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Assessing and Recognizing Gifted Children using ICTs

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Abstract
Gifted and talented students do not constitute one homogenious group. This fact evokes the need for definition of their characteristics and identification of this population. Undoubtedly metacognitive skills can lead one to recognize his/her strengths and weaknesses and lead him/herself to the upper levels of the pyramid of knowledge. Moreover identification of giftedness at school requires more than IQ tests, as it is multidimensional. Research argues that early identification and intervention is crucial due to fulfill their needs for education. Furthermore early detection of giftedness for students with special needs provides equal opportunities to dual strength students.
Keywords: Assessing, Recognizing Gifted Children

1. Introduction

Livingston cites that the term "meta-cognition" is most often associated with John Flavell, (1979). According to Flavell (1979, 1987), meta-cognition consists of both metacognitive knowledge and metacognitive experiences or regulation. Metacognitive knowledge refers to acquired knowledge about cognitive processes, knowledge that can be used to control cognitive processes. [1] According to Assouline et al the term gifted and talented, when used with respect to students, children, or youth, means students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative artistic, or leadership capacity, or in specific academic fields, and who need services or activities not ordinarily provided by the school in order to fully develop those capabilities.[2] Kaufmann et al, based in Joseph Renzulli's (1978, 2005) Three-Ring Definition, views giftedness as the interaction of three characteristics: well-above-average ability, creativity, and task commitment. Renzulli also has made a major impact on the field of giftedness by proposing that there are two types of giftedness: "schoolhouse giftedness" and "creative-productive giftedness." Schoolhouse giftedness is test-taking or lesson-learning giftedness, and is the form of giftedness most often emphasized in school. Creative-productive giftedness differs from schoolhouse giftedness: Those who display creative-productive giftedness are excellent producers of knowledge, whereas those high in schoolhouse giftedness are superior consumers of knowledge.[3] Apart from gifted students a newly recognized group of learners, with both learning difficulties and academic strengths, known as twice-exceptional learners, has emerged. Sansom refers to children who are highly intelligent, but who also have learning disabilities and are different than both their gifted peers and their learning disabled peers. The asynchronous development typical of gifted students is often exaggerated in the presence of a learning disability, leading to frustration and stress. It is important for teachers and parents to be able to understand the unique characteristics and needs of these students.[4] The present study examines the characteristics of gifted children, with or without learning disabilities, ways of evaluating their giftedness as well as the intervention they receive.

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2. Characteristics of gifted and talented students

Reis and Renzulli in this paper prove wrong the myths about Gifted and Talented being a homogeneous group and about giftedness as being statical over time and experiences. More specifically the researchers assert that there is no single homogeneous group of gifted children and adults, and giftedness is developmental, not fixed at birth. Research has pointed to the ways in which gifts and talents vary in the following general categories of developmental characteristics. 1. Abilities and aptitudes vary in both verbal and nonverbal areas across age, population, sex, disability level, and ethnic group. 2. Achievement varies across high-potential children and over time 3. Academic background varies, because of different experiences, results in poor preparation for many young people and adults with high aptitudes. 4. Culture and identity are important because children from diverse backgrounds and racial and socioeconomic groups interact with achievement in rich and diverse ways, and we sometimes fail to take their unique identities into account 5. Effort and motivation matter, as high-aptitude students often "coast" through school without having to expend effort, and when they finally do encounter a challenge, some experience a loss of confidence in their abilities resulting in diminished achievement levels 6. Interests, learning styles, and creative opportunities are intimately associated with high performance. All persons recognized in history as gifted contributors in the arts, sciences, humanities, and other areas of human performance have had interest bordering on passion for their work, opportunities to pursue this work in a manner compatible with their preferred ways of learning, and environments that provided opportunities for creative expression. Without these factors and environmental conditions, even persons with exceptional cognitive potential do not maximize their potential. In addition, there are more other factors that play a role in the high-level accomplishments such as courage, optimism, sense of power to change things, empathy, and physical and mental energy. These characteristics combined with other noncognitive skills such as collaboration, leadership, organization, and self-efficacy,synthesize a picture of giftedness that extends far beyond the "golden chromosome" theory has led too many researchers in the field, to believe that some people are preordained to be "gifted". Nevertheless this myth proves to be wrong when factors like poverty, hunger, poor schooling, or lack of stimulation on some children who had high potential but failed to develop it over time are considered. Furthermore research has proved that untold numbers of people had high scores but never did anything with them. In conclusion, giftedness is not a state of being, it is not fixed, and it does not reside in a chosen few over their lifetimes as a fixed entity. It is, rather, developmental—in some children and adults with high potential, at certain times, under certain circumstances, and with appropriate levels of support, time, effort, and personal investments and choices. [5]

Zenasni et al (2016) aim (a) to position giftedness in terms of the processes involved and (b) to propose a multidimensional conception in order to differentiate creative and academic giftedness. Creative giftedness is represented by a high ability to produce ideas that are original and valuable in a specific domain or in several domains of work. The question of different kinds of intelligence has in part emerged with Thorndike's (1920) assumptions about social intelligence. Sternberg (1996) proposed in his theory a distinction between academic, practical and creative intelligence. It could be interesting to identify to which degree creative giftedness can be distinguished from academic giftedness with both indicating a high level of excellence. The goal of this paper is to propose answers to these questions that describe why academic and creative giftedness are simultaneously dependent (i.e. creativity depends in part on intelligence) and independent from one another.

Sternberg (2000) proposes seven types of gifted individuals: The analyst, the creator, the practitioner, the analytic creator, the analytic practitioner, the creative practitioner, and the consummate balancer. Milgram (1989) has also proposed a model of giftedness, which clearly distinguishes academic abilities from creative ones, and which has two dimensions: The first dimension defines the type of ability and the second dimension defines the level of ability. Sriraman proposed a definition of mathematical giftedness. Academic mathematical giftedness is defined as a set of specific abilities such as reasoning in abstract terms, discerning

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mathematical structures; managing data; mastering mathematical principles; thinking analogically and heuristically; the reversibility of mathematical operations; the intuitive awareness of mathematical proof; the independent discovery of mathematical principles; making decisions; visualizing problems; distinguishing empirical from theoretical principles; thinking recursively and learning at a faster pace. Creative mathematical giftedness is "The ability to produce original work that significantly extends the body of knowledge and/or the ability to open avenues of new questions for other mathematicians". The previous theories promote the ideas that both intelligence and creativity are relatively independent, numerous studies show that they are consistent. Milgram's bi-dimensional model – including the distinction between creative and intellectual giftedness– was tested in the domains of both literature and mathematics. They confirmed that creative thinking predicts creative, but not academic ability in mathematics, whereas intelligence predicts academic, but not creative ability in mathematics. Kim (2005) conducted a meta-analysis with a set of 21 studies to identify how much creative and intellectual performances are related or independent. In fact, the relationship between creativity and intelligence is not linear across all the levels of the IQ. This suggests that, the people with a high IQ do not necessarily show high performance on creativity, suggesting the independence of these constructs at some levels of performance. There is a level above which the relationship between creativity and IQ changes and it is called the "threshold". Some researchers propose a threshold at IQ equal to 120, suggesting that high performance on creativity requires high or at least above-average intelligence; above this threshold, creativity is no longer limited by intelligence. In this perspective, they allow us to anticipate that academic abilities are at least partly independent from creativity and allow distinguishing creative giftedness from academic giftedness Regarding academic and creative giftedness, we have identified some processes and/or motivations in which they are involved and which allow us to talk about two kinds of giftedness in any performance domain (e.g. social, mathematical, and musical). Three distinctive kinds of factors are postulated to explain the distinction between these processes in individuals. The first type of factor refers to abilities per se, hence cognitive factors explain the distinction between academic and creative giftedness. In this perspective the specific use of both hemispheres of brain is emphasized. Beyond this neurocognitive component, striving and affective components are determinants that distinguish academic giftedness from creative giftedness. These factors refer mainly to stable behaviors, motivations determinants that distinguish academic giftedness from creative giftedness. Thus, to boost "access" to creative giftedness, he suggests that teachers should help pupils from the K-12 level to harmonize creativity by encouraging them to tolerate ambiguity, to take risks, to appreciate the aesthetics of unusual solutions, and to give time to the incubation stage involved in the creative process. Giftedness has been related to particular neuropsychological functioning. These works suggests an absence of the classic asymmetry hemispheric functional areas contrary to the observations in general population. People who were "gifted" in math do not have the hemispherical asymmetry that one would classically expect. During problem-solving, both hemispheres of these children's brains were activated whereas the general population of children showed an asymmetry which is classically observed in favor of the left hemisphere. Personality traits like stable motivation and perfectionism are among the traits that are highly developed in gifted people. The types of perfectionism observed in gifted children may help interpret the distinction between academically and creatively gifted individuals. There is a distinction between healthy and unhealthy perfectionism. Healthy perfectionism of gifted children is associated with higher levels of extraversion, agreeability and conscientiousness, whereas unhealthy perfectionism is associated with higher neuroticism, higher openness to new experiences and lower consciousness. These characteristics of gifted unhealthy perfectionists may appear as significant resources of creativity: Openness to new experiences leads to creativity and low levels of consciousness lead individuals to generate and check alternative solutions instead of focusing and developing one optimal solution. In this perspective a high level of giftedness associated with a high level of perfectionism may lead to creative giftedness or academic giftedness depending on the type of perfectionism developed. Emotion and affect are obviously important aspects of human life and are integrated in the description of personality. Gifted children and adolescents seem to have specific emotional

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characteristics. As mentioned earlier, perfectionism has some associations with affect due to the anxiety that it may create. But affective intensity/sensitivity appears as a relevant emotion-related personality trait for describing gifted people. Thus, positive or negative emotions of gifted children are felt and expressed more intensely than in children of average intelligence. Affective intensity may also be accompanied by symptoms such as somatization, high emotional memory, high anxiety or high attachment to others. Academic and creative giftedness may also depend on the level of arousal, a principal component of emotional experience, and the use of unconscious thoughts which are usually associated with lower level of arousal. We put forward the hypothesis that academic and creative giftedness can be considered as two different phenomena. We highlighted the idea that creativity refers to a specific process that allows going beyond intelligence and academic skills. Indeed, it appears that intelligence constitutes a necessary but not sufficient condition for creative behaviors and accomplishments. Considering this distinction between creativity and intelligence, both in their mechanisms and their function, we suggest that academic and creative giftedness are not based on the same components. {6]

Sayler& Brookshire (1993) explored the differences in the social, emotional, and behavioral adjustment of gifted and regular eighth – grade students. Early school entrance and grade skipping consist of the theme of this survey. It is commonly accepted that recently studies have focused on their academic skills and performance. More specifically, acceleration has been applied in educational programs, as it is believed to be suitable and profitable for gifted pupils. However, doubts have been drawn up about the social and emotional effects of this practice. The sample was divided in three groups: a) students who had entered school early or had skipped one or more grades, b) students in gifted classes in Grade 8, and c) regular eighth – grade students. They completed a survey and took a battery of achievement tests. The current study was a post hoc analysis of the NELS: 88 data. The results showed that the percentage of males in the gifted group was higher than in the entire sample of students in the study. The accelerated group had more females than the group as a whole. Furthermore, the parents of students in the accelerated group graduated from college more frequently than parents of students in gifted classes, or the parents of students in regular classes. On average, students in the accelerated group had the highest level of internal locus of control, followed by students in the gifted and regular groups. The global self-concepts of both the gifted and accelerated groups were higher than those of the regular group sample. In addition, the accelerated group had higher composite achievement scores than did either the gifted group or the regular group. The gifted students said their peers saw them as good students, popular, important, and athletic more often than regular or accelerated students did. Accelerated students reported that they were more likely than regular students to be seen as good students by their peers, but not as often as students in the gifted group did. The accelerated group reported being seen as troublemakers significantly less than the regular group. Subjects reported the number of times they were sent to the office for misbehaving or their parents received a warning about their behavior. The accelerated group was sent to the office fewer times than were students in the regular group. There was no significant difference among the groups in the frequency of parents receiving a warning about behavior. As a conclusion, the fear that acceleration usually or inevitably leads to academic, social, or emotional maladjument was not supported. The accelerated students, on average, were not disadvantaged by early entrance or grade skipping prior to eighth grade. They displayed levels of emotional adjustment and feelings of acceptance by others that were higher than those of regular students and about the same as those of older students identified as gifted. [7]

3. The impact of Metacognition on Giftedness

In this paper Drigas and Pappas propose a cognitive-based approach of an 8-layer model (pyramid) of knowledge, which adapts to the different types of human intelligence, and they define the metacognitive components that will help someone to move from one layer to the other and finally reach the top of the knowledge pyramid. According to the researchers

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individuals have to improve their skills of observing control, as well as of adapting their cognitive processes, through mental self-observation of their cognitive skills, in order to complete successfully the process of 'building' the pyramid of knowledge and utilize the information to reach the top layer. These skills have to be defined so that will help individuals to organize their knowledge, in order to jump directly to the next layer. Information could be defined as organized and structured data. The importance of some data for a specific purpose differs among individuals, as it depends on their cognitive schema and the existence of other relative information. Furthermore it is argued that there is a clear distinction between the terms information and knowledge. The amount of information one perceives will not necessarily lead to the process of knowing. This explains a certain pathogenicity of the educational system, as in many cases students acquire information but not knowledge. Human brain transforms information into knowledge through personal experience, beliefs and values, and thus knowledge formed though the same information differs from an individual to another. Moreover, expertise could be characterized as well-organised and interconnected domain specific knowledge, which allows individuals (experts) to overlap working memory limitations. The process of becoming an expert requires the development of creativity, motivation and self-actualization, and in most cases involves failure. Carl Rogers argues that the only driving force of every individual is the tendency of self-actualization. The achievement of self actualization makes more possible self-transcedence, as individuals can merge themselves as a part of a larger whole. According to Mashlow (1969), the sense of getting absorbed, fascinated and concentrated, could lead an individual out of his/her own psyche and cause loss of self-consiousness and finally transcedence of the ego . Transcendence is strongly correlated with self-esteem and emotional well-being. The cognitive processes of the human brain contribute to the organization and representation of knowledge. These cognitive structures and processes change as the individual evolves, acquires experiences and conquers knowledge. Cognition consists of a set of skills and brain functions through which individuals perceive their environment. Cognitive skills, such as working memory, attention, perception, visuospatial processing and various executive skills, play a crusial role in the formation of the learning process. Cognitive enrichment requires promotion of meaningful intellectual activities. Development of meta-cognitive procedures, which we define as monitoring, regulation and adaptation, or in one word consciousness, is the key for the individuals in order to move from one layer to the next one. Metacognition is the ability of individuals to know their cognitive functions, monitor them while they operate, to control and adjust them, in order to optimize the adjustment to equivalent needs and requirements presented during the whole learning process. Development of metacognition and specifically of monitoring, regulation and adaptation, requires training of cognitive skills, such as attention, short-term and working memory. In order to move a system to higher energy levels and greater organization, there must be energy expense. In the pyramid of knowledge, in order to move from a layer to the higher one, some kind of energy should intervene and so we can go from senses to data, from data to information, from information to knowledge and so on. According to the constructivist perspective, gaining knowledge could be performed through self-organization. Many researchers argue that intelligence can be enhanced by training, as working memory is highly correlated with intelligence. Furthermore, cognitive exercise and especially continuous training of working memory could slow down the process of intellectual decay. Based on Gardner's theory of multiple intelligences, the researchers propose that the 8-layer model of knowledge could be adapted to each one of the different types of intelligence, defining thus the levels of domain specific knowledge. The conquest of the top of this pyramid presupposes the 'Unity Level of Knowledge', the ultimate level which could be defined as total knowledge or omniscience. In conclusion, the development of meta-cognition plays a decisive role in the process of acquiring knowledge so that we have not only improvement of the academic performance of the individuals, but also better functioning of the whole cognitive mechanism. Through various intervention techniques and training of metacognition and cognitive skills, individuals could improve all different types of intelligence such as verbal, mathematical, and visual-spatial, as well as particular cognitive skills such as perception, understanding, memory in all its forms, pattern recognition and problem solving. With the pyramid of knowledge, the researchers

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present all the eight levels that the individual has to conquer in order to reach transcendence. In essence, each higher level of the pyramid is a higher state of self-organization, awareness and consciousness, while at the same time reduced entropy levels.[8]

Snyder et al conceptualize metacognition as the ability to understand, regulate, and use one's cognitive processes in a constructive manner. It is widely viewed as a critical hallmark of expert performance in that experts organize greater amounts of knowledge in a more effective manner, use more appropriate strategies, and regulate their thinking and performance more effectively than non-experts. Several researchers have noted that much of the research examining meta-cognition and giftedness has focused on memory tasks or reading comprehension. More recently, researchers conducted more ecologically valid studies by exploring meta-cognition and self-regulation in gifted adolescents in middle school and high-school science classrooms. Metacognition can be conceptualized as having two primary components: knowledge of cognition and regulation of cognition. Knowledge of cognition encompasses stored knowledge about cognitive processes, strategies, and one's own cognitive abilities. This knowledge consists of knowing what strategies to use, how to use them, and when to use them. Knowledge of cognition is a critical component of meta-cognition in that individuals need to have general knowledge about various learning strategies, including how and when to use them. Prior research suggests gifted students possess more metacognitive knowledge, particularly declarative knowledge, than typically developing students. These differences follow a monotonic pattern of development into high school. Interestingly, even gifted students with learning disabilities have shown greater knowledge of cognition than typical students with learning disabilities. However, simply possessing good metacognitive knowledge is not sufficient for effective meta-cognition. One needs to effectively implement strategies and monitor performance (e.g., regulate cognition) in order to see benefits. Regulation of cognition refers to active monitoring of cognitive processes and the actual use of strategies employed. Components include planning, information management, monitoring, debugging, and evaluation. One particularly important and challenging form of regulation of cognition is metacognitive monitoring, which is the active regulation and awareness of one's comprehension and performance on a task. Calibration, a form of metacognitive monitoring referring specifically to the match between one's perception or judgment of one's performance with one's actual performance, is essential for self regulation and effective learning. Well-calibrated students often perform better, make more accurate predictive judgments and judge their own metacognitive ability more accurately. Metacognitive monitoring is inherently connected with working memory and background knowledge. How do gifted students compare with typical students with regard to metacognitive monitoring? In prior research, there was no significant relation between general ability and monitoring ability found no differences in the use of monitoring between gifted and typical middle school students on a challenging think-aloud task, despite better performance among the gifted students. Accurate metacognitive monitoring is generally difficult for all students, even for those who are gifted. However, some evidence suggests that gifted students may possess the mental capabilities necessary for successful metacognitive monitoring. For example, gifted individuals displayed more efficient working memory, which is a factor in managing the mental demands of effective metacognitive monitoring. In summary, meta-cognition is an essential component of learning and is a notable characteristic of how experts organize information. In summary, meta-cognition is an essential component of learning and is a notable characteristic of how experts organize information. The current study extends prior research by examining differences in meta-cognition between gifted and typical high school students in the classroom context. Specifically, the study investigates differences between gifted and typical high school students using several indicators of metacognitive ability. A total of 67 students, of a public high school in southeastern United States participated in the study. All five classes were taught by the same teacher using identical exams and curricula. Three of the classes were a homogeneous grouping of only gifted students (n=44) and the remaining two classes were a homogeneous grouping of typical students (n=23). To confirm gifted status, the Raven's Progressive Matrices (Raven, 1962) was administered to all participating students. Students were also tested in Metacognitive Awareness Inventory, Exam Performance and Measures of Calibration Accuracy. Overall findings suggest that gifted

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students have superior metacognitive abilities both in terms of accuracy and monitoring. It is important to note that gifted students held an advantage in local monitoring even during the first exam, suggesting that this skill may already be present even at the start of the semester. All students improved local monitoring ability, perhaps because of familiarity with the exam format. However, gifted students maintained the advantage throughout the semester.

Researchers have long searched for evidence of qualitative differences between gifted and typical individuals. Metacognition appears to be one such area in which gifted students appear to be qualitatively different from typical students. The results from the current study contribute to this line of work by examining differences in meta-cognition for gifted and typical adolescents in a realistic academic context over a brief time period. These findings, combined with finding that local calibration accuracy partially mediates the relation between giftedness and performance, extend our understanding of metacognitive processes in gifted students and provide a starting point for continued work within the classroom context. [9]

4. Assessment of giftedness and talent

This article presents WICS as a model of giftedness. WICS stands for Wisdom, Intelligence, Creativity, Synthesized. The article considers the relation between giftedness and expertise, and argues that giftedness is, ultimately, expertise in development. One cannot clearly distinguish between giftedness and expertise, because all measures of giftedness assess some kind of expertise, at least to an extent. Identification of the gifted has involved various conceptions of giftedness. Educational programs, as well as scholarship and fellowship programs, have created various criteria for selecting students for their particular programs. The question addressed in this essay is whether it is possible to generate a unified model of giftedness that would work across a wide variety of programs so that the various programs might be able to present a common face to students in terms of what they believe is important for their scholarships and fellowships. In seeking a set of criteria, are we looking for individuals who are gifted in terms of abilities or for individuals who are experts in terms of their achievements, or for both? From the present point of view, there is no clear distinction between the two. Abilities are competencies in development, and competencies are expertise in development. Hence, by extension, abilities are expertise in the earliest stage of development. The tests simply measure different levels of developing competencies. In this essay, abilities are viewed as expertise in development. Expertise should be the end-product of giftedness. It isn't always as many gifted people do not have the chance to develop their abilities so they do not become competencies. The goal here is to create a model that would comprise most of the general attributes that gifted program should seek. Rather, a model should have five main characteristics: 1. The model encompasses the attributes that constitute giftedness and expertise. 2. It does not encompass attributes that do not constitute giftedness and expertise. 3. It is conceptually coherent. 4. It is psychologically defensible.5. It is operationalizable—the stated attributes can be assessed in one or more ways. The question is, how selection committees can identify the people who are not only talented, but most likely to translate this talent into actions that have a meaningful impact on the world. The WICS model is a possible common basis for identifying gifted individuals. WICS is an acronym standing for: 1. Wisdom 2. Intelligence 3) Creativity 4) Synthesized. According to this model, wisdom, intelligence and creativity are sine qua non for the gifted leaders of the future. Without a synthesis of these three attributes, someone can be a decent contributor to society, and perhaps even a good one, but never a great one. (Successful) intelligence is 1.The ability to achieve one's goals in life, given one's sociocultural context; 2. Capitalizing on strengths and correcting or compensating for weaknesses; 3. The ability to adapt to, shape, and select environments; 4. A combination of analytical, creative, and practical abilities. Intelligence is not merely what intelligence tests test. Intelligence is important for making a meaningful contribution to the world. But some people are intelligent but offer up little. They are good critics but not good creators. Creative skills matter at least as much as do analytical intellectual ones. Creativity is another attribute of giftedness. Creative ideas are both novel and valuable. They potentially have impact. But, they are often rejected because the

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creative innovator stands up to vested interests and defies the crowd. Creativity is as much a decision about and an attitude toward life as it is a matter of ability. Creativity is often obvious in young children, but it is harder to be found in older children and adults because their creative potential has been suppressed by a society that encourages intellectual conformity. Creative work requires applying and balancing the three intellectual abilities—creative, analytic, and practical—all of which can be developed. Furthermore Creative people question assumptions and eventually lead others to do the same. Questioning assumptions is part of the analytical thinking involved in creativity. Sometimes it is not until many years later that society realizes the limitations or errors of their assumptions and the value of the creative person's thoughts. The impetus of those who question assumptions allows for cultural, technological, and other forms of advancement. Schools in particular, and society in general, tend to make a pedagogical mistake by emphasizing the answering and not the asking of questions. Moreover, those who propose such ideas may be viewed with suspicion and distrust as well. Because people are comfortable with the ways they already think, and because they probably have a vested interest in their existing way of thinking, it can be extremely difficult to dislodge them from their current way of thinking. The creatively gifted need to be people who are not only highly creatively competent, but ones who have convinced others of their creative competence. Gifted need to be individuals who use knowledge to move beyond where things are, rather than to replicate what others have already done or to get stuck in old ways of thinking that no longer are serving a constructive purpose. Gifted individuals will encounter many obstacles in their lives. The ones who go on to greatness will be those who are prepared to surmount rather than succumb to these obstacles. Thus willingness to take risks is especially important for gifted students. To succeed in life, one has to believe not in each and every thing one does, but in one's ability to get done what needs to get done, and to recover from the inevitable setbacks that life throws at one. Moreover teachers must help students to find what excites them, to unleash their students' best creative performances. Identification committees should select those students who genuinely love what they do and wish to keep doing it, not because it brings them extrinsic rewards, but because they feel a calling to do it. The people who feel such a calling are the ones who later can make a true difference. Part of being creative means being able to work on a project or task for a long time without immediate or interim rewards. Students must learn that rewards are not always immediate and that there are benefits to delaying gratification. Defying the crowd takes, above all, courage. Those who do not have courage may be many things—they will not be creative. A gifted individual can be many things. If he or she is not courageous, the other things may not matter. The above attributes are the prerequisites of creativity proposed by Sternberg. Wisdom may be the most important attribute to seek in gifted individuals. People can be intelligent or creative but not wise. According to Sternberg's balance theory of wisdom (Sternberg, 1998b, 2001), wisdom is defined as the application of intelligence and creativity as mediated by values toward the achievement of a common good through a balance among (a) intrapersonal, (b) interpersonal, and (c) extrapersonal interests, over the (a) shortand (b) long-terms, in order to achieve a balance among (a) adaptation to existing environments, (b) shaping of existing environments, and (c) selection of new environments. Wisdom is not just about maximizing one's own or someone else's self-interest, but about balancing off various self-interests (intrapersonal) with the interests of others (interpersonal) and of other aspects of the context in which one lives (extrapersonal), such as one's city or country or environment or even God. Intelligence, creativity, and wisdom are important attributes of leadership. But for them to be useful as criteria for identification, they need to be identifiable. In one study, Sternberg and his colleagues used the so-called Sternberg Triarchic Abilities Test to investigate the internal validity of the theory of successful intelligence. Three hundred and twenty six high school students, primarily from diverse parts of the USA, took the test, which comprised 12 subtests in all. There were four subtests each measuring analytical, creative, and practical abilities. For each type of ability, there were three multiple-choice tests and one essay test. In 2002 a study used an expanded set of tests on 1015 students at 15 different institutions aiming to devise tests that would supplement the SAT, measuring skills that this test does not measure. In addition to the multiple-choice tests described above, there were used three additional measures of creative skills and three of practical skills. The message that occurred for creativity

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from the above tests is that creative people are those who think flexibly—who can easily move back and forth between conceptual systems. As it concerns to practical skills, Sternberg and his colleagues have found, that practical intelligence as embodied in tacit knowledge increases with experience. In selecting the gifted leaders of tomorrow, three very important factors to consider are intelligence, creativity, and wisdom—synthesized so that they work together effectively. These are not the only attributes that matter. For example, motivation and energy are extremely important as well. However, motivation is partly (although not exclusively) situational. With the proper environment, anyone can be motivated to achieve.Sternberg used the Triarchic Abilities Test (STAT) to investigate the internal validity of the theory of successful intelligence. The test included multiple choice tests exploring the analytical, practical and creative intelligence. Creativity was also investigated by tests containing cartoons, written and oral stories. For practical skills there were used tests such as 1. Everyday Situational Judgment Inventory (Movies). 2. Common Sense Questionnaire 3. College Life Questionnaire. The tests significantly and substantially improved upon the validity of the SAT for predicting first-year college grades the test also improved equity among ethnically diverse students. As it concerns to wisdom identification lies in scenario-based studies, where individuals are presented with real-life scenarios depicting problems to be solved, Sternberg and his colleagues have found, first, that practical intelligence as embodied in tacit knowledge increases with experience, but it is profiting from experience, rather than experience per se, that results in increases in scores. Wisdom scenarios differ from practical-intelligence scenarios in that they more involve balancing of interests toward a common good. This essay has concentrated on 'tests' as measures of intelligence, creativity, but they represent only one of many ways of assessing these attributes. Interviews, questionnaires, letters of recommendation, and project work all can help in assessing these attributes. Institutions should consider pooling their resources and developing a common model and common methods of assessment.[10]

Okoye has conducted a review about the role of parents and teachers in the identification and development of gifted/talented students. The review took place in Nigeria, in 2013. Okoye uses the definition for giftedness given by Maryland in the United States' Department of Education. According to this definition, children referred as gifted and talented are those children that are identified by professionally qualified personnel as having outstanding abilities, capable of high performance, and have demonstrated achievement and/or potential in any of the following areas: general intellectual capability, specific academic aptitude, creative thinking, leadership ability, visual and performing arts, and psychomotor capability. In spite of the criticism geared toward IQ test, it cannot be underestimated as one of the good indicators of giftedness. Another concept worthy of mention is Gardner's Theory of Multiple Intelligences (MI). According to MI theory, students can excel in the following areas: linguistics, logical-mathematical, interpersonal, intrapersonal, spatial, naturalistic, musical, bodily kinaesthetic, and technological. Finally the researcher defines gifted and talented students as those students who are born with special distinctiveness which differentiates them from their peers and makes them first among equals. Gifted and talented students are not only those who are uniquely endowed with rare possibilities, but also those who have the ability to insist in reaching the full realization of those gifts and talents. Furthermore Okye argues that teachers and parents need to encourage and spur their students and children to pursue their gifts and talents with determination and passion. In addition as characteristics of giftedness and talentedness are presented the early and rapid learning, rapid language development as a child, superior language ability (verbally fluent, large vocabulary and complex grammar), academic superiority, large knowledge base, superior analytic ability, reasoning, and high-capacity memory, high curiosity and exploration, high career ambitions, active in getting and sharing information, enjoying learning, reading, asking many and critical questions, motivating others, demonstrating self-confidence, thriving on complexity and becomes unusually upset at injustice, criticizing works for self and others, making sophisticated use of techniques and media, discussing in detail, enjoying debating, relating well with adult, etc. Additionally it is proposed that schools through teachers should provide and implement school-wide effective enrichment program in order to provide opportunities for students to manifest and develop their

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hidden gifts and talents. Furthermore teachers should be involved in the development of a curriculum or scheme he/she will use for his/her class so as to make it meet the needs of gifted students. A gifted student tends to mask his/her gift because he/she often finds him/herself in an awkward situation in which he/she begins to perceive that his or her outstanding knowledge makes others, especially age or classmates uncomfortable. This mask can be very detrimental because a lot of gifted students can go unidentified. Many gifted students have not developed their gifts to the fullest due to the luck of good environment and chance. As some females may experience discrimination and maltreatment, teachers can help to enhance the situation by ensuring that both males and females have an equal share of the teacher's attention, creating an inclusive classroom and including questions that ask both males and females to use analytical and higher-order of thinking. It is essential to involve both parents/guardians in the process of the identification of gifts especially in the case of very young children. This is because students may not portray their gifts in the school setting, but may do so at home where they are more acquainted and comfortable with the environment and their parents. Some of the ways teachers may find out students' interests are through conversation and formal interviews. The use of interview is very essential because it will help the teacher to get further insight in identifying the student's characteristics and interests that were not visible or easily measurable in the classroom setting. In order to keep the gifted student engaged with the lesson, a teacher can ask the student to do things such as carrying out an inquiry research project or designing something using computer in a particular area of interest and share with his/her peers in their classrooms by way of power-point presentation or movie. This will help the student to develop critical thinking, organizational, problem solving, creativity, and leadership skills. Moreover the teacher has to create a supportive learning environment promoting cooperation and healthy social interaction. Some of the strategies for engaging gifted students include tiered instruction, provision of a learning center, mentorships, acceleration, and curriculum compacting. Tiered lessons and assignments are processes in which a student works with the same essential ideas and outcomes and use the same key skills, but works at different levels of complexity. Tiered tasks and assignments are vital because they provide gifted students the opportunity to produce ideas, reflect on their intellectual needs, work in areas of interest, and develop higher-level thinking skills. It is also the duty of a teacher to learn how to apply acceleration practice which helps gifted students meet their curriculum outcomes at a faster pace.Gifted students fear failures and humiliations. Teachers should encourage them to take up hard tasks. The teacher should be conversant with diagnostic strategies in order to identify a gifted student. Identification process should come from different sources and different assessment strategies namely, assessment for learning, assessment of learning, and summative assessment. Some of the sources of data for identification and assessment include observations from teachers, parents and guardians, peers, mentors, and students themselves, developmental history such as parents' descriptions of the child's exceptional abilities and interests, examples of the student's creativity, achievement and aptitude tests which measure specific knowledge and skills in a particular area such as report card grades and student's natural talents or special abilities for doing or learning how to do certain kinds of activities, intelligence or cognitive tests including off-level testing, demonstrations of creative and critical thinking. "Off-level testing" is given when student is discovered to be two or four grade level above his/her age or classmates. Giftedness is important to be identified at early stage and to be well nurtured, so that the gifted person can help himself to thrive and also offer significant contribution to the society. Otherwise it might cause psychological difficulties to the individual and a loss of valuable personnel for the society as well. Finally Okye proposes recommendations for teachers and governments. Teachers should have, at least, a basic knowledge of special education and the use of differentiated instructions in classroom settings to enable each student benefits from the lessons and develop fully his or her gifts. On the other hand the government should provide extracurricular activities in every school. Government should also provide enough funds for scholarships or loans for both males and females gifted students in particular those of them that are from indigent families. Government should provide equal opportunities in all aspects of education for both male and females. Identification process needs to be accessible to all students irrespective of the gender, cultural background and social status. Strategies use in the

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identification should include both qualitative and quantitative information. In conclusion appropriate techniques should be used to see that hidden gifts are unmasked, nurtured, enhanced, and supported to its fullest realization. [11]

5. Conclusion

Gifted students must be taken under serious consideration. Educators who wish to implement research-based "best practices" must reconsider many of their previously held perspectives and must commit in more than words to developing the "full potential" of all learners, including the gifted and talented. Twice-exceptional students confuse their parents and teachers by simultaneously displaying academic strengths and learning difficulties. They often are accused of being lazy and/or underachievers. Their strengths and limitations—either uniquely or in combination—are typically misunderstood. In addition, the unpredictability of their performance makes it difficult for educational professionals and others to understand that twice-exceptional students present distinctive attributes requiring similarly unique educational interventions. Each school or district must identify the grouping options that best match (a) the learners they have, (b) the attitudes of teachers about gifted learners, and (c) the attitudes of administration and the community to the possible options. The most efficient way of identification of the gifted population is to hold valid, scrutinizing, multi-variable tests in the whole school population, so that even masked giftedness is revealed. These students must be correctly identified as being gifted and having a learning disability in order for their needs to be adequately met. Effective programming for gifted and learning disabled students also includes social and emotional support, as well as interventions which focus on strengths, rather than weaknesses. These students will meet their potential only when their needs are appropriately met.

More research needs to be done and, particularly, more empirical studies need to be completed to take the ideas and theories on best practices for identification and education of students with dual exceptionalities and ground them in research so that educators can help these students meet their full academic potential.

Finally we have to underline the role of digital technologies in education domain that is very productive and successful, facilitates and improves the assessment, the intervention and the educational procedures via Mobiles [32-45], various ICTs applications [46-82], AI & STEM [83-94], and games [95-104]. Additionally the combination of ICTs with theories and models of metacognition, mindfulness, meditation and emotional intelligence cultivation [105-161] as well as with environmental factors and nutrition [28-31], accelerates and improves more over the educational practices and results, especially for the gifted students.

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