

From Mental Retardation to Intellectual Disability: A Proposed Educological Framework for Teaching Students with Intellectual Disabilities in Singapore

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ABSTRACT

This paper begins with the operating definition of “mental retardation” (MR) – now known as “intellectual disability” (ID) – and goes on to delve into the historical development of the term, especially the passing of Rosa’s Law (Public Law PL111-256) that has become one big milestone in the field of intellectual disabilities in the American history of special/inclusive education. The authors also discussed about the assumptions underlying the current definition of ID, including the prevalence of ID, its classification and diagnosis, in Singapore. In addition, there is a brief coverage on educology, i.e., wealth of knowledge about education and its process, with the main focus on teaching and learning (T&L) processes for students with ID before the authors went on to introduce the three main educological frameworks of intervention for students with ID involving the T&L processes: the therapist/teacher-centered, the client/learner-centered, and a mix or integration between the first and second educological frameworks of T&L processes. Finally, in their concluding remark, the authors suggested the need for more educological research to be done on T&L processes in order to design better intervention programs for students with ID and recommended heilpedagogy, which means “learning by assisted teaching”, as the appropriate approach.

Keywords: Educology, intellectual disability, mental retardation, teaching and learning

INTRODUCTION

Mental retardation (now re-termed as *intellectual disability*) is more than a disorder. It is a complex phenomenon that changes over time and to define the term “has always been a contentious process” (Wehmeyer, 2003, p.271). According to the 10th edition of the American Association on Mental Retardation (AAMR; now known as the American Association on Intellectual and Developmental Disabilities) reference manual (Luckasson et al., 2002), mental retardation, which the intellectual disability was then known as, has been defined as “a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills. This disability originates before age 18” (p.1). Hence, it is best understood in terms of an individual’s present level of functioning in two primary areas of concern, i.e., limitations in intelligence and adaptive behavior (Hourcade, 2002), and its occurrence in the developmental period (Wehmeyer, 2002).

The limitation in intelligence remains somewhat arbitrary. Prior to 1973, an IQ of 85 was recommended as the cut-off score for mental retardation. However, in 1973, the IQ cut-off score was revised downwards to 70, where it remains today, and this is an estimated lowest scoring two per cent of the population (Hourcade, 2002). However, low IQ score is not sufficient for a complete diagnosis of mental retardation. It has to co-exist with limitations in

adaptive behavior, which refers to social skills (e.g., communication and social interactions) and practical skills (e.g., dressing, managing money and taking public transport) that a normal individual can use effectively to function in the daily living. Any impairment to an individual's intelligence and adaptive behavior must happen before the age of 18 in order to be diagnosed for mental retardation.

In addition, there are five assumptions that are essential to the application of the definition (Luckasson et al., 2002, p.1) and they are as follows:

1. The need to consider the limitations in present functioning within the context of a community environment typical of an individual's age peers and culture.
2. A valid assessment should consider the individual's cultural and linguistic diversity as well as differences in communication, sensory, motor, and behavioral factors.
3. Within the individual, limitations often co-exist with strengths and these must not be ignored.
4. The main reason for describing limitations is to develop a profile of needed supports for the individual.
5. With appropriate personalized supports over a sustained period, the life functioning of the individual with mental retardation (or intellectual disability as it is known now) generally will improve.

According to Wehmeyer (2003), the AAMR definition focuses on mental retardation as a function of the relationship among three factors, i.e., individual functioning, supports and contexts. The first factor, *individual functioning*, concerns intellectual abilities, adaptive behavioral skills, and social roles that involve participation and interactions. The next factor, *supports for individuals with mental retardation*, is best understood in terms of (1) support needs in areas such as human development, teaching and education, home and community living, protection and advocacy, training and employment, and health and safety; and (2) sources of support in terms of, for example, befriending, financial planning, health assistance, community access, and employment assistance. Finally, the third factor, *context*, represents an eco-systemic perspective that involves three levels, beginning with the immediate social setting, then the neighborhood, community or organization that provides education or habilitation services, and lastly, the overarching socio-cultural patterns and socio-political influences involving larger populations. In other words, context is operationalized as the "interrelated conditions within which people live their everyday lives" (Luckasson et al., 2002, p.15).

From Mental Retardation to Intellectual Disability

For many decades, *mental retardation* was the term of choice to describe an individual with significant limitations in intellectual functioning and adaptive behavior before it lost much professional acceptance. In fact, long before the use of mental retardation, terminology such as idiot, imbecile and moron were used frequently.

In 2002, the Division on Mental Retardation and Developmental Disabilities of the Council for Exceptional Children felt that the term *mental retardation* was rather offensive and had excluded many individuals with cognitive and intellectual disabilities (including those with autism spectrum disorders), and voted unanimously to change its name to the Division on Developmental Disabilities (Stodden, 2002).

Similarly, in June 2006, members of the American Association on Mental Retardation, which was founded in 1876 as the Association of Medical Officers of American Institutions for

Idiotic and Feeble-minded Persons (later changed its name to American Association on Mental Deficiency and then to the American Association on Mental Retardation) and arguably, the oldest and largest interdisciplinary professional organization in the specialized field of mental retardation, voted to drop the term mental retardation and change its name to the American Association on Intellectual and Developmental Disabilities.

There were also many other disability advocate groups including the National Association for Parents with Children in Special Education, National Association of Special Education Teachers, National Dissemination Center for Children with Disabilities, and Special Olympics International, that had, in the past decades, strongly criticized the term *mental retardation* as hurtful, demeaning and derogatory, carrying with it a great deal of negative stigma.

On January 5, 2010, during the 111th Congress of the United States of America at the second session, the proposal to substitute *mental retardation* with *intellectual disability* was raised by the Senate and House of Representatives. The Act, cited as Rosa's Law (Public Law PL111-256) – named after a 9-year-old girl, Rosa Marcellino, with Down syndrome, who was taunted frequently and pejoratively called “retarded” in a demeaning manner in her school (Harris, 2013) – aimed to find a suitable and more dignified term to replace *mental retardation*. During the debate in the 111th Congress, the advocates settled for a politically correct term *cognitive disabilities* to replace *mental retardation*. However, the term *intellectual disability* soon caught up with the majority as it had a wider acceptance. In August 2010, the Senate passed the Rosa's Law. On September 22, 2010, the House of Representatives passed the law. Finally, on October 5, 2010, President Barack Obama signed legislation (Public Law PL111-256) with the approval of the Congress for changes in terminology dealing with *mental retardation* to be substituted with *intellectual disability* and that person first language be used when referring to such individuals in all federal laws, i.e., the Higher Education Act of 1965, the Individuals with Disabilities Education Act (IDEA), the Elementary and Secondary Education Act of 1965, the Rehabilitation Act of 1973, the Health Research and Health Services Amendments of 1976, and the Public Health Service Act.

According to the National Dissemination Center for Children with Disabilities (NICHCY, 2011) the IDEA has defined *intellectual disability* as “significantly sub-average general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period that adversely affects a child's educational performance” (p.1). The two essential areas of weaknesses must be present in order for an individual to be identified as having an intellectual disability: (1) impairment in intellectual functioning, which is determined by an IQ assessment where an IQ score of 70-75 is indicative of intellectual impairment, and (2) deficits in adaptive skills which are necessary for daily life such as communication, self-care skills, and social skills. They are the same primary features of limitations stated the definition of mental retardation in the tenth edition of the Mental Retardation reference manual (Luckasson et al., 2002).

In the fifth edition of the Diagnostic and Statistical Manual of Mental Disorder (DSM-V; American Psychiatric Association, 2013), intellectual disability (or intellectual developmental disorder) is revised from the DSM-IV-TR (American Psychiatric Association, 2000) diagnosis of mental retardation. Moreover, the revised diagnosis of the disorder has moved away from its previous multi-axial approach to evaluating conditions. With DSM-V, all mental disorders are considered on a single axis and given equal weight.

In identifying an individual with intellectual disability, DSM-V looks at how the impairments of general mental ability impact adaptive functioning in three domains that determine how well an individual is coping with daily tasks (American Psychiatric Association, 2013, p.1):

- I. Conceptual domain: skills in language, reading, writing, math, reasoning, knowledge, and memory;
- II. Social domain: empathy, social judgment, interpersonal communication skills, befriending and similar capacities; and
- III. Practical domain: self-management skills, e.g., personal care, job responsibilities, money management, recreation, and organizing school and work tasks.

Moreover, intellectual disability is considered to be about two standard deviations or more below the general population or an IQ of around 70 or below.

Traditionally, based on IQ scores, there are four levels of severity (see Table 1):

Table 1. Levels and Types of Intellectual Disability

<i>IQ Scores</i>	<i>Level of Severity</i>	<i>Type of Severity</i>
50/55-70	1	Mild Intellectual Disability
35/40-50/55	2	Moderate Intellectual Disability
20/25-35/40	3	Severe Intellectual Disability
Below 20/25	4	Profound Intellectual Disability

Although intellectual disability does not have a specific age onset, it must occur during the developmental period. Its diagnosis is based on the degree of severity in adaptive functioning impairments. Being chronic in nature, intellectual disability can co-morbid with other conditions such as autism spectrum disorders and attention deficit-hyperactivity disorder.

According to DSM-V, the parenthetical name “(intellectual developmental disorder)” is added alongside the term *intellectual disability* in the text to reflect deficits in cognitive capacity beginning in the developmental period. The revision to the term *mental retardation* – now *intellectual disability* – brings the term into alignment with terminology used by the World Health Organization’s 11th edition of the International Classification of Diseases (ICD-11), which will be out in print in 2015 (World Health Organization, 2013).

INTELLECTUAL DISABILITIES IN SINGAPORE

Unlike the West, there is scarcity of literature on intellectual disability across Asia including Singapore. According to Jeevanandam (2009), the prevalence of intellectual disability across Asia appears to be consistent with western estimates at 0.06-1.3 percent, with the exception being China at 6.68 percent. Unfortunately, in Singapore, the exact prevalence of intellectual disability is unknown due to a lack of official information on the socio-demographic and clinical profiles of individuals with intellectual disability. However, estimates from other Asian countries suggest a prevalence of less than 1.3% (Jeevanandam, 2009; Wee et al., 2013). Such information is most helpful to educational, health and workplace employment services to meet the needs of these individuals and their caregivers.

According to Yeo (n.d.), the total prevalence of intellectual disability in Singapore is about 27 per 1000 and the prevalence of moderate and severe intellectually disabled is 3.7 per 1000.

Intellectual disability (also referred to as intellectual delay and mental handicap and the terms are used interchangeably) refers to two important factors (Yeo, n.d.): First, a significant sub-average intellectual functioning with an IQ of approximately 70 or below. Second, a concurrent impairment in adaptive functioning in at least two of the following areas: communication, self-care, home living, interpersonal skills, use of community resources, self-direction, functional academic skills, work leisure, health and safety.

Classification and Diagnosis of Intellectual Disability in Singapore

In Singapore, intellectual disability has been classified according to the following four levels of intellectual impairments (Yeo, n.d.):

Mild Intellectual Disability (IQ 50-70)

This group accounts for 80 per cent of the intellectually disabled in Singapore. Most of them with more or less normal language and social skills have unremarkable physical appearance. They can lead an independent life but need assistance under stress. These individuals with mild intellectual disability often come from lower social class, poverty, poor housing and an unstable family environment.

Moderate Intellectual Disability (IQ 35-49)

Approximately 12 per cent of the intellectually disabled population falls under this group. Most of them can speak normally or at least learn to communicate and perform simple routine tasks. According to SG Enable (2013) – a one-stop agency for people with all kinds of disabilities – this group of people constitutes a good source of workforce that prospective employers can tap on. “Sheltered workshops can provide vocational training to them to improve their opportunities for future employment” (SG Enable, 2013, para.1). For example, basic job skills (e.g., packaging and assembly through sub-contract work) are taught to them so that they can earn an allowance. In addition, they can gain an invaluable experience working under a real client organization. Thus, it improves their prospects for open employment later on. However, many are quickly dismissed from their jobs as they are unable to cope, fail to stay long in their jobs due to stress or poor attitude.

Severe Intellectual Disability (IQ 20-34)

About 7 per cent of the intellectually disabled population comes under this group. Only with supervision are they able to take care of themselves. Many of them work and continue to work in sheltered workshops as it is harder for them to find jobs in the open competitive market.

Profound Intellectual Disability (IQ 20 and Below)

Less than 1 per cent falls into this group. They require close supervision and, often, need institutional care. Many of them stay either with their families or in gazette homes for the disabled (e.g., the Red Cross Home for the Disabled and Singapore Cheshire Home).

In Singapore, most parents whose children have been diagnosed with moderate to profound intellectual disabilities often feel very distressed. During very stressful circumstances, these parents would go through a cycle of grieving period: denial, guilt feeling, shame and rejection, anger, and eventually may come to rational acceptance of the child with intellectual disability. There are those who have been found to suffer from what is known as caregiver stress syndrome and, as a result, many of them have to undergo counseling to cope with their struggle to accept the child and also learn how to take care of him or her (Chia, 2013). “Parents, themselves, need help and support as they take the onerous life-long task of looking after a *child with intellectual disability*” (Yeo, n.d., p.8; words in italics are amended by the

authors to replace the original phrase *mentally handicapped child*). One VWO in Singapore that provides a comprehensive support system for caregivers is the Asian Women's Welfare Association (AWWA) Center for Caregivers that provides caregiver-focused programs offering respite and psycho-social education and support such as its SMILES (Students Meet for Interaction, Learning and Enrichment Services) program (Oei, 2013).

Soon, after getting over the initial grieving period, these parents begin to seek professional advice and assistance to decide the course of action to be taken in terms of early intervention to meet the child's learning and behavioral needs. They have to work with the medical, social welfare and educational authorities on the proper placement for their children. Children with mild or borderline intellectual disabilities can still function normally in a mainstream school with additional help provided by the school counselors and allied educators for learning and behavior supports (AEDLBS). However, for the majority of those with moderate to profound intellectual disabilities, special schools provide a better option for them so that these children can develop their potentials according to their respective paces. In most instances, majority of the parents still prefer to put their children with intellectual disabilities in mainstream schools and they have the final say. According to Chia (2010), in mainstream schools, both school counselors and allied educators for learning and behavior supports have to work collaboratively with teachers as well as parents, advising them to lower their expectations of such children and yet encouraging these children to develop as many skills as possible. Moreover, parents have to be constantly reminded by the counselors or allied educators not to become overprotective of their children and "inadvertently denying them the opportunities to gain greater social functioning" (Yeo, n.d., p.8).

Education for Children with Intellectual Disabilities in Singapore

Services for the intellectually disabled are largely supported by voluntary welfare organizations (VWOs) that also run their own special schools. For instance, the Movement for the Intellectually Disabled of Singapore is the largest VWO in Singapore catering to the needs of individuals with moderate to profound intellectual disabilities in Singapore. It provides specialized services catering to the varying needs of intellectual disabled in a wide range of settings (e.g., early intervention centers, special schools, sheltered workshops and residential homes). Because these intellectually disabled with a wide range of different ages have significant differences in clinical and socio-demographic profiles, their needs are best met in different settings. However, as already mentioned earlier, there is currently a lack of such local data in the literature. Apart from a 2009 review (see Jeevanandam, 2009, for detail) presenting limited data that showed a relatively high prevalence of mental health issues and physical health problems, such as obesity (42.1%), high blood pressure (24.2%), and high blood cholesterol (16%), amongst older individuals with intellectual disabilities in Asia, information on medical issues amongst older individuals with intellectual disabilities in Singapore is also sparse. Research on people with intellectual disabilities here is obviously very lacking indeed.

Besides the special schools, mainstream schools in Singapore are also responsible for academic learning of students with mild intellectual disabilities. However, from the time when Singapore became an independent state in 1965 to the first decade of the new millennium, parents of children with intellectual disabilities often expressed their frustration and concern that too few opportunities to academic learning were open to their children during their formal schooling years in contrast to their peers without disabilities. This issue of concern was not peculiar only to Singapore but has also been reported in the west (Berninger et al., 1998; Erickson et al., 1994). The differences between students with intellectual disabilities and their peers without disabilities could be observed both in their academic

performance quality, e.g., in written expression, reading comprehension and story problem solving in mathematics, and their knowledge of various academic subjects such as science, history, geography and literature. In special school, these students with intellectual disabilities are primarily learning daily living, social, and prevocational skills (Dever, 1990). However, in mainstream schools, the focus is on teaching them basic literacy and numeracy skills by the specially trained AEDLBS.

Educology of Teaching and Learning (T&L) Processes

Education concerns both teaching and learning (T&L) processes. The former process is delivered by teachers while the latter process is acquired by learners. A more accurate term to describe this wealth of knowledge about the educational process, which consists of warranted assertions, valid explanatory theories and sound justificatory arguments, is *educology* – most probably, first used by Harding (1951, 1956, 1964, 1965) in his seminal work on educational process and the knowledge about it. Instead of using the term *educology*, Chia (2011) has chosen to use the term *T&L process* in his writing to avoid too many technical terms or jargons. The T&L process is divided into four phases (see Figure 1) that develop and change over time as an individual grows and matures from birth to old age. This process should be seen “as a continuous development that grows and changes throughout an individual’s lifetime” (Chia, 2011, p.31) and this individual can be a teacher or learner.

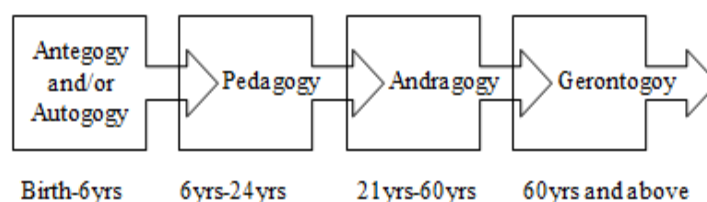


Figure 1. The Educological Process of Teaching and Learning (T&L) (Chia, 2011)

Briefly, *antegogy*, where the two Greek words *ante* means “before” and *gogy* means “to lead”, is coined by Chia (2011) and it was based on his observations of infants before formal learning begins to take the lead later on. According to Chia (2014) in his personal communication with Professor Milan Matijević of the University of Zagreb, Croatia, “[S]uch learning is more in response to the sensory stimuli in terms of hyper-responsivity or hypo-responsivity. Antegogy, as I see it, begins the moment a newborn is delivered to undergo the Apgar test (developed in 1952 by Dr Virginia Apgar) as a quick screening to assess the health of newborns immediately after birth” (Chia, 2014, February 12). It constitutes the first phase (between birth and six years of age) of the T&L process. Literally, it means “before leading” or before formal learning starts to occur (Chia, 2011). A lot of intuitive or spontaneous learning takes place during this phase and learning is described as “being caught”, i.e., *real* teaching has not begun yet. According to Santrock (1995), young children can learn very quickly and their brain functions like a sponge that absorbs a lot of water. Montessori (1967) called it “the absorbent mind”. These young children learn by playing both the learner’s and teacher’s roles, instinctively and experientially, unconsciously and automatically, through their daily contacts with their environment. This T&L phase is also termed as *autogogy* (self-learning), which literally means “to lead by self” (Chia, 2011). It intertwines closely with *antegogy*.

Formal learning takes over by the time the child goes to school at the age of six years old. This T&L second phase (6-18 or up to 24 years of age) involves pedagogy, where *peda* means “child”, and the term means “to lead the child”. It involves formal teaching beginning from primary school (normally in a classroom) to post-secondary and tertiary institutions (involving lectures and tutorial sessions).

Learning becomes more problem-centered than subject-centered during adolescence to adulthood period. The learner’s perspective also changes and matures from future application of knowledge to immediacy of application (Knowles, 1980). This third T&L phase involves *andragogy*, which literally means “to lead the adult”. It is also defined as “the art and science of helping adults learn” (McClusky et al., 2007, p.84).

Finally, learning becomes a reverse process for those learners aged 60 years old and beyond. This means that, for example, an older worker has a younger mentor to help him/her to integrate into the ever-changing workplace (Hong, 2008). “Moreover, learning beyond 60’s also includes recreational activities and voluntary work to makes lives of these senior learners meaningful and beneficial to the community as a whole” (Chia & Kee, 2013, p.417). According to Matijević (2014, February 13; in private communication with first co-author), Kujundžić (1992) used the term *gerontogogy* to describe this form of learning that deals with the optimization of education or self-education of elderly people. However, the term was first mentioned in the book *Andragogy* (see Andrilović et al., 1985).

Educological Intervention Frameworks for Students with Intellectual Disabilities

When we move into the field of special or inclusive education, there is scant research and publication on educological framework of T&L processes, especially how to plan and teach a proper lesson to students with intellectual disabilities.

Currently, in Singapore, there are three main educological intervention frameworks of T&L processes used by professionals (e.g., psychologists, occupational therapists, speech-language therapists and special education teachers) and allied professionals (e.g., counselors, youth workers and allied educators providing learning and behavior support) on working with students with special needs (including those with intellectual disabilities) in both special and mainstream schools: the therapist/teacher-directed educological framework; the client/learner-centered educological framework; and a mix or integration between the first and second educological frameworks. Under each of these three educological frameworks of T&L processes are several models with different emphases. Below are selected models to provide as examples for a brief discussion here.

The Therapist/Teacher-Directed Educological Framework

In the therapist/teacher-directed educological framework of T&L processes, Chia and Kee (2012) have presented the Triple-D model of T&L (see Figure 2) consisting of three main interacting components, i.e., diagnostics, dialogics and didactics, being briefly described below.

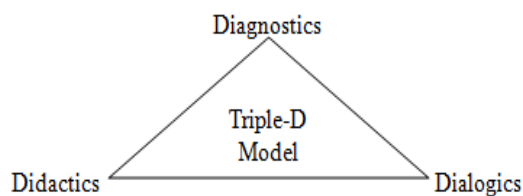


Figure 2. Triple-D model of T&L (Chia & Kee, 2012)

First, *diagnostics* involves “evidence-based psycho-educational testing, evaluation and profiling of a learner with intellectual disability” (Chia & Kee, 2013a, p.423). It aims to understand the individual better and “adopts a trans-disciplinary approach that requires a teacher to know and understand different levels and types of formal/informal testing in order to determine and profile students with intellectual disabilities that he/she is working or going to work with” (Chia & Kee, 2013a, p.423).

Next, according to Chia and Kee (2013a), *dialogics* is the process that concerns all involved parties to come to an agreement on the profile of a student with intellectual disability in terms of his/her strengths, needs as well as interests so that a more holistic approach can be taken to help him/her maximize his/her potential.

Lastly, *didactics* involves “the ability to teach, the people who have the ability to teach, the content taught, teaching aids, including methods and media, the school and the classroom where learning takes place, and learning as the main activity of pupils” (Gundem, 1998, p.19-24). It is also defined as “a teacher’s reflection of practice that concerns how he/she can realize his/her educational objective” (Chia & Kee, 2013a, p.423).

Under this Triple-D framework of T&L are the educational therapy model and the Assessment-Planning-Implementation-Evaluation (APIE) model, to list just two of them here. Each of them will be briefly described below.

According to the Association of Educational Therapists (2013), the model of educational therapy consists of the following nine steps:

- I. Identification of current challenges;
- II. Synthesis of information collected from other professionals and parents as well as the client concerned;
- III. Formal and informal diagnostic assessment;
- IV. Interpretation of assessment results;
- V. Prioritization of primary and secondary issues of concern;
- VI. Collaborative consultation with other professionals and parents as well as the client;
- VII. Planning of intervention program;
- VIII. Implementation of the intervention program; and
- IX. Evaluation of the intervention program.

It is a specialist professional T&L model that involves two main specific treatment areas – academic aspects and social-emotional aspects of learning (see Association of Educational Therapists website at www.aetonline.org for more detail). This form of intervention is offered by only qualified and specially trained professionals, “who combine educational and therapeutic approaches for evaluation, remediation, case management, and communication/advocacy on behalf of children, adolescents and adults with learning disabilities or learning problems” (Association of Educational Therapists, 2013, para.1). Currently, the majority of educational therapists in Singapore are trained to work with students with dyslexia. Fewer than five are working with students with intellectual disabilities and they are either in private practice or working as part-time consultant therapists at the Children’s Medical Institute of the National University Hospital.

The other example is the APIE (Assessment-Planning-Intervention-Evaluation) model. It is a planning tool frequently applied within managerial settings. It is adapted from the nursing model used in health care services. APIE is widely used in the mainstream schools in Singapore by teachers, who have undergone a part-time Teaching Special Needs (TSN) program at the National Institute of Education to be equipped to work with students with special needs in an inclusive classroom setting. The APIE model (see Figure 3) presents a systematic way of “approaching intervention planning, implementation, and evaluation of programs for students with special needs” (Poon et al., 2008, p.1) and complements the ecological framework that the model is embedded within many environments (i.e., the classroom, the school, and the external environment) and affected by several factors (e.g., the teacher, the peers, physical setting and the curriculum and resources available) to provide a

means by which the needs of students with mild intellectual disabilities in mainstream school may be adequately understood, intervention programs tailored to meet their learning and behavioral needs, and the program systematically monitored (see Poon et al., 2008, for more detail). This model also requires teachers to put concerted effort into adapting and/or modifying the school curriculum so that it contains a scope and sequence of skills that are aimed at meeting the learning needs of students with mild intellectual disabilities. This model has been advocated by several leading researchers in the field of assessment of children (e.g., Bagnato & Neisworth, 1991; Bagnato et al., 1997) and early intervention (Bricker et al., 2002).

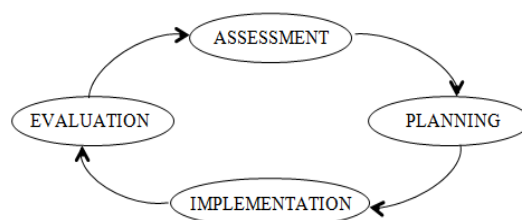


Figure 3. The APIE model

The Client/Learner-Centered Educological Framework

The client/learner-centred educological framework of T&L processes differs from the therapist/teacher-directed one in that its main focus is to meet the learning and behavioural needs of the client or learner by looking from the client’s or learner’s T&L perspective. Chia and Kee (2013a) have presented the Triple-T framework of T&L (see Figure 4). The goal of learning is focused on the functional mastery of the essential content knowledge and skills needed for independent living and survival of an individual with intellectual disability. There are three main components in this framework: *epistēmē* (“what” of learning), *Techné* (“how” of learning), and *Telos* (“why” of learning). Together, they are triangulated to form the Triple-T model of learning (see Figure 4).

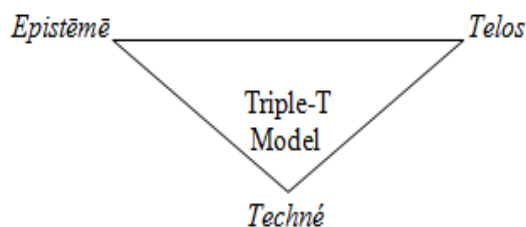


Figure 4. Triple-T framework of T&L (Chia & Kee, 2013a)

Firstly, the component *techné* comes from a Greek derivative, which means how an object or objective in learning is accomplished with appropriate teaching strategies. It concerns the “how of learning”. In choosing the appropriate teaching strategies to work with students with intellectual disabilities, two key factors have to be considered: the degree of intellectual impairment and the degree of limitations in adaptive functioning.

All teaching strategies used in working with students with intellectual disabilities can be classified under two main categories: accommodations and modifications. Students with moderate to severe intellectual disabilities may receive both accommodations and modifications. An accommodation involves making an appropriate adjustment to the teaching resources used during lesson so as to make learning accessible to students with disabilities. A modification changes or adapts teaching materials to make them simpler for the student with intellectual disability.

Next, the second component *epistēmē*, another Greek derivative, stands for knowledge or “to know”. It refers to the “what of learning” or the content knowledge and skills needed to be taught to or learnt by students with mild intellectual disabilities in mainstream schools. It resembles *techné* in the implication of knowledge of principles, although *techné* differs from *epistēmē* in that its intent is making or doing, as opposed to “disinterested understanding” (Chia & Kee, 2013b, p.599)).

The last component *telos*, also another Greek derivative, refers to “the end term of a goal-directed learning process or the final cause. It is the ‘why of learning’ or the rationale or reasons behind the choice of content knowledge and skills selected to be included in” (Chia & Kee, 2013b, p.599) a modified or adapted curriculum for students with intellectual disabilities.

Under this Triple-T framework are several models that are very much used by the allied educators for learning and behaviour supports (AEDLBS) in mainstream schools. One of them is the model known as psychogogy, whose Greek words *psycho* means “mind” and *gogy* or *gogia* means “to lead”, literally means to “to lead the mind” (Chia & Kee, 2012).

According to Chia and Ng (2011), psychogogy (see Figure 5) is defined as an “instructive theory that includes psychological influence on a learner’s mind in terms of his/her learning and thinking abilities (cognition), feelings (affect) and will (conation) to perform or act and whose behavioural traits interlinked by various senses through different sensory processes (sensation) in order to establish his/her own perception and belief through interaction with others within a given socio-cultural context” (p.2).

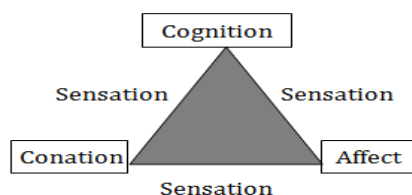


Figure 5. Triangulation of cognition, conation and affect interlinked by sensation (Chia, 2011)

Cognition, conation and affect form what Goldstein and Mather (1998) have identified as the cornerstones of learning and behaviour. Chia and Wong (2011) have termed it “the foundational block because it provides the support system for all our children’s learning” (p.1). All the three cornerstones are linked up by the sensory-perceptual-motor processes which are collectively known as sensation. This psychogogic model is known as the CCAS (Cognition-Conation-Affect-Sensation) model.

Conation is the potential for action (e.g., dancing, sitting in a chair or pole vaulting that are observable) and it is inherited (Poland, 1974). These actions “can include a great variety of automatic behaviours such as walking and habits such as smoking or repeatedly wiggling a foot while sitting in a chair” (Poland, 1974, p.13). Moreover, thinking has been recognized as the at-birth potential and Poland (1974) termed it as cognitive behaviour and sees feeling as the genetically-based potential, which is sometimes called affective behaviour, and “it has to do with a wide variety of behaviour ranging from sadness and depression through happiness and ecstatic joy. Feelings are not directly observable, although they often may be expressed through action” (Poland, 1974, p.13).

Briefly, the CCAS model will first look at the sensory needs of a client or learner based on his or her sensory profile. Then it will examine how the sensory-perceptual motor processing in terms of sensory sensitivity, registration, integration, modulation and responding affects the learner’s cognition, conation and affect in his or her learning and behavior.

Close to this CCAS model is the hierarchy of five building blocks of skills and abilities that teachers working with students with intellectual disabilities should know and understand if they hope to see some degree of progress in their students' learning and behavior. This is another model under the client/learner-centered educological framework. The hierarchical model of skills and abilities (see Figure 6) consists of five levels of building blocks will be briefly described below (see Chia, 2008, 2013, for more detail).

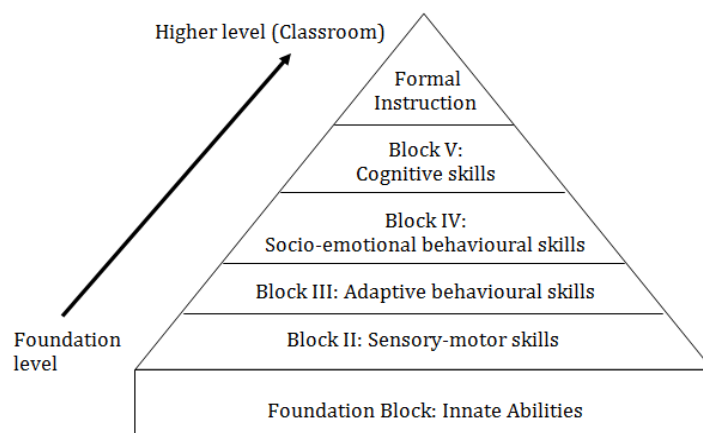


Figure 6. Hierarchy of building blocks of skills and abilities (Chia, 2008)

Beginning from the foundation block or Block I, learning is built on the abilities inherited and genetically coded at birth. These innate abilities cover abstract thought, understanding, communication, reasoning, learning, planning, emotional intelligence, and problem solving (Chia, 2008, 2013). They define how near the child comes to performing at those upper limits which, in turn, is determined by other elements such as interest and motivation necessary to learning (Franken, 2002). An IQ test is often administered to determine if a child “is highly-able, able, less able or disabled in his/her performance as a learner” (Chia, 2013, p.337)

Block II concerns sensory-perceptual motor domain that are developed from the foundation of the child's innate abilities. The sensory and motor skills are partially determined by genetic code and partly acquired through repeated interaction with the environment (Chia, 2008) and can be improved with proper practice. Sensory skills are classified under exteroceptive senses (e.g., vision, hearing, touch, smell and taste) and interoceptive senses (i.e., vestibule and proprioception). These senses are essential for information reception and co-working with motor skills (related to muscles and movement), e.g., jumping and writing, to give expression to the information received and processed by the senses. Any deficiency in these skills would require some form of intervention such as sensory integration therapy.

Block III focuses on the adaptive behavioral domain, i.e., “the effectiveness or degree with which an individual meets the standards of personal independence and social responsibility expected of his/her age and social group” (Grossman, 1973, p.11). A wide range of skills are covered at different developmental stages (Chia, 2008): sensory-perceptual motor processing skills, social interactive skills, self-help skills, home living skills, independent living skills, language concepts and academic skills. “During infancy and early childhood, the adaptive behavioral process of learning covers sensory-perceptual motor processing skills, communication skills, self-help skills and socialization skills” (Chia, 2013, p.337). From the late childhood to early adolescence, adaptive behavioral skills cover the application of basic academic skills in everyday life activities, application of appropriate reasoning and judgment in mastery of the environment, and social skills. From the late adolescence to adulthood, adaptive behavioral skills concern vocational and social responsibility and performance

(Chia, 2013). For a child with intellectual disability, adaptive behavioral deficits are obvious. An assessment such as the Vineland Adaptive Behavior Scales has to be administered in order to come up with an appropriate intervention program that will include “applied behavior analysis that involves systematically arranging environmental events to produce desired changes in his/her behavior” (Chia, 2008, p.30).

Block IV covers the socio-emotional behavioral domain including adaptive behaviors, internalizing and externalizing behaviors. This domain encompasses qualities that are prerequisites for socially acceptable behaviors, e.g., desirable interests, attitudes, values, and character development (Kratihwohi et al., 1964). Learning in this domain is often challenging because of its subjective nature. “Unlike sensory-motor and cognitive skills that can be evaluated by written examination or practical testing, socio-emotional behavioral skills are difficult to identify, quantify, and assess” (Chia, 2008, p.30). The intervention program to remedy deficits in this area of concern includes social skill training, behavior modification, play therapy and counseling.

Finally, Block V covers the cognitive domain that includes the ability to analyze, evaluate, retain information, recall experiences, make comparisons and determine action (Giles, 2005). Learning as a cognitive process has an innate component, but the bulk of cognitive skills are learned or deliberately acquired. These skills can be practiced and improved with the right teaching approach. Chia (2011) argued that “[W]hen this development fails to take place naturally, cognitive weaknesses are the result and they diminish a child’s ability to learn, and are difficult to correct without specific and suitable intervention” (p.38). With appropriate intervention, the brain of a student with intellectual disability can actually be ‘rewired’ and cognitive function can be restored or enhanced (Goswami, 1998). Feuerstein et al. (2002) have termed this ability as cognitive modifiability.

Mix or Integration between the First and Second Educological Frameworks

A third educological framework of T&L processes proposed by Chia and Kee (2013a) (see Figure 7 below) is a mix or integration of the first and second educological frameworks as already described above.

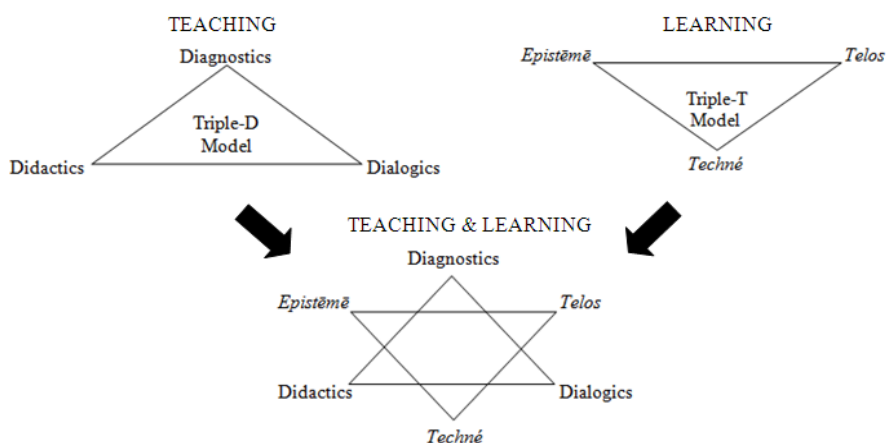


Figure 7. Integration of Triple-D teaching and Triple-T learning models (Chia & Kee, 2013a)

This third T&L framework illustrates three main factors that serve to empower the special education teachers’ multiple professional roles. Firstly, starting with the *Diagnostics* phase, appropriate psycho-educational assessments are administered to establish the current profiles of students with intellectual disabilities. With the assessment results, next comes the *Epistēmē* phase, where teachers decide on the content knowledge and essential or functional

skills to be taught to these students in order to meet their needs. In the *Telos* phase, teachers have to rationalize why the selected content knowledge and skills are included in the intervention program or curriculum for their students.

Secondly, parents and other teachers are consulted to ensure a successful implementation of the intervention program/curriculum. This *Dialogics* phase offers the teachers an opportunity to discuss, share and exchange ideas on pedagogic issues affecting their students' learning (see Chia & Kee, 2013a, for detail) in terms of available resources and also appropriate teaching strategies (including accommodations and modifications) that will be implemented during the *Techné* phase.

Finally, in the *Didactics* phase, teachers will put their lesson plans into classroom practice. However, this is not the end of the integrated T&L framework but the beginning of a series of consistent formative evaluations throughout both Triple-D and Triple-T processes as well as a summative evaluation at the end of the intervention program/curriculum. Teachers will know if the program/curriculum "has indeed succeeded in attaining its T&L goals, to reflect on the evaluation results, and to consult everyone involved in the process to improve the quality of their T&L delivery" (Chis & Kee, 2013a, p.425).

CONCLUDING REMARKS

There is still room for more research to be done in the field of educological framework of T&L processes in order to design better intervention programs for students with intellectual disabilities. One interesting point that the authors have taken note is that educology can be quite a broad term to describe T&L processes for working with these students with intellectual disabilities. They recommend that a narrower and more focused approach is needed to target at the learning and behavioral needs of this special group of students. Perhaps *heilpedagogy* – a term coined by an Austrian educator and psychoanalyst, August Aichorn (b.1878-d.1949) – to refer to "learning by assisted teaching" is the most appropriate approach. This is because it takes into consideration the operating definition of intellectual disability in order to decide on an individual's learning capacity before planning how best to help the individual to learn by assisted teaching.

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