MULTILINGUAL SOCIETY, MIND AND LITERACY: A CRITICAL REVIEW

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DECLARATION

I declare that the dissertation titles **"Multilingual society, mind and literacy; a critical review"** submitted by me in partial fulfillment of the requirements for the award of the degree of **Master of Philosophy** to Jawaharlal Nehru University is my own work. It has not been submitted previously submitted for any other Degree of this or any other university.

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Chapter-1

Introduction

Language plays a critical role in creation of democratic spaces and an inclusive personality. In order to sustain the pluralistic and diverse society, there is a need to reconceptualize language differently than we normally do by removing monolingual stereotypes and linguistic hierarchy. It is important to recognize and appreciate the linguistic diversity and bring into focus the languages of those who survive on the margins of the society. In a diverse society like India, multilingualism is a default socio-linguistic condition. Hence, there is a need to recognize this linguistic diversity of the country and stop defining languages using the category as the "best", "pure", "majority", and "minority" languages etc. Contrary to what we commonly perceive, (Cummins 1986, Mohanty et al 1994) suggests that multilingualism can facilitate mutual communication and survival of different groups through daily interaction which creates new meanings and help to maintain and sustain the multiple identities simultaneously. It is also believed by many linguistic and psycholinguistic researchers that multilingualism would bring about social tolerance. In essence, language are simply combination of sounds and symbols which we use to communicate to the other person, and to the speaker they are the resource and inextricably tied with their identity, so to take that away from her is to deprived her of a dignified life. Language hierarchies are human creations and we need to rethink over it before it "kills" all other languages. If there is such thing as the most "useful" or the "best" language, then they are mere social constructions which we need to deconstruct.

1.1 Multilingualism as the new linguistic norm in a globalized world

International phenomena of globalization is one of the main factor which is responsible for the rise in national, transnational and/or international migration. Different national institutions, including schools, find themselves in a multilingual condition, where students with different linguistic background speaking different L1 ends up in one single classroom where the norm is to converse in only one dominant languages. The increase in mobility and migration across the globe has brought about a multilingual and multicultural space which has resulted in increase number of multilingual classrooms. The resultant effect of this increasing number of multilingual classrooms has positioned the students belonging to the linguistic minorities group at a disadvantage, since the education system today do not recognize the need of a multilingual society and monolingualism is practiced and encouraged in majority of the schools around the world. Thus, one of the most rudimentary problems that plague the education system in a pluralistic society remains this: students do not understand what the teachers are teaching. The language spoken in the classroom is foreign and with that foreign language they are introduced to even foreign concepts, which further alienate and detach them from their lesson. The problem is as basic and obvious as this and yet the problem persists. This inevitably leads to adverse consequences. It is important to consider individual multilingualism in the learning and teaching process in order for students to be able to communicate smoothly in a multilinguistic classroom.

The monolingual norm is destructive for children from linguistic minority group. Since children are not always provided with support to learn their mother tongue they are found to have higher chance of drop out and have lower levels of attainment throughout their schooling. This in turn stops them from reaching their full potential.

The dominant position that the English language has assumed internationally has further made it more challenging for to bring about a change where multilingualism will be a norm (Jorda, 2005:9; Crystal, 2008:702; Sharifian, 2009:1-16).

Globalization has let to intersection of diverse cultures and languages (Agnihotri, 2009). Hence multilingual societies are more common than monolingual society today. But t is a common misunderstanding that we have that a greater part of the world is monolingual when in fact, it is impossible to find an individual or community that is strictly monolingual (Agnihotri and others, 2008). Agnihotri (2009) argue that multilingual societies are not only the new normal group but the most commonly found society in the world today, the most densely populated part of the world are all multilinguals. In contrary to what is generally perceived, monolinguals are actually a rarity and are only confined to certain isolated tribal groups and industrialized society. In a multilingual and multicultural society, any classroom is by default a multilingual classroom where language subsumes multilingualism (Agnihotri, 2008). Multilingualism is the new norm, hence the focus of pedagogues and linguists and teachers should be on creation of a classroom situation that accept this norm and develop efficient tools and teaching aids accordingly. There is a need to recognize multilinguality as an empirical reality and cognitive asset.

Many of the researches in linguistic researchers today argue that language and language development can only be fully understood by considering the multilingual norms as that is the inevitable reality in any pluralistic society. The development of language is a complex and dynamic process in itself, but this process of language acquisition and development is made even more complex by multilinguistic reality, hence linguistic and psycholinguistic studies should studies need to take this into

account (De Angelis & Selinker, 2001; Flynn, Foley, Vinnitskaya, 2004; Herdina, Jessner, 2002Abunawara,1992; Cenoz, Hufeisen, & Jessner, 2003; Cook, 1991;).

A number of cognitive researches on bilingualism in the recent time has contributed significantly and proposed new hypothesis in this area. One of the prominent finding of these researches is that, it has refuted earlier findings on the same subject which showed bilingualism as characterized by negative cognitive effect. There are ample of empirical studies today suggest that speaking in multiple languages can extend cognitive capacities, instead of diminishing it (Ricciardelli, 1992; Bialystok, 2005; Hakuta and Diaz, 1985). In the light of many recent studies and findings, the claim that bilingualism can effectively cause "language handicaps"(Arsenian, 1937; Darcy, 1953, 1963; Macn by Arsenian, 1937; Darcy, 1953, 1963; Macnamara, 1966) has been questioned.

The positive relations between bi/multilingualism and enhanced cognitive development has been established by many researches in recent times. This cognitive advantage or the bilingual advantage as it is known today has been consistently found in many of the researches on bilingualism. However it is unfortunate that despite the findings which clearly suggest the advantage of speaking in multiple languages, the general norms in educational system is largely biased towards a single dominant language. This ultimately forced the other minority languages to become obsolete; students are not provided access to education in their own mother tongues, instead were made to feel negatively about it. This consequently leads to the disappearance of a minority language as it is elbow out by the majority dominant language. However if this trend to continue, many of the world languages will be forced to the verge of extinction and consequently lead to "linguistic genocide" (Skutnabb-Kangas, T., 2009).

Significant contribution to research in cognitive effect and development of bilingualism was made by Ellen Bialystok and others, who successfully demonstrated that bilingual children indeed have a major role to play in cognitive tasks requiring executive processes (Bialystok, 2001; Bialystok, Craik and Pantev, 2005). It was also found that this advantage persists till a person reach adulthood (Bialystok & Viswanathan et al.,2004) have shown that this cognitive advantage persists into adulthood, and may even help them to delay the cognitive deterioration that comes with age. Through a number of empirical studies conducted, they showed an interlacing nature of bilingual development and the need to consider the sociocultural context and not just consider the individual's linguistic abilities. The time and circumstances and the status of the language one speak, also individual's experiences are all important factors to consider and carefully examine in order to understand the psychological effects of bilingualism.

They also raise the question on the possible effect that sociocultural factors might have in shaping the conceptual changes which are then inextricably linked with cognitive abilities. The effect of two cultural sets on the experience of a bilingual ultimately leads to psychological changes as well. Thus it is crucial to understand the sociocultural effect because disregarding them in psychological research could lead to misleading generalization. It is thus important to examine and also design reliable tools for studying cognitive functions which consider the cross cultural experiences of an individual.

1.2 Multilingualism in Indian context

> "According to 1961 census, there are 1652 mother tongues (1961 census) and even larger number of dialects. These languages are classified into 300 to 400 languages (five language families). *Constitution of India*, VIIIth schedule, after the 100th constitutional amendment, December 2003 has constitutionally recognized 22 of them as official languages with English as the associate official language. Out of these many languages, 104 languages are used for radio broadcasting and for adult literacy programs, and 87 are used for print media" (as cited in Mohanty, 2004).

Mohanty (2004) argues that it is not the mere presence of these many languages but the relationships and the interaction of these languages that result in the dynamic relationship of all these languages.

Mohanty ,2004; Skutnabb et al., argues that there is an increasing risk of genocide of minority languages which results from the adoption of dominant contact language and the positive maintenance norms. There should be equality of right to speak and to find opportunities to all speakers of all the languages, he asserted. However the argument that some languages are weak and have limited use is simply a myth and not something that is inherent in the language itself. There is a social origin to it which is the inevitable consequence of the unequal treatment within the society.

> "It is the social, political, educational and economic conditions which often reinforce the association of the minor and tribal languages with powerlessness and insufficiency which ultimately reflects the speakers of these languages who are invariably disadvantaged to begin with. As a group they are usually

> poorer, belong to mostly rural and economically underdeveloped areas, and share many features of the disadvantaged populations." (Mohanty, 2004)

Neglect of languages in educational system is one of the worse form of institutionalizing linguistic inequality. As compared to the languages used in the 1970s, today the number of languages used in schools either as a medium or as a subject has reduced considerably apart from 22 official languages. Majority of tribal and minor languages has no room in the educational system in India. The children whose mother tongues belong to these minority languages are compelled to adopt the dominant contact language which ultimately lead to subtraction of the minority language.

English, which often been quoted today as the "international killer language" (Skutnabb-Kangas, 2000) has assumed a powerful status in our society. It creates division between the privileged and the under privileged class. Public schools or education which cannot impart knowledge in English is seen as sub standard; hence the upper class invests on expensive English education schools for their children. This clearly plays out well for them as knowing English entails access to all the "desirable" jobs that the globalised world has to offer. Post-Independence years, the English language has become an indicator of socio-economic mobility. Ultimately failure to learn it has led to failure in academic achievement.

However it is undeniable that the English language has thrived in India but it comes with a huge cost:

> " the first one being that power of English over Hindi is augmented by the political processes by which acceptance of English is a strategy for keeping Hindi from being imposed as a national official and educational language.

This is particularly true of the states in South India. In virtually all the non-Hindi states, English has continued to be the dominant language of governance".

Thus, it has come at the cost of weakening the use and purpose of other regional and minority languages. Today, the number of parents forcing children to attain English education just to gain power and status has tremendously increased. This further weakens the already weak languages and the also widen the gap between the privilege and the under privilege as the English education are expensive which cannot be afforded by people from low social economic status. Moreover,

An alarmingly increasing proportion of the parents and students aspire to English medium education as a road to power and success. This further weakens the already weakening state-sponsored regional majority language schools that are imposed on tribal language communities, other linguistic minorities, and the poor and disadvantaged groups who cannot afford high-cost English-medium schools. The hierarchical power relations of different languages are reinforced in the process.

"Early language socialization, a life-long process of socially-constructed psychological processes of identity formation, reconciliation of dissonance, and perception of reality tempered by a fatalistic resignation, make linguistic communities legitimize the assigned roles for their language in the hierarchy. Most Indian children develop awareness of the higher social status of English compared to their own mother tongues, and schools contribute to such perceptions."(Mohanty *et al*., 1999).

In India, although language shift does not occur as a general pattern, there is considerable domain shrinkage for minority and tribal languages as a contact outcome. It seems that natural bilingualism among the weaker and disadvantaged

communities such as the tribals is a survival strategy that ensures smooth social functioning in the contact situations. Thus in India today, there is a considerable shrink in the minority and regional languages.

Poverty, as conceptualized by Amartya Sen implies "capability deprivation". (as cited in Skutnabb-Kangas, T., 2009).

> "Even the relevance of low incomes, meagre possessions, and other aspects of what are standardly seen as economic poverty relates ultimately to their role in curtailing capabilities (that is, their role in severely restricting the choices people have) ... Poverty is, thus, ultimately a matter of 'capability deprivation… it can no longer to be viewed simply in terms of generating economic growth; expansion of human capabilities can be viewed as a more basic objective of development" (Dreze & Sen, 1996; Misra & Mohanty 2000a: 263).

The central question in reducing poverty is: "What is the most critical (and cost effective) input to change the conditions of poverty, or rather, to expand human capabilities?" (Misra & Mohanty 2000).

In India bi/multilingual nature of the society makes it necessary to understand the interaction between bilingualism and control processes needs to be developed. Language proficiency may vary on a continuum among bilinguals which may predict cognitive advantage. Bialystok and Feng (2009) also confirm with their study that bilinguals may even compensate for lower language proficiency with greater executive control. Hence, following Sen's idea of poverty, positive cognitive effect that comes to bilinguals and multilingual from speaking many languages can be utilize or capitalized to built capacity.

The implication of the cognitive research in the recent times truly show that that bi and multilingualism are really asset and resources which teachers, administrators and policy makers should capitalize on. It is not only important to understand to this new development in research not only for scientific purpose but for social justice and to save the diversity of the world. A cost for investment in MLE is minimal and not too high if we rationally calculate the returns of such an investment.

Making L1 as a medium of instruction is not only beneficial for the holistic development of the child but it can benefit the society in general. It would be a first step towards creation of a truly pluralistic and democratic society which thrives on its diversity and not "kill" them by positioning a "killer" at the top of the hierarchy and thereby kill all other languages.

Much of the earlier accounts and studies focused on the specific type of the executive control (Bialystok, 1999), many of the recent studies suggest the need to look beyond single aspect of the executive function (Bialystok, 2010). These new researches indicates the need to explore and look at executive function as a system which consisting of multiple components with different function but interrelated and connected which work as a single system. There is a need to examine different components of the executive function in the multilingual mind.

The change in the nature of knowledge, new development that contradict the findings of the past needs be considered in order to meet the need of the multilinguistic reality.

Previous researches in this area did not provide a strong evidence which support the claim that bilinguals have advantage over monolingual on the cognitive control and flexibilbility. One reason for this was because the nature of tasks used in earlier

studies which were not appropriate to capture the bilingual effect which was not very obvious.

Bialystok & Feng 2010; Engel de Abreu, 2011 presented lists of words to be recalled and presented several tasks, in which the nature of the tasks was mainly to do with words or digits. Consequently, the results gained on these studies showed poor performance as compared to their counterparts. The nature of the working memory tasks was equivalent for monolingual and bilingual children.

Generally the scores on receptive and productive vocabulary among bilinguals are found to be lower than that of monolingual. "This difference in vocabulary may have created a handicap for bilingual children performing verbal tasks, and the equivalent performance may in fact be masking a latent bilingual advantage" (Bialystok et al, 2012).

There is certainly the need to examine the subject more closely as a review of literature on this subject suggests a lack of scientific understanding of the executive function besides cognitive control, makes it all the more important to study and investigate the exact roles of executive function in a bilingual mind.

As evident in earlier studies, the question of tools and task used to study the working of the executive system has led to misleading findings. It did not capture the actual working of the multilingual mind, and led to misleading conclusion, i.e. the language handicap. Metalinguistic skill or ability is an abstract concept, hence it is difficult to scientifically measure it in the same way we measure physical objects, but the inability to find the right tool should not be misconceived as non existence. As is evident in the study of the working memory and how the current studies are getting to

see the distinct way in which a speaker of multiple language experience, one should be open to possible hypothesis and findings in the future.

> "These results suggest that the bilingual advantage might not be attributable to a single component of executive functioning and that working memory alone is not modified by bilingualism; instead, the experience of bilingualism affects an integrated set of abilities in which efficiency is enhanced on cognitively demanding tasks" (Bialystok et al, 2012)

Studies on development of working memory among bilinguals also shed light on the overall development of cognition, specifically the effects of everyday experience on cognitive outcomes. The case of bilingualism stands out as it is something that gradually develops in the everyday, the role of experience in shaping the mind and directing the course of development is made evident by the study of the bilingual mind.

1.3 Research objectives

The followings are the two objectives of the present study:

Objective 1: To investigate the effect of bi/multilingualism on the cognitive and executive functions of the brain.

Objective 2: To study the relationship between multilingual society, mind and literacy.

A critical review of the existing primary and secondary literature is done in order to discuss these objectives. The chapter one reviews the theoretical as well as empirical works done in the areas of Bi/multilingualism and cognitive and executive functions. The works of Elizabeth Peal and Wallace Lambert (1962),

Cummins (1976), Bialystok (2005), Miyake et al., (2000), Kharkurin, A., (2008); Ricciardelli, (1992) and others are reviewed primarily to assess if multilingual society creates a cognitive handicap or an advantage.

The chapter 2 deals with the intervention and experimental studies done in the area of literacy practices in multilingual societies. Both longitudinal and cross sectional studies are analysed to critically examine if multilingual education delivers a stronger literacy programme or not. Studies comparing relatively complex multilingual society and societies that put their faith in monolingual practices are reviewed in order to study the relationship between multilinguality and literacy practices. The conclusion chapter summarizes the findings of the chapter 1 and chapter 2.

Chapter 2

Bi/multilingualism and Mind

The cognitive effect of bilingualism has taken two broad arguments since its inception. Exploring the ontogenesis of the research on bilingualism is crucial in order to dispel the myths that surround individual's bi/multilingualism. The overwhelming majority of studies prior to 1960s claimed that bilingualism can effectively cause "language handicaps"(Arsenian, 1937; Darcy, 1953, 1963; Macn by Arsenian, 1937; Darcy, 1953, 1963; Macnamara, 1966). This negative cognitive effect of bilingualism argue that simply having two labels for each concept will create confusion for a child and result in retarded conceptual development. This argument was prevalent prior to 1960 when concern was raised over the poor performance of immigrant students in the US, both in academic and intelligence tests (Hakuta,1985). And it is this concern for immigrant bilinguals which prompted research in this area.

Initially the inferior performance of bilingual students was explained in two ways. On the one hand was a group of psychologists who attributed poor performance to innate biological inabilities, the like of Lewis Terman and Florence Goodenough. On the other hand were the environmentalists who attempted to explain the cause of inferior performance by bringing in the external causes and found the answer in bilingualism, i.e. children's attempt to speak two different languages which results in *mental confusion.* Thus, according to the researches following the environmentalists perspective, bilingualism was majorly responsible for the low performance in academics and cognitive tests (Hakuta, 1985).

This argument was also in line with the behaviorist perspective which was a dominant perspective of that time; hence this explanation was viable as the answer to difficulty

faced in the learning process by bilinguals. It was also claimed that in comparison to monolingual children, multilingual were found to be inferior in some areas of linguistic abilities, and that "language handicap" leads to linguistic confusion which affect the intellectual development of a child and hamper academic performance even when one reach adulthood (Saer, 1923). Bilingualism was thus perceived as disadvantageous for children and the negative cognitive effect of bilingualism was remains till the 1960s.

However by late 1950s, there was a paradigm shift in the discipline of psychology, which is commonly known as the cognitive revolution. The Cognitivists' argument was apparent in the new metaphor of mind which asserts that the mind is not only a container which retain the information brought in by the outside world but is also a machine with wired-in properties of its own, a problem-solver and fully capable of being stimulated (but not created) by the environment. One prominent figure who is associated with this major change in the field of language development was Noam Chomsky, who effectively argued that language was more than just an observed behavior but that the mental capacities and processing of language in the mind is far more complex and intriguing than was believed earlier (as cited in Hakuta, 1985).

A number of researches today believe that the human brain is changed and modulated by cognitively demanding experiences and this can also lead to modification of cognitive functioning (Green & Bavelier, 2003; Maguire et al., 2000; Polk & Farah, 1998; Salthouse & Mitchell, 1990). Thus following this premise, it is proposed by many psychologists and psycholinguists that the daily practice of speaking in multiple languages will bring about changes in performance (in Bialystok, 2009). Substantial evidence in a number of studies suggests that two languages, along with their structures and conceptual system are somewhat active in the mind during the process

of comprehending and producing a particular langauge (Blumenfeld & Marian, 2007; Francis, 1999; Grainger, 1993; Kroll &de Groot, 1997; Marian & Spivey, 2003; Rodriguez-Fornells, Rotte, Heinze, Nosselt, & Munte, 2002; Thierry &Wu, 2007).

2.1 Early studies of bilingualism

In the early 1960s, one of the most significant research in the studies of bilingualism was carried out by Elizabeth Peal and Wallace Lambert (1962) who first introduced a new approach to research in bilingualism and popularize the concept of "balanced bilinguals" where they make differentiation of three types of bilinguals, the first group is the balanced bilinguals who are highly proficient in two languages, unbalanced bilinguals are those who are proficient in one language but not in the other. The third groups of bilinguals are the ones who have relatively poor command of both languages. This categorization was one of the major contribution by Peal and Lambert, as it was further used by subsequent researchers to prob and understand distinct nature of the bilingual mind.

Consequent studies found major methodological flaws in previous bilingual studies. It was argued by Lambert (1962), Cummins (1976) and others that the early studies which correlate bilingualism to cognitive development did not match bilingual and monolingual participants on multiple dimensions such as socioeconomic status (SES), second language proficiency, language of assessment, gender, age, and urban-rural contexts. Cummins et al (1976) found error in methods of research and further pointed out that early studies failed to control group differences in socioeconomic status between bilingual and monolingual samples. Thus the consequent effect of this stance on bilingualism was the creation of the myth of “language handicap” which actively advocated the eradication of bilingualism. Thus, children not allowed from speaking

their own mother tongue in school premises and consequently made to feel uncomfortable about their cultural background and home language. It is studies conducted during this period which found that bilingual students did poorly in schools and many experienced emotional conflicts. In order to assimilate into the majority culture children were in some way asked to disown their home culture. This creates confusion in identifying with either of the cultural groups. However, disregarding this possibility that the school's treatment towards minority children could be the reason for under performance, teachers, researchers and administrators conveniently blamed children 's failure to bilingualism. The general belief and misconception then was that our human brain is only capable of processing a specific amount of information and if we divide this limited capacity and space between two languages, both the languages are likely to develop very poorly and without any question it would cause intellectual confusion to the child (Jensen, 1962; Cummins, 1983).

But new researches and studies today are evident enough that this beliefs about the negative effects of using LI in the home and school are nothing but misconceptions about the role that language play in the educational and intellectual development of a child and the specific ways of effect that bilingualism has on this developmental process.

A large number of research literature today suggest that bilingualism can actually have a very positive cognitive effect, both in the acquisition process of a second language itself and also on the development of academic skills. Thus using one's L1 in the schools as medium not only makes the communication process more convenient but could also play a much larger role (Cummins, 1979a, 1980).

It has been found by a number of studies that many variables correlated with bilingualism, such as schooling and parental socioeconomic status, confounded their interpretation. They argued that these dimensions and other factors have confounded earlier results which showed that bilingualism is disadvantageous for cognitive development. Recent studies and researches thus argue that poor academic performance was not because of the students' bilingualism but because of the school's attempt to eradicate bilingualism and the consequent treatment that a child received because of his or her mother tongue or L1. Bilingualism is actually one of the positive factors that can contribute to their cognitive development.

Therefore, by controlling these extraneous factors, Peal and Lambart 1962 carried out a study to understand the relationship between bilingualism and intelligence. The result of the study showed that bilingual participants significantly outperformed monolinguals on several measures of verbal and nonverbal intelligence. It was found that bilingual as compared to monolingual children, children who are equally proficient in two languages showed better performance on cognitive tests to measure intelligence. The result they gained clearly contradicted the early findings and suggested that bilingualism might have a positive effect on intelligence, it contradicted with the claim of the behaviorist perspective which conceptualized the mind as a passive recipient of information. Rather, they took the cognitive vantage point and saw the bilingual mind as both capable and eager to solve problems that come from the environment. They based their conclusion on the simple example that the mind which works on two problems, i.e., negotiating with two languages, would certainly have more experience in solving problems as compared to a mind which work on only one problem i.e. one language. Accordingly, Peal and Lambert (1962) described the bilingual mind in the following manner:

> "a youngster who has wider experiences in two cultures have given him advantages which a monolingual does not enjoy. Intellectually his experience with two language systems seems to have left him with a mental flexibility, a superiority in concept formation, a more diversified set of mental abilities.. .In contrast, the monolingual appears to have a more unitary structure of intelligence which he must use for all types of intellectual tasks." (as cited in Hakuta, 1985).

Since Peal and Lambert's (1962) original studies, a large number of studies came out in support of their claim that there are indeed cognitive benefits in speaking two or more languages. Researchers have observed that bilinguals may have greater metalinguistic awareness (Bialystok, 1987, 1988, 2001b; Diaz, 1985; Diaz & Klinger, 1991; Ferdman & Hakuta, 1985; Goetz, 2000; Hakuta, 1990; Huber & Lasagabaster, 2000; Ricciardelli, 1993; Titone, 1997) and enhanced metacognitive skills (Duncan, 2005). Bilinguals may have stronger symbolic representation and abstract reasoning skills (Bamford & Mizokawa, 1990, 1992; Berguno & Bowler, 2004; Chan, 2005; Diaz, 1985; Goncz, 1988; Johnson, 1991; McLeay, 2003), as well as better learning strategies (Bochner, 1996; Ponomarev, 1992). The enhanced problem-solving skills are also hinted because of their ability to selectively attend to relevant information and disregard misleading information (Bamford & Mizokawa, 1991; Bialystok, 1999, 2001a, 2005; Bialystok & Majumber, 1998; Duncan, 2005; Stephens, 1997) this selectivity further helps in solving the theory-of-mind tasks, which require the ability to attribute others behavior and understand the beliefs, desires, and intentions from their perspective (Chan, 2005; Goetz, 2000). Bilinguals may have enhanced creative and divergent thinking skills (Braccini & Cianchi, 1993; Ho, 1987; Konaka, 1997;

Ricciardelli, 1993; Srivastava, 1991) and greater cognitive flexibility (Hakuta, 1990; Iannaccone, Fraternali, & Vaccia, 1992; Kovacs & Teglas, 2002; Kozulin, 1999).

Diaz 1983; Cummins 1984; McLaughlin 1984 conducted studies with bilingual children in various parts of the world using a variety of tasks of mental performance gained similar result. Hakuta (1985) also suggest that there is a positive relationship between bilingualism and various abilities, which includes metalinguistic awareness and non verbal thinking.

Although many studies have documented advantages for bilinguals on cognitive tasks, other studies have reported negative, null, or mixed effects of bilingualism (Macnamara, 1966; Rosenblum & Pinker, 1983). In order to gain a clear understanding about the extent and diversity to which bi/multilingualism could affect cognitive outcomes, a study of the meta-analysis of studies that examined the cognitive correlates of bilingualism was carried out by Olusola O. Adesope, Tracy Lavin, Terri Thompson and Charles Ungerleider (2010). In this particular study, data from 63 studies (involving 6,022 participants) were extracted and analyzed by following standard rules and guidelines for meta-analysis. These included the grade level of participants, total number of participants involved in each study, languages spoken by the bilingual participants, cognitive benefits measured, and unbiased effect size.

Results indicate that bilingualism is reliably associated with several cognitive outcomes, including increased attentional control, working memory, metalinguistic awareness, and abstract and symbolic representation skills. Overall mean effect sizes varied from small to large, depending on the cognitive outcomes measured, and were moderated by methodological features of the studies. All these cognitive mechanisms

come under the broad body of the executive function, which as the name itself suggest, regulate and controls much like those of corporate executives. The detail functioning of the executive system and its major components which are supposedly well developed in a bilingual mind are further discussed and elaborated in the following section.

2.2 Bilingual advantage in executive functions

The prefrontal cortex of the brain which is responsible for the functioning of the executive systems rapidly develops during the first 5 years of life. Executive functions is formed by a set of cognitive processes – including attentional control, inhibitory control, working memory, and cognitive flexibility, also includes reasoning, problem solving, and planning – that are necessary for cognitive control of behavior (Baddeley, 1986). The executive processes and its functioning is often compared to that of a functioning in a corporate executives. They mainly organize our mental lives, just as a corporate executive coordinates a business's activities; where both the function is administrative in nature and not "hands on". It regulates the operation of other mental processes which facilitate in coordinating of mental activity so that a task at hand is accomplished. Because of this nature of functioning in the executive process, where processes operate on other processes, it is also known as metaprocesses. Although all executive processes are metaprocesses, not every metaprocess is an executive one, because it may not coordinate and control mental activity (Smith and Kosslyn, 2011).

Hacker, D.J., 9 (1997) differentiates between two kinds of executive processing: the first kind is the *executive monitoring* processes which enables an individual to identify the task on which one is currently working, to check on current progress of that work,

to evaluate that progress, and to predict what the outcome of that progress will be. The second type is the *Executive regulation* processes which are "directed at the regulation of the course of one's own thinking". They include decision making process that helps a person to allocate his or her resources to the current task, to determine the order or steps to be taken to complete the task, and to set the intensity or the speed at which one should work the task.

Multilinguals tend to practice the use of executive system more frequently than monolingual counterparts, although it is done unconsciously (Diamond, 2010). The difference between monolinguals and multilingual simply the fact that the latter practice or exercise their brain more often than the former. As the word is spoken and heard, a monolingual is likely go through his or her storehouse of phonemes or other language rules in that particular language, it is the same hwen thye speak a word, it is drawn from a single "stock". Multilinguals, on the other hand, have multiple storage systems or jar of different language, so when a word is heard, their mind is likely to scan through all the jars in search of the phonemes and meaning making rules of that spoken word. In simple words, their mind is much more busy and demand information to be processed quickly. For instance, on hearing the phonemes b-u-rr-o, a Spanish/Italian bilingual instantly interprets them to mean either "don-key," if the context is Spanish, or "butter," if the context is Italian.

Just as athletics and musicians and patients of Alzheimer practice daily to keep up with the demand of their situation and improve its function , practicing and constant unconscious use of the executive system could lead to efficiently of skills and the reverse, ie not utilizing these executive skills could let its function to deteriorate (Diamond, 2010).

2.2.1 Cognitive flexibility as a positive cognitive effect of multilingualism

Multilinguals constantly control the use of the multiple languages, select the intended language, and switch between languages on demand. The ability to switch between different languages is an interesting phenomenon in multilingual speakers given that different languages partially share neuro-anatomical representations (Klein, Milner, Zatorre, Zhao, & Nikelski, (1999). Producing a word in a particular language activates a conceptual system and not only the lexical representation of the word in the target language but also the lexical representation in the non-target language. Not only are the lexical representations of the non-target language activated, but also the phonological properties of the word. (Rodriguez-Fornells, De Diego Balaguer, & Münte, 2006).

A number of models of lexical access assume that during the course of lexicalization in one language (i.e. L1), the lexical nodes of both languages receive activations from the semantic system (Colome, 2001, Costa, Caramzza & Sebastian-Galles, 2000. This parallel activation assumption receives support from studies like, Colome (2001) which demonstrated that during a series of phoneme monitoring task segmental units of information of the target word's translation are also active. Language – Specific Selection Model by Costa et al 1999 suggests that the practice of selecting one language may improve skills in selective attention (Craik & Bialystok, 2006) and lead to benefits even in a non-verbal task.

Cognitive control or flexibility (used interchangeably) is a multidimensional construct. It refers to the ability to resolve conflicts & produce appropriate actions in favor of goal directed ones (Hare & Casey, 2005). Cognitive flexibility is defined as the readiness with which the person's concept system changes selectively in response to

appropriate environmental stimuli. It is domain general & not task specific. According to the type of task, there are different terminologies for cognitive control, like effortful processing, executive control, attention bias, conflict resolution. Cognitive control as a general purpose process interacts with other cognitive systems such as language processing. Cognitive control processes enables goal-oriented behaviour through constraint of thoughts and responses, which include controlled retrieval of relevant information from long-term memory, inhibition of irrelevant responses, selection of relevant responses, ability to handle competing representations and task-switching. It is the cognitive control which enables an individual to adapt to different stimuli and respond accordingly instead of being rigid and inflexible. Cognitive control processes include a group of mental operations like goal or context representation and maintenance, and attention allocation etc. Cognitive flexibility involves paying selective attention to the relevant aspects of a problem, inhibiting attention to irrelevant information and switching between competing alternatives. Cognitive control promotes task-relevant information in the face of interference or competition

Traditionally cognitive flexibility is measured by using several tasks like the Card Sorting Task, it is assessed by inviting the subject to expand the groups he has created on the original sorting task. In general, the greater a subject's cognitive complexity, (a) the greater is the likelihood that he will expand the groups, and (b) the greater is his tendency to gain information (i.e., dimensional complexity) by the expansion.

Bialystok (2005) proposed cognitive control is not only required in language processing of multilinguals but multilingualism can also enhance or improve the functioning of the cognitive control processing. Traditionally, in non-verbal tests, inhibitory control of bilinguals are often measured in order to study the executive

functions. Bilingual's performance generally show superior performance in these tests as compared to a monolingual.

In one study magneto-encephalography (MEG) was used to find out the neural response of bilinguals and monolinguals performances while performing the Simon Task (Bialystok et al., 2005). Red and green squares were presented on a screen and the participants were instructed to press response keys with the left or the right hand depending on the colour of the square. The squares where presented to the right or to the left on the screen and the participants had to concentrate on the colour and ignore the irrelevant position of the squares. Faster reaction time in the bilingual group correlated with greater activity in superior/middle temporal regions, cingulate and superior/inferior frontal regions, mostly in the left hemisphere. Faster reaction time in monolinguals correlated with enhanced activity in middle frontal regions. It was suggested that bilingualism lead to systematic changes in executive functions in frontal regions. Neural correlates of the effect of bilingualism on development of brain networks associated with general purpose executive control have also been reported (Garbin et al., 2010). The involvement of left inferior frontal gyrus in the switching performance of bilingual speakers highlights the relationship between language control and general purpose cognitive control. This study suggest that early experience with two languages may have long lasting consequence for the formation of cognitive control networks also resulting in the involvement of language control brain areas in the non-linguistic switching tasks.

Bilingualism has a long lasting impact on the attentional control abilities. Attentional component of executive control seems to be the most likely candidate to be affected by bilingualism. According to Posner and Peterson (1990) attentional processes can be fractionated in three different components sub-served by different brain networks:

alerting, orienting, and executive control. Bialystok et al (2005) have reported that faster responding among bilinguals as compared to monolinguals is related to greater involvement of areas like left prefrontal cortex involved in conflict resolution and anterior cingulated cortex involved in conflict monitory and interference control. Management of two language systems may lead to systematic changes in frontal executive functions. It is also suggested that bilinguals outperform monolinguals by building up and maintaining goal representations more efficiently and by translating these representations into top down support from dorsolateral prefrontal cortex for goal related processes (Colzato et al., 2008).

Executive control network is predicted to be the most affected among bilingualism as it aids in conflict resolution. Bilinguals were also found to have better executive control even in conflict resolution and there was small difference in performance of congruent and incongruent trials of attention network task (Costa, Hernandez, & Sebastian-Galle, 2008). Bialystok and Feng (2009) further suggest in their study that the efficient functioning of the cognitive control may sometimes even compensate for lower language proficiency. Both language proficiency and executive are considered as resources which are required in order to perform interference control tasks.

Language control among bilingual children has also been studied by using the language switching paradigm. Bilingual speakers are asked to name digits or pictures in L1 or L2 on the basis of the signal by a cue such as color, geometric figures etc (Hernandez et al., 2001; Christoffels et al., 2007). Some issues regarding the representation, organization and control of two languages are still to be resolved (Rodriguez-Fornells et al., 2006). Multiple factors like language use, order of acquisition, age of acquisition, proficiency are also possible variables which could affect language control mechanisms. Debated issues in the context of bilingualism and

control include language proficiency, balanced vs unbalanced bilinguals, stronger and weaker representations for a language.

There is considerable evidence that bilingual speakers are more readily able to control their attention while engaged in linguistic and nonverbal tasks compared to monolingual learners (Bialystok, 2001a; Bialystok, Craik, Klein, & Viswanathan, 2004; Bialystok, Craik, & Ryan, 2006; Emmorey, Luk, Pyers, & Bialystok, 2008). Several explanations have been advanced for this cognitive advantage. A dominant perspective suggests that the regular use of two languages requires that bilinguals control their attention and select the target language. Some researchers have claimed that the ability to selectively attend to different representations may be responsible for the greater attentional control exhibited by bilingual participants in many studies (Bialystok, 2001a; Bialystok, Martin, & Viswanathan, 2005; Yoshida, 2008). In other words, the ability of bilinguals to hold two languages concurrently in the mind, controlling the unnecessary interruption of words and grammars from one language whilst focusing on the target language may explain the greater control which is seen in performance of task with conflicting or distracting information. More interestingly, it has been found that these executive control or skills continue to remain and could be sustained into adulthood. For example, Bialystok et al. (2004) studying the performance of task on cognitive control among monolinguals and bilinguals found that there is certainly a difference in their performance and that bilinguals fare better when presented with tasks requiring cognitive control.

In addition to this major cognitive advantage that bilinguals have, there are research evidence which suggests that by building cognitive reserves that slow the aging process for adults, bilingualism may help offset some age-related cognitive declines (Bialystok, Craik, & Freedman, 2007; Bialystok et al., 2004). Recent studies on the

effect of lifelong bilingualism on age-related cognitive decline, Bialystok et al. (2007) found that bilingual adults showed symptoms of dementia 4 years later than comparable monolinguals, even when other factors remained constant. Thus the findings so far suggest that "the lifelong experience of managing two languages attenuates the age-related decline in the efficiency of inhibitory processing" (Bialystok et al., 2004, p. 301).

2.2.2 Positive effect of bi/multilingualism on working memory

Arnaud Szmalec, Marc Brysbaert, Wouter Duyck (2012) argued that the special function of the working memory, i.e. “the ability to temporarily represent serial-order information, is crucially involved in both native and foreign word learning, and also in sentence and text comprehension”. Traditional research in memory differentiate between verbal and visuospatial information, on which different memory processes operate. This division was explicitly present in the working memory model of Baddeley and Hitch (1974) and it remains present in many recent models. On the basis of a literature review, Baddeley, Gathercole, and Papagno (1998) proposed that verbal working memory primarily represents "the processes and mechanisms by which the sound patterns of the words of the native language are learned by the child" (p. 159). Baddeley et al. (1998) reviewed a large amount of evidence from adults, children, and patients in support of the idea that verbal working memory primarily is a language learning device and a positive correlations between measures of verbal working memory capacity (e.g., nonword repetition) and native vocabulary knowledge in children of various ages was found (Bowey, 2001; Gathercole & Adams, 1993, 1994).

Miyake et al., (2000) proposed that the executive function consists of three core components which roughly correspond as inhibition, shifting, and working memory. They proposed the idea that executive function is characterized by ‘‘unity and diversity,’’ which means that it consists of a group of skills or abilities which are correlated but not identical. This emphasize its reliance on other important mechanism that underlie the system (Best & Miller, 2010; Garon, Bryson, & Smith, 2008; Lehto, Juujärvi, Kooistra, & Pulkkinen, 2003). Consequently, it follows that working memory is automatically affected by any experience that affects the general functioning of the entire executive system as a whole. As a result bilinguals have advantage over their monolingual counterparts even in the function of the working memory.Thus from this concept of ‘‘unity’’, they formulate the hypothesis that bilinguals should demonstrate enhanced working memory.

Understanding both the role of working memory on executive function and effect of bilingualism on its development is important because working memory is considered to be one of the most important component of executive function. Working memory is responsible for many of the cognitive functioning and abilities, which include dealing with interference, conflict, or distraction (Kane, Conway, Hambrick, & Engle, 2007,), In addition, it helps make prediction on the cognitive and academic outcome of children. For instance, reading comprehension requires one to hold information in mind so it can be related to the current material, and mental arithmetic requires holding numbers in mind while the operation is applied to update the result. Therefore the early acquisition of literacy and numeracy skills (Adams & Gathercole, 1995; Blair & Razza, 2007; De Beni, Palladino, Pazzaglia, & Cornoldi, 1998; Gathercole, Pickering, Knight, & Stegmann, 2004; Savage, Cornish, Manly, & Hollis, 2006) and later language and math achievement (Barrouillet & Lepine, 2005; Blair & Razza,

2007; Bull & Scerif, 2001; Espy et al., 2004; Gathercole et al., 2004; Passolunghi, Vercelloni, & Schadee, 2007; Swanson & Kim, 2007) depend heavily on working memory.

Working memory involves maintaining and manipulating a limited amount of information for a small amount of time (Ilkowska & Engle, 2010). It engages in wide range of cognitive tasks ranging from performing mental rotation to sentence comprehension (Baddeley, 2003). Huettig et al., (2010) proposed a framework to explain how working memory facilitate . They emphasize the role of working memory as a central interface for linking the representations between the language and visual orienting. In this framework, when the participants see a visual display, the visual representations get linked to some specific spatio-temporal indices within the working memory. This process of connecting two representation enables a person in creation of conceptual and linguistic representations as well. As the spoken input unfolds in real time, these conceptual and linguistic representations match to the representations activated by the linguistic input. A feedback then goes to the linked location about this activation. Therefore, at a given point in time the direction of the eye movement is decided by the location that is most active in the working memory.

Studies by Biedron et al (2012) revealed that short-term memory and working memory abilities in the accomplished multilinguals were higher than in the mainstream philology. The multicomponent WM model is now accepted universally. It was formulated by Baddeley and Hitch (1974). They originally proposed dividing memory into three subsystems: (a) the phonological loop, which processes verbal and acoustic information, (b) the visuospatial sketchpad, which processes visual information, and (c) the central executive, which is a supervisory attention-limited control system. Later, they proposed a fourth factor, the episodic buffer, which stores

information (Baddeley, 2000) . In subsequent research on WM, the findings of correlation analyses have provided evidence that WM plays an important role in a number of complex cognitive abilities, such as language learning, reasoning, comprehension, and cognitive control, and that WM measures are an indicator of intellectual ability (Kane, Conway, Hambrick, & Engle, 2008).

Some researchers claim that WM, in particular the phonological loop, is a significant factor determining a foreign language learning outcome (Baddeley, 2003; Baddeley, Gathercole, & Papagno, 1998; Service, 1992). There is evidence to suggest that both children and adults who have poor memories (as measured by digit span and nonword repetition) have poor language skills (Baddeley et al., 1998). Baddeley et al. (1998) claim that the case of gifted language learners suggests that a natural talent for language learning may arise directly as a consequence of excellent phonological loop function.

There are at least two contrasting hypotheses about the relationship between bilingualism and working memory. First, the need to manage two languages concurrently could place greater demands on working memory. This hypothesis suggests that bilingualism may impede efficient processing of information in working memory because of the cognitive load imposed on working memory (Lee, Plass, & Homer, 2006; Sweller & Chandler, 1994; van Merrienboer & Sweller, 2005). Conversely, bilinguals' well-developed ability to inhibit one language while using the other may increase the efficiency of their working memory capacity because working memory resources are properly managed because of the thorough inhibitory processing (Bialystok et al., 2004; Bialystok, Craik, & Luk 2008; Fernandes, Craik, Bialystok, & Kreuger, 2007; Just & Carpenter, 1992; Michael & Gollan, 2005; Rosen &Engle, 1997). Bialystok et al., (2008) argue that the either of the hypothesis may be

true depending on the nature of the task given to the participants. When a higher level of attentional control is required, bilinguals may have superior performance in working memory capacity than monolinguals (Engle, 2002; Kane, Bleckley, Conway, & Engle, 2001). In attention-aided tasks, however, the bilingual advantage do not have much role to facilitate them in their performance (Yang, Yang, Ceci, & Wang, 2005).

Bialystok et al (2012) in their study hypothesize that working memory is enhanced in bilingual children, particularly in conditions for which the other core components of executive control are also required. They form this hypothesis on two basis, firstly, the effect of bilingualism on some components of the executive function would have effect on all the other components, which include working memory, through their common foundation. Second, from the perspective of diversity, the joint activation of both languages for bilinguals in language processing requires not only inhibition and selection but also maintenance of representations of context, interlocutors, and discourse which are all the job of the working memory. Therefore, as with the other two components, the relations should be observed through interactions with other executive function processes. Just as inhibition of irrelevant information in an incongruent trial is observed primarily in the context of shifting between congruent and incongruent trials, it is also expected that the effect of working memory can be observed in situations where working memory demands are integrated with demands for inhibition and shifting. The other implication of this view is that every core components of the executive function system are all involved in bilingual processing and are all modified as a consequence.

Two studies reporting the differences in performance between monolingual and bilingual children on tasks requiring different levels of working memory was

conducted by Julia Morales, Alejandra Calvo and Ellen Bialystok (2012). In the first study, 56 5-year-olds performed Simon-type tasks which were manipulated to exert more demands on the working memory, conditions based on two rules and four rules are compared and conflict resolution demands were manipulated by comparing conditions that included conflict with those that did not. The result report that the bilingual children responded faster than monolinguals on all conditions and bilinguals were more accurate than monolinguals in responding to incongruent trials, confirming an advantage in aspects of executive functioning. In the second study, 125 children 5- or 7-year-olds performed a visuospatial span task that manipulated other executive function components through simultaneous or sequential presentation of items. Bilinguals outperformed monolinguals overall, but there were larger language group effects in conditions that included more demanding executive function requirements. Together, the studies show an advantage for bilingual children in working memory that is especially evident when the task contains additional executive function demands.

In the study, working memory demands were operationalized as the difference between performing the task while holding in mind either two response rules or four response rules in conditions that either had minimal additional executive control demands or included conflict and so required inhibition and shifting. Thus, in this way manipulations in working memory was examined across levels of executive control. Bilingual children were reported to perform the task more efficiently than monolingual, as they responded more rapidly throughout and achieved higher accuracy even on the difficult incongruent trials. This pattern was found for both conditions that included low executive control demands and those for which executive control demands were higher.

In the second study, the visuospatial working memory task to minimize the role of linguistic demands were administered on children between the age group of 5 to 7 years of age. The nature of the task is considered to be more complex and captures the development of the ability to mentally manipulate visuospatial information. Previous researches show that this ability develop by over 5 to 7 years of age (Gathercole et al., 2004; Miles et al., 1996). In this study, children were asked to recall the positions of items in a matrix which follows a presentation simultaneously or sequentially. In addition greater burden it imposed on working memory, the position and order information were also required, the sequential task also requires executive control to monitor two sources of information and update both position and order information (Rudkin et al., 2007). Thus, the children's ability to perform a working memory task were compared for a condition in which only simple recall is required and a more difficult condition in which memory and executive control demands are higher. If the working memory advantage for bilinguals is independent of other task demands, then the study predicted that the bilinguals will outperform monolinguals on both conditions, as working memory is involved in both the tasks. However if the bilingual advantage in working memory is constrained by other task demands, then bilinguals were expected to show an advantage only when demands are high on the executive control.

The result shows that children performed better in the simultaneous condition than in the sequential condition (cf. Lecerf & de Ribaupierre, 2005; Mammarella, Pazzaglia, & Cornoldi, 2008; Tucker, Novelly, Isaac, & Spencer, 1986). Improved performance was also observed as children gain in age (cf. Gathercole et al., 2004; Miles et al., 1996). Although there were no language group differences in span, bilingual children obtained higher scores than monolinguals in both conditions on the more sensitive

proportion correct score. The two-way interaction showed that bilingual children obtained higher scores than monolinguals on the more difficult sequential condition, and the three-way interaction revealed that the younger bilingual children performed better than their monolingual counterparts on the simpler simultaneous condition.

Through these two empirical studies, Bialystok et al attempted to answer the question of whether bilingual advantage is present even in the working memory, and if it were the case then to what extend or the specific role of other components of executive control, i.e. inhibition and shifting disable or enable the working of the working memory. In both studies, the outperformance of the bilinguals over the monolinguals was found and the evidence of bilingual advantage was found across manipulations in the level of other executive control components.

In Study 1, the difference was found for both a simple condition in which it was necessary for them to hold two or four rules in mind to press a response key and a difficult condition in which the response also required executive control to ignore distraction from a misleading position and shift between trials. In Study 2, the difference was found in a simple condition in which young bilingual children performed at the level of older monolingual and bilingual children and in a difficult condition in which children needed to recall both position and order information and ignore interference from competing positions in the wrong sequence.

However it was noted that the bilingual advantage was seen in greater degree in condition which was more complex, such as performing the incongruent trials in Study 1, which was well handled by the bilingual children. Thus, the study positively imply that bilingual children perform better than monolinguals on working memory

tasks, an advantage that is nonetheless related to the other executive function demands of the task.

This pattern of results is consistent with the view of unity and diversity described by Miyake and Friedman (2012) and contributes to our understanding of the development of working memory in monolingual and bilingual children and to the relation between working memory and the other executive control components.

There are many important implications to understanding the development of bilingual children. It brings forth the point that different executive working of bilingual and monolingual mind need also to include the differences in the function of the working memory. Much of the earlier accounts and studies focused on the specific type of the executive function like inhibition (e.g., Bialystok, 1999), but more recent evidence suggest the need to look beyond single component explanation (e.g., Bialystok, 2010). These new researches herald the need to explore and look at executive function as a system which consists of a variance of body with different function but interrelated and connected and work as a single system. There is a need to examine different components of the executive function in the multilingual mind.

The presence of both main effects of working memory advantages for bilingual children and an enhancement of those effects when other executive function demands are present also emphasize the crucial role that working memory play in the executive function.

It is important to note that previous studies on multilingual mind did not show clear evidence for a bilingual advantage. One reason for this was because the nature of tasks used in earlier studies which were not appropriate to capture the bilingual effect which was not very obvious. For example, Bialystok and Feng (2010) asked children

to recall lists of words, and Engel de Abreu (2011) presented several tasks, in which the nature of the tasks was mainly to do with words or digits. Consequently, the results gained on these studies showed poor performance as compared to their counterparts. The nature of the working memory tasks was equivalent for monolingual and bilingual children, but bilingual children generally experience more difficulty than monolinguals in verbal processing. Thus, bilingual children obtained lower scores than monolinguals on tests of receptive and productive vocabulary. "This difference in vocabulary may have created a handicap for bilingual children performing verbal tasks, and the equivalent performance may in fact be masking a latent bilingual advantage". However in the study that is discussed here, the tasks were visual and visuospatial, with very low verbal requirements, thus it minimize the possibility of a confound variable in linguistic processing. Thus the latent functioning of the bilingual mind were evident which is seen in bilingual children outperforming monolinguals on various tasks of working memory. Another crucial implication of this study is the concept of the relation among different components of the executive function. The bilingual advantage in the working memory tasks in the current studies was independent of other task demands, as shown by the main effect of language group in both studies.

In the first study it was found that bilingual advantages is present in both conflict and non-conflict blocks, and in the second study, bilingual children showed superior performance in both difficult memory conditions. These results point to an effect of bilingualism on working memory that is separate from previously reported advantages in executive functioning. However, the executive control demands of the task in both studies had a significant role in determining the outcomes for working memory.

In Study 1 a bilingual advantage in accuracy was found for the difficult incongruent trials, and in Study 2 the young bilingual children showed a better performance than monolinguals in the simple condition, whereas in the more difficult condition the bilingual advantage was equivalent for children at the two age levels.

> "These results suggest that the bilingual advantage might not be attributable to a single component of executive functioning and that working memory alone is not modified by bilingualism; instead, the experience of bilingualism affects an integrated set of abilities in which efficiency is enhanced on cognitively demanding tasks".

Thus the findings in these two studies of working memory is in congruent with the proposal of Miyake and Friedman (2012), which argue for both unity and diversity of the many components of executive control. Traditionally, the working memory is measured and assessed separately from other abilities of the executive system and manipulated accordingly, but the results and findings by Bialystok et al shows that outcomes depend would also largely depend upon the other task demands. Hilchey and Klein (2011) also suggest similar proposal as they attribute the bilingual advantage not to a particular factor like inhibition but to a general ability to monitor attention (see also Costa et al., 2009).

The findings of studies on a number of researches thus makes it clear that the advantage that comes naturally to the multilingual and bilinguals on working memory or on any other aspect of the executive function should not be examined in isolation as a singular part but that single component influence each other. The cross effect of the executive system should be considered in understanding the bilingual mind.

Another observation which is apparent in the study of Bialstok et al is the overall understanding of a bilingual mind. The development of working memory is one of the most important aspect of the cognitive development of a child and the distinct way in which the working meory is developed in the multilingual mind is evident enough of the developmental effects of experience. Thus it makes important contribution to the area of research studies in cognitive development which examine the effect of experience on cognitive outcomes. The case of bilingualism however stands out from that of musical training or video gaming as they are not based on talent or interest. It is something that gradually develops in the everyday and hence constitutes an interesting area to explore. The role of experience in shaping the mind and directing the course of development is made evident through study of the bilingual mind.

2.2.3 Bi/multilingualism and its correlates with divergent/creative thinking

In addition to advantages in conscious attention-demanding processing, bilinguals are also found to possess superior or enhanced level of unconscious divergent thinking. Across a number of studies, bilinguals have shown enhanced skills with respect to creative and divergent thinking and to abstract and symbolic reasoning. In an investigation on creativity and bilingualism (Kharkurin, A., 2008; Ricciardelli, 1992;) found that bilinguals outperformed monolinguals in 20 of the 24 studies reviewed, showing a clear positive relationship between bilingualism and creativity or divergent thinking. Peal and Lambert (1962) suggested that bilingual children develop greater cognitive flexibility and creativity as a result of switching between two languages and two different perspectives. As well, Cummins (1976) has proposed that bilingualism spurs the development of abstract and symbolic reasoning through the experience of having two different words for most concepts. This helps bilingual children understand that the relationship between words and their referents is entirely arbitrary

and represents an abstract symbolic relationship. Problem Solving Bilinguals also show evidence of enhanced problem-solving skills, particularly on tasks requiring executive control (i.e., planning, cognitive flexibility, abstract thinking, rule acquisition, initiating appropriate actions and inhibiting inappropriate actions, and selecting relevant sensory information; Baddeley, 1996). A bilingual advantage has been demonstrated using the Simon task, dimensional change card sort task, and other similar tasks used to assess executive control for problem-solving tasks (Bialystok, 1999, 2006). Simon tasks refer to a family of tasks typically used to investigate interference effects. In the Simon task, stimuli are presented with different target features and in different positions. For example, participants may be asked to indicate the color of either a red or a green square presented on one side of the screen by pressing a left or a right key. The general finding in the Simon task is that reaction times are slowed when the spatial location of the target and its response coding do not correspond (incongruent condition) versus when spatial location and response coding correspond (congruent condition). An incongruent trial occurs when a signal is presented to the right but its color requires a left-hand button press. Conversely, signals that require a left-hand response and are also presented on the left side are referred to as congruent trials. Typically, reaction times are slower to incongruent compared to congruent trials, a finding referred to as the congruency effect or interference effect. The enhanced problem-solving ability may be because of the cognitive flexibility associated with bilingualism. Because bilinguals have the capacity to choose between two languages, they may develop more flexibility with respect to thinking that can be applied to solve problem.

To investigate the influence of bilingualism on divergent thinking, Kharkurin, A. (2008), tested and compared the performance of Russian–English bilingual

immigrants and English monolingual native speakers on the Abbreviated Torrance Test for Adults, which is one of the major assessment tool for divergent thinking. The study reveals that bilinguals do better in tasks where there is a need to "simultaneously activate and process multiple unrelated concepts from distant categories". This ability is further enhanced by the level of proficiency that the individual has on both the languages, the age of acquisition was also correlated with the divergent thinking and the length of exposure to the new cultural settings which leads to the development in that language itself are found to be important indicators among bilinguals.

> "A specific architecture of bilingual memory in which two lexicons are mutually linked to the shared conceptual system is theorized to facilitate the functioning of the language mediated concept activation, thereby encouraging bilinguals' divergent thinking performance (Kharkurin, A. 2008)".

The positive influence of bilingualism on human cognition is found to extend beyond conscious functioning. Evidence from many studies which focus on the correlation between bilingualism and creativity suggests a positive correlation between the two variables. It was found that bilingualism has influence on the unconscious and automatic cognitive processing like divergent thinking.

Guilford (1967) defined divergent thinking as a "process which involves a broad search for information and the generation of numerous novel alternative answers to problems". Other researchers characterize as occurring in mental state where attention is defocused (e.g., Mendelsohn, 1976; Kasof, 1997) and thought become associative (e.g., Koestler, 1964; Mednick and Mednick, 1967; Ward, Smith and Vaid, 1997). It is proposed that when an individual engage in divergent thinking, an "automatic

spreading activation mechanism" is responsible for triggering a large number of mental representations at the same time.

This activation of mechanism leads to establishment of associations which links concepts with different categories. Thus, "divergent thinking can be assumed to be an unconscious ability to simultaneously activate and process a large number of often unrelated concepts from distant categories".

Three important factors are implicated to exert considerable amount of influence on the development of divergent thinking among bilinguals (Kharkurin, A. 2008), language proficiency, age of L2 acquisition and length of exposure to new cultural environment.

The level of linguistic proficiency in the languages that a bilingual speak is considered to be one the factors that is implicated in divergent thinking abilities (Lambert,1955; Kharkurin, A., 2008). Employing the concept of degree of language proficiency as explicated by Lambert (1959), drew a distinction between two types of bilinguals based on their degrees of relative proficiency. Balanced bilinguals, he argued, are equally competent in both languages, whereas dominant bilinguals speak one language better than the other. The hypothetical relationship between the level of language proficiency in both languages and divergent thinking is based on a number of empirical studies reporting the former as a reliable predictor of bilinguals' cognitive abilities (e.g., Cummins, 1976; Bialystok, 1988; Lemmon and Goggin, 1989). For example, Bialystok reported two studies in which children differing in their level of bilingualism were given metalinguistic problems that made demands on either analysis of knowledge (i.e., the way in which the language is represented in the mind) or control of processing (i.e., the selection of information for use). She found

that fully bilingual children performed better than partially bilingual children on tasks requiring high levels of analysis of knowledge.

Employing the concept of "balanced bilinguals" (Lambert, 1955) Kharkurin, A. (2008), in a study suggest that the language proficiency of bilinguals is an important contributor to their cognitive development. it was hypothesized that if bilinguals with different levels of language proficiency show varying performance on cognitive tasks they might also show differing patterns of performance on the DT tasks.

There is indirect evidence suggesting that the age of L2 acquisition might also be an essential contributor to bilinguals' divergent thinking abilities. The important role of this factor can be logically inferred from studies demonstrating that certain cognitive capacities decrease with age. These findings reveal an age-related decrease in the ability to learn paired associates (Salthouse,1992), increased difficulty encoding new information (Rabinowitz, Craik and Ackerman, 1982; Craik and Jennings, 1992), reduced accuracy in recalling detail as opposed to the broader picture (Hultsch and Dixon, 1990), and changes in working memory capacity, cognitive processing speed, and attention (Kemper, 1992; Kharkhurin, Kempe and Brooks, 2001). Age-related deficiencies were also reported for implicit learningabilities (e.g., Curran, 1997; Howard and Howard, 2001;Fischman, 2005). The decline in cognitive functioning can be explained to some extent by age-related changes in cognitive structures and/or processing that occur as the person matures. Studies with connectionist networks provide evidence for this phenomenon (e.g., Elman, 1993;Marchman, 1993).

These two factors are likely to be complemented by a third factor – the degree of the bilinguals' exposure to the cultural settings of the languages they have learned. A huge number of studies in the field of bilingualism has been carried out among the

immigrants who moved from one cultural context to another (Kharkurin, A. (2008). Pavlenko, 2000). Hence it is assumed in contemporary researches that the bilinguals may undergo conceptual changes due to their experiences within different cultural settings (e.g., De Groot, 2000; Paradis, 2000; Pavlenko, 2005). These researchers argue that the conceptual system of individuals who acquire more than one language inevitably undergoes adaptations that are influenced by the cultural and social contexts in which these languages were learned. Cultural knowledge (in the form of schemas and frames) modifies conceptual representations and organizations in the memories of bilingual speakers (Vaid, 2000). New connotations, even entirely new meanings, may develop through acculturation. In turn, newly developed conceptual representations may promote cognitive flexibility, and novel and creative ways of encoding experience. The present study takes these considerations into account and introduces exposure to new cultural environments as another factor that can potentially influence bilinguals' divergent thinking. Bilinguals' extensive cross-linguistic and cross-cultural experiences may enhance their performance on various cognitive tasks. The facilitatory effect is explained by specific processing in the bilingual mind: experiences with different linguistic and cultural settings may result in certain modifications of bilingual memory, which in turn may improve cognitive abilities. By analogy, the present study hypothesizes that cross-linguistic and cross-cultural experiences may have an influence on bilinguals' divergent thinking. The specific architecture of bilingual memory may account for bilinguals' greater range of associations to a concept compared to non-bilingual speakers because it is situated in two different linguistic conceptual networks (Lubart, 1999). It is this diversity of associations that is considered to be a key property of divergent thinking.

Thus, the present study pursues two major goals. First, it explores the hypothesis that bilingualism has an effect on unconscious divergent thinking. To test this hypothesis, the performance of bilinguals and monolinguals was compared on DT tasks, which, as per Guilford (1967), assess fluency, flexibility, elaboration, and originality in divergent thinking. The superior performance by bilinguals on these measures could be regarded as supportive of the hypothesis, whereas equivalent or inferior performance would contradict the hypothesis. This study explores several research questions pertinent to the influence of bilingualism on individuals' divergent thinking abilities. Bilingualism is found to have an effect on fluency, flexibility, and elaboration in divergent thinking. These traits respectively address the ability to rapidly produce a large number of ideas or solutions to a problem, the capacity to consider a variety of approaches to a problem simultaneously, and the ability to think through the details of an idea and carry it out. Three factors in bilinguals' development (age of L2 acquisition, proficiency in both languages, and rate of exposure to new cultural settings) were proposed as potential contributors to their superior divergent thinking. The findings indicate that all three factors may have an impact on individuals' divergent thinking performance. Bilinguals who acquired their L2 earlier tended to outperform their counterparts who acquired L2 later in life on the measures of fluency and flexibility in divergent thinking,which require simultaneous activation of a large number of concepts from different categories. At the same time, bilinguals with high proficiency in both languages tended to score higher on the measure of elaboration, which taps into the ability to keep concepts active during the thought process. Finally, those bilinguals with longer exposure to the new cultural settings tended to show greater abilities on all of the above listed divergent thinking traits.The study reveals a tendency for the proficiency of bilinguals in both English

and Russian to have an effect on elaboration in divergent thinking. Specifically, it shows that bilinguals with a high proficiency in both languages are more successful in elaboration than their less proficient counterparts. This finding is in line with a number of studies on children showing greater divergent thinking performance of bilinguals highly proficient in both languages compared with their linguistically unbalanced counterparts (e.g., Carringer, 1974; Konaka, 1997). The result of the studies show that bilinguals who attained a high expertise in both languages would have stronger and more efficient links between lexical and conceptual levels than those who were not able to develop any of their languages to a high degree.

This study explored several research questions pertinent to the influence of bilingual development on individuals' divergent thinking. First, while bilinguals show superiority on those divergent thinking tasks that refer to the capacity to rapidly produce a large number of ideas and to think through the details of an idea and carry it out, they did not demonstrate that superiority on the test where the ability to produce unique and original ideas was measured. Second, depending on their history of bilingual development, different types of bilinguals show different patterns of divergent thinking performance. These differences could be explained by the facilitatory effect of cross-linguistic and cross-cultural factors in bilingual development. Bilinguals' age of L2 acquisition, linguistic fluency, and length of exposure to L2 cultural environments are suggested to influence the communication links in bilingual memory, which in turn may enhance the effectiveness of language mediated concept activation.Tthis study also lends indirect support to the creative cognition approach. On the one hand, bilinguals seem to utilize the same cognitive mechanisms of concept formation and lexical access that are used by all people. On the other, they tend to show greater divergent thinking abilities. Thus, the "mundane"

cognitive functioning enhanced in the process of bilingual development may contribute positively to individuals'creativity.

2.2.4 Superior metalinguistic skill of bilingual

Metalinguistic awareness is the ability to think about language. It is the awareness of the forms and structures of a language and an understanding of how these relate to and produce meaning (Cazden, 1974). It refers to knowledge about one's own cognitive processes. It is an awareness of one's own learning strategies and the mental activities required to self-regulate the learning process (Flavell, 1978). The process of learning the vocabulary, syntax, phonology, and morphology of more than one language, as well as learning how to use this body of knowledge in contextually appropriate fashion, may provide bilingual speakers special insight into their own cognitive processes and learning strategies (Kemp, 2007). Unlike concepts in cognitive processes, the concept and definition of metacognitive and metalinguistic skills similarly remain somewhat fuzzy but because of the crucial role it plays in the learning process and concept formation, there is a need to further study and understand the concept of meta linguistic ability.

Malakoff (1991) defines metalinguistic awareness as the awareness of the underlying linguistic nature of language use. It is the ability to consider the linguistic form and structure that underlie the meaning of the utterance.

Simply put, metalingistic awareness is a variance of metacognition which allows a person to think about language as an object and the ability to separate the different functions of language, ie into language forms and language representation. In broad sense Pratt and Grieve (1984) defined metalinguistic awareness "as the ability to think about and reflect upon the nature and functions of language". Similarly Gombert

(1990) suggest that metalinguistic awareness is the ability to intentionally reflect on and manipulate language which implies that language is a object that one can abstractly think about (Jessner, 2006). Davidson and Raschke defines metalinguistic awareness as the "the ability to attend to, and reflect upon, the properties of a language."

Meta-linguistic task requires the speaker to think about the linguistic nature of the message: to attend to and reflect on the structural features of language.

> *"to be metalinguistically aware is to begin to appreciate that the stream of speech, beginning with the acoustic signal and ending with the speaker's intended meaning, can be looked at with the mind's eye and taken apart" (Malakoff,1991).*

Bialystok et al (2001) propose that in metalinguistic awareness "attention is actively focused on … the explicit properties of language" whereby they highlight two important component of metalinguistic awareness: executive control and language analysis.

It is hypothesized that the experience of acquiring and maintaining two different languages - with different forms and structures - allows bilingual speakers to develop an explicit and articulated understanding of how language works. For example, bilingual speakers have two different words for most concepts. Reflecting on this can point to the insight that words are only arbitrarily and symbolically related to their underlying concepts. Similarly, when syntactic rules differ across languages, bilingual speakers of those languages may notice the differences and become explicitly aware of the syntactic rules which most monolingual speakers knows only implicitly. Noting

this distinction provides insight into the specific grammatical rules in each language as well as into the universal properties of human language.

Over the past decades, researchers who investigated the effects of bilingualism on children's metalinguistic development found that bilingual speakers, particularly those highly proficient in both languages, demonstrate greater metalinguistic awareness than their monolingual counterparts (Bialystok, Majumder & Martin, 2003; Campbell & Sais, 1995; Galambos & Hakuta, 1988). Research comparing the metacognitive awareness of bilinguals and monolinguals has generally found that bilinguals show greater metacognitive awareness than monolinguals (Ransdell, Barbier, & Niit, 2006; Vorstman, De Swart, Ceginskas, & Van Den Bergh, 2009).

Bialystok and Ryan (1985) thus divided metalinguistic ability into two skill components: analysis of knowledge and control of processing. Analysis of knowledge refers to the organization of linguistic knowledge into formal/symbolic categories and having explicit representations for them. Control of processing refers to the ability to selectively monitor and process a specific type of linguistic information. These components are said to develop alongside linguistic, cognitive, and metacognitive skills.

Furthermore, metalinguistic ability is measured by performance on metalinguistic tasks, tasks that put strain on both of these components. To study any of the two components, metalinguistic tasks that put high strain on one component with relatively low strain on the other are often employed. For example, a task that would put strain on the control component might ask the participant to judge the grammaticality of a sentence while ignoring semantics (e.g. *The colorless green ideas slept furiously)*. A correct response would require the participant to identify the

example sentence as correct because it is grammatically flawless despite it making no sense. The ability to judge the grammaticality of a sentence requires knowledge of correct vs. incorrect grammatical forms. Therefore, analysis of knowledge are assessed by using meaningful sentences and asking the participant to judge for grammaticality without having to ignore semantics (Bialystok, 1986), although some have doubted the effectiveness of this kind of measurement (Ricciardelli, 1983). Therefore, Bialystok (1986) also employed correction tasks to further assess analysis of knowledge (i.e. asking to participant to identify which aspect of the grammar was incorrect). Some researchers have suggested that asking a participant *why* a grammatical detail is incorrect is an even stronger indicator (Galambos & Goldin-Meadow, 1990).

Studies by Malakoff and others (1991) show that bi/multilinguality has positive effect on the cognitive development of a child, by improving the meta-linguistic, cognitive and executive function under supportive environment (Malakoff et al, 2006). Speakers of multiple languages experience the world through different languages, where the use of diglossia and code switching is an everyday practice. Every language has different language structure, the placement of the verb, object/subject etc are different in each language and as the child constantly makes sense of the different language system this contribute immensely to their development of meta linguistic awareness (Agnihotri, 2008).

Researches in the recent past on meta linguistic awareness has proposed a childhood bilingual advantage in childhood which is associated with *symbolic flexibility*, that enables them to understand the arbitrariness of language (Ianco-Worrall, 1972; Ben-Zeev, 1977).

In a study conducted by Ianco-Worrall (1972), performance on Piaget's sun-moon problem was compared between bilingual and monolingual children. In this classic experiment, children were asked if it was possible to switch the names of the sun and moon, and if that is the case then what would be up in the sky at night. Additionally they were asked what the sky would *look* like at night. Most children were able to switch the names of the sun and moon without difficulty, but chose to say that the sky would be bright at night.

Ianco-Worrall suggests that bilingual children realize the arbitrary relations of words and the objects they represent earlier than do monolinguals. These findings were also supported by Ben-Zeev (1977). This conclusion was based on the theoretical assumption that the bilingual environment is facilitative to symbolic flexibility since bilingual children grow up with at least two different symbols for the objects in their world. It was reported that this possibly led bilingual children to use semantic rather than phonetic analysis of words earlier than monolinguals, suggesting that bilingualism speeds up the development of concept formation.

Research has consistently found early bilingual advantages for control of processing (Bialystok, 1999). In grammaticality judgment task, bilingual children outperform monolinguals (Bialystok 1986, 1988).

But in order to find out the extent to this variation, non-linguistic task are often administered. In a 1999 study, Bialystok employed such a task by using the dimensional change card sort (DCCS) task, used by Zelazo and colleagues (1996) to assess cognitive complexity and control. The idea is that control will increase as children acquire increasingly complex rules and awareness of those rules whereby children are required to have *explicit representation* of a rule before reflection and

control. Furthermore, *executive functioning* is also needed to inhibit previous rules when switching to a new rule system.

The DCCS requires both types of processing in that children must understand the rules of the game as well as inhibit a prior rule when switching. The cards usually vary along two dimensions: (a) color and (b) shape. The standard game goes as follows:

1. Preswitch Phase – In this phase, the experimenter points to two target cards explain the one dimension rule.
2. Postswitch Phase – In this phase, the experimenter points to the same target cards but changes the rules of the game (e.g. from color to shape) and asks the participant to sort according to the new rules.
3. Knowledge-Action Phase – In the final phase, participants are asked about the rules of the game are their performance are evaluated based on their knowledge about the rule of the game.

Results from Bialystok's (1999) study indicates that there are generally no problems seen in monolinguals or bilinguals during the preswitch phase. However, the postswitch phase proves significantly more difficult for monolingual children than bilingual children. Through this result, they argue that bilingual children hold an advantage over monolingual children during tasks based on conflict and attention.

Bialystok thus suggest that to accomplish a metalinguistic task a child must possess three processing skills; the ability to differentiate between phonological structures and meaning, the being attentive to linguistic features of the target language without getting distracted, and thirdly and sufficient linguistic knowledge to correctly perform the task. They argue that bilingualism effects all the three components of

metalinguistic ability but in different ways. Bilingualism enhance the child's ability to understand the arbitrariness of language and efficiency of executive control, however it does not influence the how one learns the language representations in two languages.

Further Bialystok, 1986; Cummins, 1978; Ianco-Worrall, 1972 found that bilinguals children outperformed their monolingual counterparts in Piaget's sun/moon problem which further support earlier findings, that bilinguals do have the special ability to separate forms and meaning which leads to higher level of symbolic flexibility. These skills help them to understand the arbitrariness of language reference, which is the first prerequisite ability for metalinguistic development.

A large amount of research studies indicate that bilingual speakers have more efficient executive control systems as compared to monolinguals (e.g., Bialystok & Martin, 2004; Bialystok & Shapero, 2005; Carlson & Meltzoff, 2008). Consequently they outperform their counterparts in non verbal conflict tasks whereby they are required to selectively attend to one dimension of a task and ignore other distractive information (e.g., Barac & Bialystok, 2012; Bialystok, 2010). This ability is believed to have developed because of the constant executive control practice of bilinguals by managing between two languages (Bialystok, 2001). It has been shown by early researches that both languages are jointly activated for bilinguals (Beauvillain & Grainger, 1987; Francis, 1999; Friesen & Jared, 2012; Kroll & DeGroot, 1997; Marian, Spivey, & Hirsch, 2003; Rodriguez-Fornells, Rotte, Heinze, Nosselt, & Munte, 2002) hence a selective mechanism to control is required so that the speaker can focus only on the target language, and this selection of language is regulated by the executive control system. The increased practice in using the executive control network for language selection enables more efficient cognitive processing.

Consequently, going by these findings metalinguistic tasks that require using of executive control processes wherein there is a need to separate form from meaning should be performed better by bilingual children than by their monolingual peers. Bialstok et al (2012) administered three metalinguistic tasks to a group of bilingual and monolingual children and the result confirm earlier findings. In Wug test where the performance is largely determined by high level of language knowledge but does not require much of executive control, monolingual children outperformed bilinguals. However in grammaticality judgment and verbal fluency tasks where high levels of executive control is required, a superior performance by bilinguals was found and this ability in some way helped bilinguals to compensate for weaker language skills (Hermanto et al., in press) and an improved control mechanisms (Bialystok et al., in press).

Today, language development is considered as a complex and dynamic process by many researchers. The current linguistic studies challenge the idea of monolingual norms which follow a linear way of development. With an increase in the number of languages involved in multilingual development, the dynamics, that is, the changes and the complexity of language learning, has become even more evident (Jessner et al, 2008). Consequently, a number of researchers have argued that language development can only be adequately researched by applying a multilingual norm to linguistic research; in other words, it is only by investigating multilingual development that we can evaluate language development accurately (e.g., Abunawara, 1992; Cenoz, Hufeisen, & Jessner, 2003b; Cook, 1991; De Angelis & Selinker, 2001; Flynn).

Chapter 3

Bi/multilingualism and Literacy

The consistent research interest and findings on the possible implications that bi/multilingualism have on cognitive and intellectual development (Cummins, Hakuta, 1986 and others) bring forth the important question of how it can facilitate the learning process of a child both inside and outside the classroom.

Bialystok (2002) proposed that there are three distinctive features that are crucial while considering the process of literacy acquisition among bi/multilingual. Understanding the process of acquiring literacy cannot be isolated from the contribution of bilingualism itself. In attempting to understand the process of acquisition, majority of the research studies in L2 has concentrated on three broad categories, each addressing a different issue (Bialystok, 2002):

(1) The acquisition of literacy by bilingual (or partially bilingual) children (or adults) in a weak language

(2) The acquisition of literacy by monolingual in different languages, and

(3) The cognitive and linguistic components of fluent reading in a second language.

UNESCO advocates bilingual or multilingual approach to literacy as a key element of linguistically and culturally diverse societies. Bilingual and multilingual approaches to education refer to the use of two or more languages as mediums of instruction. The term 'multilingual education' refers to the use of at least three languages – the mother tongue, a regional or national language and an international language – in education. Furthermore, it is also urges adequate supply of reading material in mother tongues to learners, 'for entertainment as well as for study'. Teacher training in order to ensure

‘sufficient numbers of fully competent and qualified teachers who are familiar with the life of their people and able to teach in the mother tongue’ (ibid.). For mother tongue-based bilingual or multilingual education approaches to be effective, teachers or facilitators need to be recruited from minority language groups.

There is ample evidence that the use of the first or home language of learners as the language of instruction has a positive impact on learning (UNESCO, 2016). Research has consistently demonstrated that learning to read and write in one’s home or first language or mother tongue facilitates access to literacy as well as the ability to read and write in other languages (e.g. Brock-Utne, 2000; Goody and Bennett, 2001; Heugh, 2003; Hornberger, 2003; Ouane, 2003; Grin, 2005; Ouane and Glanz, 2011). Literacy provision that initially uses the learners’ first language and progresses to a second language has cognitive, psychological and pedagogical advantages (UNESCO, 2005). Mother tongue-based adult literacy programmes were piloted by the Asia-Pacific Programme of Education for All (APPEAL) at UNESCO Bangkok in Cambodia, India, Indonesia, Nepal and Thailand, with promising results. The case studies from the different countries show that learners can acquire the desired skills faster in their mother tongue. The pilots demonstrate how much ethnic communities value their linguistic and cultural heritage and the practicability of teaching and learning through mother tongue. They also illustrate the direct impact bilingual mother tongue literacy programmes can have on the lives of adult learners. They have tremendous potential as poverty reduction strategies (SDG 1), not only reducing income poverty but also addressing the lack of capabilities essential for human development (‘capability poverty’) through learning opportunities that effectively empower people, in particular women, to access developmental resources previously denied them. One of the conclusions drawn from these experiences is that mother

tongue-based programmes that strengthen linguistic and cultural diversity should be viewed as an integral component of sustainable development (UNESCO-APPEAL, 2007).

Education programmes that exclude certain segments of the population make it difficult for those groups to take an active role in local or national development because such education does little to equip them [students] with the knowledge, skills and attitudes necessary to contribute positively to community or national development. Education-for-development should ensure that all learners – no matter which home languages they speak – can develop to their fullest potential and contribute to their own well-being as well as to that of their community and their nation. Effective MLE programmes are crucial for members will gain the knowledge, skills and confidence to participate in and contribute to the development of the nation as a whole.

Some oppose mother tongue education considering the financial cost of investment and also because of its high maintainance. However, studies in the field of language economics, analyzing the cost of language-related public policies, have found that MLE programmes have a very reasonable cost, especially given their long-term benefits. The added expenditure entailed by moving from a monolingual to a bilingual education system is much smaller than commonly believed. Therefore, only comparatively modest additional financial outlays need to be factored in. Hence the important question to ask is not the cost of investment but the cost of an educational system that results in failure for most learners who do not speak the official language at home

If we compare the cost of establishing an MLE programme with the social and economic costs of inadequate or failed education for minority language learners, it is

clear that multilingual education is a wise long-term investment, as some World Bank studies on cost-effectiveness have shown.

3.1 MLE and the importance learning through L1

United Nations Permanent Forum on Indigenous Issues commissioned two expert papers (Magga et. al., 2005 and Skutnabb Kangas & Dunbar, 2008, Mohanty & Skutnabb Kangas, 2012, along with a large bulk of research, have shown that education in a dominant language (submersion schooling) for the indigenous tribal minorities:

1. Violates right to education and prevents access by creating linguistic, pedagogical, cognitive and psychological barriers;
2. Causes serious mental harm and marginalization, curtails development of children's capability (leading to poverty), and assimilates them forcefully to the dominant group;
3. Has a subtractive effect on the mother tongue while the development of proficiency in the language of schooling remains slow and limited;
4. Results in inadequate development of multilingual proficiency which deprives children of the cognitive and metacognitive benefits strongly associated with multilingualism;
5. Creates a language barrier and problems of non comprehension in schools which cumulate to school failure and large scale "push out";
6. Leads to extinction of tribal languages and loss of linguistic diversity.

Thus, dominant language only programme of education is the least effective form of education for the linguistic minorities and it is organized against solid research evidence on how best to enable children to achieve academically in school and how to reach high levels of multilingualism.

In the following section some of the MLE programs which follows different strategies will be analyzed along with the consequents cost and benefit. In early transition (also called early exit) Programmes, tribal and other linguistic minority children are taught mainly in their mother tongue for up to 2 to 3 years with the dominant language as a subject. By Class IV, most of the teaching is in the dominant language medium whereas mother tongue may or may not be taught as a school subject. There is a large body of research (including the very well known large scale studies (Ramirez et al., 1991; Thomas & Collier, 2002 and, more recently, Heugh et al. 2010) showing that early exit transitional programmes:

1. Fail to develop adequate mother tongue proficiency while proficiency in dominant language also remains limited and, therefore, the usual cognitive benefits of multilingualism do not accrue to the children
2. Show limited and short term academic benefits, at best.

Thus, early transitional programmes of MLE may be somewhat better than the dominant Language medium schooling but they are not very effective; initially the children in early Transition programmes seem to perform quite well, but when the mother tongue medium teaching becomes minimal and gets over, their performance declines and competence in the dominant and other school languages such as English remain low. Early transition programmes are weak and soft assimilative forms of MLE and they fail to develop strong linguistic and cultural identity. Early transition to L2 (or the dominant language)goes against the research evidence, which make a strong case for at least 6-8 years of use of mother tongue as the main medium of instruction in MLE programmes of the late exit variety.

Strong and successful models of MLE for indigenous tribal minority children all over the world use mainly the mother tongue as the medium of instruction (MI) during the

first 6 –8 years of primary education with the dominant language as a second language subject taught by multilingual/bilingual teachers who know the children's mother tongue. There is robust research evidence to show that the length of mother tongue medium education is more important than any other factor in predicting educational success of MLE programmes. Ramirez et al (1991) study involving a sample size of 2,353 students and the Thomas and Collier study (world's largest longitudinal study of minority students), involving a total of over 2,10,000 students, show that when different models of early and late transition from the mother tongue are compared, length of education in mother tongue medium was the strongest predictor of children's school achievement, bi/multilingual competence and achievement in the dominant language (English). Ethiopia's national evaluation of different regional variations of mother tongue medium education (Heugh et al., 2010) shows that the students with 8 years of mother tongue medium education (MTM) along with Amharic (the national language of Ethiopia) and English as school subjects, had better school achievement as well as proficiency in English compared to those with 6 years of MTM who, in turn, performed better than those with 4 years of MTM. Thus, the research and practice of MLE all over the world, strongly support the conclusion that, compared to the early transition, late transition forms of MLE with at least 6-8 years of teaching in the mother tongue medium leads to:

1. Better academic achievement,
2. Higher levels of multilingual competence, and
3. Better achievements in dominant languages (including English).

As with the 'mainstream' programmes for the dominant language groups, mother Tongue medium education with no transition and with other regional, national and international languages taught as second and foreign languages and as school subjects,

can be seen as the strongest form of education for tribal and indigenous groups. These forms of schooling in the mother tongue medium with other languages as school subjects can promote:

1. Better school achievement,
2. High levels of achievement in dominant and other languages (such as English)
3. Positive linguistic and cultural identity.

However, in multilingual societies like India, education must foster high degree of multilingual proficiency among all children. Tribal and other linguistic minorities, in particular, must develop, through education, competence in the languages of regional, national and wider communication.

Thus, while the dominant language medium of education has not worked, mother tongue only

programme (with other languages being taught as school subjects) cannot be seen as a viable alternative for tribal children in a multilingual society. MLE is accepted and promoted as an effective model of quality education for the indigenous tribal and other linguistic minorities all over the world.

Multilingual education (MLE) involves use of two or more languages for teaching and it seeks to develop high levels of multilingualism and multiliteracy (Mohanty, Panda, Phillipson & Skutnabb Kangas, 2009). Psycholinguistic principles of bi or multilingual education (Cummins, 2009) suggest that positive transfer to a second language occurs when cognitive and academic proficiency in the mother tongue is well developed. He question the beliefs about the negative effects of using LI in the home and school, which are based on misconceptions regarding the central role of language in children's educational development and the specific ways in which bilingualism affects this development. Recent research findings from many parts of

the world show clearly that maintaining and developing LI through using it as a medium of instruction for a major part of the school day has no negative effects on the development of L2 and in many cases has very positive effects, both on the development of L2 and on other academic skills (Cummins, 1979a, 1980). Therefore early support for development of mother tongue through schooling is necessary. International experience with MLE (Heugh & Skutnabb Kangas, 2010) shows that quality education for high levels of academic achievement and development of multilingual proficiency must begin with development of proficiency in MT used as the language of teaching for at least 6-8 years of schooling and gradually develop other languages through their systematic use as language subjects and language of teaching. Is three years of mother tongue medium education not long enough for a smooth transition to the major/dominant language? Clearly, the answer is "no". Apart from the bulk of research on this question (including Ramirez report, Thomas & Collier studies and the national evaluation in Ethiopia by Heugh et al. 2007), a 2012report on the Kom Experimental Mother Tongue Education Pilot Project in the North West region of Cameroon (Walter & Chuo, 2012)shows that "three year period of the intervention(in MT medium MLE) is not long enough to adequately prepare students for an effective transition to L2 instruction". In this experimental MLE programme, children's MT (Kom) is used as the MI in Classes I to III with English taught as a school subject. From Class IV onwards, the children return to the standard English only instruction programme. In Class V, comparison between children in the 12 experimental schools with 12 matched English only schools showed significant drop in the performance of the early transition children (who had switched after Class III from Kom mother tongue medium to English medium instruction). It may be noted

that, despite the drop in their performance between Classes III and V, the MT medium children still performed better than the non MT English medium children.

Thus, the research findings in respect of MLE programmes in different parts of the world are emphatic and clear: mother tongue based MLE programmes are better than the dominant language programmes and late transition MLE programmes are better than early transition MLE.

Research on MLE and teaching of English as a second or foreign language has consistently shown that the longer the MT is used as the MI, the better is the achievement in English as a school subject. This may appear to be counter intuitive, but development of high levels of cognitive and academic proficiency in MT along with progressive exposure to other languages in the classroom promotes metalinguistic awareness of languages and engagement with cross linguistic reflections to make learning of languages more effective and quick. The psycholinguistic principles of positive transfer of developed MT proficiency to other languages are well established. Pedagogues of English all over the world as well as in India agree that the time spent on development of MT is at no cost to learning of English as a second/foreign language. Keeping in view the commonality of proficiency across different languages and linguistic interdependence and also the psycholinguistic basis of positive transfer from developed MT to other languages, late introduction to English founded on strong MT development is supported on sound pedagogic grounds. However, in India, the popular aspirations for English as a language of global and economic advantages have resulted in increasing popularity of private English medium schools and pushing English to a prominent position in school curriculum and to earlier Classes in the Government primary schools.

The fundamental psycholinguistic principles of MLE would still apply to the ML classroom context; building a strong foundation of each child's language (L1 or MT) is a prerequisite for high levels of multilingual competence, development of the second language and effective classroom learning. The real challenge, therefore, is simultaneous promotion of multiple mother tongues through effective classroom communication and teaching learning strategies. Fortunately, a lot is known about how languages support each other, the dynamics of multilingual communication and the mechanisms of transfer across languages, in order to develop specific strategies for extension of the pedagogic principles of MLE to multiple language classrooms. Broadly, some strategies for MLE in multiple language classrooms involving simultaneous development of multiple MTs, multilingual awareness and cross linguistic reflection, progressive engagement with classroom curricular learning and development of MT and L2 can be suggested, as some examples sing all the languages of children as resources rather than as problems; for each child, her language is the only way of her articulation and, therefore, classroom must create space for her articulation. Using children's spontaneous communication links and chains of multilingual communication as prototypes for classroom communication network (in multilingual contexts, children from different MTs do evolve strategies/mechanisms for establishing communication links in play groups and informal contact situations); this can be facilitated by use of link languages wherever such languages are used by the contact language communities. Designing activities that involve the use of the multiple of languages available in the classroom. In such activities the teacher's role is one of a facilitator and a learner. Classroom processes should be transacted in a way that encourages the use of all the languages available in the classroom. Developing specific multilingual communication networks and

translanguaging through open activities of expression and comprehension, such as picture story telling, vocabulary development activities, reading and writing. Facilitation of multilingual communication activities (as mentioned earlier) through the help of community volunteers and children from higher Classes (in multigrade contexts). Encouraging use of multiple language and culture based counting systems, math and games activities for promotion of mathematical concepts in children's languages. Using language games and cross linguistic reflective activities focusing on structural aspects of languages for development of language awareness, metalinguistic skills and cross linguistic reflection. Promotion of multiliteracy engagement through unrestrained oral and written expressive activities. Collaborative production of multilingual texts by children working with teachers, community volunteers and other children from higher grades.

These examples are given only to show that it is feasible to extend MLE programme to multilingual classroom situations. It would not be necessary to develop specific textbooks but some supplementary texts and other TLMs need to be developed and classroom strategies planned. The TLMs already developed in the MLE programme can also be used. It is recommended that MLE programme be extended to cover multilingual classrooms, which would need special strategies for fostering high levels of classroom learning and multilingual proficiency through simultaneous development of multiple MTs, metalinguistic awareness and crosslinguistic reflection.

Skutnabb-Kangas (2009) questioned the subtractive type of MLE programs where children are forced to adopt a new language at the cost of their own mother tongue. This not only lead to linguistic genocide of a minority language but also have economic, psychological and social dislocation, psychological, cognitive, linguistic and educational harm, and, partially through this, also economic, social and political

marginalization. He argues that teaching tribal children in a language which is not their own obstruct them from access to education, which can also be seen as a genocide and a crime against humanity. Teaching tribals in the medium of a dominant language in a submersion or even early-exit transitional programme prevents access to education because of the linguistic, pedagogical and psychological barriers it creates. Thus it violates the human right to education.

In submersion education an ITM child learns something of a dominant language subtractively, at the cost of developing her own language. Often the dominant language replaces the child's own language. Submersion education often curtails the development of the children's capabilities and perpetuates poverty. It is organized against solid research evidence about how best to reach high levels of bilingualism or multilingualism and how to enable these children to achieve academically in school. Instead the children should have additive education, in a mother tongue based multilingual (MLE) programme where the child's own language is the main medium of education at least during the first 6 years, preferably longer, and where other languages are taught as subjects by well-qualified bilingual or multilingual teachers who know the child's mother tongue. subtractive education "... is now at odds with and in clear violation of a range of human rights standards, and in our view amount to ongoing violations of fundamental rights. It is at odds with contemporary standards of minority protection. The concept of "crime against humanity" is less restrictive [than genocide], and can also be applied to these forms of education.... In our view, the destructive consequences of subtractive education, not only for indigenous languages and cultures but also in terms of the lives of indigenous people/s, are now clear. The concept of "crimes against humanity" provides a good basis for an evolution that will ultimately lead to the stigmatisation through law of subtractive educational practices

and policies." Subtractive education through the medium of a dominant language often transfers IM children to the dominant group linguistically and culturally within one or two generations. It may thus lead to the extinction of Indigenous/tribal languages, thus contributing to the disappearance of the world's linguistic diversity. Most of the world's linguistic diversity resides in the small languages of Indigenous/tribal peoples. Much of the detailed knowledge of how to maintain biodiversity is encoded in their languages. Through killing them we kill the prerequisites for maintaining biodiversity. If we continue as now, most of the world's Indigenous languages will be gone by 2100. When States, including India, refuse to grant Indigenous/tribal peoples an unconditional right to the most decisive Linguistic Human Right in education, the right to be educated mainly in one's own language in a non-fee state school, they are seriously harming both the children concerned, the whole society, and our planet. Indigenous/tribal and minority education could be organized so as to promote high levels of multilingualism. This would give better results in terms of school achievement, learning of the dominant language and issues around identity. In addition, not even the initial short-term costs would be more than a few percent higher, and in the long term, mainly mother-tongue medium education would lead to considerable savings, including eliminating much of the "illiteracy" of tens of millions of children, and today's educational wastage.

The forced assimilation in education leads to homogenisation. Homogenisation, also in education, kills creativity. MLE works against homogenisation; it maintains diversity and fosters creativity. Human survival depends on creative solutions to the global and local problems of our own making. "The value of 'perfect' English skills as a financial incentive decreases substantially when a high proportion of a country's or a region's or the world's population know English well. 'Good' English will fairly

soon be like literacy yesterday or computer skills today: employers see it as self-evident and necessary but not sufficient for good jobs. The future is for high-level multilinguals.

Effective pedagogic strategies remain the key to the success of any educational activity. General pedagogic principles and good practices must form the core of MLE as of any other system of education. At the same time, MLE for linguistic minorities and tribal children needs to be implemented with some special pedagogic considerations. Realizing the objectives of MT based MLE requires culture based pedagogy and classroom activities drawn from everyday experiences of children in the programme. While MLE classroom transactions target achievement of uniform curricular objectives across different contexts, specific pedagogic processes must remain sensitive to cultural, ecological and experiential diversity. MLE is often seen as a mode of education to facilitate home to school transition making it possible for a child to move from a minority MT to more dominant languages. The notion of "exit" from the language of the child to target language(s) has been criticized as possibly accepting uncritically the hierarchical positioning of languages in the society (Panda, 2012) and in the process undermining the linguistic and cultural identity of the target group. The mother tongue skills should form the foundation for teaching / learning of English. Not only the languages but also the major language skills like listening, speaking, reading and writing and the sub skills these macro skills involve are similar in all the languages. These skills and sub skills once systematically developed in the mother tongue can easily be transferred to teaching/learning of English. Based on the principles of language acquisition, teaching of any languages should start with teaching of listening and speaking rather than reading and writing as is often the practice. Tribal and rural learners have some exposure to English in their

environment, which are different from their urban and upper class counterparts; they join the English class with some familiarity with the language, which can be used as their resources. Teaching/learning of English is to be systematically integrated into the teaching/learning of other languages.

Cummins et al (1981) conducted a meta-analysis of a number of bi/multilingual education programs namely, Rock Point Navajo Study (1971), Legaretta study: Direct ESL-bilingual comparison (1979), Nestor School Bilingual Program, Santa Fe Bilingual program, Sodertalje Program for Finnish Immigrant children in Sweden (1976), Manitoba Francophone Study, Edmonton Ukrainian English Program (1970) . These studies gained a resounding support that learning in mother tongue can facilitate children to learn the second and third language efficiently as compared to students whose MI is not L1.

Government support for strong MLE programmes demonstrates to all citizens those minority languages, and those who speak the languages, are valued. MLE programmes that help learners to build a good "bridge" between their home language and the official languages help to build national unity without forcing people to sacrifice their unique linguistic and cultural heritage. Experiences around the world have demonstrated that denying or suppressing people's linguistic and cultural heritage has been a cause for division and strife. MLE supports unity through *affirming* diversity rather than *instead* of diversity.

Learning in mother tongue would not only make the task of learning easier and more enjoyable but would also help sustain the minor languages and to grow as well. No language is inherently superior or inferior and that the question of prestige and status of a language is essentially a socio-political and not a linguistic question. Linguistically speaking, all languages are equally systematic and rule governed and

could potentially be used for all literary and scientific activities. Language is also a marker of a group identity intertwined with our thought processes.

The domination of minor languages by a elite and majority language has a historical basis and persists even today. There is a need to produce language learning materials in the native language of the children. Equally important is to educate teachers on the linguistic diversity which is the new norm and be aware of the benefit of learning in one's mother tongue which would go a long way in making the process of acquiring interaction and conversing easier in the classroom. Multilingualism should be considered an asset and attempts should be made to make the language of instruction as simple and easy to comprehend to the children.

It is crucial to consider the importance of individual multilingualism as it can immensely help the students to navigate and communicate within the linguistic diversity of a multilingual global society. The increase in mobility and migration across the globe has brought about a multilingual and multicultural space which percolates even into the classrooms.

There is conclusive research evidence that learning mother tongues alongside the language of instruction enhances not only their mother tongue competences but also their competences in the language of instruction. There is indicative research evidence that this has: longer term benefits for educational attainment and reducing the gap between migrant children and native born children, wider benefits in enhancing children's confidence and their cultural awareness and pride in their culture and longer term benefits in increasing employment opportunities.

In a World Bank funded study, Dutcher in collaboration with R. Tucker (1994) reviewed the international experience on this subject and found that:

• Children need at least 12 years to learn their L1.

• Older children and adolescents are better learners of an L2 than younger children. This is because of the greater amount of experience and cognitive maturity that older children and adolescents have over younger children.

• Developing the child's cognitive skills thorough L1 is more effective than more exposure to L2. Knowledge and skills learned through the L1 need not be relearned but simply transferred and re-encoded in the L2.

• Conversational language in an L2 can be attained within 1 to 3 years but success in school depends on the child's mastery of the academic language which may take from four to seven years).

• Individuals easily develop cognitive skills and master content material when they are taught in a familiar language. They can immediately add new concepts to what they already know. They need not postpone the learning of content before mastering an L2.

3.2 Role of identity text in a multilingual classroom

Norton et al (2013) shows that there is a connection between one's identity, literacy and language teaching in a multilingual classroom which is supported by research done in different countries like South Africa in the early 1990s, followed by research in Canada and Pakistan, and Uganda.

Language learning is not a gradual, individual process of internalizing a neutral set of rules, structures, and vocabulary of a standard language, rather language learners struggle for ownership of meaning-making; they struggle to learn to command the attention of their listeners; and negotiate language as a system and as a social practice.

He exposed the concept of "investment" and "imagined communities and imagined identities" to further illustrate this argument. Making reference to the economic metaphor used by Pierre Bourdieu called the "cultural capital" (Bourdieu 1977, 1991) which is the knowledge, credentials and modes of thought that characterize different classes, and which have differential exchange value in different social fields, the concept of "investment" stresses the importance of socially and historically constructed relationship of learners to the target language, and their sometimes ambivalent desire to speak, read, or write it. when learners 'invest' in language and literacy, they attempt to achieve the symbolic and material resources which will increase the their cultural capital and social values. Such resources include language, education, and friendship, while material resources refer to such resources as capital goods, real estate and money. As the value of their cultural capital increases, so learners' sense of themselves, their identities, are reassessed. Hence there is an integral relationship between investment and identity.

This construct of investment conceives of the language learner as having a complex identity, changing across time and space, and reproduced in social interaction. There is a need to realize the importance of human relationship in the process of adjustment in schooling; relationship with teachers and peers at school needs to be assessed along the assessment of a child's academic performance. Cummins et al (2005) examine the role of affect, identity, respect, and human relationships in children's learning. They proposed that students' cultural knowledge and language abilities are important resources in enabling academic engagement; and that students will engage academically to the extent that instruction affirms their identities and enables them to invest their identities in learning. They argue that these aspects are consistently proven and found by early research studies as well hence they form one of the core

scientific principles of learning (Bransford, Brown, & Cocking, 2000; Cummins et al, 2006).

Bransford, Brown, & Cocking (2000) (as cited by Cummins et al., 2006) in synthesizing the optimal conditions in fostering learning came to the conclusion that there are three important aspects that cannot be disregarded in the process of learning.

Donovan and Bransford (2005, p. 4) point out that "*new understandings are constructed on a foundation of existing understandings and experiences"*. What learners notice in their environment and their way of interpreting and organizing their observations is significantly influenced by prior knowledge, skills, beliefs, and concepts significantly influence. Prior knowledge is the totality of one's experience that has shaped a person's identity and cognitive functions. In other sense they are wider than the information or skills previously acquired in a transmission-oriented instructional sequence. This principle has a important implications in classrooms where students belong to linguistically diverse backgrounds. The role of the teacher or an instructor in such a context is to ensure that the prior knowledge of a student is explicitly activated and used as relevant background knowledge.

Learners should be supported in taking control of, and self-regulating, their own learning. Donovan and Bransford (2005, p. 10) point out that a metacognitive or self-monitoring approach can help students develop the ability to take control of their own learning, consciously define learning goals, and monitor their progress in achieving them." When students take ownership of the learning process and invest their identities in the outcomes of learning, the resulting understanding will be deeper than when learning is passive. This account specifies some minimal requirements for effective learning. It also brings into immediate focus the lack of scientific credibility

of approaches that rely primarily on simple transmission of knowledge and skills from teachers to learners. Exclusive reliance on transmission pedagogy is likely to entail memorization rather than learning for deep understanding, minimal activation of students' prior knowledge, and passive rather than active learning. Numerous research studies have highlighted the widening pedagogical divide between urban low-income and suburban middle-income schools, with low-income students increasingly subjected to scripted transmission-oriented pedagogy that fails to build on their preexisting cultural and linguistic knowledge (e.g. Warschauer, Knoebel, & Stone, 2004).

Thus it boils down to the need to acknowledge the prior experience of a multilingual student as important tools for learning in the classroom and attempts should be made to and explicitly transfer knowledge and skills across languages. Secondly, instructions should communicate respect the culture and language of a student communicates and aims explicitly to enable students to engage with literacy and invest their identities in the learning process. Therefore it is important that MLE programs incorporate these should pre-existing knowledge in the process of instruction, aim for deep understanding of issues and content, and the goal should be to encourage students to regulate themselves and makes owns the learning process as part of the identity. Since prior knowledge are encoded in the L1 it is only reasonable and appropriate to focus on the transfer of concepts and skills from L1to English. Research findings are clearly evident of the advantage of cross-language transfer in school contexts that are supportive of biliteracy development (e.g. Reyes, 2001; see Cummins, 2001).

However in a multicultural and multilingual context, question arises as to how such cross-language transfer and literacy engagement are to be managed where languages

are many, and teacher (s) may not know a single one. One approach that has been explored and are still explored in around the world is the usage of identity text. *Identity texts* basically describe the products of students' creative work or performances carried out within the pedagogical space orchestrated by the classroom teacher. Students invest their identities in the creation of these texts which can be written, spoken, visual, musical, dramatic, or combinations in multimodal form. The identity text then holds a mirror up to students in which their identities are reflected back in a positive light. When students share identity texts with multiple audiences (peers, teachers, parents, grandparents, sister classes, the media, etc.) they are likely to receive positive feedback and affirmation of self in interaction with these audiences. Although not always an essential component, technology acts as an amplifier to enhance the process of identity investment and affirmation. It facilitates the production of these texts, makes them look more accomplished, and expands the audiences and potential for affirmative feedback.

The framework incorporates the same emphasis on critical literacy, active self-regulated learning, deep understanding, and building on students' prior knowledge articulated by Bransford and his colleagues. However, it also argues for the centrality of *identity negotiation* and *identity investment* in any conception of effective pedagogy. Teacher-student interactions, and other interactions within the learning community (e.g. with peers and parents), create an interpersonal space within which knowledge is generated and identities are negotiated. Learning will be optimized when these interactions maximize both cognitive engagement and identity investment (Cummins, 2001). Maximum cognitive and identity investment in the process of learning could go a long way in bringing a child closer to the subject she learn in school.

As argued by Cummins (201) the framework attempts to express in a very concrete way the kinds of instructional emphases and language interactions required to build students' academic expertise. Optimal instruction will include a *Focus on Meaning*, a *Focus on Language*, and a *Focus on Use.* The focus on meaning entails the development of critical literacy rather than surface-level processing of text. The focus on language involves promoting not just explicit knowledge of how the linguistic code operates (e.g. phonics) but also critical awareness of how language operates within society. If students are to participate effectively within a democratic society they should be able to "read" how language intersects with power and how people use language to achieve social goals: to elucidate issues, to persuade, to deceive (or "spin" the truth), to include, to exclude, etc. The focus on use component argues that optimal instruction will enable *all* students (including ELL students) to generate knowledge, create literature and art, and act on social realities.

There is a need to expand the idea of a *whole child* and the *whole teacher*. The process of identity negotiation is reciprocal, when the teachers open up identity options for students, the identity of the teachers themelves are redefined. The teachers who supported and appreciated bilingual students in their initial struggles to express themselves and make them a part of the new environment in some way define the role of an educator. They see students not as a "limited English proficient" student but as an individual with intelligence, emotions, aspirations, and talents. They opened up pedagogical spaces where her identity and talents could be expressed and affirmed.

Chapter-4

Conclusion

Thus is evident from the theoretical and empirical overview of the study that bi/multilingual has added advantage in the cognitive ad executive functions which their monolingual counterparts do not have. Superior performance in various cognitive and psychological measures are consistently observed in many studies supporting the claim that various component of the executive function like cognitive control and flexibility, working memory, divergent thinking and metalinguistic skills are all influenced and enhanced by the everyday practice of bi/multilingualism. However this cognitive advantages are also hugely dependent on factors like language proficiency as seen in the case of "balanced bilinguals". However, in subtractive type of MLE, children are gradually forced to adopt the dominant language and leave their L1 behind, and this does not give them the cognitive benefit of bilingualism as researches has found that in order to fully master L1, minimum time of 6 years is required. While in contrast, learning or acquiring L2 and L3 takes a maximum of three years to learn once the child has mastered their L1.

Thus the importance of using mother tongue as medium of instruction in the initial 6 to 8 years is crucial in order to make the acquisition of literacy easier as well as to gain the cognitive benefit of bi/multilingualism. The need of the hour is to recognize this asset/resource and invent MLE programs which are designed to maximize this cognitive asset.

Education programmes that exclude certain segments of the population make it difficult for those groups to take an active role in local or national development because such education does little to equip them [students] with the knowledge, skills

and attitudes necessary to contribute positively to community or national development. Education-for-development should ensure that all learners – no matter which home languages they speak can develop to their fullest potential and contribute to their own well-being as well as to that of their community and their nation. dominant language only programme of education is the least effective form of education for the linguistic minorities and it is organized against solid research evidence on how best to enable children to achieve academically in school and how to reach high levels of multilingualism.

The consistent research interest and findings on the possible implications that bi/multilingualism have on cognitive and intellectual development (Cummins, Hakuta, 1986 and others) bring forth the important question of how it can facilitate the learning process of a child both inside and outside the classroom. it is crucial to question education programmes that exclude certain segments of the population make it difficult for those groups to take an active role in local or national development because such education does little to equip them [students] with the knowledge, skills and attitudes necessary to contribute positively to community or national development. Education-for-development should ensure that all learners – no matter which home languages they speak – can develop to their fullest potential and contribute to their own well-being as well as to that of their community and their nation. Effective MLE programmes are crucial for members will gain the knowledge, skills and confidence to participate in and contribute to the development of the nation as a whole.

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