“So, in the independent work time they're outside. Some of the times I'm sitting outside with them, discussing this assignment with them, or I see sitting close by, just to see that they're doing the work. Very few times I would sit in the classroom, while they're outside on their own. So, that's my breakout. Between the breakouts and the independent work time, I have this every day, I see the kids every day. They'll interact with me for the entire class or 3/ 4<sup>th</sup> of the class, and they will have the remaining quarter of the class to finish up what we started in class, or to start tomorrow's assignment in advance but every day they will see me either for the entire class or for 3/ 4th of the class time.”</p>	Mr. Jamshed	Teacher Interview

*Final Code book* Theme 1. Salient Strengths of Creativity-fostering Opportunities facilitated in Magnet High School Learning Environment

Categories	Sub-categories	Example Quotes	Participant	Source
Open-ended Learning Opportunities	Open collaborative learning space	“And I think, having that open space and flexibility to work with on your project, or maybe practice on those skills, I think that is really important part of [RRMHS] environment”	Mr. Heeler	Teacher Interview
	Authentic & Agentic creative learning through student-led PBL	“They get to ask the why, and I give them an opportunity to connect the real-world application.”	Mr. Jamshed	Teacher Interview
		“I designed a prototype for a website that would help people of color find therapists that look like them. I completed this during an internship through my school.”	Survey participant	Student Survey

*Final Code book* Theme 1. Salient Strengths of Creativity-fostering Opportunities facilitated in Magnet High School Learning Environment

Categories	Sub-categories	Example Quotes	Participant	Source
	Choice-based learning progression	“They have provided [us] with such a great opportunity of doing an associate degree in high school,..”	Rita	Student Interview
	Dynamic creative opportunities	“it's about allowing children to give answers that are not necessarily what they learned in the textbook, or what they heard you say the previous day.”	Mr. Kida	Teacher Interview



Categories	Sub-categories	Example Quotes	Participant	Source
Non-linear Creative Learning	Cross-curricular learning opportunities	“..for the astronomy project that was a lot of fun, I got to use my Photoshop creativity and make a drawing on my computer for the size of different stars compared to the state of Rhode Island. And that I thought that was a lot of fun.”	Nick	Student Interview
	Providing optimal challenge and promote growth mindset	“Especially in algebra 2 when most students are not taking the [standardized test] at the end of the year, we try to do more performance tasks where they are, the students are the ones coming up with the math, not me giving them the math to do something with.”	Mr. Max	Teacher Interview

Categories	Sub-categories	Example Quotes	Participant	Source
		<p>“So, for example, .. they had to either come up with a game or to present the data on black holes if they were doing an astronomy presentation, or if they came up a physical game where they were playing like Monopoly, or they have to come up with an app that they had to create that students would use as a medium to share their research on black holes. So, the rubric had a point on there that said they were going to be graded on the creativity of their medium. They could not use Google slides. It could not use Google decks because they had [already] used Google slides at the beginning of the year. They used that before, and so later I started measuring other different parts of presentation skills. Then, later on, they advanced to not using Google slides and using other creative technologies and media, so that they're testing out their new skills. So, a student who is interested in</p>	Mr. Jamshed	Teacher Interview w

Categories	Sub-categories	Example Quotes	Participant	Source
		virtual reality used his oculus goggles, and he went into the metaverse and created a presentation on his research.”		
	Opportunities to self-regulate creative learning	<p>“I think I learned that very hard way by managing the time and having me (sic) deadlines. It's an important thing, even in the college and in real life you have to meet deadlines.”</p> <p>“Students are learning project management methodology, such as scrum and agile. Our teachers are really helping us to embrace that. It's not uncommon for you walk across the classroom and you see students doing a standup or students going</p>	<p>Rita</p> <p>Mr. James</p>	<p>Student Interview</p> <p>School Administrator Interview</p>



Categories	Sub-categories	Example Quotes	Participant	Source
		through a sprint just to basically or using combine boards, like to organize their work.”		
	Mastery-based learning progression	“So, in ninth grade, and I learned how to use html and CSS. And we were trying to get in to web designing, but we weren't able to, because we were lagging behind on other stuff. So, I just started doing my own thing at that time and just trying to figure out how I would do it. And I started with the website Wix because it has a basic template, and you can just go ahead and create it.”	Rita	Student Interview w
	Failures as learning resources	“I can get them to look at the creative piece by trusting me that if they fail, no hammer is coming down.”	Mr. Jamshed	Teacher Interview w
		“Make a mistake, and then try to [improve], and then keep trying.”	Mr. Heeler	Teacher Interview w

Categories	Sub-categories	Example Quotes	Participant	Source
		<p>“...in a math classroom specifically. risk tolerance is always a big one. Having students have a wrong idea and being okay with that. Yeah, wrong answers, bad ideas... I need all of that as long as there's some reason for it that I can get at ..”</p>	Mr. Max	Teacher Interview
	Providing time to practice and modeling for creative metacognition	<p>‘Now, an app is something [that] is out of my comfort zone. I've never made an app, I don't know how to make an app. So, my teacher originally told me that ‘Rita, you need to make this app’, and my initial question was, ‘how do you make an app?’ So, for two weeks I tried to figure out that and struggled on that. He told me ‘You work for this for two weeks and try to figure it out. If you don’t figure it out in 2 weeks, we’ll find out to an alternative plan’, so we did.”</p>	Rita	Student Interview
		<p>“But if they can't I’m the one who shows them the real-world application.”</p>	Mr. Jamshed	Teacher Interview

Categories	Sub-categories	Example Quotes	Participant	Source
		“And so, you give the great example of this kind of context of having accomplished that creative task.”	Mr. max	Teacher Interview
	High expectations from Students	“...And something I like about him, as he calls his classes, the dream team. He always calls it. When I was in tenth grade and I had him, and he would enter the classroom, he would say, ‘Okay! Dream team, so this is what I’ve been doing today, and this is what ...’ So, the motivation and that confidence it gives you to just be called the dream team is another thing. It hits differently at some point. Yeah, and when you remember, you were the dream team.”	Rita	Student Interview



Categories	Sub-categories	Example Quotes	Participant	Source
Productive Pluri-Perspectival Engagement	Building relationships through care, mutual trust, respect	<p>“We had the trust and a thing that I think I still remember. In senior year we went up to him, and we were just talking about generally, and my friend and I went up to him and we were like got into punching each other, and I was like actually punching. We were like just punching each other that got straight up to him, and it went like this, and his eyes did not blink. You know, normally, when you do that, just (sic) even for one second, a person is not going to punch you back but if you have this at least you just blink your eyes. He did not blink his eyes. And I asked him, why didn't you blink your eyes, and he told me, ‘Rita, I know I have that trust in you and your friend that you would never punch me. That trust that you would never punch me did not make my eyes go (sic) blink.’ But I’m like it's not even about the truth like I trust you. But if you go and do this to me, I would still blink, right?. But he would never blink [his eyes]. He was</p>	Rita	Student Interview

Categories	Sub-categories	Example Quotes	Participant	Source
		like I had the trust that you would never punch me. That thing just stuck into my head. I told this to everyone I've met after that. These small things that teachers do make a huge impact on you.”		
	Balancing Autonomy-support & Structure in instructions	“We purchased two 3-D printers. I had the students put the printers together. So, I grabbed students. I grabbed a group. Yep, boys, girls, white, black, Hispanic, mixed race, all were in that group. The group brought it over, and I said, I need these printers installed. I need them to put together. They're like “what?” And I was like ‘Here's a manual. I'm gonna stand with you. I'm gonna give you the tools, I'm gonna watch	Mr. Jamshed	Teacher Interview w

Categories	Sub-categories	Example Quotes	Participant	Source
		you. I'm gonna encourage you, But I want you to put the printers together. I'm not gonna be the one using this, you guys are. So, I need you to understand the pro how to [fix the] problem.' So, I coached them a little bit through it. They put the 3-D printers together. We used them for physics. I encouraged them to use them for other classes.”		
	Inclusive, culturally sustaining creative opportunities	“Because coming to [RRMHS] being the only Indian in the entire school, as a freshman was a little scary because there was no one I could really connect with as culturally. So, I had to make that scale my own, where I just presented ideas and did projects related to my culture, which mainly stood out in some way. So, definitely confidence in originality, and then self-reflection would be just reflecting on your own. Today, when I go back and reflect on my projects and stuff, I feel proud that I represented my own ethnicity and my own culture.	Rita	Student Interview

Categories	Sub-categories	Example Quotes	Participant	Source
		When others were just doing something that we all know today living in America, either it's like the Civil war or maybe, maybe it's the Civil War maybe it was world war 2 when I was in a history project, whereas I presented an Indian part of history then maybe no one knew about.”		
		"we have an inclusive environment that, again, just go back to really encouraging students to express themselves."	Mr. James	School Administrator Interview
	Sensitivity to culturally diverse experiences of ECD students	“When I interact with that child, I can guarantee you I can find a common ground between that child's background and mine. So, the conversation will not be about the assignment, the conversation will be about the child. What they're working on with their day-to-day life is when they're talking to me. They'll really share something where I can	Mr. Jamshed	Teacher Interview



Categories	Sub-categories	Example Quotes	Participant	Source
		build common ground because I've experienced that piece. It's very difficult for somebody who is not in the minority to experience what a minority student feels like. right?"		
	Confidence building interactions	<p>"Let me say this. I immigrated to America in 2015 where I came out of situations where people didn't really like me, and that decreased my confidence a little bit because there was a phase in my life when I started thinking badly like I wasn't worthy, or I couldn't achieve anything... There was a part of me in middle school...and when I came to high school I started developing a little bit where I started relying on my confidence more than someone else's. I was like, 'I don't know if this is right or wrong, but I think I'm confident about it, I'm just gonna go and hit submit it.'... I can't tell you a moment that I was, but there were several small-small moments that</p>	Rita	Student Interview w

Categories	Sub-categories	Example Quotes	Participant	Source
		gave me that confidence that I could do it, and part of it was just motivation from my peers and teachers.”		
	Modeling openness to diversity	“It's allowing them to have the room to be able to answer in a way that you did not expect.”	Mr. Kida	Teacher Interview
	Encouraging positive interactions among students	“So, I think that working within a team or working within a group, can help motivate ideas that have not been thought of before, just by looking at things through a different lens or a different perspective.”	Mr. Kida	Teacher Interview
		“earlier this year I was writing a story creatively and one of my classmates was wanting to write story creatively. So, we sort of like chat-talked with each other and encouraged each other, continued	Nick	Student Interview

Categories	Sub-categories	Example Quotes	Participant	Source
		writing stories.”		
	Opportunities to feel a sense of belonging to the school and creativity	<p>“I went into my math class, and that was written ‘Rita for President’, and I was like...that made me feel like, “Oh, my gosh! people want me to be a leader.” So, that was a big phase of life that I think I remember, or the moment I remember, that made me feel like today I belong here.”</p> <p>“I think they influenced it a lot because I can go and ask any of my classmates, my friends on how they think...what's wrong...or how this writing is and they'll give an opinion and, and they'll say it's good. And they'll give like some criticism, or they'll say you do a really good job. And everyone is very, very pro creativity, I guess what you would call it. And everyone is helpful about that.”</p>	<p>Rita</p> <p>Nick</p>	<p>Student Interview</p> <p>Student Interview</p>



Categories	Sub-categories	Example Quotes	Participant	Source
Focus on the Future of ECD Students	Career-Oriented Opportunities:	“During my internship, we were asked to make a website for our client. My team and I were asked to make a pizza website easily accessible to their consumers, so we work (sic) hard and designed a website up (sic) to their liking. Along with the website, we created our portfolio with all of our work from scratch using a website.”	Rita	Student Interview
	Dual enrollment college credits	“Now we have 2 pathways that a junior follows from junior year. It is either an applied concentration or an associate degree pathway.”	Rita	Student Interview
	Hands-on internship opportunities	“I designed a prototype for a website that would help people of color find therapists that look like them. I completed this during an internship through my school.”	Survey participant	Student Survey
	Meaningful & relevant extracurricular creative activities ECD	“Our internship coordinator always emphasized that that I need you to have an Odyssey [career] plan, we're gonna talk about this Odyssey plan, and you are going to tell me what	Rita	Student Interview

Categories	Sub-categories	Example Quotes	Participant	Source
	students' interests	happens if you do not become an engineer or if you do not become a doctor. There is always another option ahead of you to pursue. So, one of the inspiring conversations was that."		
	Empowering ECD students to co-create learning environment	"The students here have a reputation for creating petitions and getting most of the school signed if they don't like something. That's happened several times... The first time I remember we did our first petition was in 10th grade when they changed the schedule for the first time really. Back then, we really liked the old schedule. A lot of people liked it, liked the old schedule. So, we signed a petition, we had a petition which was like pretty close to 100 people signed. And then they ended up changing something in the schedule that year."	Nick	Student Interview w

Categories	Sub-categories	Example Quotes	Participant	Source
	Opportunities to make a positive creative impact on community	<p>“One thing I’m proud of accomplishing while at [the RRMHS] is the water filtration project. A group of us was presented with the problem of needing drinking water, so with the help of [our science teacher] we managed to come up with a way to filter water that would cost pennies. Being able to present my idea and be a part of it as it unfolded was very inspiring.”</p> <p>“Also, that day, the governor had decided to have a meeting in our school. So, he was walking around touring and I got to show him, all the pieces of my drawing work.”</p>	<p>Survey participant</p> <p>Nick</p>	<p>Student Survey</p> <p>Student Interview</p>





## Theme 2. Unique Features of RRMHS Context

Categories	Example Quotes	Participant	Source
Small Student Population	<p>“Unlike a large school students where students may feel like they are just a small, tiny piece of a very big thing, at RRMHS, because we're so small Students have direct access to leadership and to teachers regularly, and so they should feel like they have opportunities to influence What happens in the school, and that they can bring their opinions to people easily and, unlike, say, a 2,000 kids school. They can just ask to meet with me, or they can stop me in the hallway, or they can stop the associate Principal all of those things that should be open communication between students and teachers students and leadership.”</p>	Dr. Jane	Executive director Interview
Intentionally integrated, diverse learning environment	<p>“So, you take a division like [redacted: county name] county where students look one way traditionally, and the majority of students all represent one ethnicity. Then they come to [RRMHS] and their best friend is someone that they would've never interacted with because they would not have had the opportunity, ... We have people from all different environments, all different ethnicities, all different faiths, all different sexual preferences”</p>	Dr. Jane	Executive director Interview
Diverse academic pathways as per student choice	<p>“Now we have 2 pathways that a junior follows from junior year. It is either an applied concentration or an associate degree pathway.”</p>	Rita	Student Interview
An Innovative Curriculum & Pedagogical Model	<p>“I almost put them on the spot and be like. Give me a good question”</p>	Mr. Max	Teacher Interview

Categories	Example Quotes	Participant	Source
Blended learning: Integration of CS-content and digital technologies across all content areas	“Yes. we definitely integrate the computer science across the across all of our curricula.”	Mr. James	Associate Principal Interview
Project-based learning,	“All of us [internship team members] worked together. And no one from our team knew how to make a website except me, because earlier I've made a website from my restaurant. So, at that point everyone was leading back to me that I knew what I needed to do. But knowing that the project was not only for me, but for everyone else. So, I became the leader on how to leave that there or how to make go outside like the basic layouts and stuff like this. And slowly, gradually I distributed plans, and I told them how to do certain things, and then told them to do the rest of the things. So, like the opening slide ..basically out of the website I showed them how to change colors in them and how to make it more fancy the wording and other stuff, and then I told them to make the other pages too. So slowly that way I showed my creative skills.”	Rita	Student Interview
Student-Centered Differential instructional practices	“Different differences. So, the difference at [RRMHS] is that our teachers and students are allowed to schedule studies each week based on their own student needs. So, teachers should use formative data based on the products that students engaged in and those could be tested, it could be projected, it could be class discussions, could be any type of formative data, and the teachers then send out calendar invites for the students the next week to group them based on their needs, and those	Dr. Jane	Executive director Interview

Categories	Example Quotes	Participant	Source
	groups may change every week”		
Competency-based performance assessment for learning, and	“So, performance-based assessment is really just [that] I'm going to have you create a product or do in action, or you know something like that's concrete that I can see in order to be able to do that. you have to have a good understanding of the content rather than a traditional like have you memorized these facts, or can you apply in this way?”	Mr. Heeler	Teacher Interview
Promotion of mixed-grade cooperative learning	“All the rest of the groups are outside working on a project, or individually, so that is extremely creative in terms of how we approach instruction...they could be working collaboratively in the open space with teachers getting feedback, working as partners or in a group.”	Dr. Jane	Executive director Interview

### Theme 3 Affordances Specific to Teachers & School Administrators

Categories	Example Quotes	Participant	Source
Teachers Autonomy	“So, I when we interview candidates I like to say when it comes to instruction there's just a couple of minimums that you have to meet with. Teacher meet with students at least twice a week, as with our innovative learning model. But beyond that teachers should have complete creative control of their classrooms. And I think that that encourages teachers to experiment and to try new things and to	Dr. Jane	Executive Director

Categories	Example Quotes	Participant	Source
	understand that failure is okay.”		
Teachers Autonomy	“See I enjoy the trust and the autonomy the principal gives me. It gives me a lot of autonomy. She lets me do my own thing. She trusts me when I need some help she'll be there to help. So, I appreciate that autonomy.”	Mr. Jamshed	Science Teacher
	“So just the idea that we're setting up a culture that is different Helps, I think, give instructors the freedom, the levity to be able to be different, to be able to teach differently. And what does it look like? Well, at our school particularly it looks like we don't necessarily have the rigid structure of classes per se.”	Mr. Kida	CS Teacher
	“...and within math certainly we're always we're such a small department that there's a lot of autonomy.”	Mr. Max	Math Teacher
	“We are given that latitude, that freedom to assess in whatever way we feel is the best. And so, I can assess a child just by having a conversation with them.”	Mr. Heeler	CS Teacher
	“I have a lot of freedom.”	Mr. Heeler	CS Teacher
	“Yes, and we have the freedom to arrange that schedule, however, we want. The big rule is I have to meet with every student 2 times per week.”	Mr. Heeler	CS Teacher

Categories	Example Quotes	Participant	Source
Beliefs about Student Creativity			
Creativity is a malleable competency.	“Definitely. I mean, that is that is kind of the secret sauce, right? I tell my kids all the time that there is the element of problem solving and creativity in this stuff. That's maybe half of what you need to be learning.”	Mr. Heeler	CS Teacher
	“Yes, I say one can learn to be creative definitely.”	Mr. Jamshed	Science Teacher
	“So, when it comes to the I guess the creativity point, the creation is a difficult thing, so they need to have that that [growth] mindset, and that forward thinking to go from nothing to something in math, especially.”	Mr. Max	Math Teacher
Anyone can develop creativity by practicing it in their learning environment.	“But sure, absolutely everyone can be creative.”	Mr. Max	Math Teacher
	“Oh, yeah, everybody can be creative. It just looks different.”	Dr. Jane	Executive Director
	“So, I think everyone has a chance to be creative. There isn't anybody that's not creative in any way.”	Mr. Heeler	CS Teacher
	“I think everybody has some form of creativity, but different people definitely have different areas of strength, and it takes a really good understanding. And to be able to apply knowledge in a creative way. Okay, so they can transfer their kind of experiences and knowledge to that field where their strengths	Mr. Heeler	CS Teacher

Categories	Example Quotes	Participant	Source
	are most visible.”		
	“Once you're comfortable in the classroom you'll want to explore and if you have a teacher that encourages exploration and doesn't analyze if you go off the beaten track, you're going to be creative.”	Mr. Jamshed	Science Teacher
Creativity is not restricted to the arts, but it can develop in any domain area.	“So, it's not such a narrow view of like Oh, it's writing short stories, or something like’..no, no, it could be anything.”	Mr. Max	Math Teacher
Creativity manifests itself differently in different disciplines.	“It's not creativity in the traditional sense of you know, painting and sculpting and music. It's not a fine arts creativity it's much more a Can I get this job done and a lot of times you really have to be creative to. You know, maneuver around some of the obstacles that some of your structures present.”	Mr. Heeler	CS Teacher
	“The parameters will change, and you have to adjust the parameters for different students. Some students are not going to show their creativity in a board game. They have no interest. They'll show the creativity of virtual reality matters and one look to be creative.”	Mr. Jamshed	Science Teacher
	“Oh, yeah, everybody can be creative. It just looks different.” (Dr. Jane, Executive Director)	Dr. Jane	Executive Director
	“Everyone is creative in their own right. It manifests itself differently depending on who the student is and who you are personally,..”	Mr. James	Associate Principal

Categories	Example Quotes	Participant	Source
Creativity is an essential 21st-century skill that can be incorporated into academic learning.	“I think that creativity is an important part being able to be a problem-solver, and, you know, being able to have it in education, I think, is one is. It does include being able to know certain facts that have already occurred, or certain methods that are already there, but also resiliency for being able to solve problems that you've not faced before, which takes creativity so I do think that it does have a place within every teacher's classroom.”	Mr. Kida	CS Teacher
	“So, I think the creativity part of the innovative part is crucial, because students are gonna need that right after outside of high school hour, outside of college. However, it's difficult to be creative if you're not confident in yourself. And to get confident, you need proper mentors. You need mentors that you can feel very comfortable with.”	Mr. Jamshed	Science Teacher
	“I think Creativity is essential in learning in terms of I mean both ways right? Like students need to have opportunity to express creativity in their products, and in the way that they learn.”	Dr. Jane	Executive Director
Exposing students to creative tasks can help them learn not only to develop creative ideas, and products but also to master the creative process.	“I can show you all of the logical structures there are But if you never play with it enough to say, Oh, I can apply this in this other way, and then see and make that connection then then you're going to do that that that element of creativity is just going to be lost on.”	Mr. Heeler	CS Teacher

Categories	Example Quotes	Participant	Source
	<p>“You have to have a rubric that says a creativity is part of the grade, and then you have to give them time to be creative and comfortable. And not be fearful of being creative. The worry is, if you creative, you may fail and fall in your face. So, the students are told that a part of the rubric says, ‘Keep a record of your creative process. So, if your product does not turn out the way it's supposed to, and you fail at it, I can still give you a credit for the creative process, even if the product didn't turn out the way it's supposed to.’ So, the right there the student fear of failure disappears, and the student gets comfortable. They get confident, and when you get comfortable and confident your creativity just soars.”</p>	Mr. Jamshed	Science Teacher
	<p>“And I tell my students all the time. you know we give them a question or a solution, or a problem, and I'll say this is this is a way to do it. This is not the way to do it. This is just one of the ways your program will almost certainly feel and run differently from mine. It doesn't mean that mine is better or yours is better they're just 2 different ways to get it the same thing. So being able to come up with those different plans of attack That's where creativity really comes in.”</p>	Mr. Heeler	CS Teacher



Categories	Example Quotes	Participant	Source
	<p>“Encouraging students creativity. Well, I think creativity, even in that soft goal, is one of our primary things. So, we have pushed kids toward making things, and really, doing performance-based assessment. I could do the old multiple choice and essay answer test. But that only gets you so far. I get just as valuable and deep in understanding of your learning If I have you.. make a product or pitch me a new company, and give me your ideas of what you want to have the company do, or give a presentation or I mean there's so many different choices in different ways to have the kids show their learning.”</p>	Mr. Heeler	CS Teacher