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Review Article

Towards the Achievement of a Unified, Uniform and Socially-Just 'Gifted Education' Policy Acceptable on a Global Scale

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Abstract
The article examines socio-economic and political influences on gifted education. It highlights the widespread disparity between advantaged and disadvantaged 'gifted and talented' students in terms of the extent to which they benefit from gifted education. Negative perceptions of social egalitarianism and societal misconceptions in giftedness are critically analysed. Cultural aspects related to gifted education are emphasized with a particular focus on the specific 'science' domain of giftedness. The article proposes and outlines future research in gifted education to address the issues of 'cultural-clashes' and 'cross-cultural border crossing' encountered by gifted and other students in their daily lives. Future outcomes from the proposed research might help teachers adapting their teaching styles and pedagogies to address the needs of gifted students, and assist future longitudinal research related to their cognitive, affective and social development.

Keywords
gifted education, constructivist, equality, science, society, culture, assessment, curriculum, social justice.

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Introduction

Gifted education is strongly linked to the needs for individual's development, and individualism is embedded in gifted education (Schulz, 2005). It is well known that effective learning only occurs when individuals can construct their own understandings (McInerney & McInerney, 2010). Thus the central focal point of learning is related to the cognition of individual learner where social and other contextual factors affect the learning process. Current practices of gifted teaching require more supportive research-based information that can lead to find out the most appropriate pathways where individual's requirements, cognitive, social, and other contextual factors are taken into consideration.

In the past, most researchers paid less attention to socio-economic and political aspects that could significantly influence gifted education. Similarly the cultural aspects related to gifted education were not widely addressed or less explored. As for an example, a recent parliamentary paper of the Victorian state government of Australia (2012) revealed that there are up to 85 000 gifted students only in the Victorian state schools in Australia. This report acknowledged that under present circumstances, these children are neglected by current education system that largely assumes that all students learn at the same rate and in the same way. These gifted students are frequently frustrated and disengaged due to a highly unsatisfactory picture of gifted education across the entire state (Parliament of Victoria, Education and Training Committee, 2012). The similar condition is prevalent in many countries in the world. Thus the impetus of this article is to provide a broader perspective of gifted education and point out those important issues, and then discuss them not only within the confines of Australia, but on a global scale.

Gifted education has been playing a major role over the past several decades in many developed and underdeveloped countries across the continents of the world. This specialised education that focuses on the individual talents and their development is still lacking to gain full public support and awareness. This area of education is less emphasised or ignored than sports or any type of entertainments because of misunderstanding, misconception, elitism, and a lack of understanding the potential and significance of giftedness. A rational discourse between gifted education and sports is presented here in the context of Australia based on the available comparative data. Similar situation of such comparison can be found at variable extent in other countries around the globe.

Many countries around the world have a long traditional history of world-class sportsmanship where the gifted and talented kids in sports generally get full support and encouragement from all walks of life in the society. However, gifted and talented children in education do not receive similar support and encouragement from society. In the Australian context, the rich and vibrant culture of Australian sport has long played an important social and cultural role that binds communities including the indigenous people, and creates a broader imagined communities. And this culture has contributed to a flourishing national consciousness (Cashman, 2003; Ware & Meredith, 2013). The Australian Bureau of Statistics revealed that in 2009-10, out of total expenditure by Australian households, $8,293.8 M (1.5%) was spent only on the selected sporting and

physical recreation goods and services (Australian Bureau of Statistics, 2012). The allocated funding in sports by the Federal Government of Australia consistently increased in each year from 1973-74 to 2012-2013. At present the government funding to sports is more than five orders of magnitude higher than it was funded in 1973 (6.2 to 307.7 $Ms) (Australian Government, 2015; Jolly, 2013). Almost all schools in Australia have adequate resources for teaching and training the physical education. The media viz. TV or newspapers present sports quite regularly with adequate coverage. However, in contrast to this massive societal support to Australian sports, gifted education in Australia does not receive any reasonable attention as it is expected. In the past, two Australian Senate inquiries on the state of gifted and talented provisions indicated a continued lack of awareness and understanding of the nature of giftedness and talent among gross population, and a desperate needs for resources and training of these gifted learners and teaching community at large (Taylor & Milton, 2006). Despite these two Senate inquiries, research in gifted education continually suggest that, there is a lack of response and commitment from the government to gifted education and teaching needs. The graduating teachers are experiencing minimal exposure and training in the specialized area of gifted and talented education. Thus a lack of awareness and an understanding of the nature of giftedness and talents, individualistic and diverse range of learning needs, and a lack of government commitments and teacher training is severely affecting both gifted students and teaching community (Fraser-Seeto, 2013). Like the physical education and training, gifted education in Australia does not receive adequate attention either from schools or media. Many schools do not have gifted education or gifted training provisions.

Again with regard to this argument, one may attempt to rule out the line of reasoning of the preferential support from government or communities to sports over gifted education based on the common reasoning that it is a generalized proposition as this situation exists in any country or society around the globe. In response to this reasoning, it can be further argued that in order to address this issue, there is a need for a deeper understanding of reasoning, human beliefs and doubts that exist in any societal or cultural domain. In this context, Peirce (1877) succinctly described reasoning, beliefs and doubts. An example can clarify and help to understand this issue. Research revealed that when students are involved in decision-making process, they give priority to values over scientific evidences as to the fact that values are more important in the culture or society that consequently influence their decision making process on most socio-scientific issues they are involved with (Aikenhead, 2005); which in fact is aligned with what Peirce described regarding belief and doubt (Peirce, 1877). Students give priority to values over scientific evidences because values are embedded in students' culture and society, and students naturally believe in those societal and cultural values. Generally students have doubt in scientific evidences that might have been introduced due to a conflict with their own culture or students might have challenged with their own realm of values, beliefs or attitudes. In such cases, students want to remove their doubts to attain a calm, and a relaxed state of mind, and hence it influences their decision making processes. Now, if this example is

placed on the entire societal perspective of any country considering 'gifted education' as a context, then we can rationally expect similar outcomes of preferential support to sports over gifted education as any society or culture values, supports and encourages sportsmanship more than gifted education and their necessities, although many people are aware of gifted education and giftedness. Generally the values and beliefs in sportsmanship are so strongly embedded in society that it consequently hinders the rational thought of gifted education and giftedness being not only a societal and cultural issue but an educational necessity. Moreover, as the culture of social acceptance of giftedness has not yet been established in many societies, hence it is likelihood that this situation may raise questions as to whether the society of any nation is sceptical about gifted education and research findings on giftedness.

Scholars, educators and researchers have been striving for about a century to understand the major aspects and pertinent issues encompassing giftedness. It is still difficult to articulate a clear definition of giftedness that can gain a wider acceptance or broader consensus, which could help to formulate appropriate policy and practices related to gifted education. Recently Subotnik, Olszewski-Kubilius and Worrell (2011) outlined gifted education based on their research in psychological science. They proposed a new framework that may guide future research and practices. These authors defined that, 1) Abilities are important in gifted education. The amount and source of ability, the balance of general and specific abilities, and the exact nature of specific abilities vary by talent domain, which are not completely understood yet. 2) Giftedness is domain specific, and the domains of talent (viz. science) have specific developmental trajectories across the life span. 3) Effort and opportunity are factors at every stage of talent development process. 4) Psychosocial variables are important contributors to outstanding performance at every stage of talent development. The psychosocial skills of gifted students play the greatest role during their transitions from expertise to eminence. Finally, 5) Eminence should be the goal of gifted education (Subotnik, Olszewski-Kubilius & Worrell, 2011). Examples of eminence are creative and breakthrough contributions or innovative outcomes from the contribution of gifted personnel. Although Subotnik et al. (2011) presented a comprehensive review based on psychological science that proposed a direction forward to re-thinking gifted education and giftedness, however it was found that the authors overlooked the relevant cultural aspects of gifted education. It is evident that both general and gifted students representing diverse cultural backgrounds regularly encounter cognitive conflicts which affect their learning of sciences (Aikenhead, 2000; 2001; 2005; Costa, 1995; Jegede, 1995; Jegede & Aikenhead, 1999; Phelan, Davidson & Cao, 1991). And this situation will inevitably impact on the development of psychosocial skills among gifted students who are particularly from culturally diverse backgrounds.

It is likelihood that certain societal values and beliefs may hinder to rationally think various issues pertained to education, and further, these aspects can also impact on social inequality, social justice and equal outcomes for all students. Schulz (2005) stated that gifted education operates through a set of core beliefs

and practices which stretches across all levels of education, and fundamentally undermines the equal outcomes for all children. There is certain disparity being observed between gifted education's claims to equality and the uneven social outcomes it produces, and such disparity is located at the core beliefs in gifted education (Schulz, 2005). The Royal Society of Chemistry (2012) stated that gifted education provision is not elitist. The provision is not motivated by a belief that these few particular students matter more than others, but the provision is certainly motivated by a belief that, what is needed to meet the needs of these few identified students differs to that which is needed for others (Royal Society of Chemistry, 2012).

Because of a widespread disparity that is evidently observed in many countries, the USA for example, between advantaged and disadvantaged 'talented and gifted' students in terms of the extent to which they benefit from gifted education, this article highlights the pertinent socio-economic and political influences on gifted education, and elaborates the cultural aspects related to gifted education with a particular focus on the specific 'science' domain of giftedness.

Despite the fact that over the past several decades numerous improvements were observed in many areas of gifted education, but unfortunately it is evident that the cultural issues related to giftedness were either less explored or overlooked. This issue is particularly more important for a pluralistic society where multiculturalism is an essential component of the social fabric, which is constantly changing the social dynamics. These cultural issues create obstacles to both teaching science and students' learning of science. Thus an outline of future research direction is suggested in this article to address the pertinent issues related to 'cultural-clashes' and 'cross-cultural border crossing' that gifted and other students encounter in their daily lives. Future researchers may consider to address these cross-cultural issues in gifted education following the proposed research outlines. The information and discussions presented in this article might be helpful to teachers, educators, researchers, scholars, curriculum developers and schools toward the achievement of a unified, uniform and socially-just education policy and curriculum for all students including the gifted, who deserve to be our future informed citizens. This article provides fruitful information, critical analyses and reflections on a broader perspective to improve gifted education policy framework and associated curriculum. A future outlook with implicated issues pertained to gifted education and gifted practices is also presented.

Cultural Aspects Related to Gifted Education

Research on the cultural aspects encompassing gifted education that have a persistent influence on the development of gifted education and practices were not adequately explored in the past. This section attempts to shed lights by narrowly focusing on the specific 'science' domain of giftedness and gifted education, and discusses the interactive aspects of students' life-world, family, peers, teachers, school, and society.

Over the past several decades, researchers and scholars in gifted education have enriched and provided us adequate information. These data have been very helpful in understanding and knowing the criteria of gifted students. Few notable and highlighted research outcomes related to the nature and criteria of gifted students that are already known are presented here. Gifted students show their capacity to perform at a level significantly beyond the expectation of one's age in any domain of human ability (Gross, 1999). Students can be gifted and talented in a range of knowledge domains (viz. science); however, gifted thinking in one domain does not guarantee gifted thinking into others, and some students who display gifted learning and thinking may display underachievement and learning difficulties (Munro, 2011). Gifted students are emotionally intense, and they have a greater awareness of surrounding environment (Hoekman, 1994). In a mixed ability class, many teachers find difficulties to meet the needs of highly gifted students. In that environment, these gifted students find it frustrating when their age peers do not understand and appreciate their complex thoughts, capabilities, advanced knowledge and unusual connections. And in that situation, if the gifted students are held back, it is more likely to be stressful for them, and as a consequence, it can cause severe harm to their psychosocial norms. Gifted students are asynchronous, their developments are not even; their greater emotion and higher awareness of the outside world-view may not find proper emotional resources to match their cognitive awareness. As a result, they are at risk of being abused in the environments that do not appreciate and respect their differences (Silverman, 2009). Gifted students can learn at a faster pace, and they have the capacity to quickly learn the core curriculum (Plunkett & Kronborg, 2007). In a mixed ability class, a gifted student can memorise as much as 12 times faster, and in terms of complex information processing (viz. higher order thinking), it can be 4 times faster than the slowest student (Start, 1989). Gifted students expect their companionship with other students who have adequate intellectual and emotional maturity. In the case of not finding such companionship, these gifted students may either conceal their intellectual and emotional maturity in a way that can be accepted to their classmates, or they may isolate themselves, and may try to adjust with their age peers who are emotionally less matured and intellectually less advanced compared to gifted (Gross, 2004; Silverman, 1993). If a highly able or gifted student is challenged in an appropriate way, it is most likely that the student will display latent abilities (Plunkett & Kronborg, 2007).

Modern science education is now more enriched since the pedagogies involved in science education actively relate to issues of culture, identity, multiple social meanings of education, teacher-student relationships, students' desires and expectations, and values in science education. Despite the fact that modern science education has been progressed so well, however it still requires to emphasise more on the cultural aspects of gifted education especially in the school. It also requires more understanding about the culture of society, how society perceives gifted education and giftedness; and how the culture of society interacts with the culture of science or school science that affects the advancement of gifted education, gifted practices and students' development.

Students success in science depends on the degree of cultural difference students perceive between their life-world and science classroom; how effectively students move between their life-world culture and the culture of science or school science; and, the assistance students receive in making those transition easier (Jegede & Aikenhead, 1999; Costa, 1995; Jegede, 1995; Phelan, Davidson & Cao, 1991). The interaction between students' life-world culture and culture of school science may be conflicting, and may lead to a painful cognitive conflict which students want to overcome. The eradication of any psychological pain can ensure students' smooth cultural transition. If the conflict between what students bring into science classroom and their expectations to take away from classroom turns out to be substantial, it can lead to a serious cultural conflict. Such a conflict may occur in the arena of students own culture or in the realm of their beliefs or attitudes. Students require assistance when they attempt to negotiate these cultural borders which would influence their success at science.

Phelan, Davidson and Cao (1991) presented a model of the interrelationships between students' family, peers, and school world. They described how these relationships affect students' engagement with schools and their learning; and, how students' perception of boundaries between their life-world and their employed adaptation strategies move from one context to another. In everyday life, students constantly interact with their own family, peers or friends, and school. Each student has his/her own value, belief, perception, understanding, thought, feeling, and adaptation strategy. Students make their transitions from one domain to another within the context of larger socioeconomic community. Each domain (family, peers and school) has its own norm, value, belief, expectation and action. Phelan et al. (1991) identified and categorized four distinct patterns of migration across the three domains (family, peers and school). They found that two types of students can either successfully make their smooth transition or manage to cross the boundary. For remaining two types of students, the boundary crossing is either hazardous or students are unable to penetrate the borders (Phelan, Davidson & Cao, 1991). In this respect, Costa (1995) supported the theoretical framework of this model (Phelan, Davidson & Cao, 1991), and she explored it further for practice and to develop policy framework in science education (Costa, 1995). Although Phelan, Davidson and Cao (1991) and Costa (1995) have been successful in articulating a model and developing a theoretical framework of the cultural transition that applies to all students in general, however, a similar and rigorous model is particularly essential for the gifted students who have quite different norms (personal and psychosocial), values, attitudes, beliefs, perceptions, expectations, emotions, understandings and adaptation strategies compared to other students or peers. In this case, the cultural transition of gifted students may show a different pattern of migration as they travel across the three particular domains (i.e., family, peers and school). Thus future researchers may consider these studies that particularly applicable to gifted students, and explore further.

When non-Western students study science in a formal Western educational setting, they experience differences between the culture of school science and the culture of their life-world, and this may lead to a clash between these two cultures.

For example, when the African students come to science classrooms with their traditional world views, the interaction between Western mechanistic world-view and students' indigenous knowledge complicates their cognitive processes (Jegede, 1995) which makes an obstacle to their science learning. When students are constrained due to their cognitive complications, it may also affect these particular students in grasping other essential skills viz. psychosocial, mental rotation and spatial ability that could lead them develop their expertise and gain success in the sciences (Chowdhury, 2017). Jegede (1995) also argued that current school science only projects one world-view which is Western view and, the Western view neither recognizes the variations among people nor any different world-view which learners bring into science classrooms. Thus non-Western learners face an extra obstacle in their understanding and learning of science concept as they have to resolve their cognitive conflicts that have created with their indigenous or non-Western knowledge base brought into the classroom (Jegede, 1995). As a result the non-Western students find difficulties in learning science in a meaningful way as it is expected of them. Students' meaningful science learning is not rote learning in which only information is acquired without any understanding. It rather implies a comprehensive knowledge of the context of facts they learn, and relate to other knowledge. Generally, the Western students do not find difficulties in crossing their cultural borders because of their Western background, and they do not have to learn the Western thought which requires to undergoing a mental and cultural ecdysis (Jegede, 1995). As a result it does not affect their thought processes or science learning within the scientific domain. Many students within a multicultural environment experience serious problems of their cognitive conflicts between those two worlds which severely affect their science learning. The Western, non-Western or multicultural realities of many classrooms around the world clearly indicate that if any nation ignores the development of a 'science-for-all' curriculum, which arguably applies to gifted education, then it may threaten to escalate students' cognitive conflicts, and significantly affect their science learning.

When students come to school they bring their own values, beliefs, norms and expectations into the classroom. These aspects then interact with the values, norms, expectations and culture of science classroom or school, and inevitably create conflicts in many circumstances. Although many students may be able to cross other perceived boundaries however, they may not entirely overcome such critical conflicts. In that case, to eliminate such hazards, students try to invent ways of avoiding the construction of proper scientific knowledge which is foreign to them; or students try to conveniently store the constructed scientific knowledge in their minds to circumvent interferences with their own life-world experiences. Thus future research in gifted education need to emphasise these cultural conflicts that students experience quite regularly and, how these students try to eliminate such hazards employing their particular adaptation strategies. In the pursuit of cross-cultural border crossing, students make their transitions like a traveller, and some students experience some unfamiliar culture. Thus students require a degree of guidance from a travel-agent type of teacher who can provide incentives for them to smoothly travel into the culture of science. The incentives may include any

scientific topic, scientific issues, events or scientific controversies. Hence providing incentives to these students may create the need to know more about the culture of science (Aikenhead, 2001). The Science-Technology-Society/Environment (STS/STSE) and Socio-Scientific-Issues (SSI) movements are actively trying to address these cultural issues in science education (Aikenhead, 1980; 2000; 2001; 2005; Chowdhury, 2016a; Sadler, 2011; Zeidler, Sadler, Simmons & Howes, 2005; Zeidler & Keefer, 2003; Zeidler, Herman, Ruzek, Linder & Lin, 2013; Zeidler & Schafer, 1984; Zeidler, Walker, Ackett & Simmons, 2002). Thus it is important that similar emphases should be given on the cultural issues related to gifted education. In order to plan and develop an effective and sensitive gifted teaching instruction, it requires an in-depth understanding of the process of cultural border crossings that take place among the gifted students. It is particularly more important when we deal with these particular gifted students who are more often very sensitive. The cultural-clash between students' life-world and culture of science or school science is also making science teaching and students' meaningful learning of science extremely difficult (Jegede & Aikenhead, 1999).

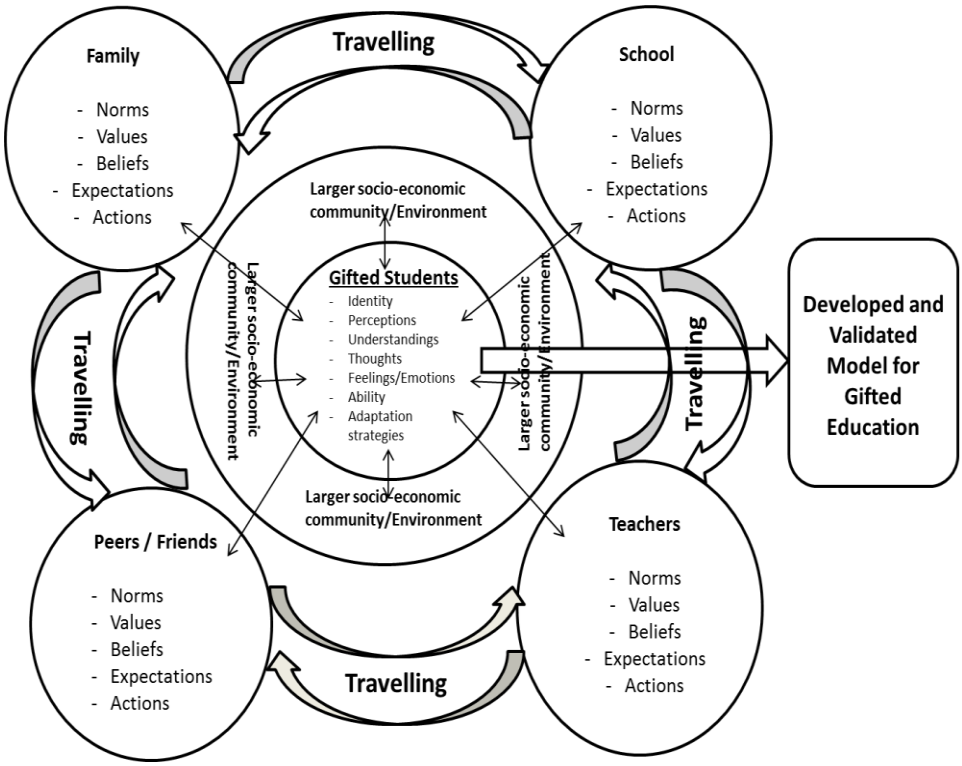

Figure 1: The outline of future research direction in gifted education pertinent to cultural issues based on the understanding of interrelationships between gifted students' family, peers, environments, teachers, and school worlds.

It is important that future research in gifted education put more emphasis on cultural issues surrounding 'cultural-clashes' and 'cross-cultural border crossing' based on the facts and discussion presented in this article so that teachers can find appropriate conceptual tools for their teaching instructions. It requires more rigorous research and data to address these issues, and find out an appropriate gifted education provision that can be effectively applied to enrichment, acceleration or mixed ability classes. In the context of gifted education, an outline of future research direction that can address cultural issues pertinent to giftedness is suggested which is depicted in a schematic diagram, and presented in figure 1. This self-explanatory research outline may attract future researchers increasing their interest in the areas of cultural aspects related to gifted education toward the development of a rigorous model that can facilitate teaching practices of giftedness, and benefit gifted education.

This suggested outline of future research direction in gifted education may have some similarities with the model proposed by Phelan, Davidson and Cao (1991), but the fundamental difference is that unlike all general students this proposed research outline is only targeted and focused on the identified gifted students who have a myriad range of different personal characteristics and psychosocial norms compared to other students as it is discussed in this article. Moreover, an additional new theme comprising the norms, values, beliefs, expectations and actions of teachers is separated from school, and it has been introduced individually because of its paramount significance. Phelan et al. (1991) considered this theme (teachers) as an embodiment of the 'school' as a whole. The underlying reason for this separation is due to the fact that many teachers are not adequately familiar with the concept of giftedness, and they do not know how to utilise the right approach in handling these particular gifted students. Many teachers cannot even realise how their little empathy, cultural awareness, guidance, and pedagogical approach profoundly impact on the development of gifted students, and make a significant difference. Thus it is expected that this research outline may offer a great deal of complexities and challenges when future researchers will attempt to address these cultural issues related to gifted students. Importantly, the suggested research outline can be applied to any specific domain of giftedness as it is not limited to only 'science'. Based on this presented outline, future research in gifted education may find that some of the upcoming results might be in agreement or differ from the results derived from the past research that were carried out for general students than these particular gifted students or it may expand ideas found in the literature. Another advantage is that the future developed model can be helpful to assisting longitudinal qualitative and quantitative studies of gifted education and giftedness over a long run that can ascertain the impediment factors for cognitive, affective and social development of the gifted students.

Summary

As gifted students display diverse nature and abilities, intense emotions and asynchronous characteristics, it is important to clearly understand how these gifted students develop their own world-views; and how they travel from one domain to another. It is yet to be uncovered as to how smoothly these gifted students

penetrate their perceived boundaries during the course of travelling from one domain to another or how they encounter and manage any conflict due to cultural-clashes which is inevitable in realistic circumstances. If future research can focus on articulating an appropriate model for the gifted students which can be widely acceptable with a rigorous authentication, then it can significantly help the teachers. Teachers can then adapt proper teaching styles and pedagogies to address these cultural issues ('cultural-clashes' and 'cross-cultural border crossing') related to their gifted students. Future developed model can benefit teachers as they can gain opportunity to develop their own repertoire of cross-cultural teaching strategies for both general and gifted students.

Socio-Economic and Political Aspects Related to Gifted Education

The discrete and specialized services of education are generally identified in three ways such as, educational need, social justice, and political & economic necessity (Sapon-Shevin, 2000). Education always remains in focus for social and political reform as it is typically linked to social relations and power which is embedded in the constantly changing social, economic and political systems. The educational practices and experiences play a significant role in what shapes us, influences our values and futures, and impacts on the potential transformation of inequalities and opportunities that can be created, recreated or cemented. The patterns of social group difference are clearly evident in educational institutions, and the complex social data and the socially differentiated reality help us to understand that the educational institutions are confronting many challenges. In such context, the identifiable patterns of social difference and the inequality in relation to educational experiences and outcomes are constantly challenging the simple notions of schooling (McLeod, 2011). It is evidently observed that a rapid science & technological advancement in the 21st century and the globalization have significantly influenced and changed the socio-economic and political landscape in societal structure. This alteration in socio-economic and political conditions has greatly impacted on the current practices of teaching, education, scientific work, and research. Evidently all changing faces of science & technology are influencing our lives, social behaviour, our learning, and work practices (Hurd, 1998; 2000; Spiegel-Rosing & Price, 1977). As a result science & technology are maintaining an upright position being a cultural force (Woolf, 1964). This situation now raises questions about the current values and position of modern science education in the society including gifted education.

The understanding of individuality, class, race, social justice, and politics in education help to understand and conceptualize as to how education play a role in the society. The orientation of gifted education to social justice can be understood by conceptualizing its prevailing discourse at political level. When we acknowledge various social contexts such as, class and race, and recognize the individual alone, then it can preclude the opportunity to address the existing social inequalities (Schulz, 2005). Again, the justice arguments often fail to discriminate the goals of equality of access, equality of services, and equality of outcomes (Sapon-Shevin, 2000). Thus in a system of gifted education, the existing social inequalities support the hegemonic power relations, and fail to address the fundamental and historic

productions of inequality (Galitis, 2008). Among various influences that contribute to generating a severe socio-economic inequality in the society, the most influential factors are dogmatic ideology, economic theory, distorted perspectives derived from philosophy and psychological dynamics; and the extent of such inequality considerably varies among nations. If societies are severely unequal, it suppress the social mobility of young people (Ambrose, 2003; 2005) and, such obstacles cause them to be frustrated in gaining success over a long term. Thus a gross inequality suppresses the aspiration discovery and talent development of the vastly deprived gifted young people. It can also distort the aspirations of the privileged gifted young people, and consequently their frustration leads them to employ their talents in a selfish way, with a boastful manifestation having swelled pride, and unethical activities (Ambrose, 2013).

The strong correlation between social class and a connection to school on student's achievement are closely linked to various social factors such as, gender, race, family's social class and ethnic affiliation (McLeod, 2011), and these factors affect the quality of both education and social outcomes. In this respect, the author of this article argues that the expectations of school and the expectations of parents regarding cultural capital do not always match, and hence it may consequently create problems in schooling. In every culture when education provisions come to affect, the poor students suffer the most (Silverman, 2009). Moreover as gifted education imparts an individualizing practice that helps the hegemonic power structures by discrediting differences, and allows only a partial view of the world, then the students from the 'least advantaged' culture are either forced to assimilate with the hegemonic centre or remain as marginalized (Schulz, 2005). In the past, a significant research have been undertaken in the area where the gifted students represented ethnic, racial, and linguistic minorities or economically disadvantaged gifted backgrounds. However the reality is, majority of young people who are identified as gifted continue to represent the culture of major populations; and at the same time, the economically disadvantaged and diverse student population are continuously underrepresented in gifted education programs. These students are not only neglected, but many of them will not even realize their potential without some type of intervention (Reis & Renzulli, 2010). The fact of the matter is, majority of the gifted students who dropped out of school participated in few extracurricular activities than it was expected, and they were particularly from the families of low socio-economic backgrounds and/or represented the radical minority groups whose parents had poor educational backgrounds. Thus a lack of challenge and differentiation are major causes of many gifted students who drop out or underachieve (Reis & Renzulli, 2010). There is a likelihood that many gifted children amongst the bulk students who are from the disadvantaged backgrounds can be missed out because of the proven link between their disadvantaged position and poor achievement in education. In contrast, the students from a higher socioeconomic status are more likely to be identified as 'gifted and talented' due to their educational backgrounds, cultural capital and assertiveness of their families. The underrepresentation of the disadvantaged and minority groups is more than a problem of the under-

identification (Dai, 2013). Thus in the process of gifted identification, the major areas where the disadvantaged students are located should be given extra care, particularly in the public schools and rural areas than the private schools. It is also evident that the gifted students who underachieve in school can be helped through an appropriate gifted education services that can effectively challenge them in regular classroom settings, and allow them to experience the enrichment and accelerated programs that may lead to their continuous progress in school. In this regard, parents can play a significant role as they are the excellent identifiers of giftedness in their children; and the parent advocacy is critical for the emotional and academic growth of the gifted children (Silverman, 2009). Both parents and families can be extremely helpful for the development of gifted students as they can significantly influence on the development of their children. Thus if parents can work properly with teachers and school in a collaborative manner, then this can earn enormous benefits.

If nations are more egalitarian, the gifted students are more supported, and the ethical ramifications of the gifted students' aspiration growth are more responsive. But the totalitarian or more unequal societies create severe health and social problems that create obstacles in the aspirational growth of gifted children (Ambrose, 2003; 2005). In that case, the abilities of the privileged children gain more support from the society while the abilities of the deprived class are obscured and suppressed. As a consequence it severely damages the discovery of potential aspirations and development of talents in young people who represent the deprived class, and at the same time, it reduces the abilities of parents to support educational development and psychological well-being of their children. The socioeconomic barriers to aspiration discovery and talent development include class-based and race-based material deprivation, segregation, and stigmatization. Although there are some scopes and opportunities are available between healthy democracy and totalitarianism for modest discovery and development for majority of the gifted students in societies, but such achievements can be attained at the expense of suffering from the crushed aspiration of the underprivileged gifted students, and at the same time, the aspirations of the privileged children are ethically distorted (Ambrose, 2003; 2005; 2013). Ambrose (2013) also described that the gifted students generally fall in love with their own ideas or are inspired by ideas of others. If the gifted students are not properly nurtured or taken care of, they can become dogmatic and dangerous when they gain power in the adult world. The daunting consequences of improper nurturing and negligence that fail to fulfil the needs of the gifted students and, the overarching effect of the societies that are severely unequal can be understood from the following statements (Ambrose, 2013)**:**

> *In view of the severe social problems generated by high levels of socioeconomic inequality in the United States and throughout the globalized economy, if gifted and talented adults knowingly or unwittingly contribute to the growth of that inequality they are fueling what might be one of the worst human rights abuses of the 21st century (p. 87).*

> *If today's globalized economic system encourages actual psychopaths and those with near-psychopathic inclinations to rise to positions of power, many of those most successful may be gifted and creative but will be destructive in the long term, caring not for the needs of others and even actively destroying elements of the socioeconomic system that might help deprived gifted young people develop their abilities (p. 87-88).*

In recent years, scholars and educators showed their earnest attention to address these issues of inequality and social justice in gifted education. Cross (2013) suggested a radical reform in gifted education eliminating the age grading in school which inhibits the potential development of many students, including the gifted. She claimed that such a gifted education can serve as an equalizer in the society and it can ensure a better quality education for all students. Both teachers and students can be benefitted from this reform, and it can act as a catalyst to improve equality and social justice. In this system, the curricula need to be developed far beyond the level of standard for the students who master early. Students of same age will be working at various levels in different subject areas. The students who face difficulties will receive an additional support while their high-ability peers move on, and all students will be with their intellectual peers in every subject. The acceleration will happen naturally providing opportunity for all students based on their abilities to advance. Teachers can focus more on teaching contents, and can maximize the achievements of all students. And in the practices of teaching, the requirements for building expertise to a specific age group can be eliminated (Cross, 2013). However, the foresight of such a radical movement could be jeopardized if the reforms are not implemented completely, which she acknowledged. While Cross (2013) advocated for a radical reform in gifted education, quite to the contrary, Dai (2013) described an effective gifted education that emphasizes excellence, selectivity, diversity, equity, social equality, and educational productivity; and a requirement for an understanding as to how the negotiation and balancing can be done without considering the embarkation upon any radical or dogmatic position. The representation of the diverse social and ethnic groups can ensure social equality and excellence in the long run and in a variety of cultural presence. Dai (2013) argued that the identification or selection practices may lead to an unfair competition for a high-quality education. Thus he suggested that emphasis should be given on how the specific educational needs of the selected can be fulfilled by the targeted educational provisions. Both excellence and equity can be fostered when any diverse educational paths with an optimum approach for individuals are provided to students. Thus if the diverse opportunities and the ways of achieving excellence are recognized and facilitated, then a gifted education can be equitable and defensible. It also requires a good balance between the maximal participation and the rigorous standards in gifted education (Dai, 2013). Ambrose (2013) suggested that the educators and policy makers can pay more attention to the ethical dimensions of giftedness to prevent the gifted young people from falling into an ethically vacuous dogmatism when they become mature. He suggested further for building an awareness of the ways in which the socioeconomic barriers to discovery and the pursuit of high-level

aspirations that obscure and supress the abilities of the underprivileged young people in the highly stratified societies (Ambrose, 2013).

There are many societal factors that affect the development of educational programs for the intellectually gifted students. Among them two major factors are discussed here.

- Generally a false social elitism prevails in the society which portrays that the gifted children may not get along with everyone if the education system fosters children's intellectual and academic abilities by introducing any differentiated provisions, and thus assumes that the gifted students may be unsuccessful. This fear leads us to experience obstacles in identifying and accepting the children as gifted, who rather could be even in danger if these students are not fully supported. In fact, research evidently show the opposite scenario. Contrary to our negative social perception, the gifted children rather have better social adjustments in classes with other children like themselves, and they can certainly become successful. Several studies (Plunkett & Kronborg, 2007; Silverman, 2009) supported the social self-concept based observation indicating that these particular students showed improvements in social adjustments when they were placed in the special classes with their true peers.
- Gifted education is always viewed as a social issue rather than an educational necessity. Because of elitism, misconceptions and misunderstandings, our community in the past could not foster the academic talents well. If social misconceptions, misunderstandings and elitism about giftedness are prevalent in the society, then the gifted students may find themselves in a predicament situation that severely affect their psychosocial skills and further developments (Chowdhury, 2016b).

Most private or elite grammar schools want to maintain a prestigious position in the society, and thus these schools put a special emphasis on gifted education providing an adequate catering provisions to their own students. However, gifted education in the public schools is more neglected or less emphasized (Fraser-Seeto, 2013; Taylor & Milton, 2006). For example, the publicly funded selected entry school program in Australia is one of the options for accelerated or enriched education. However, these selected entry schools are not uniformly positioned across the country where all the gifted students can have an equal access. In the USA, students' access to STEM high schools is not widely available and geographically the distribution is uneven (Subotnik, Tai, Rickoff, & Almarode, 2009). Thus it necessitates that research should continue to find out any viable options that can improve the differentiated programs where more gifted students can gain access to utilise the available opportunity, and effectively they can maintain their socialization with mainstream students. Most importantly, it requires a provision in place of maintaining equality and social justice. In this context, government can play a significant role forming an education ministerial advisory committee which may support to the extent that current curriculum meets the local needs, and uses the gifted education policy in a way that can be effective in

facilitating students' cognitive development while maintaining equality and social justice. The committee can evaluate how the provisions of gifted education are effective under the existing policy, how these can impact on the curriculum, and help improve students' learning process. This way it may help to justify the provisions of gifted education to uniformly incorporate into the curriculum. The committee can also be supportive in launching various pertinent websites where teachers, students, parents and societies can be well informed and benefitted from the information it provides. This committee should involve with a regular consultation with teachers, educators, researchers, scholars, curriculum developers, and stakeholders. A recent article (Chowdhury, 2013) suggested a similar education ministerial advisory committee to ensure that the current science curriculum meets the local needs, and help facilitate students' cognitive development. On this occasion, a successful example of the suggested ministerial advisory committee can be found from the Education and Training Committee of the Victorian State Government of Australia that recently published a parliamentary paper on gifted education system (Parliament of Victoria, Education and Training Committee, 2012). This committee had been engaged over two years with consultations; relentlessly sought advices and suggestions from educators, scholars, researchers, teachers, parents, stakeholders, and the society at large across the entire state of Victoria. Ultimately, the committee was successful in pinpointing the pertinent issues surrounding gifted education, students' developments, provisions of gifted education, related teaching, learning and pedagogies of gifted education, and the current socio-economic and political influences affecting gifted education. The report unveiled the reality of a false social elitism, misunderstandings and misconceptions in gifted education that prevails in the society and, highlighted the poor catering provisions of gifted education services.

The societal values, and the values of science and science education are strongly attached to society. Thus science education and science practices including gifted education require more emphasis on the relationship between the values inherent in the society and the values embedded in science and science education (Corrigan, Dillon & Gunstone, 2007). The future development of gifted education largely depends on how the society perceives and values giftedness. Different societies may have different perceptions, social expectations, beliefs and values that influence gifted education. In this regard, Cross (2011) reported a research data where 64% represented a particular group who vastly had different wishes for the practices of gifted education; the remaining group that represented 36% of the population had preferences which fell along the continuum of possibilities (Cross, 2011). The above data evidently show that those people who supported gifted education widely vary in their preferences. Thus a variable societal perceptions and expectations are found in different socio-cultural settings, and in some cases, it is in stark contrast to other, which create obstacles to understanding and uniformly defining gifted education on a global scale. For example, in the context of Japan, before year 2005, there was no formal education system for their gifted students. The characteristics of gifted education in Japan are domain-specific, and the emphasis is given only on 'science & technology' and 'research & development'

rather than education. The general views of giftedness and gifted education among the Japanese are influenced by their historical and cultural contexts that surround this issue (Sumida, 2013). In another example, the dominant culture in the United States values discipline, order, and convergent thinking (Cross, 2013).

The values, beliefs and role of the teachers in education are critical factors in adopting a curriculum with a particular set of curriculum emphases, where values are embedded. Again, when the teachers strive to improve the learning outcomes for all students, then they are caught within a complex reality of facing the conflicting influences of educational policy, formal school rhetoric and their own personal beliefs, which are further influenced by the egalitarian principles, misconceptions and misunderstandings (Galitis, 2008) and, all such influences being aggravated are detrimental to the development of gifted education. Unfortunately, this is the current situation in many countries across the globe including Australia.

Summary

Societal values, beliefs, expectations, societal misconceptions and misunderstandings greatly influence the development of gifted education. The issues around social difference, social equality and social justice require more emphasis to improve gifted education. More research are required to address all societal issues pertinent to gifted education. Equal opportunity in education requires an assurance that all students regardless of their identity and their level of ability will be facilitated to develop the full potential of each individual. All children have a right to develop maximally and, this should not be confused with the right to an equal development. Equity should demand the attainment of an individual excellence (Gross, 1999), and excellence should be within the context of equity (Sapon-Shevin, 2000).

Conclusion

Both gifted and general students encounter cultural problems in their daily lives. These cultural issues inevitably create obstacles to both teaching and for students' learning of science in an appropriate manner. In order to develop an effective and sensitive teaching instruction for the gifted students it requires an in-depth understanding of the process of students' cultural border crossings that take place from one domain to another (i.e., family, peers and school) within the larger socioeconomic community they live in. In this article, the cultural aspects related to gifted education are emphasized with a particular focus on the specific 'science' domain of giftedness. The author proposed an outline of future research direction in gifted education that researchers may consider to address the pertinent 'cultural-clashes' and 'cross-cultural border crossing' issues.

The article discussed socio-economic and political influences affecting gifted education, and explained the widespread disparity being observed between advantaged and disadvantaged 'talented and gifted' students that create obstacles to gaining the benefits of gifted education. The issues of social difference, social equality and social justice require more emphasis on the improvement of gifted education. These issues should be regularly reviewed to ensure quality and equality

of outcomes and, for continuous improvements. Both government and schools can play a vital role to improve social awareness, proper understanding and the social acceptance of giftedness; and can help eradicate any negative social perceptions of egalitarianism, societal misconceptions and misunderstandings.

It is expected that teachers, educators, scholars, researchers, curriculum developers, schools, and community at large will be benefited from the information presented in this article that may contribute to the improvement of a well-developed gifted education policy and curriculum, and it may ensure a socially-just and uniform education for all our students, including the gifted.

The author of this article acknowledges the limitation that the gender issue in gifted education which will have a profound impact on the advancement of gifted education was not addressed. The discussion on this topic was out of scope. However, the gender related issues in gifted education can be addressed through the suggested outline of future research direction in gifted education provided in this article.

Future Implications

Over the past 2-3 decades research in gifted education has been considerably expanded showing credible success in many areas of giftedness. As a result, the importance of gifted education is now increasingly acknowledged. Educators are now familiar with principles and practices of gifted education, and a substantial international research are pushing the boundary for more improvements in curriculum and teaching practices. Current pedagogical and curriculum practices encompassing gifted education require improvements to adequately fulfil the specific needs of the gifted students. The social constructivist approach that can provide an inspiration to deliver an appropriate education for the gifted students has been adopted in many countries including Australia. Currently gifted education is included in many countries as a course unit in postgraduate education courses, Australia, for example. Despite the fact of the significant advancements in gifted education and practices, it is still difficult to appropriately define the giftedness. The clear definition of giftedness which has a broader acceptance and consensus can be helpful in defining and achieving a unified, uniform and socially-just 'gifted education' policy framework that can be acceptable on a global scale. Thus it stresses on the compelling reason to find out a solid definition of giftedness that will have a wider acceptance from educators, scholars and researchers.

Future gifted education research require to put more emphasis and focus on the understanding of socio-economic, socio-cultural and political influences affecting the development of gifted education and gifted practices. Government should provide more resources to regional areas in coordination with the education ministerial committee that is suggested in this article. Gifted education needs a clear, unified and uniform policy framework with a widespread acceptance on a global scale. Future research should also focus to find out more viable options that can improve gifted education program and practices while helping the gifted students to maintain their proper socialization with mainstream students.

The suggested outline of future research direction in gifted education presented in this article can be applied to any specific domain of giftedness as it is not limited

to only 'science'. Future researchers may find this research outline is interesting and significant. The articulation of an appropriate model for the gifted students is expected from future research that can be widely accepted and validated. The rigorous model developed from future research in gifted education can help the teachers to adapt their proper gifted teaching styles and pedagogies. Teachers can be benefited as they can develop their own repertoire of cross-cultural teaching strategies for both general and gifted students. The future developed model can also be helpful as it can be probed into further research to ascertain the impediment factors for cognitive, affective and social developments of the gifted students using longitudinal qualitative and quantitative studies.

Finally, although this article attempted to delineate the socio-economic, cultural and political issues that significantly influence on the future improvement of gifted education and gifted practices, however it is also crucial that a culture is needed to be developed and fostered within the society that can accept the giftedness and value the gifted students. Hence it is important that future researchers, gifted education community, schools and government will work together to accomplish this goal.

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