A review of gifted and talented in tertiary education

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Abstract

The limited literature on the gifted and talented in tertiary education reveals the importance of investigating relevant issues and directions, given that this human resource should be nurtured for both individual and national development. This review investigates issues relating to definitions, methodologies, and theoretical interpretations, highlighting issues that needed to be resolved and considering future research directions. The changing nature of the definition of gifted and talented over time and the limited involvement of adults in tertiary education in such definitions are highlighted, and it is noted that a uniform definition may not be the most useful option. Whereas comparative studies have been prevalent in the literature, it is argued that there is a need for construct validity regarding gifted and talented in tertiary education, and for methodologies that investigate the contextual nature of giftedness and talent. It is noted that theories have evolved to explain the various definitional boundaries set for giftedness and talent over the years. This study encourages interdisciplinary approaches which have been used to explain giftedness and talent contextually. Researchers should embrace the changing nature of research into giftedness and talent.

Keywords: adult, gifted, talent, tertiary education

A REVIEW OF GIFTED AND TALENTED IN TERTIARY EDUCATION: ISSUES AND DIRECTIONS

1. OVERVIEW

There has been much investigation of gifted and talented children, but study of the gifted and talented in tertiary education remains a less charted territory (Commonwealth of Australia, 2001; Rinn & Plucker, 2004). Tertiary education is characterized by students who are in early adulthood in undergraduate education and students who are adults of various ages in postgraduate education. The limited literature that discusses gifted and talented adults has often left the interpretation of "adult" to the reader. The Concise Oxford English Dictionary (2004, p. 18) offers two definitions, a social definition: "a person who is fully grown and developed", and a legal definition: "a person who has reached the age of majority".

Investigation of gifted and talented adults in tertiary education becomes important with the shift in emphasis from teaching to learning in higher education sector, which has resulted in universities actively considering more efficient learning strategies for students (Broad, Matthews & McDonald, 2004). Universities are understood as a major institution of society within the forces of economic and social change, and they are the lead institutions available today to respond to such changes. Most countries have understood that their human capital is a primary national asset, providing comparative advantage in fostering economic growth and sustaining competitive advantage through the development of knowledge-based economies (Benjamin, 2003). University education has

become the gateway for employment and contribution to the productive growth of society. Thus identifying and fostering gifted and talented students becomes paramount to building a productive society.

This review builds on a previous literature search undertaken by Rinn and Plucker (2004) who took the perspective of gifted and talented tertiary students as honours students in the university. With their operational definition of gifted and talented students, they reviewed aspects investigated with gifted children – multipotentiality, personality characteristics, academic success at university, and selection of courses at university. This review, on the other hand, covers issues relating to definition, theoretical perspectives, and methodology in undertaking scientific investigation of giftedness and talent in tertiary education.

2. DEFINITIONS REVISTED

From the early part of twentieth century into the latter parts of that century, giftedness and talent was defined using intelligence testing. The concept of intelligence as the reference for giftedness and talent was introduced when Sir Francis Galton (1822-1912) conceptualized that psychological traits were based on physiological traits and that there must be a normal distribution of human intelligence. In 1905 Binet established the idea of comparing age norms to mental norms to introduce the intelligence quotient (IQ). However, during the twentieth century several definitions of intelligence were based on research evidence. These definitions were based on various aspects of intelligence known

as the g-factor, fluid and crystallized intelligence and the lumpers and splitters (Lee et al., 2008).

Reliance on intelligence to identify giftedness and talent took a back chair with the Javits Gifted and Talented Act of 1988 passed by the United States congress, which defined gifted and talented children as "children and youth who give evidence of high performance capability in areas such as intellectual, creative, artistic, or leadership capacity or in specific academic fields, and who require services or activities not ordinarily provided by the school in order to fully develop such capability". In 1991 this definition was revised to reflect the understanding that giftedness and talent occur in all groups across all cultures and are not necessarily seen in test scores (Piirto, 1999, p. 11).

In the literature, interest has been shown in underachieving gifted and talented individuals. The popular definition offered by Renzuli (1978), which emphasized achievement (based on above average ability, task commitment and creativity) has been criticized for excluding the underachieving gifted and talented. Tannenbaum (1983, p. 86) and Gagne (1985, 1995) subsequently proposed definitions that emphasized the capacity of the individual to perform, allowing inclusion of the underachieving gifted and talented. Gagne also differentiated between the "gifted" as those having the potential and the "talented" as those who are achieving at a level significantly beyond what might be expected at their age.

Some notable features have emerged in defining giftedness and talent. First, previous definitions of giftedness and talent have been revised through evidence-based research. Empirical evidence has broadened the definition from a previously narrow psychometric measurement of IQ. Neurological factors (Alexander, O'Boyle & Benbow, 1996; Lee et al., 2008), mentorship (Kaupmann, Harrel, Milam, Woolverton & Miller, 1986), childhood personality traits, parental education, early home environment, intellectual skills, and personal adjustment have found to be determinants in the achievement of giftedness (Tomlinson-Keasey & Little, 1990), although some have adopted narrow definitions for operational purposes (Rinn & Plucker, 2004).

Second, concerns for the equitable treatment of social groups have also led to more inclusive definitions of giftedness and talent. Supporting differentiated education for gifted and talented students, the U.S. Department of Education has urged greater efforts towards identifying gifted and talented students from minority groups (Schwartz, 1994). Campbell et al. (2007) found that the majority of gifted and talent secondary school students were skewed towards high levels of cultural and economic capital, although the model of education in the U.K. seeks to recognized gifted and talent regardless of cultural and economic background.

Third, the domain of giftedness and talent has been broadened to acknowledge subject-specific performance and determinants other than intelligence (Dudeney, 2005; Heinze, 2005; Rinard, 2004). Although contextual factors have been acknowledged in contemporary definitions of giftedness and talent, these definitions have failed to

recognize several other factors that may influence identification and development of the gifted and talented. Broader perspectives such as national political and economic factors can influence both conceptualizing and operationalizing definitions of giftedness and talent. For instance, political ideologies can translate into policies and acts of parliament/congress which can shape these definitions. Some countries (such as Australia and the U.S.) have defined giftedness and talent and have passed legislation to foster such primary and secondary students, but have ignored tertiary students (Commonwealth of Australia, 2001). Economic factors and funding commitments of governments can also influence redefining giftedness and talent to be consistent with the political aspirations of governments.

In a recent media publication in Australia, the federal government stated that future extra funding to universities would be linked to a certain proportion of students satisfactorily completing the graduate skills test which indicates how well students can function in the workplace. This suggested move was adopted by the Australian government based on the concerns expressed by employers that graduates were “not ready” for work (Maiden 2004). A government discussion paper linked a learning and teaching performance fund to the distribution of $54 million from 2006 to improve teaching and learning at universities (Duckett, 2004).

Although a uniform definition of giftedness and talent would be a preferred option for inter-country comparisons, such a definition may defeat the development of the gifted and talented from a contextual perspective. In addition to varying political and economic

factors affecting tertiary education, resources available to tertiary education and societal culture can be important variables that influence an appropriate country-specific definition of giftedness and talent.

3. METHODOLOGICAL ISSUES

Most researchers investigating issues of giftedness and talent have resorted to single methodologies to obtain their results. Statistical comparison of samples using t-tests (Alexander et al., 1996; Macy, 1996), analysis of variance (Lee et al., 2008), and analysis of covariance (Kesner, 2005) are common among studies that have compared attributes between gifted and non-gifted populations.

Macy (1996) found statistically significant differences (at the level of .01) between gifted and non-gifted people in several cognitive and creative characteristics. These included memory, thinking, problem-solving skills, and delayed closure. Macy also noted statistically significant motivational characteristics: focus, intensiveness, persistence, intolerance of stupidity, a high level of need for success, high expectations, perfectionism, and leadership ability. There were no gender differences. Such findings could be advanced by identifying the level of determinacy of each attribute towards giftedness and talent development of adults, using path and regression analyses.

On the one hand limited research has identified characteristics that distinguish gifted from non-gifted adults (Macy, 1996). On the other hand, old and narrow constructs such as IQ have been found to have a low level of validity to predict giftedness and talent

(Piirto, 1999, p. 11). Therefore, research is needed to build a construct with a high level of validity which includes contextual factors. Principal component analysis and factor analysis in future studies can contribute to building constructs with high predictive validity.

In general, research is needed to investigate issues relating to gifted and talented adults. Various methodologies can contribute at this initial stage of establishing research-based evidence. Quantitative research methodologies are helpful in establishing the reliability of results, whereas qualitative methodologies are helpful in establishing the validity of results. If it is acknowledged that giftedness and talent are contextual in nature, it is likely that research studies using quantitative methodologies cannot include all relevant variables. Evidence relating to why and how gifted adults perform better or under-perform can be gathered more comprehensively using qualitative analysis to increase the validity of findings.

Phenomenology and phenomenography are two useful research methodologies that can be employed increase the validity of studies relating to gifted and talented adults. These research methodologies can be useful to investigate particular phenomena to fill an existing vacuum in the literature. Phenomenology allows researchers to reduce the perceptions and reflections of participants to invariant meanings and finally to essences of meaning (Merriam, 1984). Phenomenology and phenomenography differ in three aspects. First, phenomenology is an alternative to empirical research, in that the focus of researchers is to depict their immediate experience of the phenomenon understood

reflectively. Second, phenomenology focuses on the essence of experience that is common to different forms of experience, whereas phenomenography characterizes the variations of experience. Third, phenomenology focuses on immediate experience whereas phenomenography describes the relation between people's thoughts and perceptions and the world around them, regardless of whether it is immediate experience (Akerlind & Kayrooz, 2003).

As a research methodology, phenomenography can be useful to answer certain questions about the thinking and learning of gifted and talented adults (Marton, 1981). Applied to educational research, it is based on the premise that improving educational outcomes requires an understanding of the learner (West, 2003). When the questions addressed are related to gifted and talented adults, and to investigating their understandings about phenomena, concepts and principles, each phenomenon, concept or principle can be understood in a limited number of qualitatively different ways. Another description of phenomenography is that it is a branch of ethnography which attempts to uncover and describe how people define an event, such as learning, through their actions, perceptions, interpretations, and beliefs (Burns, 2000). Phenomenography and phenomenology fall within the broader paradigm of qualitative research, in which it is not verification of a pre-deterministed idea but discovery that leads to new insights, and hence the focus of research is on natural settings (Sherman & Webb, 1988). It is a research method for mapping qualitatively different ways in which people experience, conceptualize, perceive, and understand various aspects of the world around them and phenomena within it (Marton, 1988).

Case study interviews have been employed in studying gifted and talented persons (Gallart, 2004; Jewell, 2005). However, such studies have often not taken sufficient precautionary measures to maximize the validity of results. These deficiencies relate to interviewer bias effects and to acknowledging the complexities of the human minds of interviewer and respondents. According to McKinnon (1988), the validity and reliability of case study interviews can be threatened by five factors. They are observer-caused effects, interviewer bias effects, data access limitations, the complexities and limitations of the human mind, and low objectivity. These five factors are now examined in more detail.

Observer-caused effects can cause respondents to change their behaviour in interviews. Respondents may also have "hidden agendas" in answering interview questions (Goddard & Powell 1994). *Interviewer bias effects* can affect the registering, interpreting and coding of interview events. *Data access limitations* can occur since data gathering through the interview method is restricted to the period of the interview. The time constraint on interviews can limit the quality and quantity of the data received. Given the *complexities and limitations of the human mind*, it cannot be assumed that statements made by respondents can be taken at their face value. Respondents can consciously seek to mislead or deceive the researcher, and even if they are honest and accurate, their statements can be still be affected by natural human tendencies and weaknesses. Finally, *low objectivity* is a feature in the interview method. It relies heavily on the integrity and

intellectual honesty of the researcher, because the experience cannot be replicated due to the very nature of the method.

4. THEORETICAL PESPECTIVES

Theoretical research frameworks used over the years have reflected the changing definitions of giftedness and talent. Developmental theories of intelligence were based on the premises that intelligence is the determinant of giftedness and talent of an individual, and intelligence influences the cognition, affect and environment of the individual (Piaget, 1960). Developmental theories were followed by cognitive theories of intelligence, where the definition of giftedness and talent was widened to explain them as phenomena of intelligent thinking taking place in the human mind. Cognitive theories of intelligence included expertise theory (Corner & Hagman, 1987) and multiple intelligence theory (Gardner, 1991). These were followed by psychological theories of giftedness, in which emotional development is considered influential in developing giftedness and talent. Psychological theories of giftedness include overexcitability theory (Piechowski, 1979), Renzuli theory (Renzuli & Reis, 1989), and Tennenbaum's theory (1983).

Comprehensive theories were the next to appear, acknowledging a multitude of factors as responsible for nurturing gifted and talent. Feldhusen (1986, pp. 112-127) developed the TIDE model, arguing that talents are genetically induced and that factors such as motivation, style, and ability are environmentally induced. The model introduced four domains of talent: academic/intellectual, artistic, vocational/technical, and

interpersonal/social. Gagne's (1990, pp. 65-81) model of giftedness and talent was another comprehensive theory. Gagne (1996) considered that the realization of the aptitude of the gifted is dependant on environmental, interpersonal, and motivational catalysts. All people may achieve competence in a domain but talent is evidenced by exemplary performance in a field. Piirto (1999) depicted a pyramid of talent development, arguing that five factors are responsible for the development of giftedness: genetic, emotional, and cognitive factors, talent, and environment (Piirto, 1999). Although the comprehensive theories directed attention towards the contextual nature of giftedness and talent development, context has not been the dominant factor, as brought out in more recent definitions of giftedness.

The contingency view has been established in management and business to explain changing phenomena due to contextual factors, but has had limited application in education. It has been used to interpret strategies adopted by firms to respond to changing levels of uncertainty due to environmental demands. The level of uncertainty increases due to contextual factors (Sanchez, 1997).

In applying the arguments of contingency theorists to fostering the gifted and talented in higher education, strategies are needed to meet contextual factors which are specific to the individual. Thus it is argued that the performance of gifted or talented adults in higher education is related to congruence among four factors: the individual (entailing neurological, physiological, cognitive and affective characteristics), his/her environment

(such as university, peer group), strategy for development (such as learning format, curriculum), and structure (such as resources).

5. CONCLUSIONS

There has been considerable research into giftedness and talent among children and adolescents, but little systematic or scientific attention has been paid to the development of gifted and talented adults. This matter is relevant, because a country's development depends in part on how well its human resource is developed and utilised for the production of goods and services. Research has demonstrated that giftedness and talent can be fostered. Neglect of the capacity to make outstanding contributions can lead to underachievement and lack of recognition of the potential of gifted and talented individuals.

Neglect of the capacity of gifted and talented adults can arise due to ignorance about identifying them, which in turn can be attributed to the limited availability of research evidence. At most, at this stage of knowledge, those willing to assist gifted and talented adults in higher education can only assume that the salient characteristics and contextual factors are the same for both gifted and talented children and adults. However, limited research involving gifted and talented adults has demonstrated that the characteristics and contextual factors which foster such adults are not same as for children.

The research methodologies used so far have been restricted to studying single or a few factors. Previous researchers have often ignored the role played by contextual factors. A

combination of methodologies is needed, addressing the weaknesses relating to validity and/or reliability issues of single methodologies, to improve the quality of findings.

There is a need for new theories to be employed in interpreting the phenomena of gifted and talented adults in tertiary education, and for the predictive power of such theories to be tested. It is necessary to acknowledge the argument that not only characteristics within the individual but also contextual factors have an influence in developing gifted and talented adults.

Theoretical interpretations and methodological approaches are affected by definitions which determine which adults are considered to gifted or talented. As the definitions of giftedness and talent are subject to change from time to time, because of the contextual nature of these constructs, so should the nature and direction of research. As Sternberg and Davidson (1986, p. 3) stated, “Giftedness is something we invent, not something we discover: It is what one society or another wants it to be, and hence its conceptualisation can change over time and place”.

There are many questions unanswered relating to gifted and talented in tertiary education. Some students achieve academic excellence in some courses but achieve average or dismal performance in other courses in the same curriculum (e.g. accounting). Some academically gifted and talented students in secondary education do not excel in tertiary education. The extent that incentives and rewards may impact academically gifted and talented students achieving academic excellence in tertiary education has not been

investigated. The extent that incentives and rewards may impact students gifted and talented but not academically in tertiary education is yet to be investigated. There is a need to identify the level of acceptance among the political, social, and academic community in teaching gifted and talented students in separate classrooms and providing them with accelerated and advanced courses. The strategies relating to uncovering talented students in the under-achieving bottom 20% students in tertiary education and transforming them into gifted students is yet to be addressed.

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