Cinematherapy in Gifted Education Identity Development: Integrating the Arts through STEM-Themed Movies

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Abstract

Gifted students, because of their advanced development compared to peers, have emotional needs that require differentiated education programs. Asynchronous social and emotional development of gifted students often leads to identity issues. Cinematherapy can be used to help gifted students explore their identities through analysis of the actions of gifted characters in films. This practical article suggests STEM-themed movies with characters facing challenges useful for gifted student identity development. The Autonomous Learners Model is used to classify gifted learners in the movies to assist teachers in matching movies to the needs of gifted learners. Tables of STEM-themed movies with gifted characters and a general list of discussion questions are provided. Finally, example Andy Warhol-inspired digital art projects related to iconic NASA space images that fit with space-themed movies are provided to allow gifted students to express the identity issues with which they wrestle and their insights about their personal character strengths.

Key Words

Cinematherapy, visual arts, arts integration, gifted students, identity development.

Introduction

Programming for gifted and talented students is under constant scrutiny to ensure that students are being challenged appropriately in academic situations whether through the use of compacting curriculum, subject area or whole grade acceleration, or by providing opportunities for students to excel in both core and non-core subject areas. Within many programs what risks being overlooked is the "whole" child, not simply the intellectual abilities, but also providing for his/her social and emotional development. The driving force behind this project is the recognition that gifted students have asynchronous developmental emotional needs that require their education be qualitatively different from typical peers (Peterson, Betts, & Bradley, 2009).

Gifted children develop at different rates intellectually and emotionally than their peers. When identifying a student for inclusion in a gifted and talented program, it is possible to find that although she or he may academically be on par with a fifth grader, she or he may be social-emotional-developmentally closer to his/her to third grade or same-age peers and possibly even behind. This separation in social or emotional development can lead to conflicts within gifted students' minds. Because of this,

educators need to be able to adjust curriculum not just for the academic needs of these children, but also for their social-emotional or affective needs. Students with high cognitive abilities often experience greater emotional depth (Hébert and Sergent, 2005). Gifted students are as emotionally stable as their peers, but because they are more mature in some domains they may experience certain kinds of social and emotional difficulties that need to be addressed for optimal development (Robinson, 2002).

The goal of this project is fourfold. The first goal is to explore the use of cinematherapy as a tool for the social and emotional development of students with gifted and talented capabilities. This goal is accomplished in the following literature review. Since many gifted and talented students identify in areas related to STEM fields, the second objective is to provide a framework for teachers to locate STEM-themed films that exhibit different profiles of giftedness, allowing choice of films that may benefit a student or group of students in the most powerful and effective way. This goal is accomplished by creating tables that allow exploration of STEM films that can assist gifted students in developing their identities. The third goal of this project is to provide a general list of discussion questions that may be adapted to the film selected and to provide insights from classroom testing of the films with gifted students. Finally, the last goal is to provide an example art project that integrates movie content and allows students to express their ideas concerning their developing gifted identity.

Literature Review

This paper will review information on the affective or emotional development of gifted children and methods that can be used to support these students. A review of the Autonomous Learners Model that incorporates an affective support domain and the National Association of Gifted Children's Standards that address the affective needs of gifted students are provided. The Next Generation Science Standards and National Core Arts Standards that relate to the project will be addressed. Two areas of support, bibliotherapy and cinematherapy, will be reviewed for their use. A review of the profiles of giftedness among the movie characters will

be included to make the selection of a film easier for educators who choose to utilize the table of films. Finally, a brief discussion of arts integration is offered.

Autonomous Learners Model

The development by Betts and Kercher of the Autonomous Learners Model (ALM) in 1981 with a revision published in 1996 and the work by Betts and Neihart in the creation of the Profiles of Giftedness in 1988 and subsequent revision in 2010, highlight the importance of developing all aspects of gifted and talented students. The ALM is a comprehensive programming model. The ALM focuses on five dimensions: orientation, individual development, enrichment activities, seminars, and in-depth study. When working within the ALM model to address social and emotional needs of students, the practitioner's focus needs to be on the orientation and individual development dimensions; in other words, students need to be provided a framework which gradually releases responsibility for their learning to them (Davis and Rimm, 2004). The orientation dimension allows students to explore who they are while the individual development dimension, as its name suggests, provides scaffolded opportunities that focus on skill development to become a life-long learner able to direct one's own learning (Davis and Rimm, 2004).

The ALM model (Betts and Kercher, 1981) is used by schools throughout the United States, Australia, New Zealand, and the United Kingdom as a foundation for the design of programming to meet the needs of gifted students. These needs must address the following areas of social and emotional development: academic advancement when compared with same-age peers, the struggle to prevent underachievement and reduce the potential damaging effects of perfectionism as a response to their giftedness, and facing the reality of having a physical disability or psychological diagnosis in addition to meeting the criteria for identification in the talented and gifted student pool (Neihart, 2002).

Gifted students may have difficulty adjusting to social interactions because of their advanced academic skills that can sometimes put them in classrooms with different age classmates. They may find themselves as the "odd-one out" because of the differences in how they approach activities

such as playground games or classroom discussions. They may also find that their same-age peers are unable to relate to their problem solving approaches or increased sensitivity to issues. Curriculum accommodations that focus solely on academic enrichment are not enough to bridge these affective needs.

National Gifted Programming Standards for Gifted Students

The National Association for Gifted Children (NAGC) has published programming standards for pre-K to grade 12 gifted students. The goal of these standards is to provide guidance for schools establishing and evaluating programs to meet student academic and affective needs. Standard 1: Learning and Development is central to meeting the diverse needs of students in the gifted population as it encourages educators to "promote ongoing self-understanding, awareness of their needs, and cognitive and affective growth of these students in school, home, and community settings to ensure specific student outcomes" (NAGC, 2010). Other standards that specifically relate to the affective educational needs of gifted students include: Standard 2.1: Assessment - Identification; Standard 3.2: Curriculum Planning and Instruction - Talent Development; Standard 4.1: Learning Environments - Personal Competence; Standard 4.2: Learning Environments - Social Competence; Standard 5.1: Programming - Variety of Programming; and Standard 6.2: Professional Development - Socio-emotional Development. The overarching theme throughout these standards is the goal of developing self-understanding in gifted students and providing them with skills and tools needed to increase their capacity and ability to utilize their giftedness in the best possible way.

The current educational environment readily uses labels to identify and classify students to meet academic needs. It is all too easy to fail to realize the impact of these labels which may contribute to conditions in which social and emotional issues may develop in gifted students due to competing external and internal pressures. Hébert and Hammond (2006) as well as Fung (2008) focused part of their work on addressing this growing list of concerns. These concerns include issues related to forming and maintaining healthy friendships, dealing with peer pressures, gender and identity issues, coping with high expectations, perfectionism, handling stress, and conflict resolution. Parents and guidance counselors should share some responsibility for the fact these issues may be unrecognized and under-addressed because of the perception that these students, referring to gifted and talented students, don't need that kind of help. Gifted and talented program facilitators must be able to identify and deal with issues before more serious complications arise.

In many respects, gifted children are very similar to non-gifted children in terms of the struggles they face while growing up. Gifted children also face a specific and unique set of challenges that result from being gifted (Frasier and McCannon, 1981). Among these issues are boredom in academic situations, being misunderstood by teachers and peers, lack of acceptance by peers, difficulty setting goals, negative self-concept, and difficulties in relationships.

To address the spectrum of services being used to meet the varying social and emotional needs of gifted students, Cross (2004), developed a "Continuum of Psychological Services." This continuum of services provided for students' needs begins with advising on one end from parents, teachers, and counselors and progresses all the way to psychopharmacology on the other end involving psychiatrists and physicians. The five steps along the continuum, from advising to guidance, followed by counseling and therapy, and finally reaching the level at which psychopharmacology is the best available solution. This continuum allows for the progressive application of services that may be needed by gifted students as they work toward a greater understanding of and ability to develop their gifts. For most teachers, the affective activities chosen for students fall within the advising and guidance categories. Here is where the teacher's role plays the greatest importance in shaping the curricular decisions that promote and develop an understanding of giftedness.

Next Generation Science Standards and National Core Arts Standards

The Next Generation Science Standards (NGSS) were created as a way to integrate Science, Technology, Engineering and Math (STEM) fields together in a way that

led to greater understanding and practice for students. The standards did not directly address the affective domain for students, however, the practices, crosscutting concepts and disciplinary core ideas contained within them can be applied when working with gifted students in affective development. (NGSS Lead States, 2013) An understanding of one's self as well as one's abilities in specific fields can enable students to greater success in pursuit of goals.

The practices dimension of the NGSS allows for students to develop the sets of skills needed to perform both scientific inquiry and engineering design as they look to solve problems they encounter in their lives. The crosscutting dimension allows students to experience the various interactions of different fields of inquiry and how there are relationships between them as opposed to isolated areas. Lastly, the disciplinary core ideas refer to aspects to which curriculum, instruction and assessments can be tied according to four sets of criteria. The key element in this dimension with regard to this paper would be the criteria that relate to interests and life experiences and societal or personal concerns that relate to scientific knowledge.

Using films as a means to address affective needs with gifted and talented students can also be supported through the National Core Arts Standards (NCAS). Film is an expression of art and can help accomplish philosophical and lifelong goals established in the NCAS including communication; creative personal realization; culture, history, and connectors; means to wellbeing; and community engagement. The domains of Responding and Connecting, found within the four anchor standards of the NCAS, provide means to address affective development. (National Coalition for Core Arts Standards, 2012).

Bibliotherapy for Social and Emotional Development of Gifted Students

One of the early processes developed to accomplish social and emotional guidance was bibliotherapy. In simple terms, bibliotherapy refers to using literature and literary characters that show similar capabilities or characteristics to the gifted students. This allows students to process and understand that there are other individuals similar to them in experiencing needs that are different from the general population; that they are not alone. It also provides an avenue for developing problem solving skills necessary to be successful (Hébert, 2009). There is a wide variety of fiction and nonfiction books that reflect issues gifted students may face that allow teachers to match books to specific student needs (Whitney and Hirsch, 2000).

The use of biographies to help gifted students understand giftedness was pioneered in the 1920s by Leta Hollingworth. As an elementary teacher, Hollingworth encouraged her students to select biographies of gifted individuals to read. The students then led a discussion period with the rest of the class in which they asked and answered questions about the book that they had chosen. By the end of the activity, she discovered that the interest level in the biographies chosen and the connection to the individuals discussed generated so many questions from students that they could not adequately addressed in the time provided, so she provided a box for additional questions to be deposited in and answered as time permitted (Hébert, 2009).

This strategy of examining the lives of famous people through their biographies and autobiographies along with fictional characters can provide gifted youth with a unique perspective on developing an understanding of what being gifted means, overcoming obstacles in their lives, and developing their strengths as lifelong learners with well-developed talents (Moon, 2002). It should be noted that the works selected for use in discussions with students must be carefully selected for their potential usefulness in developing positive solutions to the affective concerns that gifted children face (Hébert, 2009).

Bibliotherapy is not an isolated or individual process that can be completed without interaction or discussion with others. For it to have the most profound impact on a gifted child's understanding of giftedness, the process requires more than handing a child a book and hoping for the best. Rather, students should be given the book to read and provided the opportunity to discuss it with a mentor or adult facilitator who can ask questions, listen to the answers, and keep the conversation about what the child internalized from the book going so that it impacts the child's life in a positive way (Whitney and Hirsch, 2000).

Cinematherapy

Rooted in the tradition of bibliotherapy is the emergence of the use of movies rather than traditional texts to help students understand themselves. Cinematherapy uses films in which characters show gifted traits or have to deal with circumstances associated with giftedness. Once again, the process for gifted and talented facilitators is to allow students to view the films and recognize that there are individuals or characters that have similar circumstances to their own to understand their giftedness. The students move towards a greater acceptance and understanding of their giftedness through the viewing of others with similar traits. They begin to realize that they are not alone and are not completely unique. However, they may continue to feel somewhat isolated because there is no one similar to them in their everyday experiences. Bibliotherapy and cinematherapy use different forms of media to accomplish the same goal of providing a "self-help" opportunity to increase a student's awareness of coping with being gifted (Moon, 2002).

There is a small but growing body of research that details support for the use of books and movies to promote social and emotional growth. Primary support for the use of video therapy or cinematherapy is found in the research done by Hébert (2009) who noted a change that occurred when a movie viewer was able to identify with a character from a movie and experience emotional growth. Adding cinematherapy as a component of the curriculum can help address the affective needs of gifted students.

Newton (1995) acknowledges the possibility of criticism for the inclusion of video therapy in affective programming designed to meet the needs of gifted students. In response to those who might view it as frivolous, a comparison is made to the impact of adults viewing films that are considered to be cinematic masterpieces. The use of carefully selected, high-quality films with students may provide a previously unexplored avenue to reach students who do not demonstrate proficiency in reading or who may exhibit traits of underachievement as a result of language barriers and socio-economic disparities. The challenges of not being an able reader may prevent them from being able to demonstrate the impact of truly comprehending the message contained within the written material, while movies eliminate that barrier.

Hébert and Hammond (2006) note that following the viewing of a movie, the facilitated discussions led by a gifted and talented teacher and addressing the issues and experiences of gifted students portrayed in the movie would fall under guidance services as described in Cross's continuum. This allows each teacher to fill the role of guiding students to a greater understanding of their giftedness to appreciate themselves and how they fit with others. Movies provide the link to characters and ideas that they may feel exist but aren't able to interact with on a regular basis. While viewing films about giftedness and gifted characters provides an opportunity for the student to feel a lesser sense of isolation as (s)he is able to "connect" with a gifted character, it alone cannot accomplish the goal of affective growth for students.

The guiding principles for using movies as a part of a gifted curriculum are to provide students with one or more characters with which to identify, to provide an opportunity to reflect on that identification, and to nurture the ability to connect with a character(s) and experience growth as a result of activities designed around the viewing of a particular movie (Hébert and Hammond, 2006).

Profiles of Gifted Characters

Betts and Neihart (1988, 2010) identified six types of profiles to classify gifted and talented students. The purpose of the profiles was to provide teachers and parents with a tool to better understand the perception of the gifted and talented. The six types or profiles include: the successful, the challenging, the underground, the dropouts, the double labeled, and the autonomous learner. Each of these types comes with a description of characteristics and learning style needs of these gifted learners. The framework provided by these profiles allows parents and educators to consider the different types of giftedness, the specific needs of each, as well as design support mechanisms that encourage the strengths and allows for development of areas of weaknesses for each types of gifted student.

The first type, successful, generally tends to be the type of student readily recognized during the process of identification by teachers as being potentially gifted because these students have learned to demonstrate what they are supposed to do in school. Teachers expect they get the work

done, they turn homework in, they are paying attention in class, and they answer questions and participate. These are students that essentially have learned to "play school." Their ability to be "teacher-pleasers" puts them at risk because they are often perfectionists, too willing to conform, and their motivation comes from extrinsic sources. They must be taught how to take risks, be assertive and develop a sense of intrinsic motivation (Betts and Kercher, 1999).

The second type, challenging, refers to students who sometimes are not identified for gifted programs. They may be overlooked because they do not necessarily follow the rules, their abilities show up very well on aptitude tests, they can score very well in assignments and programs, but they don't follow the rules. They do not "play school" the way teachers often like and, therefore, often are not identified in the same way that the successful are. These are students that need support because they become easily frustrated with way the traditional school system is set up. School does not meet their needs for pacing nor does school's traditional instruction allow them to focus on their passion areas. Their frustration grows as they continue to find that they do not necessarily like what is going on with the curriculum. They may not feel included in social groups, because they stand out or they act out in class; sometimes they will be defiant or sometimes they will provide a perception of just being different. Being creative is a challenging dilemma for this type of student. Their unorthodox approach to solving problems may predispose them to feelings of frustration, boredom, and rebelliousness which can lead to power struggles with authority figures. They need an educational experience that focuses on building skills related to self-awareness, self-control, learning to be flexible and what belonging to a group means (Betts and Kercher, 1999).

The third type, underground, are students that are gifted but may try to hide their giftedness for various reasons. Those reasons can be aligned with gender differences. Middle school females may downplay their giftedness to fit in with social groups. For males, masking of giftedness may develop as they try to emphasize athletic talent. Both genders may find the need to fit in with the social element that is prominent and hide their intellectual abilities to fit in with the social norms. These students would prefer to go unnoticed or to be invisible. They frequently do not have well developed

intrapersonal skills and, as a result, appear to be shy, quiet, and/or exhibit signs of a poor self-concept. They will not take risks that might rock the boat or cause them to stand out from their peers. A programming component that meets their needs would highlight building a strong self-concept, focus on skills needed to interact with other gifted students in a positive manner and make decisions independently that sometimes involve putting their self-concept and ideas at risk. (Betts and Kercher, 1999).

The fourth type, dropout, are those gifted students who find themselves reaching the point at which the school system is not meeting their needs and they feel rejected. They do not wish to play the system anymore; they may withdraw, they may act defensively or lash out; they may just become more depressed and internalize the feelings they have given up. Educators may identify them as being at-risk rather than gifted because of their expressions of anger, rebelliousness, and low self-esteem. These students benefit from gifted and talented programming that emphasizes strong mentor relationships (Betts and Kercher, 1999).

The fifth type of students is the double labeled, sometimes referred to as twice exceptional students. These students are gifted but their giftedness may be hidden by disabilities that are more pronounced. These can include blindness, physical impairment affecting mobility, or a learning disability, such as dyslexia, that prevents their intellectual ability from showing through. A problem is that the school identifies them first by the disability and may fail to recognize their other talents. They may not show up through traditional means of identification because a student coming from a culturally diverse background or is an English Language Learner may not be able to communicate their knowledge due to language barriers or cultural differences. These students may possess the ability to acquire information and rapidly assimilate to course work as an indication of giftedness. Programming that is most beneficial for these students emphasizes the development of social and emotional skills such as coping strategies and develops a support network to reinforce their skills and strengths as a gifted student.

Finally, the sixth type, the autonomous learners, refers to gifted students who have learned not only about how to work the system but also how to meet their needs in ways that allows their giftedness to develop and be recognized.

Gifted programs may no longer be necessary for them, but they may play a key role in developing those autonomy skills. Autonomous learners can adapt to new situations according to their needs. They have abilities, knowledge, confidence and an internal locus of control that shows that they know where they are going (Betts and Kercher, 1999).

Arts Integration with Gifted Students to Reinforce Identity Development

Arts integration can be defined as a method of instruction in which students develop a sense of understanding of a subject area through related art activities (Silverstein & Layne, 2010).   This process connects a particular subject area with an art form wherein students are "immersed intellectually, emotionally, physically, and therefore rigorously, in the learning experience" (Lynch, 2007, p. 37). Art integration can also be viewed as an inquiry-based learning process in which teachers become facilitators and work together with students to develop "significant ideas with their own cultural knowledge and lived experience" (Daniel, Stuhr, & Ballengee-Morris, 2006, p. 10).

Using visual arts scenes from STEM movies provides educators and students the opportunity to focus on an artistic concept to illustrate or clarify a subject matter. Daniel and others (2006) described this activity as "brainstorming" or a process in which big ideas are translated and advanced into constructs included in the curriculum. These authors described art integration as a process that demonstrates students' prior knowledge to invite inquiry and critical thinking (Daniel et al., 2006). Developing an art project to demonstrate the movie concepts can encourage conversation relevant to the students' lives and stimulate discussion on identity issues. Through artistic representation, students can explore ideas and processes as a tangible construct.   Arts integration can be viewed as a "weaving wherein the design may repeat a pattern or be variable" (Harlin & Brown, 2007, p. 172).

Method

A content analysis is defined as "any technique for making inferences by objectively and systematically identifying

specified characteristics of messages" (Holsti, 1969, p. 14). Content analysis needs to be systematic, and replicable, resulting in categories based on stated rules of coding (Stemler, 2001).   In this study, movies with STEM themes were viewed to determine if they contained gifted youth characters.   The actions and dialogue of these characters were then analyzed to place each character into one of Betts and Neihart's (1988) Profiles of Giftedness as described in the next section.   The research questions asked were: "What STEM movies could enhance gifted identity development?" "What discussion questions would facilitate student identity discourse?" and "What type of art integration project could be related to the movie content and allow students to express their ideas about their gifted identities?

Content Analysis of the STEM Movies

A variety of sources were consulted to create a list of movies featuring gifted characters for possible viewing including internet websites, articles discussing gifted students in films (Cox, 2000; Hebert and Hammond, 2006; Fung, 2008), and searchable databases such as Hoagies Gifted Education Page (Movies featuring gifted kids (and adults!), 2015), Listverse (10 Films portraying genius, 2010) and About.com (10 Movies gifted children will love, n.d.) The most frequently occurring movies were grouped on the list together and common elements allowing for easier sorting were identified. Some of the elements identified included movie rating, STEM focus, minority representation, and social-emotional issues. The first sort was based on characteristics exhibited by gifted characters in the movies associated with Betts and Neihart's (1988) Profiles of Giftedness. The Betts and Neihart profiles provide some general characteristics with which both students and teachers can identify that do not follow Hollywood stereotypes of nerd or geek.   The characters identified as gifted were then categorized by Betts and Neihart profile type with a brief explanation of the traits exhibited that led to the classification.

Motion Picture Association of America (MPAA) ratings and year of release were provided for each movie so the teachers could easily identify appropriate age levels. Several movies were PG-13 or R-rated and it is advised to obtain parental approval before showing complete movies or

even excerpts to junior high or high school students. The movies may be appropriate to show and may deliver the message in a powerful way, but because of their ratings they require parental approval.

Additional characteristics that could be used for filtering movies were found in the federal definition of giftedness. These include: general intellectual ability, specific academic aptitude, leadership, performing arts, and creativity. Additionally, movies could be sorted by how realistic the portrayal of the gifted character seems. Some of the movies offer more of a fantasy or a heightened exaggeration versus a more realistic or biographical approach. The portrayal of the gifted individual or giftedness was negative or positive in nature was noted.

As students encounter social and emotional issues, it is important to identify the emotional issues and relationships present within. To ensure that the whole student population could be included, movies were reviewed for minority group representation including ethnic group, gender, disability, sexual orientation, or lower socioeconomic status. Finally, the movies were classified according to the STEM subject focus present: science, technology, engineering, and math.

The movies included in the list were all widely-released in theatres and available on video and streaming services. They should be reviewed by the teacher prior to showing to the class to be sure that the themes within the movies fit with the students that will be viewing. Not all movies will connect with all students, care in choosing the appropriate movie should be given. Included in the synopsis of each movie are points that could be discussed with students.

Developing Discussion Questions for STEM Movies

A list of questions was compiled to guide discussion of the movies because the use of cinematherapy must not end with the viewing of the movie, but include opportunities for discussion, reflection, and extension activities. Fisher (2009) blogged about using bibliotherapy with students and providing them with a bookmark containing questions on which she wants them to focus as they read. Hébert and Hammond (2006) likewise noted the importance of having a menu of questions ready to fuel discourse of the students' experience.

Encouragement of conversation about the stories students view is important (Cox, 2000). The challenge is finding questions that are developmentally appropriate. Using a list of possible prompts suggested by experts in the field, a list of general questions was compiled that can be adapted to specific movies and grade levels as needed.

Although books allow students to construct their own setting for the story aiding in the development of connection to their lives, movies can provide additional elements of visual and auditory sensations. Therefore, it is important to take into account how the movies are presented. Clothing, setting, and other visual clues may add to or detract from how students relate as well as realistic or over-stereotyped characters. Failure to create an accurate portrayal of issues that impact gifted students may diminish the possibility of students having a positive experience as a result of viewing or reading a particular movie or book (Dixon, 2009).

Additional activities either for individuals or groups of students can be added beyond discussion to allow for further exploration and opportunities to make connections. These activities can be aligned with core academic learning standards. Some specific activities that relate to visual or performing arts are: artistic expression through drawing, painting, role-play; creative writing, such as poetry and journaling; and creative problem solving (Hébert and Hammond, 2006).

Arts Integration Project

This paper includes author-generated examples of arts integration projects connected to four of the featured movies. Each artwork follows artist Andy Warhol's style iconic silkscreened images of America's space program. The Warhol iconic silkscreened painting art project offers an artist's series to be emulated by students to transfer the knowledge gleaned from the movie. The highlighted artist's work focuses on the Art of NASA featuring Andy Warhol silk screen image of astronauts featured in a Smithsonian traveling exhibition and in a book on the topic (Dean, Ulrich, Collins, Crouch, & Bradbury, 2008).

Artwork Procedures. The teacher suggests that students search the internet for an iconic image somehow connected to the movie and to the statements about the

student's identity that the student wants to make. In the examples provided in this article, NASA images of astronauts in space were used because they connect with many of STEM space-themed movies that contain gifted characters. The student brings the image into PowerPoint or another drawing program in which parts of the image can be outlined with a curved line and filled with color. The larger parts of the background are outlined and colored first. The image is cut and pasted back on top of them to keep the developing "painting" behind the iconic image. Then other large parts are outlined and colored. Finally, small parts and details are traced to complete the simulated silkscreen painting. This image is duplicated four times and colors are changed to make new, interesting images. The colored areas are grouped and mirrored so that two images point left and two right. They are arranged to form a whole and grouped to make one image. Then, an identity statement is crafted for each of the four images and overlaid. This identity statement contains insights of the gifted student about his or her personality traits related to giftedness and the characters of the movies.

Results and Discussion

This content analysis offers bibliotherapy and cinematherapy suggestions for educators to review and use in their classrooms with gifted and talented students. The themes of the movies are related to STEM subjects. Several movie offerings are described and categorized using the Betts and Neihart Profile. The attributes of the movies main characters are presented with the Betts and Neihart Profile at the forefront. The results provide the list of movies with suitability for grade level viewing noted and discussion questions suitable for the movies. Examples of movie use in a high school classroom are included. Finally, teacher-generated examples of Andy Warhol-inspired art that present movie character-related characteristics of gifted student are provided.

STEM Movie Content Analysis

The tables are organized to allow teachers to find a movie suitable for their classroom or student needs. Table 1 provides the Movie Title, Year, and Rating in one column, a brief synopsis of the story in the next column, and the Betts Profile of the primary gifted character in the final column. Table 2: Movie Characteristics and Suitability for Grade Level Viewing provides a variety of sub-groups that also can aide a classroom teacher in selection including: level of realism, positive/negative portrayal, area of giftedness, minority representation, and STEM focus.

Table 1. *STEM-Themed Movies Used in this Paper*

Movie (Year) MPAA Rating	Synopsis	Betts and Neihart Profile
21 (Spacey, Ratner, Brunetti, DeLuca, & Luketic, 2008) PG-13	21 tells the story of an MIT student who is brilliant with math and numbers. He's recruited by a professor into a group of students that travel to Las Vegas to count cards and run a scheme to rig Blackjack Games. The story deals with relationships and the misuse of talents and inappropriate uses of abilities. Potentially good with high schoolers but this film has rough points and needs to be addressed with discussing the moral implications of your talents.	Challenging: Not playing by rules, pushing boundaries
A Beautiful Mind (Abrams & Spielberg, 2011) PG-13	A Beautiful Mind tells the story of John Nash, a brilliant mathematician and eventual Nobel Laureate in economics. The story focuses around Nash's schizophrenia and the toll it takes on his family. This is a very good film in dealing with some of the issues around mental illnesses that can be associated with giftedness and the pressures of performing and succeeding at high levels.	Twice-Exceptional: Battling with mental struggles

Table 1 Continued. *STEM-Themed Movies Used in this Paper*

Movie (Year) MPAA Rating	Synopsis	Betts and Neihart Profile
Contact (Cuarón, Heyman, & Cuarón, 1997) PG	Contact follows the story of a scientist who has been involved with the search for extraterrestrial life through the SETI program. A message is discovered in a radio signal and plans for a mysterious machine are revealed. The religious and philosophical implications of possibly making contact with aliens are discovered and form a core of this science-fiction film.	Challenging: The lead character, Ellie, pursues her goals even if they are outside the rules established by her superiors.
Good Will Hunting (Bender & Van Sant, 1997) R	Good Will Hunting tells the story of Will Hunting a young man from a working-class neighborhood in Boston who works nights as a janitor at MIT. While there he secretly studies and solves complex math formulas and other high-level projects where he is eventually discovered by one of the professors. He is involved in a fight and put under the supervision of the professor provided he seek counseling for his anger. During this counseling session, he learns to deal with his ability in forming relationships in a positive manner. A good film for talking about how to use your gifts even if you are if it means pulling you away from your comfort zone and where your area is.	Underground: Denies talent to others but seeks opportunities to display when it fits him. Drop-out: Doesn't believe the system is willing to accept his ability because of his background.
Gravity (Cuarón, Heyman, & Cuarón, 2013) PG-13	Gravity is science fiction thriller about two astronauts who are stranded in space after their space shuttle is destroyed by passing debris. Sandra Bullock plays an extremely intelligent medical engineer who is on her first shuttle mission and George Clooney plays a veteran astronaut who is planning to retire after this final mission. They are left in space, tethered to each other, with no connection to anyone on Earth. They must figure out a way to get home. The theme of this movie follows gifted and talented adults, however, gifted and talented youth should find the critical thinking the characters possess as interesting.	The Autonomous Leader: Dr. Ryan shows incredible courage and eventual control of her emotions as she problem-solves her way back to Earth.
Hidden Figures (Melfi Gigliotti, Chernin, Topping, Williams, & Melfi, 2016) PG	Three gifted African-American women worked behind the scenes at NASA during the launch of astronaut John Glenn into space. The women served as the brains behind the achievement and assisted NASA in capturing the whole world's confidence in the space program. The movie's protagonist, Katherine Johnson, was a child prodigy in mathematics.	Successful but not always acknowledged: The talents of these African-American women were identified but exploited without appropriate recognition for their contributions
Imitation Game (Grossman & Tyldum, 2014). PG-13	Imitation Game tells the story of Alan Turing as he's recruited by the British government to help break the German code machine enigma during World War II. Allen is a brilliant mathematician but runs outside the rules of the government and the military in terms of how to approach things all the time and has conflicts with his superiors quite often. Turing is an underground homosexual which at the time is illegal. Good story to discuss sexuality and other topics of how to use your skills and pressures to conform within society. Asperger Syndrome	Challenging: Does not always follow the rules if they go against his process. Underground: Must hide his sexuality. Double-labeled: The movie portrays Turing as having Asperger's Syndrome

Table 1 Continued. *STEM-Themed Movies Used in this Paper*

Movie (Year) MPAA Rating	Synopsis	Betts and Neihart Profile
October Sky (Gordon, Franco, & Johnston,1999) PG	October Sky tells the story of a young boy in coal mining town who is caught up with an interest in rocketry after the launch of the first satellite. Faced with pressures of his family to simply work because of the high cost of college, he is encouraged by a group of friends and a caring teacher to pursue physics and rocketry in math and science despite no money for college or further education. This is a good story for talking about expectations and dreams and following along those paths despite the obstacles that come.	Autonomous: Students with few ready resources work with what they must pursue goals and interests.
Real Genius (Grazer, Daley, & Coolidge, 1985) PG	Real Genius follows a gifted high school student who is entered into college early in order to help a professor on a secret government project, unknown to the student. He encounters various other gifted students, many of whom follow strong stereotypes. Together they learn to cope with the pressures of high college expectations, solve the professors technical problems and uncover the professor's scheme. Provides an opportunity to talk about acceleration, stereotypes, relationships, expectations, and the proper use of abilities.	Successful: Highly able student is admitted to college early where he struggles to adapt to the expectations. Challenging: Student rebels against the 'system' that he doesn't think matches his needs.
Revenge of the Nerds (Field, Samuelson, & Kanew, 1984) R	Revenge of the Nerds follows two friends with computer skills as they head to college. The friends encounter difficulty with the football team and fitting in on the college campus. Eventually they form a fraternity with a group similar group of outcasts and nerds that follows many stereotypical looks at higher intelligence. As a group they learn to overcome the bullies and confront their fears. This is not really a school appropriate film but it does help engage conversations about stereotypes of giftedness as well as fitting into a group and overcoming obstacles.	Successful: Used to following the rules and having things work out, face challenges at college. Autonomous: Develops over the story
Stand and Deliver (Musca & Menendez, 1988) PG	Stand and Deliver tells the story teacher Jaime Escalante and his attempts to teach high-end math to inner-city Hispanic youth and other minority students. From a gifted standpoint it tends to focus on the teacher's ability to motivate students and overcome cynicism within the educational community that lower socioeconomic or minority students can be asked to excel in higher academics that even has testing services coming to prove the results weren't falsified. A good point for discussion on where talent emerges and pressures within communities to perform or to conform within certain expectations and stereotypes.	Underground: Students ability is not recognized or valued until a teacher pushes them to excel. Drop-Out: Students feel the system does not expect them to succeed so why try.

Table 1 Continued. *STEM-Themed Movies Used in this Paper*

Movie (Year) MPAA Rating	Synopsis	Betts and Neihart Profile
Super 8 (Abrams, Burk, Spielberg, & Abrams, 2011) PG 13	Based in 1979, Super 8 is a movie about several adolescents who decide to make a movie about zombies with a Super-8 camera. During filming, the friends witness a train derailment and narrowly escape harm. The friends discover the derailment catastrophe was not an accident. Something has escaped from the train as unusual, inexplicable events begin to occur in their community.	Challenging: Joe has a sense of humor and creativity that is very appealing to peers. He possesses empathy and is determined to save Alice. Dropout: Cary has interests that lie outside the realm of the regular school. He is hyperactive and easily excitable.
The Martian (Kinberg, Scott, Schaefer, Sood, Huffam, & Scott, 2015) PG 13	The Martian is a movie about an astronaut who is left behind on planet Mars when his crew blasts off from the planet during a strong wind storm that threatens their spacecraft and survival. His team assumes he died in the storm. The astronaut must survive on the planet with only a few supplies, his wit, and his positive spirit. Scientists on Earth monitoring Mars discover he is still alive through satellite photos of moved vehicles. They work with him to help him survive and plan a rescue mission.	Autonomous: Mark, the main character, has a positive self-image. He is resourceful, and exhibits leadership.
The Right Stuff (Winkler, Chartoff, & Kaufman, 1983) PG	The story of the early days of America's astronaut and space program. This film follows the push to put Americans in space and the steps taken to find the individuals with the right mix of physical, intellectual, problem-solving and courage to push the boundaries and go further, faster, and higher than any humans had before. Personal stories of success and failure in this pursuit can lead to good discussions on both.	Successful: Many candidates come from backgrounds with a high level of success. Autonomous: The select few have learned to push to achieve.
The Theory of Everything (Bevan, Fellner, Bruce, McCarten, & Marsh. 2014) PG-13	The Theory of Everything tells the story of Stephen Hawking, a brilliant young scientist and mathematician who is diagnosed with a crippling disease. Intertwined is the relationship with Hawking's wife and his commitment to fight the disease and find a way to maintain his productivity through his mind. A good story of overcoming obstacles and brilliance could be used with gifted kids with disabilities to show the possibilities that exist for them.	Twice-Exceptional: Physical disability. Autonomous: Finds a way to share his knowledge.

Table 2: *Movie Characteristics and Suitability for Grade Level Viewing*

Movie Title (MPAA rating)	Level of realism	Portrayal of gifted	Defined areas of giftedness:	Emotional Issues / Relationships	Minority	STEM focus
21* (PG-13)	reality	negative	Specific academic	misuse of gifts	female (not main character)	math
A Beautiful Mind* (PG-13)	reality	negative	Specific academic	psychological struggles		math
Contact (PG)	science fiction	positive	Specific academic	moral and philosophical debate	female	science math
Good Will Hunting* (R)	reality	negative and positive	Specific academic	psychological struggles relationships	low SES	math
Gravity PG-13	science fiction	NA	NA	psychological struggles	female	math engineering science
Hidden Figures PG	reality	positive	Specific academic High task commitment	racial discrimination	female minority	math science
Imitation Game* (PG-13)	reality	positive	Specific academic Creative	societal pressure	female (not main character) LGBTQ	math science
The Martian	reality	positive	Specific academic Creative	psychological struggles		math science
October Sky** / * (PG)	reality	positive	Specific academic Leadership	parent teacher	low socio-economic	math science
Real Genius* (PG)	fantasy	positive and negative stereotypes	Specific academic General intellectual ability	perfectionism asynchronous peers high expectations	female (not main character)	science
Revenge of the Nerds* (R)	fantasy	positive and negative stereotypes	Specific academic General intellectual ability	peer relationships	LGBTQ	science math

Table 2: Continued. *Movie Characteristics and Suitability for Grade Level Viewing*

Movie Title (MPAA rating)	Level of realism	Portrayal of gifted	Defined areas of giftedness:	Emotional Issues / Relationships	Minority	STEM focus
Stand and Deliver* (PG)	reality	positive	Specific academic Leadership	peer expectations	minority	math
Super 8 (PG-13)	Science fiction	positive	Drama and creativity	parental pressures	female	science
The Right Stuff (PG)*	reality	positive	General intellectual ability Leadership			science math
The Theory of Everything* (PG-13)	reality	positive	Specific academic General intellectual ability	degenerative disease	disabled	math science

* Suitable for secondary only. ** Suitable for upper elementary

Table 3 provides possible discussion questions for cinematherapy with STEM-related films and was developed after consulting numerous articles including Van Tassel Baska (2009), Fisher (2009), and Hebert (2006). Teachers should review the film(s) they are using to tailor the questions to the needs of their students. Focus should be placed on questions that call for reflection and discussion and not simply recitation of facts. Be prepared to adjust and revise the questions to the discussion in class as it occurs as well.

Table 3: *Discussion Questions for STEM-Related Films to Promote Gifted Identity Development*

Topic	Possible Questions
Intrapersonal	How do you see yourself in the character(s) presented? How are you different? How would you handle the situations that are put in front of the characters? In your view, are these situations realistic? How do the expectations you have for yourself affect how and what you do? How do you handle competitive situations? Do you enjoy competition? How do you handle winning and losing? Would you rather have one specific talent that you are great at or many ones in which you are very good? How do you approach a problem which does to appear to have an answer?

Table 3 Continued. *Discussion Questions for STEM-Related Films to Promote Gifted Identity Development*

Topic	Possible Questions
Interpersonal	Compare how you think others see you.
	Do you think they see you in the same way as the character?
	How do the expectations others have for you affect how and what you do?
	How do you express yourself without coming across as bragging?
	How do you effectively communicate what you know?
	How do you work with others to reach agreement when you disagree on how to do something?
Career and Passion Areas	What are the things that interest you the most?
	What activities bring out a passion for learning or doing?
	What careers interest you?
	What kinds of obstacles prevent you from learning what you are really interested in?
	How can a mentor assist in learning more about a passion area or career opportunities?

Classroom Tested Examples

The classroom in which the movies were used was a high school class of sophomore students in a small city in the Midwest. Students were part of a Talented and Gifted program that used the Autonomous Learner Model as the basis for curriculum. Students met every other day either before school or during the school day.

Portions of Good Will Hunting (1997) were the first movie used with students. This film addressed how to cope with talents and to appreciate the talents one has. Students expressed that they could relate to the character not wanting to show too much ability for fear of being forced into leaving that which the character knows and in which the character feels comfortable. They also acknowledged the conflict of, at the same time, also wanting to use their abilities. The competition factor of being the smartest in the room was also discussed.

The movies A Beautiful Mind (2001) and Theory of Everything (2014) were reviewed with students. The primary focus of the discussions was on dealing with obstacles that can be put in the way of the students. Whether these obstacles are psychological or physical obstacles, students talked about developing a helpful support system. This is especially important for students who want to challenge themselves in areas in which they may have never before failed. Having a system to keep them going and remaining positive is important.

October Sky (1999) is a film that follows a young man's determination to follow his dreams despite economic and social obstacles put in his way. The students found similarities with the characters discovering a passion and wanting to pursue it even against the wishes or advice of others. Finding and working with a strong mentor was noted as important to help guide students in pursuit of areas of interests.

Examples of Warhol-Inspired Art Projects Related to Student Identities

Because so many of the STEM-themed movies addressed the space industry and space travel and because several of Andy Warhol's iconic artworks focused on that theme, Warhol-inspired digital art expressing identified characteristics of gifted students were made. The authors generated these art works as examples of what students could create to express their newly recognized gifted identities. Figure 1 shows the iconic NASA image of an astronaut on the

moon and features a gifted student's identity ideas related to characteristics highlighted in the movie *The Right Stuff.* Gifted students wonder if they have the right stuff to achieve their dreams. In this piece of artwork, which was inspired by Andy Warhol's iconic silk-screened art, the maker asks if she has the right stuff to succeed. Similarly, Figure 2 displays several social-emotional characteristics of the main character in the movie *Gravity*, Dr. Ryan Stone, played by actress Sandra Bullock.

Figure 3 shows the footprint of the first astronaut on the moon accompanied by high-heeled footprints of the three African-American characters in *Hidden Figures*. The female maker of this artwork considered the identity issues the African American stars of this movie faced and how some of these themes were echoed in her own gifted development. Finally, Figure 4 shows self-sufficiency social-emotional issues raised in the movie *The Martian*.

The *Right Stuff:* Strong moral feelings

What Flag will I plant? One of kindness to animals. Animal rights issues are important to me.

The *Right Stuff:* Persistence

Will I make it? I don't give up easily. If I can't do it this time, I will build skills to do it next time.

The *Right Stuff:* Friendship

Can I make it alone? Yes, but I would rather collaborate and share the journey.

The *Right Stuff:* Fantasy & Creativity

What if no one else believes there is life on the Moon and other planets? So what? I enjoy imagining.

Figure 1. Example Warhol-inspired digital art related to the movie *The Right Stuff* featuring characteristics of a gifted student.
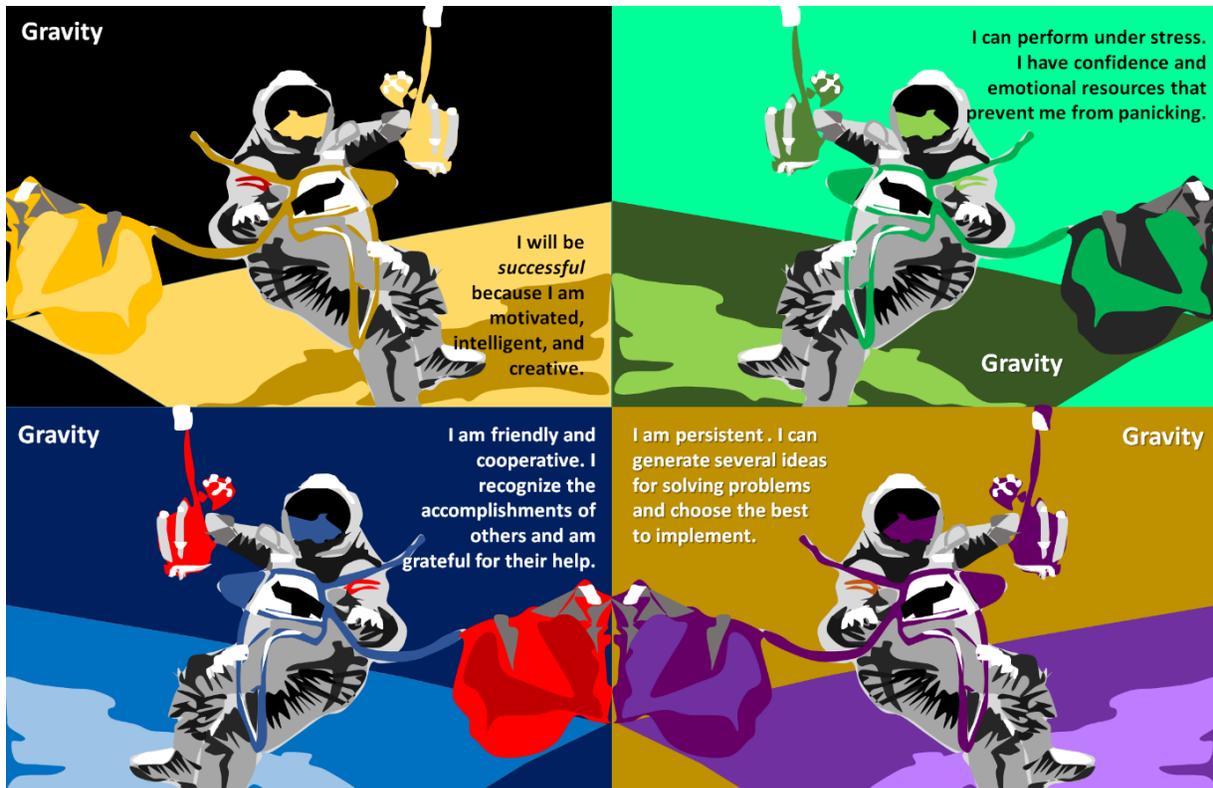
Figure 2. Example Warhol-inspired digital art related to the movie *Gravity* featuring characteristics of a gifted student that were exemplified by the star of the movie.

Conclusions

This practical article reviewed approximately movies with a STEM based theme suitable for gifted student identity development. The movie plot was described and the characters were evaluated on the Betts and Neihart profile. The paper describes the theme of the movie and offers an art project integration of the character's challenges, which may be like the challenges gifted and talented youth face. The movies range in release dates from 1983 to 2016 and have varying MPAA (Motion Picture Association of America) ratings ranging from Parental Guidance (PG) to Restricted (R).

Cinematherapy is a useful tool that can help students gain a better understanding of themselves as gifted individuals and learners. Movies offer the opportunity for students to see portrayals of situations that may be like thoughts and feelings that they already experience played out for them. STEM-themed movies can connect with student interests and talents in a way that a typical classroom discussion may not. Concluding the viewing with a discussion using probing questions that cause reflection can help deepen the understanding for these students and enhance the learning.
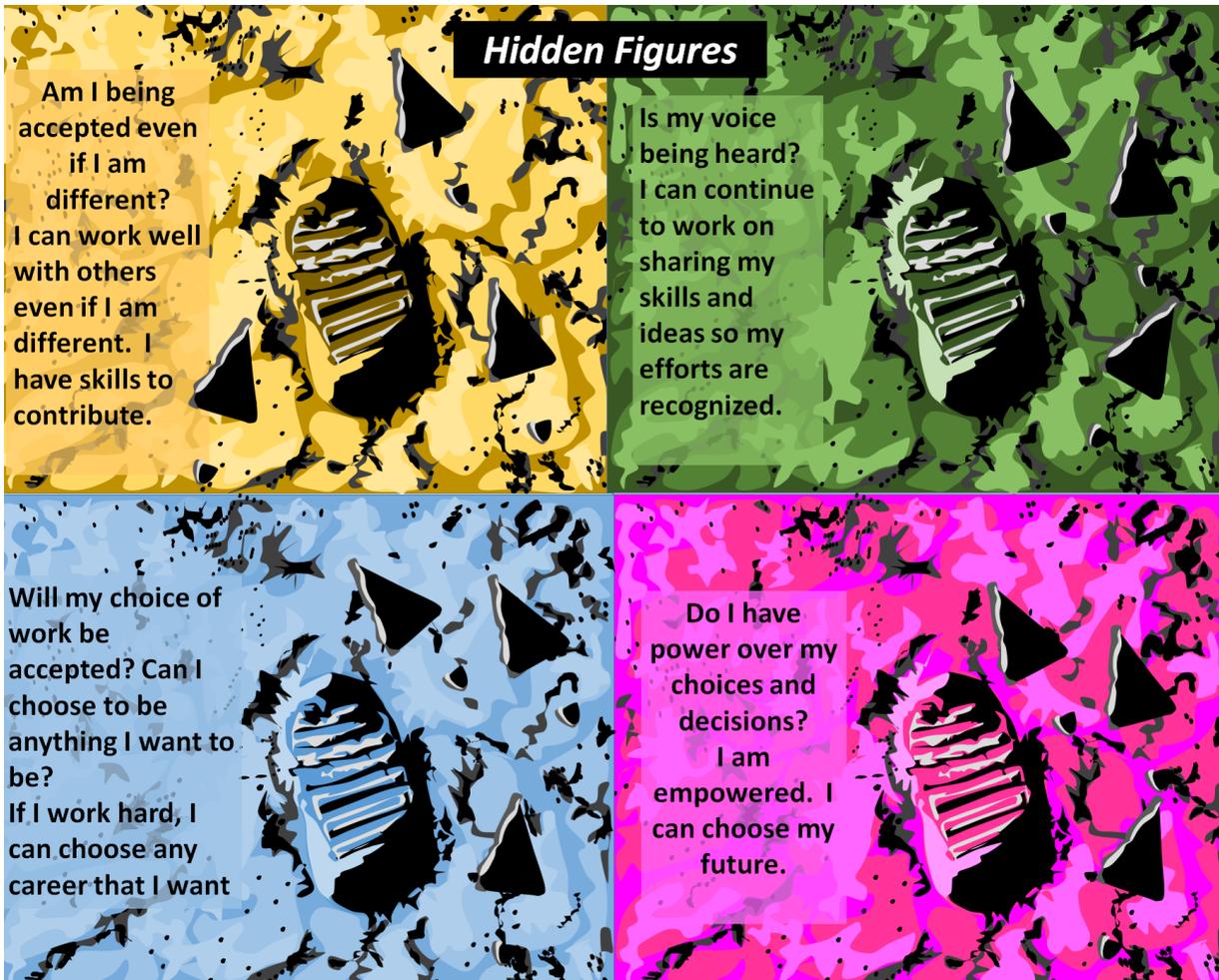
Figure 3. Example Warhol-inspired digital art related to the movie *Hidden Figures* featuring characteristics of a gifted student.

Acknowledgements
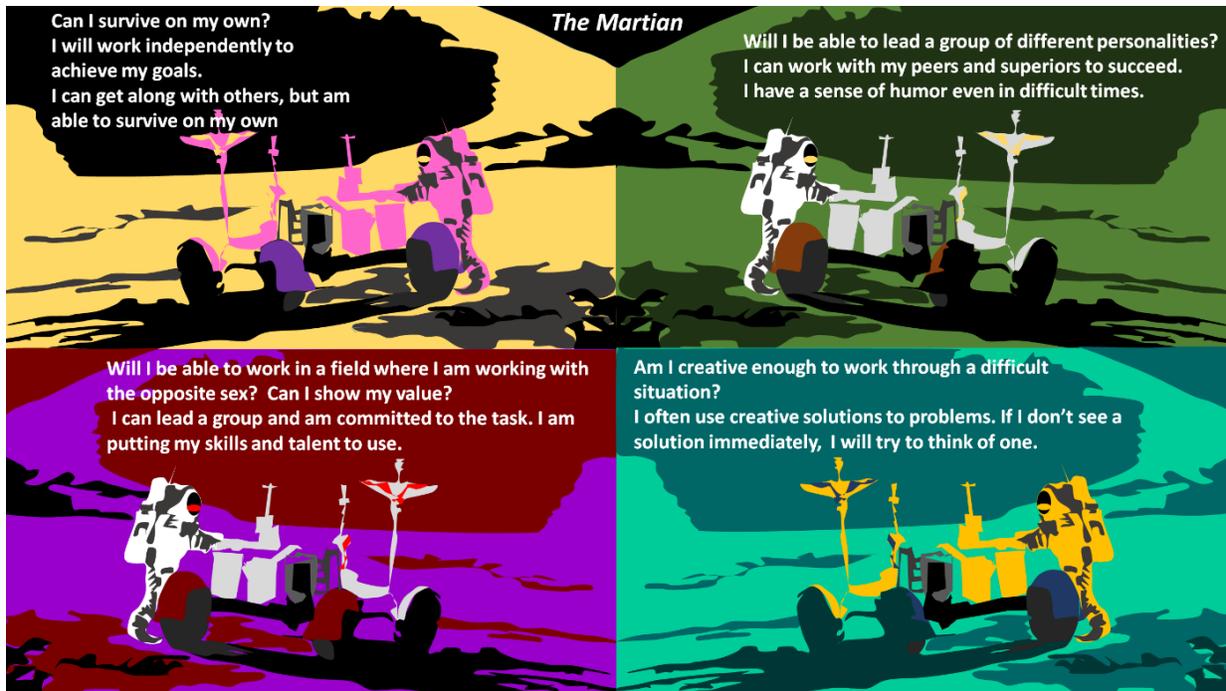
Figure 4. Example Warhol-inspired digital art related to the movie *The Martian* featuring characteristics of a gifted student that were exemplified by the star of the movie.

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