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EDITORIAL

LOOKING FOR EQUITY IN EDUCATION AMIDST GROWING COMMERCIALISATION IN EDUCATION AND SHADOW EDUCATION

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Long ago, during monarchical rule, education was limited to rich children. Today, in the days of democracy, although there is universalisation of education, quality education is limited to children from rich families."Equity and equality are related but distinct concepts:equity focuses on the process of ensuring a fair distribution of goods and services, whereas equality is about the final outcomes between different individuals. (Proulx & Lye 2016, p. 14). Equity is an issue in most parts of the world. Nations have the moral responsibility of ensuring equity in education. According to the Norwegian Directorate for Education and Training (2008, p.1),

> "Equity in Education - means to provide equal opportunities in education regardless of abilities and aptitudes, age, gender, skin colour, sexual orientation, social background, religious or ethnic background, place of residence, family education or family finances. Equity in Education must therefore be understood on the system level, using a national perspective based on overriding legislation, regulations and syllabuses, and on an individual level, adapting the education to individual abilities and aptitudes."

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American Association of Colleges for Teacher Education (2011, p.2) highlighted the situation in US in the following words:

> "Unfortunately, the most effective teachers are unevenly distributed among schools. Students with the greatest needs often have the least access to the best teachers. Extensive research attests to the fact that children in high-poverty schools are much more likely than their more advantaged peers to be assigned new teachers, teachers who lack knowledge of their subjects, and teachers with lower academic skills. These factors contribute to lower achievement for students from disadvantaged backgrounds."

Analysing US situation, the Equity and Excellence Commission (2013, p. 14)

> "Our education system, legally desegregated more than a half century ago, is ever more segregated by wealth and income, and often again by race. Ten million students in America's poorest communities20—and millions more African American, Latino, Asian American, Pacific Islander, American Indian and Alaska Native students who are not poor—are having their lives unjustly and irredeemably blighted by a system that consigns them to the lowest-performing teachers, the most run-down facilities, and academic expectations and opportunities considerably lower than what we expect of other students. These vestiges of segregation, discrimination and inequality are unfinished business for our nation."

Raikes and Shaeffer (2016, p. 4) pointed out that

> "In addition to disparities between countries, inequities also exist within countries in regards to pre-primary education. For example, in many countries there is a large gap in pre-primary enrolment rates between the richest and poorest quintiles of the population."

Seriousness of ensuring equity in schools with higher proportions of disadvantaged students has been highlighted by OECD (2012, p. 11) as follows:

> "Schools with higher proportions of disadvantaged students are at greater risk of challenges that can result in low performance, affecting education systems as a whole. Low performing disadvantaged schools often lack the internal capacity or support to improve, as school leaders and teachers and the environments of schools, classrooms and neighbourhoods frequently fail to offer a quality learning experience for the most disadvantaged."

A few strategies suggested by OECD (2012, pp. 11-13) are: 1. Strengthen and support school leadership; 2. Stimulate a supportive school climate and environment for learning; 3. Attract, support and retain high quality teachers; 4. Ensure effective classroom learning strategies; and 5. Prioritise linking schools with parents and communities. UNESCO (2015, p. 1) gave following suggestion for equity at school level.

> " An equitable and quality lifelong learning approach would require at least: 12 years of publicly-funded quality primary and secondary schooling for all; Equal opportunities for all to access education and to learn, paying particular attention to vulnerable groups who are disadvantaged by factors such as gender, poverty, conflict or disaster, geographical location, ethnicity, language, age or disability; and relevant and effective learning outcomes, including, at a minimum, foundational literacy and numeracy skills that provide the building blocks for further flexible lifelong learning opportunities."

Incheon Declaration of 2015 (UNESCO 2016, p. 7) stated that

> "Inclusion and equity in and through education is the corner stone

> of a transformative education agenda, and we therefore commit to addressing all forms of exclusion and marginalization, disparities and inequalities in access, participation and learning outcomes. No education target should be considered met unless met by all. We therefore commit to making the necessary changes in education policies and focusing our efforts on the most disadvantaged, especially those with disabilities, to ensure that no one is left behind."

The 2015 Summit of International Teaching Profession highlighted global effort for equity and excellence of education in the following words:

> "Around the world, education systems are establishing more complex goals for excellence and equity in education in the twenty-first century. No longer are providing basic literacy skills for the majority of students and higher order skills for a few adequate goals. Instead, the goals of schooling today are to develop a broader range of knowledge, skills, and dispositions for every student, including critical thinking, problem solving, creativity, communication, and collaboration." (Asia-Society 2015, p. 7)

Following suggestions were given by the International Summit on the Teaching Profession 2017

> "Achieving equity in education means ensuring that students' socio-economic status has little to do with learning outcomes. Learning should not be hindered by whether a child comes from a poor family, has an immigrant background or by gender. Successful education systems understand this and have found ways to allocate resources to level the playing field for students who lack the material and human resources that students in advantaged families enjoy. In this way, education systems become powerful engines of social mobility. Furthermore, when more students achieve high performance, the whole system benefits". (Gomendio 2017, p. 101)

Equity in education gets more difficult to achieve, when schools for disadvantaged gets new teachers in comparison to general schools. Equity in education has its root in political decision regarding quality of formal education system. Equity in education in formal school system cannot be ensured, in a nation that allows privatisation of education for compulsory school stage, which widens the gap between learning level rich and poor children.

COMMERCIALISATION IN EDUCATION

Access to education has been accentuated by privatisation of education. Inability to cope with the demand for more and better education has made many nations go for encouragement to private initiatives in education. In all nations certain age groups are covered under free and compulsory education. Giving scope for private initiative for education of this compulsory group does not make the nations provide same quality education for all. Although government schools are free, the twenty first century has witnessed speedy expansion of high fee charging private education, widening the gap in quantum of availability of quality education between haves and have-nots. The amount of responsibility of the no fee charging government schools is getting continuously enfeebled by the self-decision of parents to go for fee charging private schools. In Indian situation, expertise in English and French languages are considered essential for getting better jobs not only in India, but also in foreign countries. Borooah and Sabharwal (2017, p. 34), in their study on inequality of access to education with reference to English as medium of instruction stated that " Facility with English offers significant educational advantages and international mobility, as well as access to global know-how." Besides an international language as the medium of instruction, a few factors that make parents have a preference for private schools may be (a) smaller class size, (b) punctuality of teachers, (c) availability of a number of co-curricular activities for development of social and emotional skills, etc. The fact that the nearby government school has better qualified and better paid teachers than available in the private school does not deter the parents in preferring private school. Of course, there are instances of

government systems appointing *para* teachers paying them a remuneration that amounts to nearly 1/20 times of the remuneration received by regular government teachers, although both categories carry out the same work. Although importance of preschool education for the development of an individual has been reported in many studies, nations have failed to provide free pre-school education for all as a government initiative, giving scope for private initiative that starts widening the learning gap between rich and poor children starting from pre-school age. This is also the situation in a rich country like United States, although US National Education Association (2015) stated that

> "*Great Foundations*: Quality early education helps prepare students so they can come to school ready to learn. A quality school readiness program requires that all students have access to: high quality early childhood education; full-day kindergarten; comprehensive health screenings and top-notch, well prepared teachers."

Early childhood education is not yet compulsory in many nations and is mostly delivered by private organisations. Although Indian ancient literature reports about possibility of learning of a baby growing in a mother's womb has been reported in a document of the Scottish Education Department in UK. There are also instances of private coaching (Shadow education) for early childhood education.

Growth of Shadow Education (Private Tutoring) as a Parallel System of Education

Shadow education refers to private coaching for their children from their own school teachers or others, in the residence of the teacher, student or in a coaching centre and the practice is termed as "Shadow education", that runs parallel to the formal education system. The motives for which parents send their children for private coaching are: (a) supplementary teaching necessitated owing to (a) shortage of teachers in schools, (b) poor quality of teaching in schools, (c) fitting the academic caliber of the

student to the expected entry requirement for admission into a school, (d) to make students competent for entrance tests conducted for entry into professional courses, (e) compensatory education for slow learners, etc. In the 21st century, yearning for better quality education has steered many parents to go for getting shadow education, which has pervaded most of the world. A few studies that report this issue at various levels are: (a) World - (Bray 2007, Dang & Rogers 2008; Bray 2009, 2011, & 2013, Bray, Mazawi, & Sultana 2013; Campani 2013; Kassotakis & Verdis 2013; Mazawi, Sultana & Bray 2013), (b) Asia (Bray & Lykins 2012); Cambodia(Brehm &Silova 2014); (c) Croatia and Bosnia & Herzegovina (Jokić, Soldo & Dedić 2013); (d) Cyprus (Lamprianou & Lamprianou 2013); € Egypt (Hartmann 2013); (f) France (Oller & Glasman 2013); (g) Kazakhstan (Akimenko 2017); (h) Malta (Buhagiar & Chetcuti 2013); (i) Portugal (Neto-Mendes, Costa, Ventura, Azevedo & Gouveia 2013); (j) Slovenia (Faganel & Trnavčevič 2013); (k) Turkey (Tansel 2013; and Altinyelken 2013) and (l) United Kingdom - England (Ireson & Rushforth 2014). Prevalence of shadow education is not identical throughout the world. Buchanan, Worth and Aston (2015, p.4) in their evaluation report about the affordable small group and one to one tuition to school provided by Tutor Trust, Manchester, UK stated that

> "At the time of the evaluation the Tutor Trust would charge primary or secondary schools between £18 and £26 for an hour of tuition. Based on groups of three pupils receiving 25 tuition sessions, the total cost of the intervention is estimated at approximately £185 per pupil."

Guill and & Spinath (2014, p. 7) stated that "Western Europeanand North American countries have quite low tutoring rates, ranging from less than 10% upto about 25% of an age cohort, while private tutoring is much more common in Eastern European, Asian, and African countries." A study may need to be undertaken to ascertain if private tutoring is a significant cause for which, in PISA 2015 (OECD 2016 a & b; 2017 b & c), western countries including US fell behind east Asian countries. Becoming aware of the adverse effect of performance of regular school teachers for their

participation in shadow education system, many nations have introduced curbs on such participation.

In India, the Right to Education Act (MLJ 2009, p.8) stated that " No teacher shall engage himself or herself in private tuition or private teaching activity." However, it remains in paper. No authority bothers about this restriction, as in many institutions, monthly salary of a teacher is less than the amount received by a non-skilled daily labourer, and such a low paid teacher can have certain amount of income from private coaching. Authorities also do not bother about private coaching on payment given by teachers receiving approved government salary, due to the fact that many parents sending their children for private coaching consider it as a prestige issue. Teacher shortage is rampant not only in private institutions, but also in government institutions. Sujatha (2014, p. 13) in her study of private tuition in states of Andhra Pradesh, Kerala, Maharastra and Uttar Pradesh found that percentage of private tuition varied in rural areas from 20.67% in Andhra Pradesh to 66.53% in Kerala and in urban areas from 38,75% in Andhra Pradesh to 72.72% in Maharashtra. "Private tutoring industry has recorded a growth of 35% in the last five years in India."(Gupta 2017, p. 191). Lakshmanasamy (2017) in a study on household expenditure on private coaching found that only rich families go for private tuition for their children. UNESCO (2017, p. 109) stated that "In India, in 2007/8 about 40% of urban secondary students received private tutoring, compared with about 26% of rural students." Due to increased use of shadow education, schools and even higher education institutions no longer give stress on examining body specified minimum percentage of attendance for students of specific courses. Such a situation has also given rise to new tasks for teachers and their institutions. When a student, finds teacher teaching a topic that s/he had already covered in his/her private coaching, may create problems in the classroom that can affect the learning of other students. Teachers in such situations need to take stock of the learning of each student in coaching classes and give them appropriate learning tasks. Although, shadow education is rampant in India, there are many teachers who do not give private coaching and take care of their studends even by visiting their homes. Above discussion indicates that equity in education will be a far reaching goal even at the

end of 21st century, not only in India, but also in developed nations.

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NEGATIVE FEELINGS AND PARENTAL PRESSURE EXERTED BY ACADEMIC STRESS ON STUDENTS IN STANDARDS X AND XII IN TAMIL NADU, INDIA

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Education is a serious undertaking in India because the career paths open to high school graduates depend solely on their final exam scores. The rigor of the examination-based system of education in India creates a tremendous pressure within the middle-class homes for students to achieve the high marks necessary for university or professional school admission.Three private schools in Chennai, Tamil Nadu, India were selected in 2014 and all 233 students in standards (grades) X and XII were surveyed to obtain an awareness of how they internalised feelings of academic stress if their exam scores were lower than expected. Almost half the students expressed feelings of hurting or killing themselves when their test scores were deemed to be "bad." Girls (57%) and boys (50%) experienced parental pressure. Students with at least one parent who attended college felt their parents exerted more pressure on them than those who had not attended.

INTRODUCTION

Education is a very serious and potentially stressful activityin India. The desire among parents for the academic success of their offspring begins to unfold almost from the time the child is born, and manifests itself throughout the child's academic career. This desire causes almost everything that happens at home to be structured around optimising the anticipated results. This optimisation manifests itself by actions such as

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early admission to formal education, regular monitoring of academic progress, and careful management of after-school activities to maximise student study time. This desire generates various levels of academic stress for the student, which may increase as the student progresses through the education system. Parental pressure to succeed is a main source of academic stress for Indian students, and parents perceive this vigilance to be part of their duty. The research on academic stress indicates that under certain systems of education, such as in India, Malaysia, and Singapore, the parents' desire for their children's academic success contributes to their students' academic stress. India is one of those countries where the highly rigorous and competitive system of education provides the basis for this pressure exerted by parents on their children because the final marks earned on statewide-standardised examinations administered at the end of Standards (grades) X and XII determine their academic future and career paths following high school completion(Doss, 2017). South India has one of the highest suicide rates in the world, and academic failure is one of its leading causes. Although the media report on the problem, little has been done to mitigate it (Aaron et al., 2004).

The results reported in this paper are part of a larger study on academic stress.The research examined a population of middle-class high school students enrolled in the tenth and twelfth standards in Tamil Nadu, India to ascertain the nature and degree of academic stress they experienced in relation to not achieving desired course examination marks, in anticipation of writing state or national board examinations at the end of the academic year. The study examined the academic stress felt by South Indian high school students because of parental expectations for them to score high marks on their school exams. This paper reports on the effect that unacceptable exam results can have on the students. Students enrolled in Standards X and XII who attended private schools in three different locations in Chennai, India were selected for this study because they tend to come from homes where the desire for academic success may be particularly high, and where the desire for English language proficiency is strong. English

is the *lingo franca* of India. English proficiency is deemed highly desirable since most universities and all professional schools deliver their courses in English; it is considered prestigious; it increases the chances for government employment; and is used in the work place. National heroes of professional sports and the film industry celebrities also consider speaking in English as a symbol of achievement. Even the regional language teachers are expected to have a degree of proficiency in English.

The current system of formal education in India traces its origins to the colonial British period and its emphasis on examination scores to demonstrate knowledge attainment. In the almost eight decades since Indian independence, the system has undergone repeated and significant revision, expansion, enhancement, and opportunities for universal access, but mastery by examination alone still rules with an iron grip. India follows a 10+2 system of education. The first ten years provide a general and common education for all students consisting of reading, writing, arithmetic, history, geography, general science and civics. The last two years of high school, Standards XI and XII, provide a more specialised curriculum, based on the curriculum stream in which the student is placed.

The education system requires annual year-end school exams to determine eligibility for promotion from one standard to the next, and high-stakes exams in Standards X and XII. Textbook mastery is the desired year-end outcome and the expected teaching approach in all standards. Completion of the course syllabus is the required goal whether content mastery or comprehension is achieved.When students progress to the end of Standard X, they write subjective essay board examinations of 2½-hours each in the areas of mathematics, integrated (general) sciences, social sciences, English, and the local state language. The examination schedule encompasses a 2-3-week period, and the test results determine the student's curriculum placement for Standards XI and XII. Based on the marks earned, students are placed in one of three main curriculum groups,

namely, Group A (health and natural sciences), Group B (engineering and computer sciences), or Group C (commerce and general arts). Once placed, it is practically impossible to change to a different curriculum group**.** At the end of Standard XII, students write two examination papers each in the same subjects as before, except that the general science examination is replaced by examinations in biology, chemistry and physics. These scores help determine the student's acceptance into university programmes, since the post-secondary institutes cannot accommodate all the student applicants received each year. In addition, students write entrance exams to gain admission into the professional schools of medical, engineering, pharmacy, chartered accounting, business administration,and law. Medical science programmes are particularly competitive.For example, a student in Group A must achieve an overall score of 195/200 points on the entrance examination to be considered for admission to the medical school.

The pressure to ultimately achieve high scores on board or university admission exams builds for many students as they progress through the standards. In preparation for this ultimate hurdle, they experience periodic exams during each year, year-end exams, and the threats of failure emphasised by parents and teachers.

Parents assume full responsibility for their children's success at every stage. To increase the possibility for this success, parents enroll their children in lower kindergarten classes at 3½-years-old and expect the programme to teach a formal curriculum, including cursive writing. Parents who can afford the tuition select private schools because they believe the English medium of instruction will provide a value-added benefit for their children. Thirumurthy (2014) observed that the desire to achieve the marks on school exams is a strong motivating factor for many parents to become involved, even at the lower elementary levels, in nurturing the academic accomplishments of their children through such means as reviewing homework papers, expanding on concepts presented in school, and conducting drill and practice exercises.As students progress in

school, some parents request additional homework from teachers, hoping this will afford their children academic benefits at exam time, and most parents send their children for after-school tutoring.

In a cross-cultural study, Larson and Verma (1999) found that "middle-class high school students in India spent more time doing homework (about 4-5 hours a day) than their counterparts in other countries such as Japan (2-3 hours) or Korea (3 hours a day),(in Larson and Verma's study,as cited in Rao, 2008)."Partly because school success has such an important role in determining a child's future, it has come to be a critical measure of self-worth for young Indians; thus, students and parents place major importance on the adolescents' academic work"(in Varma's work, as cited inVerma, Sharma & Larson, 2002).

Test anxiety poses a significant and considerable concern for high school students, and this concern can affect student performance. The research of Beilock (2011) informed us that stressful academic situations, such as high stakes exams, reduced the available working memory for processing the required exam tasks. Under such stressful situations, task demands and performance concerns competed for working memory capacity. The pressure of knowing that one's exam scores may be judged by parents, teachers, and peers added to the stress of the exam situation. Performance of students with the highest working memory capacity were more likely to suffer under the stress and fall to the level of those with lower working memory capacity. Journaling before an exam and/or reaffirming one's self-worth were techniques the research showed that reduced the worry factor associated with the actual exam and freed more working memory for successfully processing the exam task.

METHODOLOGY

Three private schools in three different areas of Chennai were selected for this study. All three schools had been in existence for many years and were co-educational, government accredited, and operated by Christian churches. All teachers held government credentials in the areas they taught

and were hired based on academic expertise, not on religious affiliation. Most of the students were not from Christian families.

A survey instrument was prepared in English and administered to 233 students enrolled in Standards X and XII. The wording of the instrument was carefully considered, keeping student comprehension in mind. A pilot study then helped to improve the wording and relevancy of the items on the survey. Standards X and XII were chosen because of the high-stakes government exams administered at the end of the year to students in these two standards. Students responded to the 29-item survey instrument during a break in their regular class periods, and on average, it took approximately 20 minutes to complete the form. The researcher, and or the two assistants, met with each class group and personally administered the instrument. Neither the students nor the schools received a gratuity for participating in the survey. The survey covered more items than unacceptable examination results; however, only the results of the examination component of the survey are reported here. Four sections of students in Standard X (145 students) and three sections of students in Standard XII (88 students) participated in the survey. Administration of the survey took place early in the academic year while students still had time to consider their on-going class performance in preparation for writing the year-end exams.

Ten of the seventeen questions on the survey instrument were posed in a multiple response format, meaning students had the option of recording a variety of responses to these questions. From the response sets provided, students were asked to select as many responses to an item as they felt were appropriate. However, they were not confined to the response sets provided for the various items and were provided space to write their open responses in addition to selecting from the response sets. Moreover, this format allowed students to more freely express their opinions. For analysis purposes, the open responses were tabulated and handled in a statistically responsible manner.

Demographics

The 233 students in this study represented a diverse group in terms of caste, religion, school, birth order, number of children in the family, chronological age and parents who attended college. The demographical details are given in Table 1.

Table 1
Demographic Data of the Sample (N = 233)

		Count	Valid Percentage
Gender	Female	86	37
	Male	144	63
	Missing	3	1
Caste	Forward	9	4
	Backward	134	61
	Most Backward	30	14
	Scheduled	38	17
	Scheduled Tribe	3	1
	Other	5	2
	Missing	14	
Religion	Hindu	137	60
	Muslim	26	11
	Christian	62	27
	Jain	2	1
	Missing	6	
Standard	10th	145	62
	12th	88	38
Schools	#1 (2 sections)	64	27
	#2 (3 sections)	88	38
	#3 (2 sections)	81	35

Table 2

Do bad exam results cause you to have any of the following feelings? (Circle all that apply. If you have none of these feelings, then skip this question).

a. Headache
b. Stomach ache
c. Sleeplessness
d. I feel like hurting myself
e. I feel like killing myself
f. Other (Explain): _____

The five options provided on the survey represented the majority of responses indicated by the students. For each of these five options, girls reported a higher response rate than did the boys. The responses *I feel l like hurting myself* and *I feel like killing myself* were tabulated together since both these responses indicated extreme emotional reactions to disappointment about examination results. Overall, 43% of the students expressed feelings of *hurting or killing themselves* when their test scores were deemed to be "bad." The particular tendency of feeling like *hurting or killing oneself* did not depend upon gender or standard.This information is shown in Figure1.

Although this result is disappointing, it is not surprising. The philosophy of *"maanam varin oyur neeppar"* ("killing yourself is better than bringing shame to your family") pervades the Indian culture and is glorified in the Tamil literature. "It is better to die than shame one's name or family" is imparted subtly to each generation. In a highly competitive system of education, the physical and emotional response to earning poor marks cannot be ignored.

Twenty-five write-in responses were given for this question as *other*, and they are shown in Table 3. Although write-in responses were fewer in number and were not the same as choosing from a set of given responses, they indicated emotional responses that were of importance to students, even though exact weights could not be determined. These feelings expressed by the students

in their write-in responses relate more closely to the concepts probed in the second question under consideration in this paper. Students who had not read ahead on the survey instrument would not have known the stem for Question #2 at this point in the survey. They wanted to express feelings that were not reflected in the Question #1 to which they were responding, so these comments must be given consideration.

FINDINGS

Among many questions in the study undertaken, this paper focuses on the two that considered physical and emotional responses to stress. Together, these two questions were constructed to obtain an awareness of how students internalised feelings if their examination scores were lower than expected. Although the stem of the two questions appeared to be somewhat similar, each one served a different intent. The first question, *"Do bad exam results cause you to have 'specific' feelings?"* probed for physical or extreme emotional reactions to receiving a disappointing exam score. The second question, *"How do you feel when you do not perform well on your school exams?"* probed for less extreme emotional responses to exam disappointment. The first question contained several possible responses, out of which a student could select one or more and/or utilise a blank space for write-in-responses. The second question contained a list of responses from which a student could check as many as were applicable. Thus, both questions constituted a multiple-response format. As such, one should carefully analyze these questions without applying statistical inferential analysis, such as chi square tables. A student might have marked more than one possible given response for question one, as well as have written a personal response in the provided blank. For the second question, a student might have selected more than one possible given response to the question.

Question 1: Do bad exam results cause you to have any of the following feelings?

Students selected from a list of responses to indicate their degree of physical/emotional reaction they experienced because of poor marks on

Figure 1
Bad Exams Make Me Feel, by Gender

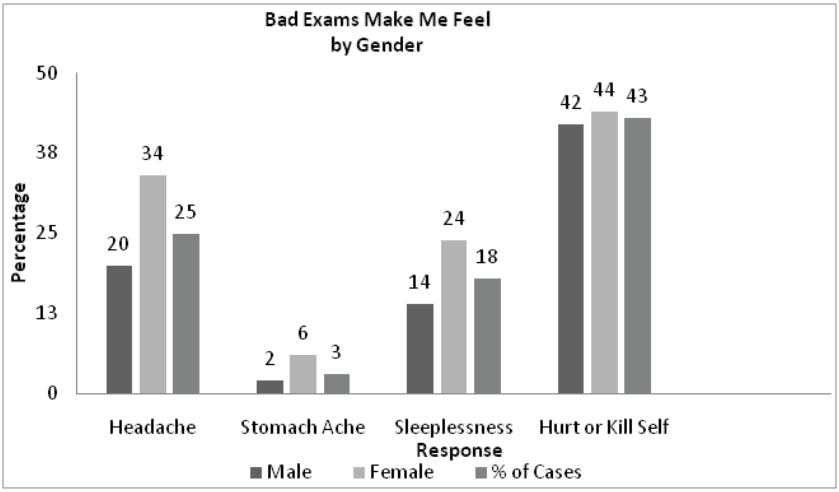


Table 3

Response	Male	Female	N	Percent of Cases
Have confidence in the future	5	0	6 *	3
Feel upset	2	2	4	2
Feel sad	3	1	4	2
Feel neutral	3	0	3	2
Feel bad	2	0	2	1
Feel confused	0	1	1	0.5
Blame self	1	0	1	0.5
Don't like myself	0	1	1	0.5
Did my best	1	0	1	0.5
Feel like killing mother	0	1	1	0.5
Pray	0	1	1	0.5
* One student did not indicate gender.				

examinations, and they had the opportunity to list any additional feelings they experienced. Table II lists the question and responses from which students selected.

Write-in Responses

Overall, boys' write-in responses expressed more positive feelings than did the girls' responses. Boys either expressed feelings that were more positive about future exams, felt neutral about 'bad' results, or felt they had done their best on the exam. Girls did not write any positive feelings about future exams, expressed dislike for themselves, or expressed feeling confused. In both groups, students expressed being "upset" at their exam results.

Question 2: How Do You Feel When You Do Not Perform Well on School Exams?

Students selected from a list of possible reasons for feeling stress after receiving low marks on a school exam. These included common expressions such as *I will do better next time, I feel inferior to my friends, I could not recall the answer, I did not know how to prepare well for the exam, and I blame myself.* See Table 4, below. The analysis of this question focused on the four areas of parental pressure; peer pressure, expressed as *feeling inferior;* teacher pressure; and optimism. Table IV, below, reports the student tally in percentages.

Table 4
How Do You Feel When You Do Not Perform Well on School Exams?
(Circle at that apply.)

	Overall	Male	Female	Yes	No	Std. 10	Std. 12
Parental Pressure	56	52	61	56	53	54	59
Hope to do Well	41	36	51	13	30	49	27

Blame Myself	29	26	34	29	33	28	32
Tension	27	23	34	29	28	30	22
Could Not Recall	22	19	26	26	20	20	24
Inferior to My Friends	20	16	28	23	20	22	18
Disappoint My Teachers	19	18	21	18	23	22	15
I Don't Know How to Prepare	13	10	16	4	9	15	8

Parental pressure, at 56%, was of the highest concern for the students and the greatest reason for their feelings of stress. Parental pressure was expressed on the questionnaire either as *disappointing my parents,* or *parents will scold me.* It should be noted that 45% of students selected *disappoint parents*; 21% chose *scolding by parents*; and 10% selected both responses. The tally of parental pressure at 56% was derived from the combination of responses for *disappointing parents* and *parents will scold me.* The overlapping responses, when a student marked both items, were subtracted from this total to rectify the double counting. One positive observation was that the degree of extreme parental concern seemed to be less than the degree of overall disappointment by parents in that less students marked *scolding by parents* than marked *disappointing parents.*

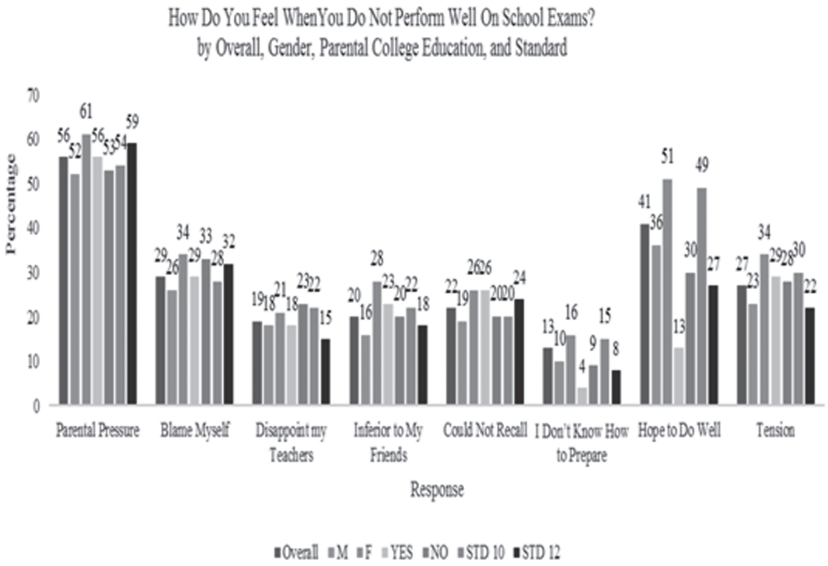
From the results seen in Figure 2 we see that what parents thought about the low marks was highly important to the students, and was almost three times as important as disappointing their teachers' expectations. We infer that the stress felt from peer pressure, as defined by the response *feeling inferior to my classmates,* and from teacher pressure are almost 1/3 of that felt from parental pressure.

Optimism about doing well in the future was reported at 41%, and in general, the feelings of optimism were twice as much as that of feeling inferior to peers. In general, girls reported feeling more optimistic at

51% than did the boys at 36%. From Figure 2, we see that females consistently reported higher feelings of academic stress in all categories of this question than did the males, yet they were more optimistic for the future. It may be concluded that when one performs poorly, one does not give up easily because of the expectations to do well, so the student is still very optimistic for the future. The optimism felt by students in Standard X decreased by ½ for the students in Standard XII. In both standards, students whose parents attended college were less optimistic than students whose parents did not attend. There was a gender bias in the expressed feelings of parental pressure with 52% for the males and 61% for the females.There was also some perceivable positive difference between those students whose parents did, or did not, have some college education. It seemed that parents who achieved some level of tertiary education exerted more academic stress on their children than the pressure felt from parents without any tertiary education, and it was seen in how students interpreted their low exam marks and how they felt about future academic performance. Fifty-six per cent of students who had at least one parent that attended college felt this parental pressure, whereas 53% of students whose parents had no college education felt this pressure exerted on them. Between the "yes" and "no" tertiary education groups, when looking at the external influence that parents or teachers may wielded on students' feelings of academic stress, we observed the following. Parental pressure was felt more by the students in the "yes, my parent attended college" group (56%, which was the same percentage as the overall report of parental pressure), whereas teacher pressure (23%) was felt more by the students in the "no, my parent did not attend college" group. However, both student groups felt teacher pressure considerably less than they felt the pressure from their parents. Interestingly, students in the "yes" group reported they could not recall as much information presented on their exams as did the "no" group. Optimism for doing well in the future was very low for the "yes" group (13%) as compared to the "no" group (30%).

Students in Standard XII felt parental pressure more than did students in

Figure 2



Standard X. Although this pressure was lower in Standard X (54%) than in Standard XII (59%), we still observed that over 50% of the students in both standards reported feeling parental pressure as their main source of academic stress. Out of the eight response options, students in Standard X reported higher levels of academic stress in four of the areas, along with higher optimism, than did students in Standard XII. These five areas were general feelings of tension, feeling inferior to friends, disappointing teachers, not knowing how to prepare for exams, and a hope for doing well in the future.

How Do You Feel When You Do Not Perform Well on School Exams? The majority of students, whether classified by gender, parental level of education, or the student's standard, expressed more pressure from their parents than from their teachers or peers. This is not unexpected in the Indian culture where the peers compete but do not exert scholastic pressure on each other. By contrast, students in other cultures, particularly in

North America for example, may feel more peer pressure in their social circles, but not feel it as much in the scholastic competition. In India, students compete in general against each other to obtain top marks to acquire good jobs. From Table 4 we see that overall, girls seemed to experience a bit more parental pressure (61%) than did the boys (52%), and if at least one of the girl's parents attended college, then the pressure was slightly greater for this "yes" group than for the "no" group of girls. We can see that girls experienced both more overall academic pressure from parents than boys did, and more pressure if at least one of their parents had achieved some level of tertiary education. Overall, parental pressure was slightly more for students in Standard XII while feelings of peer pressure was less for students in Standard XII when compared with Standard X.

Overall, 1/4 (27%) of the students expressed a general feeling of tension regarding their schoolwork. *Feelings of tension, blaming self, not able to recall information, not knowing how to prepare for exams* are all coping mechanisms that console, buffer, and sustain a student emotionally and mentally. These factors contribute to their feelings of *disappointing parents.* They are not independent and discrete factors. Feelings of disappointing parents is a multi-facet situation.

A common thread of feelings of low self-esteem was expressed in both questions analysed in this paper. *Self-blame* for poor performance; internalised feelings of disappointment such as anger, sadness, peer pressure, and feelings of disappointing others; and a range of physiological reactions all lend themselves to loss of self-esteem and feelings of depression. Loss of self-esteem gives rise for students to find reasons that explain poor performance. Realising, or being reminded, that parents invest much time and money into their children's education, poor examination performance is not taken lightly by the students.

When considering the write-in responses to Question 1 (*Do bad exam results cause you to have 'specific' feelings?*) along with the student

responses selected for Question 2 (*How do you feel when you do not perform well on school exams?*), we observe that these write-in responses confirmed some of the responses that students selected for the second question.

CONCLUSION

Regarding the academic stress experienced by the students in the 10th and 12thStandards, the main culprit was the pressure exerted by the Indian parents. Students' extreme feelings of *hurting or killing oneself* cannot be ignored. Almost half of the students (43%) expressed these feelings and they were not dependent on gender or standard. An education system based on rote memory, teaching to pass year-end examinations, and completing a syllabus whether students fully understand the concepts or not, contributes to this extreme degree of academic stress.

Educators and parents must become concerned about suicide ideation among high school students and incorporate response measures that include both school-based and home-based emphases. School and society must stress the dignity of honest labor in all forms so that students who fail to achieve their initial academic aspirations can feel validated to pursue another subject or career path.

High school girls seemed to be more vulnerable to the impact of academic stress imposed by parental pressure than were the boys. In every area, on both questions posed in this study, responses from the female students were higher than those of their male peers. These differences may not have been significant, but still the percentages were higher in every area. Several factors may have contributed to this gender bias. The perception of females in the Indian society as a "marketable commodity" for marriage may lead to this parental pressure for academic and thus professional accomplishment. The alternative is parental fears for their daughter's future marriage if they do not do excel, or for their ability to sustain themselves if they do not marry at all. Based on information ascertained while doing this research, girls seemed more committed

to entering medical science programmes than were boys, who showed greater interest in engineering and accounting. These professional pursuits require academic excellence. Indian universities have less available seats for medical science students than they have for other professions, so the competition for medical school admission is particularly intense. As stated above, a recognition by parents that all forms of honest work carry dignity and merit may help them better accept the fact that all students, no matter how diligent or academically superior they may be, will not be able to enter chosen professions simply because of the nature of the current education system in India and the inability of the university system to keep pace with the demands for university entrance.

All students, but particularly the girls, need intervention measure to help them cope with their tendency to have more negative emotional responses than do the boys. One encouraging result from this study is that girls felt more optimistic for better exam results in the future than did the boys. This optimism can be turned into positive results by teaching techniques and review strategies that help students learn how to study and prepare for exams and apply critical thinking skills rather than relying on rote memory. The increased study techniques may help reduce the overall feelings of academic tension and increase feelings of self-esteem when students have at their disposal an additional tool for success.Journaling before an exam and/or reaffirming one's self-worth as suggested in Beilock's research (Beilock 2011) are additional techniques that may be explored.

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IMPROVING THE CULTURAL CAPITAL OF CHILDREN FROM MARGINALISED COMMUNITIES

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For centuries, the Indian Caste System has created a form of segregation among its followers. This has lent to a disparity among the classes. Though this has produced a disparity in social, economic and educational establishments, the focus of this study is primarily in education. The question of this study was,"Can teaching special lessons to improve the cultural capital of students from poor communities have a positive impact on them?" The assumption was that the social capital of students from the lower caste communities is significantly inferior to that of students from affluent homes. The focus of the school was four schools from the poor low-caste communities were chosen for this research and special instructional intervention was used to see if the lessons improved personal factors related to cultural capital. The focus of the instruction provided was on improving three constructs related to cultural capital: self-esteem, locus of control and sense of hope. Prior to instruction, students were given a survey to measure their current level of cultural capital, of the students, 45 were selected for pre-instruction interviews. Once these pre-surveys were completed, students from grades 6th to 8th received special instructional intervention for five days to target their understanding of the previous mentioned constructs. Where pre-interview helped to establish the levels of students' cultural capital, the post-interview identified changes that occurred in students' thinking. The survey result showed that majority of the students had an average level of self-esteem, but they had low levels

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for locus of control and very little sense of hope. In the post interviews, every student demonstrated a profound change in his or her thinking about himself or herself. They felt that the lessons made them to realise that for their self-esteem to improve they had to set high goals and work on reaching them. Every student mentioned that they felt their caste level determined their identity; and it was associated with where they were in the caste ladder. Most of them expressed their sense of low self-identity, but the lessons made them think about changing their situations. After the lessons, they expressed their desire to change the constricting effect of caste on their self-esteem. Their sense of who they were and what values directed their lives became clearer to them. Regarding locus of control, students showed that their lives were centered on their home and community, and felt they were bound by their parents' expectations. Except for a few students, parents or grandparents made every decision (for example their future profession) for the majority. They felt that they had no control over their lives. In their sense of hope, pre-interviews indicated that every student expressed his or her desire for better life for himself or herself, but did not feel confident that they could. After the lessons, many of them showed a positive attitude about their future and mentioned that the lessons taught them to hope for better life. This study confirms that children from the poor communities need positive affirmations about who they are and how they can better themselves. Strategically targeted instruction and training in the areas of cultural capital can certainly benefit them and quality education should provide such learning experiences.

INTRODUCTION

The Indian Caste System has been prevalent in India for centuries. This segregation of people based on religious status has created a disparity in society that spans multiple social, economic and educational areas. The focus of our academic exploration is the centuries old effects that this system has created on education for children and how we can change this through appropriate programmes. The study we conducted on the education, social and economic conditions of children living

in poor, marginalised communities asked one simple question: Can children from these poor communities be taught self-esteem and goal setting through specialised programmes to overcome their difficulties and persevere towards their goals?

The educational disparity that exists in India has been an area of interest for academic exploration and serious educational inquiries with a critical approach. In order to bring new knowledge and understanding on societal problems scholars engage in studies that address issues of critical importance and develop solutions. The foundation to the problem of educational disparity lies in the nature of the Indian community,which is built on its ancient caste divisions that continue to thrive in rural villages even today. In the cities, caste distinction is not as obvious, but there are evidences that indicate that lower caste communities continue to live in poverty and poor living conditions. The level of education in these communities is low quality, because government schools there do not have any amenities to support quality learning. In addition, students coming from underprivileged communities are unable to match the demands of traditional education. Students from low caste communities, including the schedule castes and tribal groups, face many social, economic, and academic challenges in schools.

There is enough data to support that a high number of poor students drop out from school after their elementary school completion. It has been estimated that the majority of dropout children are from Dalit and indigenous communities, and the proportion of girls dropping out is much higher than the boys. (Tukdeo, 2008). Currently, schools are focused on social reproduction of the traditional culture and its values, undermining the capacity for students coming with low levels of economic, social and cultural capital to achieve traditional educational goals. Using the critical theoretical perspectives, this study explored, understood and found possibilities to this problem to improve the cultural capital of students from underprivileged communities.

The cultural capital these students bring to the school has been shaped and influenced by their home life, their neighbourhood culture and the economic standing they have had in the society. It has been stated that, "socially backward sections, especially scheduled castes and tribes (SCs and STs) have gained little from the new prosperity which rewards disproportionately those with assets, skills and higher education" (Kurian, 2007, p. 374). These students come with meager level of cultural-capital to participate in the educational opportunities that schools intend to offer.

Critical theory as an analytical tool provided insights (Anyon, 2009) into the relationship between injustice perpetuation in the educational system and the acceptance of the injustice by marginalised people. It allowed us to think about changing the paradigm of unequal educational practice and opening the door of quality learning for all students. In the highly hierarchical Indian society the caste system has prevented for thousands of years social mobility of people across the classes. In India all religious groups "covertly practice caste-based discrimination. *Dalits* who are outcastes are the worst victims of caste discrimination…." (Kurian, 2007). Children coming from the tribal communities also experience many kinds of discrimination. The educational system in India is also paradoxical. Private schools of many kinds compete with each other to teach children who can afford higher quality education. Students in those schools receive knowledge and skills to compete not only at the national level also at the global level. On the other hand the government schools where most of the poor and low caste children get educated are not of good quality. In the villages and tribal areas the schools are not up to the expected educational standards.

Public and private schools have a responsibility to improve the academic abilities of all students to match the demands of 21st century world. Classroom instruction should focus on children improving their innate abilities and enhancing their weaknesses to match up the expected educational standards. In the case of children coming from underprivileged communities the low level cultural and social capitals they bring should

be recognised and boosted by teachers and school leaders. Efforts should be taken to improve their capital and help them to overcome the cycle of poverty and illiteracy. Literature supports that high-poverty schools face many barriers that are related to student success. Some due to institutional failures others to emotional and mental conditions students bring with them.

Purpose of the study:

This study wanted to inquire if students can be empowered through a focused set of instructional lessons to improve their innate abilities, emotions, cultural habits, which are some of important components of cultural capital. The purpose of this qualitative phenomenological study was to inquire if poor students' cultural capital level could be boosted to a higher level through a specially designed instruction. The study wanted to find out how the highly motivating learning experience could challenge their thinking and bring changes in their psyche. Specially designed lessons were taught for five days to make impact on students' thinking and experience. The students were taken through a phenomenon of change in their thinking. Data were collected through pre and post interviews to find out if any changes in the thinking of students occurred about themselves. Pre-data gave evidences on their initial levels of thinking while the post-data showed what changes took place in their thinking and experience about their self-esteem, internal locus of control and their sense of hope after the special lessons.

RESEARCH PROBLEM

The students from the communities of our focus face multiple disadvantages in spite of efforts to help them have come from various agencies. The following quote taken from the World Bank report highlights the problem this study has undertaken to inquire about.

> 'Finally, our evidence shows that although considerable progress has been achieved, female disadvantage inIndia continues, and women die unnecessarily both in infancy and

> in motherhood, with the poorest outcomes among scheduled castes and scheduled tribes. Caste has been the predominant marker of deprivation and privilege in India. It is rooted in a ritually backed ordering of occupationdrawn from ancient Hindu texts. Stratification along caste lines is solidified through a system occupational segregation and rules of purity and pollution, which plays out in strict adherenceto norms of intermarriage and who may eat with whom. In practice,the caste system developed into a broad social framework, and eachcaste has hundreds of endogamous sub-castes, or jatis, which are theoperative social units."(World Bank, 2011, p. 227).

Besides, it is clear that culturally rooted systems such as the caste system perpetuates inequality and sustains a culture of poverty that afflicts underprivileged groups continuously. It is like they are caught within the inequality traps that perpetuate it. The subordinate groups that we are concerned with are kept under poverty. As a result, their behaviours and preferences for what is good can be limiting.

In order to break such inequitable traps, schools have an important role to play in developing an educated and ethical population. Learning that takes place in schools with high motivation and student engagement provides for a positive social and personal development of academic skills and processes. Declaration of Human Rights recognises schools as significant tools for development of an educated and ethical population promoting motivated and ethical citizenship (Wilson, 2015). Besides, if schools focus on providing an ongoing learning process that provides not only knowledge and skills but also other cultural and social skills for personal development of these students, their achievement gap could be narrowed. There has to be a deliberate effort put forth by the schools to provide learning experiences that incorporate cultural capital development in their schools.

Theoretical support

This study was based on the Cultural reproduction theory that Bourdieu brought forth in the late 70s. He argued that Cultural capital refers to an asset children acquire and possess from their home and family environments. Pierre Bourdieu (1977) while bringing out his cultural reproduction theory argued that the cultural resources individuals gain from their family background can be seen as a form of "capital" enabling to economic and social networks and connections. He was very passionately concerned with class and inequality and used this theory to expound the economic, social and cultural divides that exist in the society. "Bourdieu expands on the meaning of capital by using the term beyond the typical economic signification as a metaphor to include economic, cultural, educational, social, symbolic and honorific connotations. Basically, Bourdieu explains capital as an individual's ability to exercise control over their own future or that of another. Capital is necessary for people to move up the social ladder, and therefore is a form of power." (Strickfaden & Heylighen, 2010, p. 122). "Cultural capital is used by individuals or groups positioned at different levels in social hierarchies as a means of either promoting relative social advantage or as a generalized currency that can be exchanged for other economic or social assets." (Jaeger, 2011, p. 283). It can also be described as "a potential of social knowledge, the power of social integration, or cohesion, which reinstates new forms of (non-capitalist) social relationships." (Gregorcic, 2009, p. 358). It also refers to a type of endowments that they gain from their background such as their knowledge, language, mannerisms and skills. (Dumais, 2002). It is also clear that "age, income, education and social class are closely connected with cultural capital" (Kim & Kim, 2009, p. 309) and they influence the cultural experience of people. In their study they showed that there were divides in cultural experiences according to income.

Although the discussion on Cultural capital in the literature does not specify what exact behaviours it represents, it is clear that students' ways of thinking, assumptions and values that they hold determine the quality of their cultural capital which influences their educational functioning

levels. "Bourdieu argued that individuals' and families' cultural resources comprise a distinct form of 'capital'which should be regarded on equal terms as economic resources and social networks and connections… at the most general level cultural capital pertains to knowledge of the dominant conceptual and normative codes inscribed in a culture." (Jaeger, 2011, p. 283).

There is a general understanding that children coming from socio economically advantaged families and environments possess a high level of cultural capital; they also have other skills that promote school success. In addition the educational system has been "designed to recognize and reward cultural capital of the children. This structural mechanism implies that teachers and other gatekeepers systematically misinterpret children's cultural capital, namely, their demonstrated familiarity with high-status cultural signals as manifestations of actual academic brilliance and develop upwardly biased perceptions of children." (Jager, 2011, p. 283). The total learning process has been intertwined with the cultural standards established by socioeconomically advantaged system and have become the core values of education. Such perceptions benefit children who come with those expected cultural behaviour receiving preferential treatments from teachers and peers. Many quantitative studies have been done on the effect of cultural capital on educational success showing that it has a positive causal effect on academic achievement measured by the skills they demonstrate in reading, cultural communication and abilities in performing extracurricular activities. Here cultural capital is seen as a "multiplier" of resource possessed by children coming from privileged homes and communities.

Literature brings out inquiries that also noted children from low SES families have very little cultural capital that benefit their education because in their environment factors that help develop cultural capital are contrived by the limitations of their background that is economically and socially very limited. Therefore, it can be said that there is a wide gap in the cultural capital of

children coming from affluent and high caste homes and those who come from the low SES and caste communities. Children from poor communities come with very little cultural and social capital to assist in their learning. "According to Bourdieu and Passeron (1977), school success is strongly determined by the embodied cultural capital students bring from their families of origin." (Kraaykamp & Ejick, 2010, p. 210).

Hardgraves (2001) talks about a new theory of school effectiveness and improvement. According to him if students learn about knowledge economies, citizenship education and have teachers who will effectively teach them they can experience capital development. "A person's excellences are not so much a matter of his or her capacities as how they have chosen to be and to act. The purpose of education is to initiate the young into these excellences, through which they acquire the disposition to make sound intellectual and moral judgments and choices." (p. 488). In this, teacher effectiveness is an important element. If teachers effectively teach values and provide intellectual inputs to bring change in students' thinking better capital development can take place. In other words, this theory supports the idea that if schools take special efforts to provide learning experiences that will develop students' cultural and social capitals students will make good intellectual and moral judgments.

These two theoretical explanations provided the framework for this study. First, it looked at the cultural capital study and next, it brought an instructional intervention to improve students' cultural capital. Effective instruction took was applied to bring the expected cultural capital outputs. By looking at the demonstration of these constructs at the micro level of the selected individuals this became an inquiry with a subjective topic.

RESEARCH QUESTIONS

What were the levels of the selected cultural capital constructs that the target children brought to their schools?

How did the students express their perceptions about themselves and life in general?

What evidences did the students show for motivation lessons that influenced theircultural capital?
What kind of changes did the selected students demonstrate on self-esteem, sense of locus of control and feelings of hopefulness and hopelessness?

Research Design
This was a qualitative study with a quantitative research model. First, a survey was given to 150 students to quantify their levels of self-esteem, internal locus of control and sense of hope. Then the inquiry followed Pre and Post interview data collection steps with an intervention applied in the middle that is similar to a typical quantitative study design but it used qualitative data collection methods. Four schools from marginalised communities located in three different states of India became the sample sites for this study. Students from 6th through 8th standards became the subjects of this probe.

Descriptions of the Selected Schools
Four schools from marginalised communities from different parts of India were selected for this study. Asha Deep Vidhyashram was in Varanasi, in the Northern India while other three schools Krishnagiri English School, Arulneri Government High School were from Tamil Nadu and St. Peter's English School was from Bangalore in Karnataka State. All these schools were similar in one thing, they all taught children from the lowest caste groups and children from the most underprivileged communities in their areas. None of the children came from homes where parents were educated holding high paying jobs. Most of the parents had not completed their high school education and were labourers working in the fields or doing menial jobs in the cities. The leadership in all the four schools followed the traditional system of education meeting the governmental requirements. There were some differences in the way they dealt with student issues related to their academic performance and meeting student needs.

Asha Deep Vidhyashram
Fourteen years ago Cathy, an American started this school for the poorest

of the poor children in Varanasi. She had a vision to start a school for them because she saw many young children wandering the streets in Varanasi without going to school. When they turned seven or eight, their parents sent them to do some type of manual labour to bring money to the family. With the help of another local woman, Cathy, started the school on the veranda of her home. She picked students from the streets and brought them into her school. From this humble beginning, it grew to be a school with 250 students in a rental building on the shores of the river, Ganges. It was obvious that these students came with very little cultural capital that was needed for them to be successful in their school. Cathy tried her best to provide a quality education for these children making them feel valued. Their low caste designation was the signature of this school because parents from upper caste families refused to send their children to Asha Deep Vidhyashram. It was known as a low caste children's school. In this school, Hindi was the main language of instruction, but English was taught as one of the subjects. Many of the students understood some spoken English. Cathy has earned the trust of the local community and makes sure that students who finish the final grade in her school get enrolled in a High School that provides support for them. None of the parents in this school had completed their high school education and many of them were still illiterate. The students in this school are the informants for this study.

English School in Krishnagiri

This school is a private school run by a Christian organisation and is situated in the middle of a rural district near Krishnagiri City. Students in this school come from homes where parents were mainly farm workers with very little education. At the time of school selection, there were about 600 students in this school. Around 8:00 a.m. everyday, eight large buses loaded with students came rushing into the school compound. Those children were picked up from many nearby villages. The principal of this school was very much committed to providing these students an education that would lift them from the poverty and illiterate levels of their parents. There were about 14 teachers in this school. This school

had the government recognition and ran a traditional school programme approved by the State. Here the academic content was taught in English with very little instruction in second language learning. Despite this, most of the students were able to understand and speak some English.

There was some after school support for students to complete their school work. An after school programme was held twice a week to assist students in learning their weekly lessons. The instructional programme of this school was mainly focused on teachers finish teaching their prescribed curriculum and making sure that students passed all their tests. There was no learning activity that supported the enormous social, emotional and psychological needs of students. Students came to school and learned what they were taught but meeting student needs was not built within the educational system that ran this school.

Alagiri Government High School

This school is situated amid many acres of rice paddy fields. The green plantain farms and rice fields provided a rich natural setting for this school. The two-storey building flanked with classrooms across its premise stood stately declaring its educational mission to all the villages. Even prior to our programme study, it had achieved many high level acclamations from the government and had a great reputation for its good education. The student expectations in this school were high and the teachers pushed the students constantly to reach their high standards. Although each classroom was loaded with over 60 students, there was order and well-established routines that students followed.

The teachers in this school spoke about how hard they worked for their students to achieve their expected academic standards. Although most of the students came from illiterate and low caste families, they held on to them reaching high academic levels. In the 10^{th} and 12^{th}grades, students were taught to pass the government exam, which they had to write at the end of each school year. Their aim was to get all the students pass that exam, achieving 100% passing. For many years they were able to achieve

that level of passing and were very proud of that accomplishment. In spite of the many positive things about this school, there were areas of great need that students faced within the social, economic and emotional parts of their lives. The school programme did not address those needs. The school was mainly concerned about all students achieving their academic expectations. There was no concern for meeting the needs that students faced stemming from the emotional, social and economic challenges they faced in their homes, school and communities.

St. Peter's English Elementary School

This elementary school with K-6 grades is owned by a private management company and has existed over twenty years. It is situated amidst a booming industrial township in the suburbs of Bangalore, the Silicone Valley of India. This three-floor school building stands along a very busy road among many offices and industrial buildings. We selected this school, because we noticed that the students for this school came from the shacks and huts that were scattered around this part of the city. There were about 250 students in this school at the time of data collection. The enrollment in this school had reached its peak to 700 a few years ago but due to much competition for students by privately run schools the enrollment in this school had dwindled recently. There were only 6 teachers running multi-grade classrooms.

The reputation of this school was not very good. There was a sense that the academic standard in this school was going down due to a lot internal problems with the management. Since most of the students came from very poor homes and got assistance to pay for their monthly tuition they did not have much voice in expressing what they wanted from the school. Their parents were mostly illiterate or partially educated holding jobs that required manual labour. Most of them were from the Dalit communities in the city. This school setting provided intense data collection opportunities for this study.

Data Collection Process

The data collection in these schools took place in five phases. In the First phase there was direct observation of the school sites. The researcher took field notes as she became acquainted with the schools. In the second phase, she administered the cultural capital survey to all the 6th through 8th grade students. This was mainly to establish their levels of cultural capital expressed in their self-esteem, locus of control and sense of hope. During the third phase, face-to-face in depth pre-interviews were conducted to a total number of 45 students. Then an instructional intervention to influence students' cultural capital was administered as the fourth phase. Specially designed lessons to coach students on high self-esteem, better locus of control and a positive sense of hope were taught. The instruction covered two class periods. This instruction took place for 5 days which was followed by an in depth post-interview. In the final phase post-interview data were taken to identify or recognise the impact of the special coaching instruction on the cultural capital of the selected students. Interview data were transcribed and the transcription texts were analysed with the help of Nvivo10 software. The transcribed data were fed into the software and several queries were made to analyse the data.

The Descriptive Data

The investigation began with accessing descriptive data on the levels of students on a scale that measured three cultural capital indicators, which were self-esteem, internal locus of control and sense of hope. This scale was specially designed by Dr. Chang Ho Ji, who is the lead researcher at our School for the purpose of initially determining the levels of students on the three social capital constructs of this study. This tool consisted of Rosenberg Self-esteem Scale, Cultural Locus of control Scale, Hope Scale by Snyder and Social Dominance Scale. There were in total 51 questions on this scale with an interval of 1-7. Then the study used qualitative methods of inquiry following the phenomenological design. Interview on the life experience, attitudes and beliefs of the students became the major tool for qualitative data collection. Field observation notes also became another source of data.

A total of 150 students from the selected schools completed the Cultural Capital Survey. Then 45 students from grades 6th through 8th were selected for the Pre and Post interviews. After the first interview, students from the same sample received special instruction for five days for two hours each day.They had the opportunity to experience 5 lessons designed to motivate their self-esteem and their internal locus of control and sense of hope. The teaching and learning activities incorporated in these lessons focused on increasing their 'native' cultural capital to the expected norm of school's cultural capital. This intervention was built on the idea that effective experiential learning would impact students' thinking. In other words, this study basically was built on the hypothesis effective experiential learning would impact change in students' thinking.

Instructional Intervention

The essential part of this research was the instructional intervention that was administered to boost the areas of deficiencies in students' cultural capital that students demonstrated. Grades from 6th through 8th were selected to receive five days of special instruction that focused on improving their self-esteem, ability to overcome difficulties and to have a sense of hope. The theme of this special teaching was "Lessons from Our Heroes". It covered four topics, which were building self-esteem, setting high goals, overcoming difficulties, persevering to reach the goal. The instruction integrated coaching techniques with the learning and was held for two hours each day. Each day an outstanding Indian who exemplified one of the selected topics was highlighted. On the last day, activities to celebrate the life example of Abdul Kalam, the past President of India was planned. Students enjoyed writing about him, reading stories on him and making speeches about him.

For five days, the instructional intervention carried on activity based instruction engaging the students in the total learning process. "…in activity based education the student becomes more actively involved in the learning process through acts of 'doing', 'being' and critically reflecting than in traditional didactic education that is more centered around passive act of

knowing"(McGrath & MacEwan, 2011, p. 23). This specialised instruction concentrated on improving the deficient cultural capital of the target students. Students were brought together in one large group first then they were organised into teams. The content of the lessons consisted of materials that were exciting to students. Stories, videos, books on various heroes at the global, national and local levels provided the learning materials.

The researcher taught the intervention lessons and the teachers assisted her. Instruction began with an introduction of the topic followed by an activity to connect the topic with what students already knew. Activity based learning was delivered. The lessons focused on improving the self-esteem of students. The learning unit was on the topic of heroes. Students read life stories of successful male and female role models from the international, national and local levels. They did several activities that helped them analyse the selected life stories and identify how those heroes worked against many difficulties to achieve their goals. Different learning activities were used to engage students in the learning process. They read stories, texts on concepts, engaged in discussion questions, learned to write different types of writing. They particularly liked writing simple stories and drawing pictures to illustrate them. They watched videos followed by question sessions. They learned to draw word maps that helped them to process ideas they were learning and also express what they learned. They enjoyed drawing activities that engaged them to think creatively. The inquiry sought to find out if the learning experiences used in the specialised instruction made any impact on students' thinking from the post interviews.

The instruction was very rewarding to see the students fully engaged in all the learning activities and processing them well. It was difficult to end the learning sessions because students did not want to go to their regular classes. There were no discipline problems because they were excited about what they were learning and it was obvious that the lessons were making positive impact on them. The teachers in the schools were very supportive of the instruction and were observing the non-traditional teaching that was

taking place. On the final day of instruction there was a celebration with games ending with sweets distribution. This special instruction transformed the learning environment of the school.

FINDINGS

In this study, it was important to identify the levels of the three social capital constructs that were under observation. The following chart shows how each school fared on this scale on the three constructs that described the cultural capital of the students who became the subject of this study before the instructional intervention.

Average Scores on Specially Designed Scale

Schools	Self-esteem	Locus of Control	Sense of Hope
School 1	5.4	5.4	5.1
School 2	5.6	5.9	5.9
School 3	5.1	5.3	5.3
School 4	4.9	5.1	5.3
Average Score	5.2	5.4	5.4

The information on this chart answered the first research question, "What were the levels of the selected cultural capital constructs that the target children brought to their schools?" Data showed what their initial levels of measure were on the three selected cultural capital constructs. By looking at the scores on this chart, we can conclude that on a scale of 1-7 the average score in each category was above 50% of the scale. This was not a very negative picture. It showed that the questions on the survey elicited positive responses from the students.

Pre Interview data defined the nature of Students' Cultural Capital

The interview in each of the school took place during the school hours. Students were called into the room where the researcher was and the interview provided an opportunity to engage in a conversation talking about them. The informants responded freely to the questions that asked them to speak about themselves and their family background. The following

chart gives the summary of the pre-interview data. Then each theme is explained briefly establishing an understanding of how students felt about their life experiences.

Investigation of the Selected Constructs

Cultural Capital Constructs	Data Source	Data Description and samples
Self-esteem	Pre-Interview (10 questions that touched the selected cultural capital constructs)	Most of them expressed that they had high self-esteem and talked about going to college. After more in depth questions it all seemed that they had very low self-esteem about themselves and their families
	How do you feel about yourself?	"I am a confident girl" " I want to be a Doctor" "I want to be a software engineer" "I come from the Schedule Caste" "My parents are not educated; they can only write their names. They don't know how to read or write" "Some students call me black because of my dark complexion, this has been a real challenge for me"
Internal Locus of Control	Pre-Interview What would you do if your father refuses to send you to college?	The answers showed that the lives of the interviewees were very much controlled by their home situations, societal restrictions for the lowest caste, their economic depravity. They did not seem to have the emotional strength to even fight back when someone creates some conflict.

	What would you do if your friend fights with you?	"I can't do anything if my father doesn't send me to college" "I want to become a software engineer but if my father has no money to send me to college, I have to give up that and find some job for myself" "I can't do anything. I will just walk away" " I will keep quiet"
Sense of Hope	How do you feel about your future? Pre-Interview	It was obvious that the interviewees' lives were very much conditioned by their family and the community. Very few expressed a sense of hope that they had developed. Many of them expressed that they hoped for a better future but realized that just hoping for a better life did not automatically happen for them "I don't think my parents have enough money to send me to college so, I don't think I will go to college". "One bad experience I have had is my mother beating me. I feel very sad and sit and cry very much, won't eat…also my father beating my mother is also a sad thing for me. I sit and cry and can't do anything about me.

Pre-interview data clearly answered the second research question, which

was, "How did the students express their perceptions about themselves and their life?" First perception that came out was their low caste status. Almost every student said he or she came from the lowest caste, which was really a negative identity in his or her thinking. Although most of them rated themselves high on a scale of 1-7 about their self-esteem, there were feelings of low moments that only they could recognise.

Feelings of Low Caste Status

While talking about their family backgrounds, they talked about their caste category and economic levels. While describing their families they had to identify the caste they belonged to. 90% referred to belonging to the Scheduled Caste (SC), which is the lowest caste in the social ladder. While identifying themselves as SC they did not talk much about it, but quietly agreed that they were from the lowest caste. One of the female interviewees said, "I belong to the scheduled caste but I don't feel bad about it or worry about being a SC, because we get good treatment these days". It was obvious that how they related to others depended on their caste identity.

The next factor they came out of the interview was the family status as it related to the economic factor. Most of the students interviewed said that their parents were Coolies (menial workers) working in construction work or in the food industries such as roadside restaurants, or in the rice or wheat fields. In many homes, only fathers worked and some mothers and fathers worked as coolies bringing very meager income to take care of the family. One of the female interviewee said, "My father and mother are coolies. They do coolie work for people who need some work done… we have a lot of financial problems in our family…" Other interviewees also expressed similar feelings. One student said, "We are not very happy family because of financial hardships our family is experiencing, although we have some property we are still hard up for money". The theme of financial hardships that the family faced was very prominent in their interviews.

Family Dynamics

In understanding the cultural capital that the students brought to the school it was also important to understand what type of family life the interviewees experienced. The informants were very free to express their feelings of joy and sadness related to their families. Several of them talked about coming from happy families although they were economically deprived. One student, said, "My father and mother do Coolie work. My mother cooks the food and then goes to help my father in his work. My mother and father are happy but they have small fights once in a while, but we are a happy family." Another student said, "In our family we have been O.K but recently we are having some problems in the home. My Father doesn't drink, but family members are fighting because there is no money in the home and that is becoming hard for them to handle." A boy said, "My father brings fruits, food and chicken but my mother is sad a lot of times because my father beats her up". At the same time, another boy said that his parents were very poor and they didn't have much money but they were a happy family. It was obvious from the data that more than half of the informants came from families where there were serious economic and relationship problems between the parents. However, the children seemed to have developed resiliency to live through many difficult circumstances. Except one student everyone felt loved by their parents or grand parents. The family relationship was a very strong factor in their lives and it served as their cultural capital however meager and low their social status was.

Self-esteem Beliefs

On the self-esteem scale their average rating was 5.2, which was a positive level but while talking about their self-esteem their answers varied. Many of them expressed their desire to become a doctor or engineer, which is very commonly aspired careers in India. One of the students said, "I want people to tell about me that although she comes from a poor low caste family, she wants to become a doctor." Several of them talked about becoming teachers or going to the military service. A few aspired to become dancers. Most of them had a career in mind, so

coming to school and studying hard was a very important thing for them to do. In this endeavour, several of them talked about financial difficulties in their homes that interfered in their aspirations. Although they held on to becoming doctors and engineers, they were not sure if they could even go to college after they completed their high school education. While many of them felt that if they studied hard, they could achieve their goals. Some of the interviewees did not feel confident that they could achieve their desired goals. They felt they were not smart enough and the lack of parental support in their learning was a big factor that stood on their way. One student was not sure within her if she really had the intelligence to become a teacher because she was getting bad grades and she never get any help at home because her parents were not educated. The theme that came out while talking about their self-esteem was the topic of parents' inability to financially support them in their education or help them in their school work. In their mind, they were trying hard to build a positive self-image from the experiences they were gaining in their schools but for that to grow in them, they did not receive adequate emotional support from their home environment.

Managing Challenges

The interview data also indicated that the students' ability to manage challenges in their homes and schools varied greatly. One of the main concerns they had was that their parents did not have the financial capacity to educate them in the careers they had in mind. For example, One female student who wanted to become a doctor said, "I don't think my parents have enough money to send me to college so, I don't think I will go to college." Some of them had a hard time learning the subjects taught at school, they got disappointed with poor grades but could not do much to improve their learning.

Another area of concern was the family problems they faced in their homes in their parents' relationship with each other. They saw their fathers becoming alcoholics and beating their mothers, they saw their fathers not giving money to their mothers to buy food for the family.

Some of them talked about problems their parents had with families of their grandparents or uncles and so on. They felt helpless to deal with those problems. They had developed a mind set to accept things as they were and deal with these by bearing the negative effects of those experiences. They or their parents did not have the emotional or economic strength to deal with the problems that kept them in many kinds of captivities.

The interviewees also spoke about the difficulties they faced in their relationship with fellow students. They all seemed to enjoy having friends in their schools and neighbourhoods; however, there were times when they had conflicts with them. A lot of times fight broke out between them. One student said, "If they talk nicely, I will talk to them, but if they are mean to me, I will not talk to them." Another said, "If my friends fight with me I will be very sad, but I will ignore and wait for them to become nicer". "I will fight if they really bother me", said one interviewee when asked how he will deal with someone who started a fight with him.
One student was talking about a very difficult problem he and his parents faced in their neighbourhood. Her father had a tea stall on the road and sold tea and other eatables. One day someone came and demolished and left. Her father was greatly distressed over this loss but as a family they could not do anything to recover what they lost and there was no one to bring justice in this matter. They did not have the financial means to do anything about this. Experience like this had its toll on this student and her family members because the lack of economic power in the society kept them powerless. The sense of powerlessness was the theme that emerged from this part of the interviews.

The Sense of Hope

The pre-interview interaction also focused on understanding how the selected students looked at life. It was important to find out what was their sense of hope like. The questions were directed to elicit how they hoped in the most desperate situations. One question was, "What would you do if your father tells you after you finish your high school that he

did not want you to go to college because he did not have any money?" The student answered, "If my parents say that they did not have money to send me to college, I have to follow whatever my parents do." To the same question another student gave a similar answer. He said, "I can't do anything about it. Then I will not go to college. What to do?" The answer from one more student to the same question was a little different. He said, "I have to find something else to do if I can't go to college. I might start a business or something. I will listen to my father but I have to break the cycle in my family for going to college but I don't know what to do". One student who wanted to become a software engineer said, "If my father says he can't support me for college, I can't do anything. I will have to find a job and forget about becoming a software engineer". Every one of them said that if their parents could not send them to college for them to achieve their career goals, they would have to stop their dreams. The interviews also brought forth many other family challenges students faced which were not contributing for them to live a life with much hope. Education was the main venue they believed in for raising from their low social and economic conditions but reaching their career goals was derailed by their family's inability to financially support them. The theme from these responses was that students' feeling of hopelessness about their future in terms of getting an education to choose the career they aspired to achieve.

Post Interview Results

The interview after the instructional intervention mainly focused on finding out what changes students demonstrated in terms of their self-esteem, internal locus of control and living with a sense of hope. There were five questions that focused on receiving answers that talked about the impact they felt in their hearts and mind about themselves and their lives. In the post-interviews students showed a very different spirit in answering questions. They exhibited a happy attitude and enthusiasm while answeringthe interview questions. Following chart gives a summary of responses that indicated changes in their self-esteem, internal locus of control and sense of hope. The responses cited in this chart clearly answer the third research question, "What kind of

changes did the selected students demonstrate on self-esteem, sense of locus of control and feelings of hopefulness vs. hopelessness?

Impact of Specialized Instruction

Self-esteem	Post Interview – How do you feel about yourself?	Most of the students had positive things to tell about how they felt about themselves after they had gone through special instruction. In many of the responses they implied that listening to their parents was part of feeling good about themselves.
		"I think I must become someone I life and help others free". "I think that I am good". "I am a good boy and don't talk evil things about others. I listen to my parents" "I must get first mark and listen good in school and respect my parents"
Internal Locus of Control	Post Interview— What did you learn about living a good life?	"I learned that we must think we are all equal and we must help others become equal. I must respect others and help others". "I learned about heroes who did something good. I also learned many more ideas such as Gandhi saying that a man is as he thinks about himself."

		"I also learned that I shouldn't tease others because we are all equal and we must treat each other equally" "I also learned that I must be good and be kind to all". "I must go to school on time and study better and improve my learning habits"
Sense of Hope	Post Interview—What type of future you expect for yourself?	Almost every one of them said that their future was going to be better because they were going to study better. In their thinking studying hard and passing exams was the only way to have a better future. "I must study hard and get a good job. Then only I will be valued in the society". "If I study hard I will have a good future". "That if my future should be good I must study well"
		"I must go to school on time and study better and improve my learning habits" "I must study hard and get a good job". "My future is going to be good because I am going to study hard and come up in life"

Further six themes were identified from the post-interview transcripts. They were 1. Belief in self; 2. Be good and kind; 3. Set high goals; 4. Live in harmony; 5. Persevere; and 6. Study hard. Following section shows impressive responses from the interviewees that reflected the identified themes.

Belief in Self

All the post-interview answers related to self-esteem were positive. There were answers such as the following: "I learned that I must believe in myself", "I have a self within me that I must bring out", "I learned that I must think good about myself", "I learned about how to have good self-esteem", "I learned to have more faith in myself", "I learned to become a positive person because I have to think of good things". These responses certainly indicated that students were thinking about them and even were able to express what thoughts were going on in their mind. It was remarkable to hear students saying that after the lessons their thinking about them changed.

Be good and kind

The interviewee's responses to the question, "what did you learn about building positive relationships with friends and family members?" were also very positive. They all spoke very effectively about being kind and the here are some of the examples of what students responded.

"I learned that I must be good and kind to all", "I have learned that I must help others"

"I learned that I must help others like Mother Theresa, help poor people", "I learned that we must help others and treat everyone equal" and "I should treat everyone kindly and help others"

These positive responses reflected that after experiencing the special instruction for 5 days, they were thinking of becoming better toward others.

Setting High Goals

The interviewees were asked what would take for them to become an

everyday hero in their schools and neighborhoods. One student said, "I should not feel defeated but keep my spirits high". Another said, "We learned that, heroes we learned about faced many difficulties but they overcame them by working hard and setting high goals for themselves. They did not make their problem an excuse. They made their weakness their strength". A response such as this required deep thoughts and reflection. It was obvious that the special instruction certainly made them think about how to manage their difficulties. Most of them had positive answers such as, "I want to be a hero that shows good character by helping others." They expressed that after the special instruction, they realised it was important to set high goals for their lives. "I also came to know that if I set high goals and work hard to reach them, I can become a hero …"

Live in Harmony

The idea of living in harmony was emphasised in the special instruction because during the pre-interview the students spoke much about conflicts in their homes and communities. The lessons brought several examples of living in harmony. The story of Dr. Seuss "Speeches" was read to them to illustrate how to live in harmony. The story was read aloud, and the video of the story was shown, there was discussion questions followed by worksheets that had activities that made them think deeply about themselves. "I learned that we should not fight with each other but live in harmony", "I learned to live a proper life which means I must help others" and "We should not tease others and let them be who they are" were some of the answers students gave for questions related to this topic.

Perseverance

This theme from the students' interviews also showed that there was a change in the students' thinking about how they must live their lives. In the pre-interview when students talked about the difficulties they faced instead of feeling disturbed about them they accepted their challenges as inevitable. Now they were thinking of taking some steps to manage their hardships. One student said "I learned that if we decide to do something, we must stick with it till we complete it." Another student

while talking about him helping his father make slippers said, "I can have many issues and troubles but if we dream about doing something we must stick with it till we do it." One female student said, "I learned that when I face problems and difficulties, I must pray to God and then work hard to remove them" "I should not give up but be brave and face the problems and I learned that if I set goals for my life I must work hard in achieving them" were the responses from two other students. Many of them talked about the heroes that they had learned about who worked under difficult circumstances to achieve their goals. They wanted to emulate them in their lives.

The responses that students gave certainly indicated that there were some changes in their thinking about how they should deal with challenges they faced. It was obvious that they had learned that they have to work hard on problems without giving up.

Study Hard

Students in this study were in no way different from others in India where studying hard is an expected norm of the society. However, studying hard was not the desire of many of the target students. Although they loved to come to school, achieving their academic expectations was not easy. In the pre-interviews, many students expressed their difficulties in learning English, science and math. After the special instructional sessions, their responses about learning were very positive. They said, "I have been inspired to study hard and get good marks.", "Now I know I can study better." "I must work hard and not be lazy" and "I learned that I must study hard and not copy others". The desire for students in this sample to study hard is certainly a positive result of this study.

Specific Results of the Study

The fourth research question was, "What evidences did the students show for motivation lessons that influenced their cultural capital? The post-interview data showed many evidences of students showing improvement in their thinking about themselves and gaining some ideas for overcoming the challenges they faced at home and school. Their improved confidence

in themselves also came out in their responses. Most of them expressed that their future was going to be better because they were inspired in the special learning sessions to take charge of problems and think hard to find solutions. One male student said, "I think my future is going to be great". Similarly, a female student felt that she felt happy about her future because she planned to work hard and become good and she said, "I will face problems and solve them". The above cited examples clearly indicate that there were certainly positive changes in the thinking of the students in terms of their self-esteem, locus of control over their conditions and sense of hope.

The dilemma for schools that teach poor children is to determine the levels of their cultural capital and then how to improve it for students to be successful in their education. This puts the children coming from poverty and deprived communities, at a great disadvantage. In order to decrease the educational disparities that exist in the country research must focus on recognising the cultural capital that the target population bring to the school first and then design learning activities and programmes that would build the esteemed cultural capital.

CONCLUSION AND RECOMMENDATIONS

This study used a unique research design that combined certain elements of quantitative research techniques with the qualitative research tradition. That brought a good balance between subjective and objective elements of the research. The idea of finding how students felt about themselves and what type of internal locus of control they had over their circumstances and how they hoped about their lives were subjective elements of the study that support the qualitative component of this study. However, by using the survey instrument to measure the levels of self-esteem, internal locus of control and sense of hope the study brought some objectivity to this inquiry. The result on the survey showed that students had reasonable levels of self-esteem, internal locus of control and sense of hope.

The pre-interview data showed clearly that the students came with

low level of cultural capital. They expressed how their low caste and economic status had contributed to them feeling hope less a lot of times. It was obvious that they had accepted their limited family and community factors as part of their life. Coming to the school for their education was positive and their hope for better life was based how well they did in their school.

Next, this study would have no meaning if the instructional interventions were not applied to this investigation. Most of the time, a typical phenomenological study mainly deals with the experiences the subjects face in a selected context. It tells stories of the informants about how they felt about a particular situation, the inquiry focuses on. It describes and shows how and why they feel in a certain way. On the other hand this inquiry first focused on understanding how students felt about themselves, their abilities and their future. Then it took another step to see if applying an intervention as quantitative studies does in general could change how they felt. This qualitative research is unique in showing the quantitative element of showing improvement in its problem of investigation.

The findings from the post-interview data supports the general assumption or even a theoretical premise that instruction that engages students in the learning process through active learning brings many positive results. In this study, the specialised instructional intervention was very much focused on improving the three selected cultural capital constructs providing many student engaging activities in the learning process. That provided a clear teaching and learning track for the teachers and students. Five days of concentrated activity based instruction was another positive component of this study. This study demonstrates that if positive learning experiences are provided for students consistently they would respond with positive behaviours.

Another important point about this study is that unlike a quantitative study that always quantifies its results, this study results are not quantified but they are expressed in the stories and explanations of students. Therefore,

we see the results in this study as descriptions not quantifications, which is a very powerful testimony to this inquiry.This research study sets a good precedent for researchers who want to use qualitative research tradition as their forte. This investigation certainly demonstrates that integrating the quantitative procedures within a qualitative study can bring good results. In that, it is different from doing a mixed methods study in which both quantitative and qualitative data collection processes are combined. Here a qualitative study uses a quantitative step to bring objectivity and some results that can be experienced by the informants and recognised by the researchers.

Although this study demonstrated that engaging instruction brought deep changes within the thinking of the students about themselves and their lives, there is a lot of room for more research along this line to substantiate the results of this study. Further inquiries should be done with more sets of data and different venues to expand the growth of the cultural capital among students coming from marginalized communities. Research with more quantitative elements with large sets of data to quantify the cultural capital improvement is very important. Such studies should be done in different contexts and settings at the national and international levels. The findings of this study should encourage more research work to improve the educational, social and economic conditions of children coming from poor marginalised communities.

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LEVS. VYGOTSKY
(1896–1934)

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The scientific work of Lev S. Vygotsky has had a remarkable destiny. The man himself, one of the greatest psychologists of the twentieth century, never received any formal training in psychology. His death at the age of 37 put an end to his research after only ten years or so, and he did not see the publication of his most important works. And yet this 'Mozart of psychology' (as the philosopher S. Toulmin called him) constructed one of the most promising theories in psychology. More than fifty years after his death, now that his major works have been published, Vygotsky has become an avant-garde writer. According to one of his best exponents, 'There is no doubt that, in many respects, Vygotsky is far ahead of our own time' (Rivière, 1984, p. 120).

Such a phenomenon, so rare in the history of science, may perhaps be explained by two closely connected factors: first, the scope and originality

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of his scientific writings over a relatively short period offer clear proof of his genius. Second, he was working at a time of dramatic historical change, namely the October Revolution in Russia. At the heart of the psychological system constructed by Vygotsky we find an ontogenetic theory of mental development that is also in many aspects a historical theory of individual development. In other words, it is a genetic conception of a genetic phenomenon. No doubt there is an epistemological lesson to be drawn from this: it would seem that historical periods of revolutionary change sharpen the sensitivity of human thought and predispose it in favour of everything that concerns genesis, transformation, dynamic evolution and the future.

The life and work of Vygotsky

Lev Semionovich Vygotsky was born at Orsha, a small town in Belarus, on 17 November 1896. After attending the gymnasium at Gomel, he began his university studies in law, philosophy and history at Moscow in 1912. His school and university education provided him with an excellent training in the humanities—language and linguistics, aesthetics and literature, philosophy and history. At the early age of 20 he wrote a voluminous study on *Hamlet*. He displayed a lively interest in poetry, drama, language and questions of signs and meaning, the theory of literature, the cinema, and the issues of history and philosophy, long before he began his research in psychology. It is important to note that the first book by Vygotsky, which was to point him once and for all towards psychology, was *The Psychology of Art*, published in 1925.

An interesting parallel can be drawn with Jean Piaget. They were born in the same year, and neither received any formal training in psychology; like Piaget, Vygotsky became the author of a remarkable theory of mental development. From adolescence onwards throughout his long life, however, Piaget was attracted by biology, and this difference in inspiration may account for the difference between two important paradigms in developmental psychology: Piaget placed the emphasis on structural aspects and on the essentially universal laws (of biological origin) of

development, whereas Vygotsky stressed the contribution of culture, social interaction and the historical dimension of mental development.

After university Vygotsky returned to Gomel, where he engaged in a wide variety of intellectual activities. He taught psychology, began to take an interest in the problems of handicapped children and continued his study of the theory of literature and the psychology of art. After his first professional successes in psychology (papers submitted to national congresses), in 1924 he settled in Moscow and began work at the Institute of Psychology. It was there that Vygotsky, surrounded by fellow workers as passionately interested as himself in a thorough reconstruction of psychology, created in one prodigious decade (1924-34) his historical-cultural theory of psychological phenomena.

The essential writings and professional activities of Vygotsky, long neglected, have only recently been gradually rediscovered and reconstituted. The interested reader can now find them in the following works: Levitin (1982), Luria (1979), Mecacci (1983), Rivière (1984), Schneuwly and Bronckart (1985), Valsiner (1988) and, of course, in the six-volume collection of works by Vygotsky (Vygotsky, 1982-84).

In the course of those few years of research Vygotsky wrote some 200 works, a number of which have been lost. The principal source remains his *Complete Works*, published in Russian between 1982 and 1984; despite its title, however, this does not contain all his writings that have been preserved, and several of his previously published books and articles have not yet been reissued.

The most complete bibliography of the works of Vygotsky, together with a list of translations and studies on him, is to be found in the sixth volume of the *Complete Works* and in Schneuwly and Bronckart (1985). It should be noted in passing that certain presentations of Vygotsky, particularly some of those in English, have been rather unfortunate and, in particular, have occasioned many misunderstandings. This is especially true of the

highly distorted presentation in English of Vygotsky's most important work *Thought and Language*, published in 1962. It is to be hoped that the editions of the *Complete Works* currently being prepared in several languages (English, Italian, Spanish, Serbo-Croat, etc.) will help foreign scholars to gain a more accurate understanding of Vygotsky's real thinking. The bibliographical data in the original version of the *Complete Works*, together with the commentaries to be found in each volume, will, moreover, make it easier to reconstruct the origin and growth of his ideas. Such a reconstruction will, among other things, make for a sounder interpretation of his thinking, particularly those ideas that were formulated in various ways in works written at different times.

Be this as it may, there will always remain a further difficulty for readers unable to study the texts of Vygotsky in Russian: in creating an original theoretical system, Vygotsky at the same time invented a terminology that was capable of expressing the new approach. In consequence, any translation runs the risk of distorting those ideas, at least to some extent.

From the corpus of Vygotsky's ideas we shall attempt here a brief analysis of those that are relevant to education, leaving aside his thinking concerning the methodology of science, general psychology, the psychology of art, handicapped children, etc. Our discussion will therefore concentrate on two points: the educational implications of Vygotsky's theory of mental ontogenesis; and the analysis of his strictly and explicitly educational ideas.

The interpretations offered are, needless to say, our own. Having long studied the texts of Vygotsky we shall, rather than reproduce his words, attempt to capture the deeper meaning of his ideas, to develop those ideas and to present them in language that is understandable for readers unfamiliar with his works. Then, going a step further than the mere presentation of Vygotsky's ideas about education, we shall briefly consider the application of those ideas in educational research and in everyday teaching practice.

Theory of mental development and problems of education

If we were to characterize Vygotsky's theory by employing a series of keywords or expressions, the following at least could not fail to be mentioned: human sociability, social interaction, sign and instrument, culture, history, and higher mental functions. And if we were to link these words and expressions together in a single formula, we could say that the theory of Vygotsky is a 'socio-historico-cultural theory of the development of higher mental functions' as against the more frequent description of it as simply a 'historical-cultural theory'.

For Vygotsky, the human being is characterized by a 'primary sociability'. The same idea is expressed more categorically by Henri Wallon: 'The individual is genetically social' (Wallon, 1959). During the lifetime of Vygotsky, that principle was no more than a purely theoretical hypothesis. Today, however, it is safe to say that the idea of a primary sociability, to some extent genetically determined, has virtually achieved the status of an established scientific fact. This is due to the convergence of two currents of research: on the one hand biological research on, for instance, the role of sociability in anthropogenesis or on the morpho-functional development of the infant (for example, there is increasing evidence that the areas of the brain governing social functions, such as the perception of a human face or voice, reach maturity earlier and more quickly than others); on the other hand, recent empirical research on social development in earliest childhood offers abundant proof of the existence of a primary and very early sociability (Bowlby, 1971; Schaffer, 1971; Zazzo, 1974, 1986; Thoman, 1979; Lamb and Scherrod, 1981; Tronick, 1982; Lewis and Rosenblum, 1974; Stambak et al., 1983; Zaporozec and Lissina, 1974; Lissina, 1986; Ignjatovic-Savic et al, 1989).

Theoretical analysis led Vygotsky to advance some quite visionary ideas on the early sociability of the child and take them to their logical conclusion in constructing a theory of child development. He wrote in 1932 (Vygotsky, 1982- 84, vol. 4, p. 281):

It is through the mediation of others, through the mediation of the adult, that the child undertakes activities. Absolutely everything in the behaviour of the child is merged and rooted in social relations. Thus, the child's relations with reality are from the start social relations, so that the newborn baby could be said to be in the highest degree a social being.

The sociability of children is the basis for their social interactions with the people around them. The problems raised by the psychology of social interaction are now well known; we shall therefore confine ourselves here to some brief comments on a few distinctive traits of Vygotsky's theory. Human beings, by reason of their origin and nature, can neither exist nor develop in the normal way for their species as isolated monads: part of them is necessarily anchored in other human beings—in isolation they are not complete beings. For the development of the child, particularly in early infancy, the most important factor is asymmetrical interaction, that is, interaction with adults who are vectors of all the messages of that culture. In this type of interaction the essential role is played by signs and various semiotic systems whose initial purpose, from the genetic standpoint, is to assist communication and, later, individuation, when they begin to be used as tools for the organization and control of individual behaviour. That is the crux of Vygotsky's conception of social interaction, which plays a formative role, a constructive function, in the child's development. In other words, certain types of higher mental functions, such as deliberate attention, logical memory, verbal and conceptual thought and complex emotions, could not emerge and take form in the development process without the constructive assistance of social interaction.[4]

This idea led Vygotsky to generalizations whose heuristic value is far from exhausted, even today. We are thinking here of his famous theory concerning the transformation of interpsychic phenomena into intrapsychic phenomena. Here is one formulation of that idea (Vygotsky, 1982–84, vol. 4, p. 56):

The most important and the most fundamental of the laws that account for genesis

and towards which we are led by the study of higher mental functions could be expressed as follows: each instance of semiotic behaviour by the child originated as a form of social collaboration, which is why semiotic behaviour, even in the more advanced stages of development, remains a social mode of functioning. The history of the development of higher mental functions is thus seen to be the history of the process by which the tools of social behaviour are transformed into instruments of individual psychological organization.

The admirable research done by Vygotsky on the basis of that idea focuses on the relationship between thought and language during ontogeny. Indeed, this is the central theme of his work *Thought and Language*. We now know that the child's capacity to acquire language is strongly determined by heredity.

Vygotsky's research reveals that, even so, heredity is not a sufficient condition and that a contribution from the social environment in the form of a quite specific type of teaching process is also needed. According to Vygotsky, this teaching process is simply the process of constructing in common during activities involving the child and the adult, that is, in social interaction. During this preverbal collaboration, the adult introduces language, which, building on pre-verbal communication, serves in the beginning as a tool for communication and social interaction. In his book on the subject Vygotsky describes the subtleties of the process by means of which language, as an instrument of social relations, is transformed into an instrument of internal psychic organization for the child (apparition of private language, internal language and verbal thought).

For our purpose, which is to explore the implications for education of the theory of development, there are several important conclusions to be drawn here. In the first place we are confronted with an original answer to the question of the relationship between development and the teaching process: even for a function determined largely by heredity (such as language acquisition), the contribution of the social environment (the

teaching process) is nevertheless constructive and is therefore more than a mere trigger mechanism, as it is for instinct, or a mere stimulant that simply speeds up the development of forms of behaviour that would have emerged anyway. The contribution of the teaching process derives from the fact that it provides the individual with a powerful tool, namely language. During the acquisition process this tool becomes an integral part of the psychic structure of the individual (with the development of internal language). But there is something in addition: the new acquisitions (such as language),
which are of a social origin, start to interact with other mental functions such as thought. This encounter engenders new functions such as verbal thought. Here we meet a Vygotsky hypothesis that has not yet been sufficiently assimilated and exploited in research, even in present-day psychology: the crucial factor in development is not the progress of each function considered separately, but the changing relationship between different functions, such as logical memory, verbal thought, and so forth. In other words, development consists in the formation of composite functions, systems of functions, systemic functions and functional systems.

Vygotsky's analysis of the relationship between development and learning in the case of language acquisition leads us to define the first model of development: in a natural process of development, learning is a means that reinforces this natural process by making available to it culture-generated tools that extend the natural possibilities of the individual and restructure his mental functions.

The role of adults as representatives of the culture in children's language acquisition process and in their assimilation of a part of the culture—the mother tongue—leads to the description of a new type of interaction besides social interaction that is of decisive importance to Vygotsky's theory, namely interaction with the products of culture. Needless to say, it is impossible to separate or to distinguish clearly between these two types of interaction, which often take the form of socio-cultural interaction.

To elucidate these ideas of Vygotsky, we shall draw upon Meyerson (1948), whose central idea is as follows; 'everything that is human tends to become objectified and to be projected in works' (p. 69). The task of psychology is 'to seek out the mental content in the facts of civilization described' (p. 14), or 'to discern the nature of the mental operations that are involved' (p. 138).

In analysing the role of culture in individual development, Vygotsky advanced similar ideas. Among all the acquisitions of culture, he focused his attention on the ones that would subsequently control mental processes and human behaviour, that is, the various instruments and techniques (even technologies) that people assimilate and turn towards themselves in order to influence their own mental functions. There thus emerges a gigantic system of 'artificial and external stimuli' by means of which people gain control over their own inner state. In Vygotsky, we encounter once again, but from a different angle, the phenomenon of interpsychism: from a psychological point of view, part of the individual is anchored in other individuals and another part in his or her works and culture, which, according to Marx, is the individual's 'non-organic body'. Marx's expression is highly appropriate: culture forms an integral part of the individual but it is, nevertheless, outside him. Hence the development of a person cannot be reduced solely to the changes taking place within the individual; it is also an allomorphic development capable of taking two different forms—the production of external aids as such and the creation of external tools that can be used to produce internal (psychological) changes. Thus, besides the instruments that human beings have invented throughout the course of their history and use to exercise control over objects (external reality), there exists another series of tools that, directed towards themselves, they can use to control, master and develop their own capacities.

These tools include—to mention just a few—spoken and written language (and, in McLuhan's phrase, the whole 'Gutenberg galaxy'), rituals, models of behaviour depicted in works of art, systems of scientific concepts,

techniques that assist the memory or thinking, tools that improve motility or human perception, etc. All these cultural tools are 'extensions of man' (McLuhan, 1964), that is, extensions and amplifiers of human capacities.

To a cultural anthropologist, such a statement may appear commonplace, but in psychology, where concepts are traditionally coloured by subjectivity, it is very rare for such cultural factors to be taken into account. Even cultural anthropologists, however, often confine themselves to a single aspect, the objectification of human capacities in the products of culture.

For McLuhan, and even more so for Vygotsky at a much earlier date, what is important are the psychological consequences, the impact of the existence of such tools on the development of the individual, namely, the interaction between the individual and these tools.

In his analysis of those consequences, Vygotsky starts from the famous aphorism of Francis Bacon, which crops up several times in his works: *Nec manus, nisi intellectus, sibi permissus, multum valent: instrumentis et auxilibus res perficitur* [The human hand and intelligence, without the necessary tools and aids, are relatively powerless; on the other hand, their strength is reinforced by the tools and aids provided by culture].

In the first place culture creates an ever-growing stock of powerful external aids (tools, apparatus, technologies) that back up psychological processes. From knots in a handkerchief or notches on a stick for the purpose of remembering certain events, up to powerful computerized data banks or modern information technologies, the progress in 'psychological technology' never ceases. Alongside the individual and natural memory or intelligence, there exists an external and artificial memory and intelligence. How effective would Europeans of today be if deprived of these technologies and left to themselves, 'with naked hand and intelligence'? Could psychology produce valid conceptualizations of higher mental processes without these external aids? The fact is, the very existence of these aids changes the nature of the process, which still takes

place within the individual; to be convinced of this, one has only to observe the changes in the performance of straightforward arithmetical operations by people who have become accustomed to using pocket calculators. The real tasks for research are the analyses of the restructuring of inner processes when such aids are present and of the interaction between the external and internal aspects of those processes.

In addition to external aids, however, there exist in cultural works psychological tools that are capable of being internalized. These include all semiotic systems, all those skills and intellectual procedures and techniques of the media, intellectual operations and structures, and the models of intellectual activities to be found every time the acquisition of culture occurs.

Vygotsky, like McLuhan, did not conclude his analysis at the superficial level of such acquisition. He wanted to grasp its hidden and deeper meanings. The direction of his exploration is expressed in McLuhan's famous maxim: 'The medium is the message.' In other words, it is the medium that carries the profound meanings. This approach can be made more understandable by taking the example of a tool, such as written language (both authors considered this example). An individual—the same also applies to a cultural group, for that matter—who has mastered written language is not just one who also possesses a technical skill. Written language and book-based culture have a profound impact on the ways in which perception, memory and thought function. This is because written language contains within itself a model for the analysis of reality (treatment in discrete units, linearity and temporality in the organization of thoughts, loss of the sense of totality, etc.) and psychological techniques including, in particular, an enhanced power of memory that alters the relationship between memory and thought. Hence individuals, in gaining access to the written language, appropriate for their own use the psychological techniques available in their culture, techniques that become 'internal techniques' (Vygotsky borrows this term from Claparède). Thus, a cultural tool takes root in individuals and becomes personal to them.

When we consider present-day changes in technology, a question of considerable importance is raised: What are the consequences of the employment of modern intellectual (in my view, a more appropriate term than 'information') technologies, such as computers or computerized data banks, for individual cognitive processes?

Vygotsky's admirable research on the appropriation of cultural tools to serve as internal techniques deals with the formation of concepts: comparative studies on experimental concepts, spontaneous concepts and scientific concepts. The outcome of this research is presented in his book, *Thought and Language*.

At the heart of this research lies the acquisition of systems of scientific concepts, the most important acquisition during the period when a child is of school age. Vygotsky regards the system of scientific concepts as a cultural tool that is yet another vehicle for profound messages, and its assimilation by children induces profound changes in their mode of thought.

The essential property of scientific concepts is their structure, the fact that they are organized in hierarchical systems (other possible systems would include 'networks', 'groups', 'genealogical trees', etc.). When children interiorize a hierarchical structure they extend considerably the possibilities of their thinking process because such a structure enables them to carry out a series of intellectual operations (different types of definition, logical quantification operations, etc.). The advantages of this structure become obvious when compared with 'practical' structures, for example, categories such as 'furniture', 'clothes' and so forth. If, for example, we attempt to give a logical definition of the term 'furniture', we quickly discover the limitations of practical categories or categories based on experience which lack the formal structure of scientific concepts. The advantages all individuals draw from the assimilation of such powerful intellectual tools are obvious.

The assimilation of systems of scientific concepts is made possible by systematic education of the type received at school. Organized systematic education is essential for this, unlike oral language acquisition in which teaching has a constructive role but requires no more than the presence of adults with a command of the language to act as partners in shared activities.

This brings us to the second model of development. Vygotsky calls this 'artificial development': 'education may be defined as the artificial development of the child . . . Education is not limited simply to influencing developmental processes; it restructures in a fundamental manner all behavioural functions' (Vygotsky, 1982-84, vol. 1, p. 107).

The essential point is that education becomes development: whereas, in the first model of development, it was merely the means of reinforcing the natural process; in the second model, it is a relatively independent source of development. Using Vygotsky's theory, it is possible to identify several models of development—a point he explained himself on several occasions—by focusing on the period of development concerned, on the nature of the cultural tools, on the extent to which functions are determined by heredity, etc.

If allowance were made for the enormous range of cultural tools and techniques a person might or might not be given the opportunity to assimilate in particular cultures or periods of history, it would be fairly easy to conceptualize intercultural or historical differences in the cognitive development of groups and of individuals. With such a conception of the development of human intelligence it seems paradoxal to speak of 'culture-free tests of intelligence' (which Bruner calls 'intelligence-free tests') or to maintain that the only possible scientific definition of intelligence is one that reduces it to indicators such as reaction time, evoked potential, etc., as Eysenck (1988) does.

His analysis of this second model of development, the model of 'artificial

development', exemplified in the process by which systems of concepts are assimilated, leads Vygotsky to his discovery of the metacognitive dimension of development. The fact is that the assimilation of knowledge systems based on such a degree of generalization, the interdependence of concepts within a network which smoothes the transition from one concept to another and simplifies the execution of intellectual operations, and the existence of external models (in books or demonstrated by the teacher) for the conduct of these operations, all facilitate the individual's realization (in Russian, *osoznanie*) and command (*ovladenie*) of their own cognitive processes. This process of deliberate self-regulation can be helped by the type of learning process (verbal learning, explanation of intellectual methods of approach, description of the concept-building process, concept-building in common, monitoring of the learning process by the adult expert, etc.).

In these conditions, the individual boy or girl would be able to achieve a fairly clear understanding of his or her own knowledge-acquisition processes and to exert deliberate control—the very essence of metacognitive processes—over them. Here it should be made clear that the writings of Vygotsky constitute the most important theoretical and historical source for the conceptualization and empirical study of metacognitive processes. Vygotsky's scientific achievement in this field is evident: instead of regarding metacognitive process as no more than practical techniques for self-mastery (like mnemonics, for example) or as an isolated question (like most questions of metamemory), Vygotsky offers a theoretical framework. For him, the problems of metacognitive processes are integrated into a general theory concerning the development of higher mental functions. In his theory, these processes are seen as a stage that is necessary, in certain specified conditions, for development. In return, they play an important role in the restructuring of cognition in general. This role provides the clearest illustration of Vygotsky's conception of development as the process whereby the relationships between particular mental functions are transformed. In this context, for example, even the term 'metamemory' (Flavell and Wellman, 1977) is inappropriate, since Vygotsky is not concerned here with the working of memorization techniques in the activity

of memorization, but with the working in such activities of thought processes that have become conscious and deliberate. In other words, he is speaking about a new relationship between two distinct functions.

Even today, Vygotsky's theory is the only one that offers, at least in principle, the possibility of conceptualizing scientifically metacognitive processes, the only one that makes it possible to link up this dimension of cognitive development with cognitive development in general and to understand the source of a person's capacity to control his or her own inner processes (as a result of the transition, outlined by Vygotsky and mentioned above, from external inter-individual control to personal intrapsychic control).

We shall conclude this part of our study by sketching in some possible ways in which Vygotsky's theory of mental development could be utilized in educational research and practice. In our view, the most important ones are as follows:

First, no other psychological theory of development attaches so much importance to education. In Vygotsky's theory, education contains nothing that is external to development. As J. P. Bronckart rightly states (in Schneuwly and Bronckart, 1985, author's emphasis): '*The school becomes the natural arena of psychology* because it is the scene of learning processes and of the genesis of psychic functions'. That is why the theory could be effectively employed to improve our understanding of education-related phenomena—especially their role in development—to design educational research projects and to test practical applications.

Second, as a direct or indirect consequence of Vygotsky's theory, a whole series of new empirical research problems of capital importance for education have been incorporated into present-day psychology.

Research on the sociability of the infant (see sources already mentioned), a rapidly expanding area of research, has improved our understanding of

early childhood, and there have already been some practical applications in the education of young children.[5]

The relationship between social interactions and cognitive development is one of Vygotsky's typical themes and is very much in fashion in present-day psychology; it stands at the interface between social psychology and cognitive psychology and has obvious practical applications in education (for example, Perret-Clermont, 1979; Doise & Mugny, 1981; CRESAS, 1987; Hinde et al., 1988; Rub≠ov, 1987; Wertsch, 1985*a*, 1985*c*).

Current research on semiotic mediation, on the role of semiotic systems in mental development, and on the development of language are manifestly strongly influenced by the ideas of Vygotsky (Ivic, 1978; Wertsch, 1985*b*; and others).

Third, Vygotsky's theory is historically and scientifically the only significant source in present-day psychology of research on metacognitive processes. It would be impossible to overestimate the importance of these processes in education and development. Even though highly productive theoretical and empirical research could be conceived within the framework of Vygotsky's theory, the absence of such research is the sole explanation for the continued neglect of these processes in education. They are now both on the agenda of psychology and pedagogy.

Fourth, it would be easy to develop an analytical grid and set of instruments for research and diagnosis on the basis of Vygotsky's concept of 'artificial development', namely, the sociocultural development of cognitive functions. To start with, it would be enough simply to build up a list of the external aids, the tools and the 'internal techniques' at the disposal of individuals and social and cultural groups in order to determine parameters in the light of which comparisons could be made. It is obvious that such instruments, developed within a theoretical framework of this nature, would eliminate the dangers of racist and chauvinistic interpretations.
Fifth, besides the two models already mentioned in this article, a whole

series of learning patterns have been conceptualized on the basis of Vygotsky's or similar ideas. These include co-operative learning, guided learning, learning based on the socio-cognitive conflict, knowledge construction in common, etc. (Doise and Mugny, 1981; Perret-Clermont, 1979; Stambak et al., 1983; CRESAS, 1987; Rub≠ov, 1987; Brown and Palincsar, 1986).

Finally, the recent emergence of modern audio-visual media and information technologies, their applications in teaching and their short- and long-term place in the lives of children, raise new and serious problems. What instrument could be more relevant and more useful for research into the impact of these new cultural tools than a theory like Vygotsky's, which sets their role in psychological, historical and ontogenetic development precisely at the centre of its concerns? This theory offers an ideal conceptual framework for such research, but there remains the hard task of putting it on an operational footing and conducting empirical research.[6]

When we attempt a critical appraisal of Vygotsky's ideas, the first observation that springs to mind is that his theory has remained in many respects a mere sketch, insufficiently developed and operational. In many cases, for instance, his theoretical arguments are not illustrated or supplemented by appropriate methodology. These omissions cannot be blamed on Vygotsky, whose ideas were often simply restated rather than built upon by his disciples. Nor can Vygotsky be blamed for the fact that present-day psychology has wasted effort and resources in conducting research based on much less fruitful paradigms than his.

There has been frequent criticism of the distinction drawn by Vygotsky between two channels of mental development (which he actually regards as intertwined), that is to say, natural (spontaneous and biological) development and artificial (social and cultural) development. We are in agreement with Liders[7] on the necessity of retaining this scientifically productive contrast in preference to the facile claim that all human development is cultural.

In our opinion the true starting-point for any critical appraisal of Vygotsky's theory should be the absence of criticism of social and cultural institutions (and 'tools'). Vygotsky, fascinated by the constructive contributions made by society and culture, never really managed to work out a critical analysis, in the modern sense, of those institutions.

The fact is that the perturbation of social relations (in the social group, the immediate environment or the family) may be capable of proving seriously pathogenetic, precisely through the action of the mechanisms discovered by Vygotsky. Similarly, the cultural 'tools', again through the action of Vygotskian mechanisms, cannot be agents solely of mind formation; they also contribute to general development—for example, the formation of narrow-minded, dogmatic or sterile attitudes—precisely because the individuals concerned have experienced interactions with the cultural carriers of such profound tools and messages.

The critical analysis of institutions, including schools, and of social and cultural agents could clarify the conditions in which socio-cultural 'tools and instruments' become the formative factors of development.

Vygotsky's ideas on teaching

In the first part of this profile we looked into the consequences for education of Vygotsky's theory of development. We shall now briefly review his more explicit ideas on education. It must be said, however, that we regard the analysis conducted in the previous section to be of greater importance for this subject.

Vygotsky was himself a very active and, it is said, very gifted teacher. As a member of various bodies in charge of national education, he had a hand in dealing with the practical problems facing the Soviet education system at the time, including the transition from a holistic to a discipline-centred approach in primary schools, and throughout his life he was interested in the education of handicapped children.

We shall make a few comments here on the educational problems raised by the relationship between development and the learning process, on the 'proximal zone of development' concept and on specific aspects of formal education.

Vygotsky regarded the question of the relationship between development and the learning process as primarily a theoretical one. Since his theory regards education as being closely connected with development, however, and development as taking place in the actual socio-cultural environment, his analyses are focused directly on education of the type provided in schools.

We have already seen that one of his models of development (Model II—artificial development) depends, in fact, upon formal education, the core of which is the acquisition of systems of scientific concepts.

For Vygotsky, therefore, education cannot be reduced to the acquisition of a body of information; it is one of the sources of development and is even defined as the artificial development of the child. Hence, the essence of education is to ensure the child's development by the provision of tools, internal techniques and intellectual operations. On many occasions Vygotsky even speaks of the acquisition (learning) of different types of activity. If we applied his approach to botanical classification, for example, we could say that for Vygotsky the essential thing is not a knowledge of taxonomic categories but a mastery of the classification procedure (definition and application of taxonomic criteria, the classification of ambiguous or borderline cases, determination of new members of a class and, most important of all, learning to execute the logical operations that interlink various classes, etc.).

All this goes to show that Vygotsky attached the greatest importance to the content of educational curricula but placed the emphasis on the structural and instrumental aspects of that content, the significance of which was mentioned in our analysis of the implications of McLuhan's

phrase 'the medium is the message'. In this connection, it must be said that Vygotsky did not take these fruitful ideas far enough. In this approach it is quite possible to regard the school itself as a 'message', that is, a fundamental factor of education because, as an institution and quite apart from the content of its teaching, it implies a certain structuring of time and space and is based on a system of social relations (between pupils and teachers, between the pupils themselves, between the school and its surroundings, and so on). Indeed, the impact of formal education depends to a considerable extent on these aspects of the 'educational medium'.

Secondly, we have already seen that Vygotsky did not take his criticism of formal education very far despite its pertinence to his system of thought: the school does not always teach systems of knowledge but in many cases overburdens its pupils with isolated and meaningless facts; school curricula do not incorporate tools and intellectual techniques; all too often, schools do not provide a setting for social interactions conducive to knowledge construction, etc. Lastly, Elkonin (Elkonin and Davidov, 1966) rightly reproaches Vygotsky for not paying enough attention to teaching methods.

Vygotsky's concept of 'the proximal zone of development' has first of all theoretical implications. In the socio-cultural conception of development children cannot be regarded as cut off from their social and cultural environment like young Robinson Crusoes. Their ties with other people form part of their very nature. It is thus impossible to analyse their development, aptitudes or education without taking social ties into consideration. The concept of the proximal zone of development illustrates this view precisely. This zone is defined as the difference (expressed in units of time) between the performance of the same child working with and assisted by an adult. For example, two children pass tests for 8-year-olds on a psychometric scale; with standardized assistance, the first attains the 9-year level and second the 12-year level; in this case the proximal zone is one year for the first child and four years for the second.

In this concept of the proximal zone, the view of the child as a social being engenders a methodological approach with far-reaching implications, since the child's development is regarded as a dynamic and dialectical process. Applied to pedagogy, the concept of the proximal zone offers a way out of the eternal dilemma of education: should we wait until children have attained a particular level of development before beginning formal education or should we expose them to a certain education so that they may attain a particular level of development? Following the dialectic of the relationship between the learning and development processes examined earlier, Vygotsky adds that development is more productive if children are exposed to new learning precisely in their proximal zone of development. In this zone and with adult assistance children would be able to assimilate more easily what they would be incapable of assimilating if left to themselves.

The actual forms taken by adult assistance in the proximal zone vary enormously: the demonstration of methods to be imitated, examples, maieutic questions, monitoring by the adult and, most important of all, shared activities (*sovmestnaja deatel'nost*) as a constructive factor of development.

The heuristic value of the proximal zone concept has not been sufficiently exploited. The nature of the concept translates into operational terms the theoretical conception of the child as a social being. But its applications need to be taken further and, in fact, a new approach to the theoretical and practical construction of diagnostic tools based on that concept is currently being developed. It involves studying the dynamics of the development process (rather than present performance) and the capacities of normal or handicapped children, in order to draw maximum benefit from the assistance and learning opportunities offered.

A second direction that could be explored in the application of this concept is education in the family and at school. There is evidence that many parents spontaneously direct their teaching efforts precisely towards the

proximal zone (Ignjatovic-Savic et al., 1989). Bearing in mind Vygotsky's oft-repeated view that the education of a child should ideally be aimed at the proximal zone in which that child experiences his/her encounters with the culture, assisted by an adult acting initially as a partner in shared constructions and later as the organizer of the learning process, formal education could be regarded as a powerful support for natural development (Model I) or as a relatively independent source (Model II). The references to formal education that we find in Vygotsky should be taken not as descriptions of actual educational situations, however, but rather as an outline for the renewal of education. Vygotsky's theory, formulated over fifty years ago, has such heuristic potential that it could very well become one of the instruments for this renewal of present-day formal education.

Notes

1. This profile was first published in *Prospects*, vol. 19, no. 3, 1989.
2. I have developed these ideas in a monograph dealing with the origin and development of the semiotic function in the child (Ivic, 1978).
3. I have analysed in a recent article one of the possible interpretations of this constructive role of social interactions (CRESAS, 1987).
4. I have attempted to integrate these ideas about early sociability into an educational programme designed for nursery-school children, a programme that is now being employed in the Republic of Serbia (Ivic et al., 1984). In a piece of empirical research (Ignjatovic et al., 1989) my colleagues have brilliantly succeeded in putting this general idea of Vygotsky's into practice.
5. In a thesis defended at the University of Belgrade, M. Kovac ('The Visual Media and Cognitive Development') has shown empirically how the specific features of video may be employed to influence the cognitive development of children.
6. Liders, in a thesis, has powerfully restated Vygotsky's fundamental idea of the two channels of development (natural and artificial); this text is published in a volume containing the proceedings of a conference devoted to Vygotsky. See *Nau_noe tvor_estvo Vygotskogo i sovremennaja psihologia* [The Scientific Achievement of Vygotsky

and Contemporary Psychology], Moscow, APN SSSR.

7. I was unfortunately unable to consult for this article the study by Rogoff and Wertsch (1984) on the proximal zone of development.

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JEAN PIAGET
(1896–1980)

Alberto Munari[1]

A portrait of an educator that is also a portrait of the great Swiss epistemologist and psychologist might, at first glance, seem surprising. Indeed, why should Jean Piaget be regarded as an educator?—since he never practised that profession and always refused the title of educationist, going so far as to affirm: 'I have no views on teaching' (Bringuier, 1977, p. 194), and since all his writings on education[2] do not amount to more than a three-hundredth[3] part of his *œuvre* as a whole.

Such bafflement is altogether in order if we refer only to Piaget's own scientific output. But it is less surprising if we remember the many books that we owe to other authors on the educational implications of Piaget's achievement [4]. Indeed, for several years, we have ceased to count the number of educators and educationists in different countries who explicitly refer to Piaget's work
to justify their methods and principles. But is the interpretation always the same? Do writers invariably refer to Piagetian *psychology*, or do they evoke other aspects of his complex and manysided work? To which of

the very different Piagets do we owe the most important contributions: to Piaget the *biologist*, Piaget the *epistemologist* or Piaget the *psychologist*? Or are we particularly indebted
to the *educational politician"*?—as one might call Piaget in his capacity as Director of the International Bureau of Education.

A lifelong cause: science

Let us start, however, by filling in the background. Jean Piaget epitomizes the 'enlightened' academician who struggled all his life against the institutions and intellectual prejudices of his day—and also perhaps against his own youthful idealistic and spiritual concerns (Piaget, 1914, 1915, 1918)—in order to defend and promote the *scientific approach*.

Encouraged by his father, whose 'scrupulous and critical mind disliked hasty
generalizations' (Piaget, 1976), he was introduced very early to the precision of naturalist observation by the malacologist Paul Godet, Director of the Natural History Museum in Neuchâtel, his native town (ibid., p. 2–3). While still a schoolboy, he entered the arena of international scientific controversy by publishing as early as 1911, at the age of 15, the first of his articles in highcirculation journals. Piaget was very quickly attracted by the charm and rigour of scientific research. In his own words:

> Precocious as they were, these studies were nevertheless very useful in my scientific training. Moreover, they acted, if I may say so, like protective weapons against the demon of philosophy. Thanks to them, I had the rare privilege of catching a glimpse of science and what it represented before I went through the philosophical crises of adolescence. The early experience of these two sets of problems constituted, I am sure, the hidden inspiration for my subsequent activity in psychology (ibid., p. 3).

Thus, in spite of two major 'adolescent crises', one religious and the other philosophical (ibid., p. 4), Piaget was gradually brought to the

firm conviction that the scientific approach was the only valid way of gaining access to knowledge, and that the introspective approaches of the philosophical tradition could, at best, help to develop a certain wisdom (Piaget, 1965*a*).

This increasingly strong conviction determined the fundamental choices that Piaget made in the 1920s or thereabouts, and which, from then on, did not waver, whether they involved the psychology he decided to study, the academic policies he chose to defend or the commitment he undertook with regard to educational issues. On the subject of psychology, he declared: 'This made me decide to devote my life to the biological explanation of knowledge' (ibid., p. 5), thereby abandoning, after an initial interest linked to his own family experiences (ibid., p. 2), psychoanalysis and pathological psychology. With regard to his work as a researcher and university teacher, the constant concern influencing and guiding his work and, indeed, his entire life was that of winning recognition, especially by his colleagues in physics and the natural sciences, for the equally *scientific* nature of the human sciences and, more specifically, of psychology and epistemology. His attitude and his involvement in the field of education led him quite naturally to champion the pupil's active participation as the royal road to the scientific approach in school.

The discovery of childhood and education

It was, then, this plan that motivated Jean Piaget to move away from philosophical introspection and to go to work in Paris with Janet, Piéron and Simon in the laboratories founded by Binet. It was there that he discovered for the first time the rich world of children's thinking. It was also on this occasion that he prepared the first rough draft of his *critical method*—which he sometimes also referred to as his *clinical method*—of questioning very young children, on the basis of a wholly novel and remarkable distillation of what he had just learned from Dumas and Simon in clinical psychology and from Brunschvicg and Lalande in epistemology, logic and history of the sciences. The originality of the Piagetian exploration of a child's thought resides in the methodological

principle whereby the flexibility and subtlety of the 'in-depth' interview, characteristic of the clinical approach, need to be modulated by the systematic search for the logico-mathematical processes underlying the reasoning put forward. To conduct this type of interview, however, it is necessary to refer to the various developmental stages through which the concept to be examined has passed in the course of its historical evolution. Hence, the Piagetian methodology emerges from the outset as an attempt to associate the three traditionally Western approaches that had hitherto remained separate: the empirical method of the experimental sciences, the hypothetico-deductive method of logico-mathematics and the historical-critical method of the historical sciences (Munari, 1985*a*, 1985*b*).

In Paris, most of the children questioned by Piaget were children in hospital. Only when he was called to Geneva by Edouard Claparède and Pierre Bovet did he begin to study children in their 'normal' surroundings, especially at school. The Maison des Petits of the Jean-Jacques Rousseau Institute then became the principal venue for his research. His work in this leading centre of modern education—and subsequently in the primary schools of the day in Geneva, perhaps less 'modern' than the Maison des Petits—probably helped Piaget to understand the distance which too often separated the unsuspected intellectual skills that he had just discovered in children and the teaching practices commonly adopted by teachers in State schools. Moreover, the fact that he was working this time within a Jean-Jacques Rousseau institute, entirely dedicated to developing and improving educational systems and practices, and no longer in hospital establishments or medical laboratories dealing with sick or handicapped children, was bound to have a certain influence on Piaget's awareness of the wider education issue.

'However', Piaget admitted, not without candour, 'teaching did not interest me at the time, since I had no children of my own' (Piaget, 1976, p. 12). It was only later, when he returned to Geneva after a brief period in Neuchâtel where he had replaced his former teacher, Arnold Reymond, and was made co-director, with Claparède and Bovet of the

Jean-Jacques Rousseau Institute, that his commitment to education first took tangible form. 'In 1929, I unwisely accepted the post of Director of the International Bureau of Education, yielding to the insistence of my friend Pedro Rosselló' (ibid., p. 17). This was a decisive turning-point in Piaget's life, for it led him to the discovery of the socio-political issues that are inseparable from any educational undertaking and prompted him to embark on the grand scheme of international education.

From the IBE adventure to Piagetian educational principles

'This adventure was something of a gamble', Piaget said (ibid.), as if he wanted to play down its importance. Nevertheless, he remained at the head of this international organization from 1929 to 1968! This is, undoubtedly, a remarkable fact, not only in itself but especially in view of Piaget's own personality, since he was notoriously reluctant to commit himself to non-scientific tasks. Was it his desire to improve teaching methods by 'the official adoption of techniques better adapted to the mind of the child' (ibid.) and therefore, once again, more *scientific*? Or should the project be viewed as a way of becoming more effectively involved in official school institutions through the action of a supragovernmental organization? Or, again, did it hold out the hope of combating misunderstanding among peoples, and hence the evils of war, through an educational effort directed towards international values?

Every year, from 1929 to 1967, Piaget diligently drafted his 'Director's Speeches' for the IBE Council and subsequently for the International Conference on Public Education. It is in this collection of some 40 documents—forgotten by most reviewers of Piaget's works that we find features of Jean Piaget's educational credo expressed much more explicitly than in his other writings. Hence, it is those documents, rather than the few general works that Piaget agreed to publish on education (Piaget, 1969, 1972*b*), which provide illustrations of the underlying principles guiding his educational plan. We shall see that this plan is far less 'implicit' and less 'unconscious' than has often been claimed.

Above all, Piaget—contrary to what is usually thought—attached very great importance to education, for he unhesitatingly declared that 'only education is capable of saving our societies from possible collapse, whether violent, or gradual' (Piaget, 1934*c*, p. 31). In his view, the educational endeavour is therefore worth fighting for, since the outcome is sure: 'We need only remember that a great idea has its own intrinsic strength[5], and that what exists is largely what we want, in order to feel confident and to be sure that, starting from nothing, we shall succeed in giving education its rightful place internationally' (ibid.). On the eve of the Second World War, Piaget again declared: 'After the upheavals of these last few months, education will once more constitute a decisive factor not only in rebuilding but also, and especially, in construction proper' (Piaget, 1940, p. 12). Hence, in his view, education was the prime challenge facing all peoples, transcending ideological and political divergences: 'The common wealth of all civilizations is the education of the child' (ibid.).

But what kind of education? Here, too—and contrary to what he would later say to Bringuier (1977, p. 194)—Piaget was not afraid to enlarge on his opinions in his 'Speeches'. First, he stated a basic precept: 'Coercion is the worst of teaching methods' (Piaget, 1949*d*, p. 28). Accordingly, 'in the field of education, example must play a more important role than coercion' (Piaget, 1948, p. 22). Another precept, just as fundamental, which he put forward on several occasions, is the importance of the pupils active participation: 'A truth learnt is only a half-truth; the whole truth is reconquered, reconstructed and rediscovered by the pupil himself/herself' (Piaget, 1950, p. 35). In Piaget's view, this educational principle rested on an indisputable psychological fact: 'All modern psychology teaches us that intelligence proceeds from action' (ibid.), hence the fundamental role that the exercise of research must play in all educational strategies. That research, however, must not be an abstraction, for 'Action presupposes prior research, and research has value only with a view to action' (Piaget, 1951, p. 28).

A school without coercion, then, where pupils actively experiment with a

view to reconstructing for themselves what is to be learnt. Here, in outline, we already have Piaget's blueprint for education. However, 'Children do not learn to experiment simply by watching the teacher performing experiments', he warns 'or by doing exercises organized in advance; they learn by a process of trial and error, working actively and independently, that is, without restriction and with ample time at their disposal' (Piaget, 1959, p. 39). On this principle, which he considered paramount, Piaget did not fear controversy: 'In most countries, however, the school turns out linguists, grammarians, historians and mathematicians but fails to educate the inquiring mind. It is important to remember that it is much more difficult to train an experimental mind than a mathematical mind at primary and secondary school [...]. It is much easier to reason than to experiment' (ibid.).

What, then, would be the role of books and textbooks in such a school? 'The ideal school would not have compulsory textbooks for pupils but only reference works used freely [...]. The only essential manuals are those for the teacher's use.' (ibid.)

Are these principles applicable only to children's education?

On the contrary, active methods requiring a type of work that is both spontaneous and guided by the questions posed, and work in which the pupil rediscovers and reconstructs truths instead of receiving them ready-made, are as necessary for the adult as for the child [...]. For it should be remembered that *every time an adult tackles new problems, his or her sequence of reactions resembles the way in which reactions occur in the course of mental development*[7] (Piaget, 1965*b*, p. 43).

So these are the basic principles of Piagetian education. Nor, in his 'Speeches', did Piaget hesitate to give plenty of sound advice concerning specific disciplines, especially the teaching of mathematics:

As small children are more developed on the sensorimotor plane than on the plane of verbal logic, it is advisable to provide them with patterns of action on

which subsequent learning can be based [...]. An introduction to mathematics is [therefore] facilitated by a sensorimotor education, such as that practised, for instance, at the Maison des Petits in Geneva (Piaget, 1939*c*, p. 37).

His stance on this subject is very clear:
'Mathematical understanding is not a matter of ability in children. It is therefore erroneous to consider that lack of success in mathematics is due to a lack of ability [...]. The mathematical operation derives from action, and it therefore follows that the intuitional presentation is not enough. The child itself must act, since the manual operation is necessarily a preparation for the mental one [...]. In all mathematical fields, the qualitative must precede the numerical (Piaget, 1950, p. 79–80).

The teaching of natural sciences also received Piaget's special attention:
Those who by profession study the psychology of intellectual operations in children and adolescents are always struck by the resources at the disposal of every normal pupil, provided that he/she is given the means to work actively without the obligation of too much passive repetition [...]. From such a standpoint, science teaching is the active inculcation of objectivity and the habit of verification (Piaget, 1952, p. 33).

But the principle of active education may also be applied to less technical areas, such as the process of learning a modern language: 'learning a language as directly as possible in order to master it; then thinking about it so as to clarify the grammar' (Piaget, 1965*b*, p. 44); or it may even be applied to the development of an international outlook: 'as a means of dealing with scepticism and relational difficulties between peoples, only remedies of a receptive order have been considered, in the form of lessons, appeals to the sensitivity and imagination of the pupils [...]. We need to create social links between children, especially adolescents, and to encourage them to act and assume responsibility' (Piaget, 1948, p. 36).

With respect to the links between education and psychology, Piaget, in his 'Speeches', is much more explicit than in his other writings. Firstly,

the link between education and psychology is, in his opinion, a *necessary* link: 'Indeed, I do not believe that there is a universal method of teaching, but what is common to all education systems is the child itself, or at least a number of general features of the child's psychology' (Piaget, 1934, p. 94). And these are precisely the general features that psychology should accordingly highlight, so that educational methods can take them into account: 'It is undeniable that psychologists' research has been the starting-point of almost all methodological or didactic innovations in recent decades. It is unnecessary to reiterate that all methods appealing to a pupil's interests and actual activity have been inspired by genetic psychology' (Piaget, 1936*b*, p. 14). Nevertheless, 'the links between teaching and psychology are complex: teaching is an art, whereas psychology is a science, but while the art of educating presupposes unique innate abilities, it needs to be developed by the requisite knowledge of the human being who is to be educated' (Piaget, 1948, p. 22). Furthermore, 'it is often asserted that education is an art and not a science and therefore does not require scientific training. Although it is true that education is an art, it has the same claim to be an art as medicine which, while it requires abilities and innate gifts, also calls for knowledge of anatomy, pathology, etc. Similarly, if teaching is to train the pupil's mind, it must emanate from knowledge of the child, hence from psychology' (Piaget, 1953, p. 20). In still more specific terms, when writing about scientific research, Piaget claims—rather argumentatively—that experimental teaching could not exist without the help of psychology:

> If experimental teaching seeks to remain a purely positivist science, i.e. confining itself to recognizing facts but notseeking to explain them, confining itself to recognizing achievements but not ascertaining the reasons for them, it goes without saying that psychology is unnecessary [...]. But if experimental teaching seeks to understand what it discovers, explain the achievements it acknowledges, and grasp the reason for the greater effectiveness of certain methods compared with others, then, of course, it is essential to combine educational research with psychological research—in other words, to make constant use of educational psychology constantly and not merely to measure achievements in experimental

teaching (Piaget, 1966, p. 39).

But, if the links between teaching and psychology are complex, the dialogue between *educators* and *psychologists* is equally so. Piaget went so far as to offer strategic advice that, surprising as it may seem, nevertheless reflects the wisdom and experience of a skilful negotiator. He reminded us that it should always be borne in mind that 'the most elementary of psychological rules is that no human being likes being told what to do, and educators even less than all others. For a long time psychologists have been well aware that, in order to be heeded by teachers and administrators, one must be wary of appearing to have recourse to psychological doctrines and must, instead, pretend to appeal only to common sense' (Piaget, 1954*b*, p. 28).

Is this opportunism? It may seem so at first glance, but on further reflection we again find Piaget's underlying fundamental educational credo:

> We have trusted in the educational and creative value of objective exchange. We have believed that mutual information and reciprocal understanding of different angles are ways of attaining the truth. We have shunned the mirage of general truths and instead have believed in that concrete and living truth which stems from free discussion and from the laborious and tentative co-ordination of different, and sometimes opposing, points of view (ibid.).

This credo is not confined to the sphere of educational endeavours: it is, in Piaget's opinion, the *sine qua non* of all scientific work, the regulating principle of all human activity and the rule of life of every intelligent being.

The long process of genetic epistemology

It was, then, in this frame of mind that, for many years, Piaget pursued the grand plan which had fascinated him from the beginning of his career: that of being able to establish 'a kind of embryology of intelligence' (Piaget, 1976, p. 10). Thus, it was by trying various approaches and methods, and comparing scholars from various backgrounds and different specialized

fields, that he studied the development of intelligence from earliest infancy. This led him to construct his famous theory of 'parallelism' between the process of constructing individual knowledge and the process of constructing knowledge, i.e. between *Psychogénèse et histoire des sciences* [Psychogenesis and history of science] (Piaget and Garcia, 1983).

This theory aroused sharp controversy far beyond the frontiers of the Geneva region and the specific field of psychology. It was, however, from the heuristic standpoint, remarkably fruitful: not only did it spark off the tremendous scientific output of the International Centre for Genetic Epistemology, whose studies now run to 37 volumes, but it was also at the origin of the fresh impetus given to the fundamental debate on education of Piagetian inspiration, especially in the
United States[8].

Piaget the psychologist had already supplied the educator with a substantial series of experimental data in support of the active methods that were also advocated by Montessori, Freinet, Decroly and Claparède. Through his work on the developmental stages of intelligence, he had already incited teachers to gear their teaching methods more effectively to the level of operation attained by the pupil. And now Piaget the epistemologist suggested another approach,
namely, that teachers should to some extent distance themselves from the pupils, their level of attainment, their difficulties and their individual skills, with a view to becoming more broadly aware of the cultural context and taking into account the various lines of progression and historical paths of development followed by the very concepts that they were setting out to study or to teach.

In particular, the basic postulate of genetic psycho-epistemology whereby the explanation of all phenomena, whether physical, psychological or social, is to be sought in one's own mental development and nowhere else, helped to give the historical dimension a new role, in teaching methods as well as in general debate on education. Every theory, concept or object created by

a person was once a strategy, an action, an act. From this basic postulate then emerges a new teaching precept: if to learn properly it is necessary to understand properly, then to understand properly it is essential to reconstruct for oneself not so much the concept or the object in question but rather the path that led from the initial act to that concept or object. Furthermore, this principle is applicable both to the object of knowledge and to the knower: hence the need to develop, in parallel to all learning processes, a metalanguage in which to talk about the very process of learning[9].

The double reading of genetic constructivism

But the facts and theories of Piagetian genetic constructivism, and more especially its description of the developmental stages of intelligence and scientific knowledge, were the subject of very different readings depending on the type of conception, avowed or not, that each reader had of culture, which is undeniably the ultimate goal of any educational endeavour.

Among these various conceptions, two marked tendencies may be distinguished: one which sees culture as a sort of structure to be built gradually according to a well-planned procedure, and the other which considers it rather to be a kind of network endowed with a certain flexibility and capacity for self-organization and whose construction or reconstruction may accordingly be prompted, facilitated, but not entirely controlled (Fabbri and Munari, 1984*a*).

The interesting fact is that both tendencies refer to Piagetian genetic constructivism, or to be precise to its theory of stages, but give two interpretations of it which are situated at different levels, one more specifically psychological and the other more strictly epistemological. These interpretations have, in the practice of teaching, ultimately become radically opposed to each other.

The first, that which places greater emphasis on the psychology of the child, considers a stage to be a *degree*, a precise and necessary step in the construction of the cultural edifice; it is a step determined by

the very nature—almost the biological nature—of the developmental process, and is supposed to represent a stable and solid acquisition without which any subsequent construction is impossible. Typical of this position is, for instance, recourse to Piagetian 'tests' so as to give a more 'scientific' justification to educational guidance and selection procedures aimed at organizing both the education system and educational practices into a hierarchy of levels regarded as 'homogeneous' and increasingly difficult to attain.

Opposed to this first interpretation of Piagetian genetic constructivism is the second, which is more concerned with epistemological analysis. This school of thought interprets the stage rather as a sort of structuring or sudden restructuring, partially unpredictable, always temporary and unstable, of a complex *network* of relations which link a number of concepts and mental operations together in a continually changing pattern. A typical example of this second position—which is
strongly reminiscent of Kuhn's (1962)—is the jettisoning of all rigid forms of programming and standardization in teaching practices in favour of close attention to setting up the right *contexts*, i.e. those believed to foster the emergence of the desired patterns of organization of knowledge (Munari, 1990*d*).

Although opposed, these two positions are often found simultaneously in various areas (both literal and figurative) of the complex and heterogeneous world of education. Sometimes one or the other gains the upper hand, depending on the precise historical circumstances, local traditions, economic issues and the political forces at work.

However, the latter seems to be the one that is gaining ground today, perhaps less in conventional schooling than in non-formal education, and in particular in managerial training strategies for company executives, possibly as a result of the new challenges that a more and more interconnected and unpredictable environment imposes on the organization of human dealings.

So, while Piaget the *psychologist* has left an undeniable stamp on educational practices, especially where early childhood education is concerned, and while Piaget the *educational 'politician'* has unquestionably contributed to the promotion of movements for the international co-ordination of education, Piaget the *epistemologist* now influences the educational task in fields he never dreamed of. Here we have an undeniable indication of the wealth of theoretical implications and concrete suggestions that his work still offers to educators.

Notes

1. Alberto Munari (Switzerland). Psychologist and epistemologist, professor at the University of Geneva where, since 1974, he has been running the Unit of Educational Psychology. From 1964 to 1974 he collaborated with Jean Piaget and , under his tutelage, obtained his doctorate in experimental genetic psychology in 1971. He is the author of numerous publications, including *The Piagetian approach to the scientific method: Implications for teaching; La sculoa di ginebra dopo Piaget* [The Geneva school since Piaget]; and (1993) *Il sapere ritrovato: conoscenza, fromazione, organizzazione* [Knowledge rediscovered: acquisition, training, organization].
2. Piaget, 1925, 1928, 1930, 1931, 1932, 1933*a*, 1933*b*, 1934*a*, 1934*b*, 1935, 1936*a*, 1939*a*, 1939*b*, 1942, 1943, 1944, 1949*a*, 1949*b*, 1949*c*, 1954*a*, 1957, 1964, 1965, 1966*a*, 1966*b*, 1969, 1972*a*, 1972*b*, 1973; Piaget and Duckworth, 1973. Piaget also drafted, as Director of the International Bureau of Education, some 40 speeches and reports, all published courtesy of the IBE between 1930 and 1967.
3. In other words, slightly less than 1,000 pages (including speeches and reports written for the IBE) out of a total estimated at approximately 35,000 pages, not counting translations!
4. In this connection, world literature is extremely rich and it is difficult to draw up a complete list. 'Classic' reference works include Campbell and Fuller, 1977; Copeland, 1970; Duckworth, 1964; Elkind, 1976; Forman and Kuschner, 1977; Furth, 1970; Furth and Wachs, 1974; Gorman, 1972; Kamii, 1972; Kamii and De Vries, 1977; Labinowicz,

1980; Lowery, 1974; Papert, 1980; Rosskopf et al., 1971; Schwebel and Raph, 1973; Sigel, 1969; Sinclair and Kamii, 1970; Sprinthall and Sprinthall, 1974; Sund, 1976; Vergnaud, 1981.We ourselves, with the help of a number of colleagues who collaborate with our group and in particular with Donata Fabbri, have on several occasions analysed the educational implications of Piaget's psychoepistemology: Bocchi et al., 1983; Ceruti et al., 1985; Fabbri, 1984, 1985, 1987*a*, 1987*b*, 1988*a*, 1988*b*, 1989, 1990, 1991, 1992; Fabbri and Formenti, 1989, 1991; Fabbri et al., 1992; Fabbri and Munari, 1983, 1984*a*, 1984*b*, 1985*a*, 1985*b*, 1988, 1989, 1991; Fabbri and Panier-Bagat, 1988; Munari, 1980, 1985*a*, 1985*b,*1985*c*, 1987*a*, 1987*b*, 1987*c*, 1988, 1990*a*, 1990*b*, 1990*c*,1992; Munari et al., 1980.

5. This was one of Jean Piaget's fundamental convictions, already to be found in his very earliest writings: cf. *Lamission de l'idée* (Piaget, 1915).
6. A worthy constructivist act of faith!
7. We have deliberately emphasized this excerpt—too often unfamiliar to those who see the Piagetian approach as relevant only to the child—for it seems to us of paramount importance from the educational standpoint. For the same reason, we have also developed, with Donata Fabbri, a strategy for an educational approach applicable to adults, which we have called 'Laboratory of operative epistemology' (Fabbri, 1988*a*, 1990; Fabbri and Munari, 1984*a*, 1985*b*, 1988, 1990, 1991; Munari, 1982, 1989, 1990*a*, 1992, 1993).
8. Cf. Copeland, 1970; Elkind, 1976; Furth, 1970; Gorman, 1972; Schwebel and Raph, 1973.
9. In this connection, and although they do not seem to have had direct links with Piagetian psychology—except of course in Geneva—the various tendencies that incline increasingly towards the use of 'educational biographies' or 'life stories' as teaching tools could be regarded as a specific development of this principle (cf. for example, Dunn, 1982; Ferrarotti, 1983; Josso, 1991; Pineau and Giobert, 1989; Sarbin, 1986). Similarly, even if its origins are elsewhere (Flavell, 1976), the rising tide of educational research and initiatives relating to

metacognition can also be hailed as part of the same trend (cf. Noël, 1990; Weinert and Kluwe, 1987; and also Piaget, 1974*a*, 1974*b*).

10. Cf. for example, Fabbri, 1990; Fabbri and Munari, 1988; Landier, 1987; Munari, 1987*b*.

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SHOULD THE NATION INTRODUCE PROVISIONAL AND PERIODIC LICENSE FOR SCHOOL TEACHERS?

Sunil Behari Mohanty

INTRODUCTION

In 1985, The Challenge of Education document of the Government of India stated that:

> "It is widely believed, particularly by teachers themselves, that selection of teachers is not based entirely on merit. Consequently, quite a few people, who have neither the inherent competence nor the aptitude for teaching come into this profession. This happens largely because no screening worth the name is attempted while admitting students to teacher training schools and colleges. The teacher training too is not planned and organized to develop the spirit of inquiry, initiative, scientific temper, manual dexterity, conceptual clarity and linguistic skills for effective speaking and writing which teachers are expected to impart to their students. Adequate attention is also not given to develop communication skills which are crucial to the function of the teachers. The training programme also does not provide for developing receptivity to induction of modern educational aids nor does it impart skills to operate even audio-visual equipment. While it is increasingly emphasised that education should become an instrument of national integration, cultural cohesion and development of humanitarian values, the trainees in teacher training institutions are not exposed to these ideas. No wonder, then, that they should fail to discharge this function. (Ministry of Education 1985, pp.55 -56)

Has the situation improved? If the situation has not been improved should there be a teacher licensing system, to be renewed at intervals to persuade the teachers to utilise self-directed learning strategies in making them fit to changes in school curricula and also innovations in ever changing teaching and learning strategies?

A number of developed countries have teacher licensing system. Seventeen years ago, in the United States, (National Research Council, US 2001, p. 5) stated that "Licensure systems should be designed to rely on a comprehensive but parsimonious set of high-quality indicators." Shuls and Trivitt. (2013, p. 1) analysing situation of licensing procedure and alternative routes of teacher training in United States stated that "there is little difference in terms of quality between traditionally and alternatively certified teachers. However, licensure exams do have some predictive power." Analysing findings of PISA 2015, OECD (2018, p. 47) pointed out that "Certification requirements can add another layer of selection. While teacher certification, credentials and licenses offer no guarantee of excellence in teaching, they may help ensure that only the most motivated candidates progress in their career. " The study reported that Australia has a system of teacher registration renewal every five years, till the teachers achieve "Proficient" level, in the Australian Professional Standards for Teachers. In South Australia, once an individual is in his/ her final semester of study in an Australian teacher education program, or his/ her overseas qualifications have been assessed as meeting the Board's registration requirements, s/he can apply for teacher registration(Teachers Registration Board of South Australia 2018 September 8). In Singapore, the country which had topped in the latest PISA, does not have any system of licensing. "However, teaching graduates in Singapore must successfully complete a probation period in which their competence for the job is evaluated" (OECD 2018, p. 48). Singapore ensures better

teacher candidates by offering teacher trainees competitive monthly stipends for which the top third of the secondary school graduating class students opt for teacher training.

In United States, Minnesota Professional Educator Licensing and Standard Board (2017) states that "applicants of a first professional teaching license must provide evidence of completing the skills examinations in reading, writing, and mathematics using the examinations adopted by the Professional Educator Licensing and Standards Board." In Germany, there is provision for initial teaching certificate, which needs to be renewed at intervals. Provision existing in Alabama State for initial teaching certificate as found on 2018 September 9 is given below:

> There are 3 classes of Professional Educator Certification in Alabama - Class B, Class A and Class AA. Each class is connected with differing pay structures (exact pay will depend on the county where you wish to teach - contact your desired county to learn the exact compensation). The following are educational requirements for each certification Class.
>
> Prior to qualifying for Alabama teaching certification, you will need to pass the Alabama Prospective Teacher Testing Program or APTTP. The APTTP is a statewide testing program to ensure new teachers are proficient in 3 basic skill areas - Mathematics, Reading, and Writing - as well as any prescribed subject or intructional support areas (e.g. Chemistry, Biology, Calculus, etc.). Subject area testing will be provided through the Praxis II subject assessment examinations. Official scores of all examinations need to be sent directly from examining organization to the Alabama Department of Education to be considered official.(Alabama Department of Education 2018a)

In our own country, there was a system of probationary period in teaching jobs, and a teacher was confirmed, only when the head of the institution

gave a satisfactory certificate. It may be necessary to have appropriate changes in teacher recruitment rules making a Provisional License to teach that may be valid for one year. A person with provisional license may take up the work of a regular teacher on a lower rate of remuneration than applicable to a fully licensed teacher. In order to be entitled to appear at the test meant for issue of regular license, the person with provisional license may need to undergo further training for a period of one year under the guidance of a carefully selected experienced teacher called mentor. A mentor may be a duly selected experienced teacher. Selection of teachers to act as mentors may be carried out by the Directorates of School Education of the concerned State /UT School Departments through their Inspectors/Supervisors on the basis of analysis of records of performance. A mentor at the class XI-XII stage may be for a particular subject. The mentor may be paid remuneration for the work at a rate to be fixed by the concerned State Government.

The Centre on International Education Benchmarking (2016, p. 7) points out that in Singapore, all teacher trainees are selected on the basis of performance on a written test and interview to test attitude, aptitude and personality and are closely monitored and if necessary are asked to withdraw from teacher training. On joining a school, beginning teachers pass through an Induction process spread over two years, in which they are given 80% of workload and work under supervision of mentor teachers. May be our nation study the system of Singapore and introduce such an induction programme for our beginning teachers and bear the cost of training of mentor teachers and incentives / remuneration to mentor teachers. After successful completion of induction programme, the candidate may apply for Regular License as a Teacher.

Present teacher selection test may be treated as test for provisional license for teaching. It may be impproved by including certified video recording of Classroom Teaching Skill Test and interview based on the video recorded teaching..

The system of renewal of registration is in vogue in a large number of developed nations. In a study conducted in United States, Buddin and Zamarro (2008, p. 31) reported that "More experienced or better educated or more skilled teachers (as measured by licensure exams) may inherently be better able to teach, but they may not persistently practice those abilities in the classroom."(Buddin and Zamarro (2008, p.31). Teachers Registration Board of South Australia (2018 September 8 b) states that "Your teacher registration is active until 31 January of the third year following your last registration or renewal. Prior to your registration expiry date you can apply to renew it for a further 3 years. You can check your expiry date on the public register." Provision existing in Alabama for teaching certificate renewal as found on 2018 September 9 is given below:

> "To renew a Professional Educator Certificate (valid for 5 years) that expires June 30th, all requirements must be completed by September 1st of the same calendar year. And your application must be received by the Teacher Education and Certification Office of the Alabama Department of Education no later than December 31st of the same calendar year."

As per this document renewal is granted, after three years of service. (Alabama Department of Education 2018b)

In India, the license may be initially issued for a period of three years. During this period, the teacher may have to produce evidence of 1.Successful participation in in-service programmes for at least a period of three months, on own initiative, 2. Record of at least 12 action researches, 3. Presentation of at least three papers in conferences / seminars for school teachers and publication of at least two articles in state level monthly journal, on school education, if any brought out by state government agency / association of school teachers.

If teacher licensing system-provisional and regular is introduced, it may be necessary to have two levels of teacher eligibility tests. Of course, the regular licenses may need to take into consideration other aspects of teacher performance such as portfolios, video recording of lessons, student assignments, etc. Introductionn of licensing system-for speciuific duration may motivate teachers to update their knowledge and skill through self-directed learning strategies including use of online resources that may take care of the damage caused due to loss of periodic teacher in-sdervice programmes carriued out through extension services department of teacher training institutions.

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AFRICENTRIC EPISTEMOLOGIES AND ONTOLOGIES DIRECTING RESEARCH ON AFRICAN ISSUES FOR AUTHENTIC OUTCOMES

Therese M. S. Tchombe
Lambert Wirdze

The focus of research in Africa has often been limited only to areas where funding exists, accordingly failing to address the all-important issue of Africentricism (Sawyer, 2004). Such research outcomes impacting policy respond to narrowly defined objectives of the funding agencies thus missing out in documenting the held ideals and values of the people and culture. Studies of this nature use research methods built on Eurocentric theories, not well equipped to handle typical contextual issues relevant in understanding African epistemologies as valid frame of reference for Africa that address African reality. Peoples' philosophy and psychology depict their mind theory in the way they think, feel and function, given the relational nature of the culture. This paper therefore advocates for a change in the conduct of research relevant to Africentric epistemologies and ontologies. The responsiveness of research is of value to what constitute a people's behaviours; how these behavours patterns are acquired, represented and the purpose these serve in human existence. Africentric epistemological experiences are deeply rooted in the logical processes of induction whereby knowledge is socially constructed from specific observations and interdependent behaviours to broader generalizations and theories. This paper advocates the adoption of an inductive approach to understand the reality of the context before subjection to deductive methodologies.

INTRODUCTION

In the 21st century, it of importance to develop in people research skills that are essential for production of useful knowledge that can lead to development. Critical creation and dissemination of knowledge is vital

for economic competiveness and community development. Despite the fact that Africa is home to 12% of the global population, it is claimed that the continent accounts only for just 1% of scientific research contribution (Ameenah, 2015). There is therefore the need not only to improve on the volume of scientific research in Africa, but equality to highlight the fact that research in Africa should be underpinned by Africentric epistemologies that form the bases of knowledge creation that lies at the very core of all political, economic, environmental, cultural and social development that is contextual and relevant to African societies. The relationship between a people's epistemology, ontology and research is crucial because "for research to play a significant part in development, it must be relevant to the problems unique to the society. In addition, the researchers must be provided with tools to effectively design their models, conduct the research and successfully disseminate their results" (Nsamenang and Tchombe, 2011, p. 415). According to Aluma (2004), African indigenous knowledge base has always been viewed as problematic. It is misunderstood, misrepresented and sometimes overlooked (Aluma, 2004). Oburu (2011) goes on to explain that indigenous African research inquiry approaches, are often devalued as lacking scientific validation. Thus most of what constitutes scientific research in Africa is underpinned by Eurocentric epistemologies, methodologies and theories that are alien to Africa and for most of the time do not address the real contextual and developmental needs of the continent. Hence, the problem of the slow pace of developmental outcomes in most African countries is a pointer to people's lack of access to quality research knowledge that is relevant and addresses their needs. Quality research demands critical reflection on the epistemological and ontological foundations of the creation, dissemination, transmission, validation, and the use of knowledge.

In order to address research gaps in Africa, there is need to seek valid answers to key epistemological and ontological questions like,

- What is Africentric content and source of knowledge?
- How is Knowledge produced within African cultures?
- What does knowledge tell about the African world view?
- What are the best Africentric methods of inquiry that can lead to effective acquisition, validation and dissemination of knowledge?

Achieving sustainable development in Africa, entails that research should be guided by the philosophical principles (induction, social constructivism) of African epistemology and ontology. Research can be defined as the search for knowledge or any systematic effort designed to discover, establish or ascertain facts. Scientific research relies on the application of the scientific method to address curiosity or uncertainty (Amin, 2005). The scientific method is a way to ask and answer scientific questions by making observations and doing experiments or designing and carrying out studies about the world (Tchombe, 2011). According to Narh (2013), the assumptions that underlie the creation and dissemination of knowledge and research on Africa, should be informed by Africans' own conception of epistemology (the ways by which knowledge is acquired and used) and ontology (the nature of reality and knowledge) (Wirdze, Sahfeh, Likie & Bongwong, 2011).

THE STATE OF RESEARCH IN AFRICA: ISSUES AND CHALLENGES

With the claim that Africa is contributing just 1% of world's total research outcomes (Ameenah, 2015), it is important to highlight the state of research in Africa and the challenges faced by African researchers especially in generating knowledge that is relevant and contextual for Africa. Progress for Research in Africa, therefore remains a challenging phenomenon that requires attention for eventual growth and development. We shall examine these challenges.

The Gap between Research, Policy and Practice

It should be noted that global agendas for development (EFA, MDGs, SDGs) have not explicitly posited the relevance of research towards development and the path which Africa must take towards acquisition, dissemination and use of its continental body of knowledge. Africa's Agenda 2063 aspires that by 2063, millions of Africans will have been trained, educated and skilled with special emphasis on science, technology, research and innovation, as well as vocational training in every sector. The Continental Education Strategy for Africa (CESA, 2016-2025) equally states in one of its principles that "quality and relevant education, training and research are core for scientific and technological innovation, creativity and entrepreneurship".(p.7). Nonetheless, little is spelled out in the agenda and strategy as to how research should be galvanized for the growth of Africa's knowledge content. While acknowledging that tertiary education supports economic development directly by generating new knowledge, building capacity to access the global storehouse of knowledge, and adapting knowledge for local use are critical concern, The 2063 agenda points out a major limitation of African tertiary education by stating that tertiary education is the backbone of research and development, an area where Africa lags behind significantly. Although South Africa and Nigeria are able to act as global players in technology development, including aero-spatial research, many African countries have less advanced research and development capacities, which are also male, dominated. Research and development as a percentage of GDP ranges from 0.3 per cent to 1 per cent in most African countries, as compared to European countries (Finland 3.5 per cent, Sweden 3.9 per cent), USA (2.7 per cent), as well as Japan, Singapore and Korea (2-3 per cent). However, in 2003, African Ministers of Science and Technology were committed to raise research and development (R&D) to at least 1 per cent in five years, demonstrating that African policy makers are fully cognisant of the challenge.

There is a dichotomy between the content of the policies and the realities that are found in the field. This is due to inadequate contextually relevant research to inform policy formation and implementation. There tends to be a lack of communication between researchers and policy makers. Policy makers are not always informed about ongoing research and researchers often lack knowledge of the most pressing policy questions that they would need to make their research more relevant. There is the absence of a multidisciplinary approach with emphasis on the social science sub-disciplines of education and inadequate strategies of implementation. The nature of the policy framework for higher education and other research institutes should provide orientations for issues of interdisciplinary research, participatory research, action research, and collaborative research which are the Africentric content of knowledge acquisition and dissemination (Nsamenang 2005; Rogoff, 2003).

Institution Based Research

One of the challenges faced by research in Africa is the limited amount of research that is mostly done by individuals and small groups focused on university studies and professional advancements. The typical projects are still discipline oriented, university based, and funded by the university or under its auspices. This type of research is undertaken essentially as part of the academic career of the researcher who decides what to study and whether and how to disseminate the results (Sawyerr, 2004). While this seems to increase to body of university research, there is a downside to this trend toward increasing institutionalisation of research.

The acquisition, production and dissemination of knowledge end within institutional boundaries. The results and findings obtained from this kind of research end up in university libraries. Little is published for external consumption and recommendations hardly reach the various stake holders that were of significance to the research process. The indifferent quality of research support staff reflecting the low priority attached to training

and specialization in research management and administration create negative conditions for conducting open research and building holistic research competencies (Sawyerr, 2004). Thus, most formal institutions in Africa follow western curricula and methodologies; hence, research conducted may not reflect African epistemologies and ontologies for relevant development (Callaghan, 1998; Ogbu, 1994).

Funding Research

Another challenge is the availability and adequacy of the means for undertaking research. The underfunding of research and research institutions in Africa is common. Most funding is dominated by Eurocentric donors who dictate alien hypothesis, methodologies and possible findings that are illusive of the contextual realities in Africa. In most cases the communities are not aware of these researches in their communities. So, African researchers and governments to an extent have allowed the ownership of generating Africentric knowledge and values in the hands international donors, who dictate research outcomes to their favour. Thus authenticity and reality may not be assured. As the typical African economy has become more outward looking, its leading edges have locked more firmly into external knowledge sources while local producers of knowledge rely on foreign-based parent companies for research. Under such conditions, local knowledge generation becomes increasingly uneconomic, and market forces direct resources away from support for the local production of modern knowledge (Sawyerr, 2004).

The problem of funding is further viewed in the environmental conditions for successful research focused on the institutional provision of infrastructure within which research is conducted. The key elements here are a minimum of research infrastructure, such as laboratories, equipment, libraries, and an effective system of information storage, retrieval, and utilization, appropriate management systems that recognize and reward high-calibre research (Sawyerr, 2004).

The following figure illustrates the challenges and issues of current state of research in Africa.

Figure 1: Challenges and Issues of Research in Africa

ACHIEVEMENTS AND CONTRIBUTIONS OF AFRICAN RESEARCH AND DEVELOPMENT

Despite the challenges and issues of research in Africa, it is worthy to note that Africa has largely contributed to world research, though this contributions are not acknowledged due to misconception is misunderstands which can be attributed to lack of knowledge or appropriate information about persons, events or situation (Tchombe, 2016). Africa's research output is continuously being compromised in favour of writings that do not reinforce Africa's values, actions, customs,

culture and identity; writings about Africa which are untrue; writing about Africa, which are negative (Smith, 2003). The goal of this section is to explain Africa's greatness and it contributions to education, science, and spirituality, which the western world sought to eradicate. The table below illustrates African achievements in research, science, technology, engineering, mathematics and humanities.

Table 1
African Research and Development

S/N	Research Field	Research Output
1	Birthplace of Humanity and Cradle of Civilisation	Discovery of skeletal remains of modern man (6th stage) and stone tools specific at Herto Bouri in Ethiopia 55000 years ago; Egyptian civilisation, 3000bc.
2	African Scripts	African scripts found in about 800 texts, discovered in French museums.
3	Metallurgy/ Mining/ Tools	Production carbon steel; technological supplication; greater fuel economy; advances in metallurgy and tool making. In Tanzania, Uganda, Rwanda
4	Astronomy	Discoveries of movement around the sun, the constellations, the cycles of the moon, detailed astronomical observations by Egyptians and Dogon people of Mali.
5	Medicine	The use of plants to heal pain, diarrhoea and malaria etc. Performance of medical procedures like vaccination, autopsy, brain surgery, skin grafting, filling of dental cavities and Caesarean section. The African multigenius Imphotep is considered as the first physician in history.

6	Mathematics	Scripted textbooks that included division, multiplication, geometry, trigonometry and Algebra developed in Egypt, Nigeria and Zaire.
7	Architecture/ Engineering	Egypt and its pyramids; Immense construction site and cities in Great Zimbabwe, Mozambique, Timbuktu; Ancient Africans sailed to South America and Asia, hundreds of years before Europeans.
8	Writing	The Egyptian hieroglyphic system. This earliest form of writing was a syllabic system that included hundreds of phonetic signs, shortened and used as an alphabet by the Egyptians 5000 years ago.
9	Economic and Political development	Civilisations of the Nile, Mali, and Great Zimbabwe etc. Timbuktu was a major economic and university centre for about three centuries, from the 13th up to the middle of the 16th centuries. The gold from the great empires of West Africa, such as Ghana, Mali and Songhai, provided the means for Europe's economy to take off in the 13th and 14th centuries. Other kingdoms and empires were in Ethiopia in the east which was in many ways exceptional rather than typical.

Source: Adapted from Tchombe (2016)

The continuous decontextualisation of research in Africa, imposed by western methods and outcomes call for new ways of conducting research in Africa that is sensitive to Africentric epistemologies and ontologies, with the adoption of an inductive approach to understand the reality of the context before subjection to deductive methodologies. Africa has ecological, humanistic and spiritual capacities embedded in traditional education that can form the bases of research in Africa (Tchombe, 2016).

THE IMPORTANCE OF AFRICAN TRADITIONAL EDUCATION IN DEVELOPING RESEARCH CAPACITY

Despite the view held by western philosophers (Georg Wilhelm Friedrich Hegel, David Hume, Levy Bruhl) that African traditional education is pre-logical and not scientific, Ogunniyi (1988), ascertained that scientific and traditional ways of viewing nature are the two systems of thought that are not completely incompatible. African traditional education refers to a teaching and learning process by which indigenous knowledge transmitted respond to different physical, agricultural, ecological, political and sociocultural challenges (Merriam, 2007). It is valuable because it is holistic, "addresses the intellectual, physical and attitudinal aspects of life. It encourages the development of critical thinking, imagination, creativity and action skills. African education foresaw the era of globalisations and its needs for development of problem solving skills" (Tchombe, 2016, p.19). Rogoff (2003) argues that human development must be understood as a cultural process. Individuals develop as participants in their cultural communities, engaging with others in shared endeavours and building on cultural practices of prior generations. Onwauchi (1972), argues that if the educational process is to be functionally relevant for the African peoples, it must be structured so as to maintain a dynamic pattern of continuity with the family and the cultural life patterns of the people. For research to be effective in Africa, there is need for it to reflect the ecological, humanistic and spiritual dimensions of African traditional education as illustrated in the Figure 2.

The Relevance of African Epistemology and Ontology in Research

The bases of generating knowledge in research lies in a firm grip of the epistemologies and ontologies that shape a particular group of people. Epistemology is derived from the Greek *epistēmē* ("knowledge") and *logos* ("reason"), and accordingly the field is sometimes referred to as the theory of knowledge. Ontology comes from two Greek words: *on*, which means "being" and *logia*, which means "study". So ontology is the study of being alive and existing (Wirdze, et al. 2011).

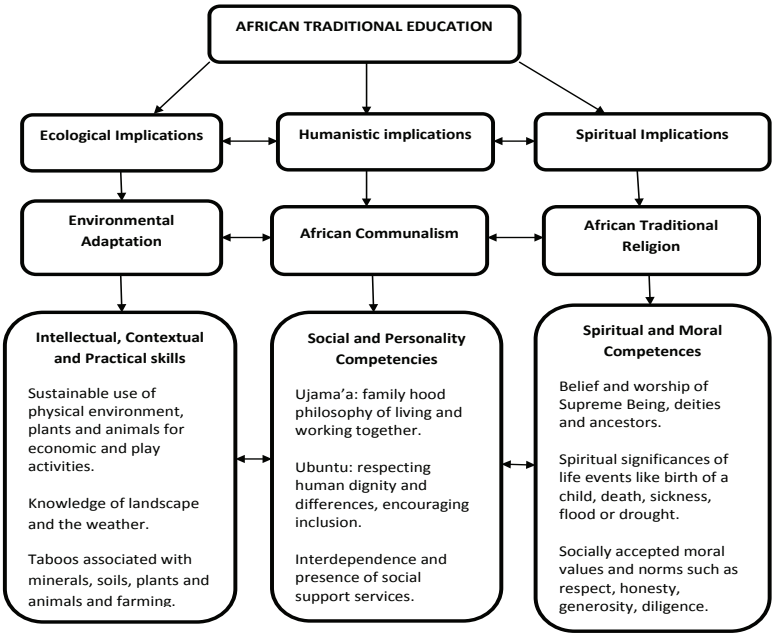

Figure 2: Traditional Education in Developing Holistic Research Capacity:

Source: Adapted from Tchombe (2016)

African Epistemology

African epistemology is the African theory of knowledge, which includes Africentric methods of acquisition, dissemination and use of knowledge (Mutombo, 2007). This entails that Africans are conscious of nature of knowledge; the means used to gain knowledge; the criteria for the assessment of the validity of knowledge; the purpose of the pursuit of knowledge; and the role that knowledge plays in human existence and development. (Mutombo, 2007). African epistemology is therefore the ways by which Africans conceptualise, interpret and apprehend

reality within the context of African cultural or collective experiences (Anyanwu, 1983). This is based on the understanding that such concepts as knowledge, truth, rationality etc. can be interpreted using African categories as provided by the African cultural experiences without a recourse to Eurocentric conceptual framework. It follows that African traditions, which entail African religions, root culture, oral literature, traditional arts, fables, proverbs, idioms, rituals, music, dance, folklores and myths, are the content of African epistemology (Amaechi, 2014). Tchombe, Nsamenang, Lah Lo-oh(2013) also characterised African epistemology from different perspectives such as in the establishment of interpersonal relationships, harmony with one another, cooperation, communalism and spirituality. They argued that from a research perspective, the community is an important source for discovering processes related to the production of African knowledge and its systems. Accordingly, the crucial epistemological problem is the doubt whether Africans who supply cross-cultural data and are privileged to read the published reports of that research would recognize that the literature is about them! African epistemology as a science in its own right must be well reflected in research arenas.

African Ontology

The concept of "being" in is attached to the principle of the "Vital Force", a spiritual power that brings together a harmonious relationship between the physical, human and spiritual dimensions of existence in a hierarchical fashion. (Wirdze et al, 2011). The content or subject matter of Africentric ontology emanates from the physical, human/social and spiritual situations of indigenous African societies. We must however note that these three indigenous contents do not exist in isolation. Within the context of African cultures, they are psychologically and philosophically connected in such a way that one cannot construe of one without the other.

The physical environment influenced the content of indigenous ontology in that the natural environment is meant to assist humans to adjust and adapt to the environment in order to exploit and derive benefit from it in a harmonious relationship (Castle, 1966). The human/social environment is embedded in a communal lifestyle whereby living together, working together, feeling for one another and collective judgments are key elements of the social order. Parents and other adults in the community ceaselessly socialise their children to etiquettes that upheld reciprocal ties. Respect for elders and social hierarchy, sustenance of good friendships, conflict management, caution towards strangers, appreciation of social obligations and responsibilities and above all, to subordinate their individual interests to those of the wider community (Tiberondwa, 1978). Spiritually, Africans are notoriously religious, with beliefs in the Supernatural God, deities and ancestors, having strong influence on physical and human environments. African Traditional Religious (ATR) plays a key role in the life of children and adults alike: it provides a rallying point for the community and backed up socially-accepted values and norms such as honesty, generosity, diligence and hospitality (Ocitti, 1971).

As already highlighted above, the human world, the natural world and the spiritual world are linked. The natural world provides the habitat for the spirits and sends messages from the spiritual world to the human world. The spiritual world provides guidance, punishment and blessing to the human world. People therefore have to relate to both the natural and the spiritual world. (Millar, 1999). From the discussions above Eurocentric approach to research with its supporting explanatory theories would find it difficult to capture these realities depicting a people and their basic life's philosophy and psychology.

The figure below illustrates the relationship between the physical, human and spiritual spheres of African ontology.

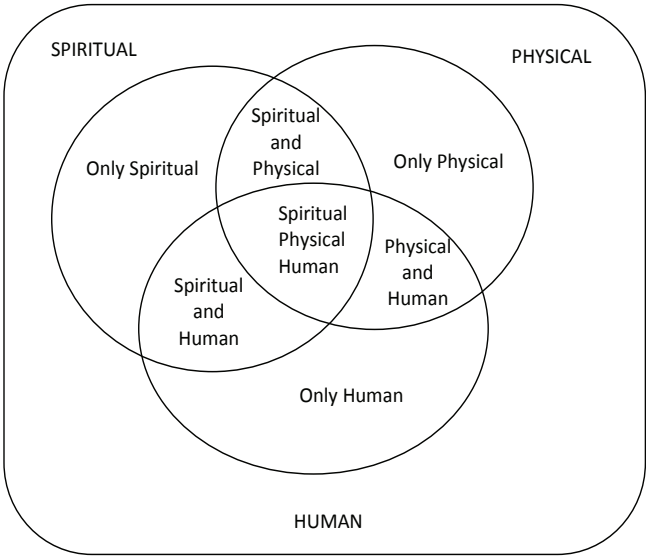

Figure 3: The three circles depicting African Ontology:

Source (Wirdze, et al. 2011).

Africentric Epistemology/Ontology as the Bases for Inductive Research Paradigm

Africentric epistemological and ontological experiences: Indigenous developmental psychology can promote understanding of social cognition—how a given people generate, acquire and use knowledge. In logic, we often refer to the two broad methods of reasoning as the ***deductive*** and ***inductive*** approaches (Wirdze, et al. 2011).

Deductive reasoning works from the more general to the more specific. Sometimes this is informally called a "top-down" approach. We might begin with thinking up a theory about our topic of interest. We then narrow that down into more specific hypotheses that we can test. We

narrow down even further when we collect observations to address the hypotheses. This ultimately leads us to be able to test the hypotheses with specific data, that leads to a confirmation (or not) of our original theories.

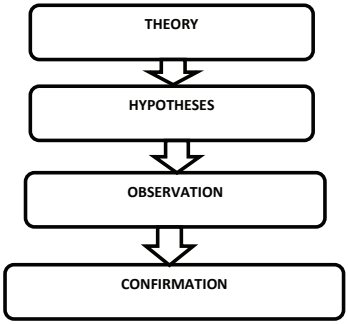

Figure 4: Deductive Research Process

Inductive reasoning works the other way, moving from specific observations to broader generalizations and theories. Informally, we sometimes call this a "bottom up" approach. In inductive reasoning, we begin with specific observations and measures, begin to detect patterns and regularities, formulate some tentative questions that we can explore, and finally end up developing some general conclusions or theories

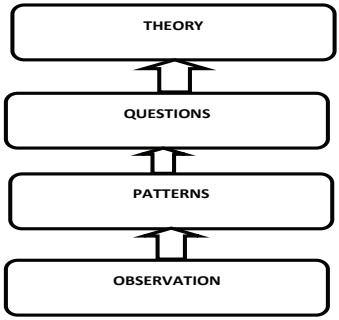

Figure 5: Inductive Research Process

These two methods of reasoning have very different "feel" to them when conducting research. Inductive reasoning, by its very nature, is more open-ended and exploratory, especially at the beginning. Deductive reasoning is narrower in nature and is concerned with testing or confirming hypotheses. It is important to understand the epistemological and ontological underpinnings of different cultures as the bases for adopting particular research approaches. This section examines aspects of African ontology and epistemology and how they can influence inductive research inquiry.

Harmonious Environmental Conception

Accordingly, in the African ontology, humankind is part of nature, as opposed to the Western conception (exemplified by Christian religion, but also by Islam) in which humankind is above nature and is thus allowed to conquer and control it (Dasen, 2011). This leads to two types of reasoning, global and symbolic on the one hand, based on inductive experience and geared to explaining the final goal of events, and analytical and experimental on the other hand, geared towards deductive explanation of causal effects (Dasen, 2011).

African epistemologies (unlike Eurocentric epistemologies) are therefore deeply rooted in the logical processes of induction whereby knowledge is socially constructed from specific observations and interdependent behaviours to broader generalizations and theories. This is so because, within African cultures, the harmonious relationship between the different spheres of existence as seen above blurs the distinction between the subject and object of knowledge (Tape, 1994). The African sees himself or herself as part of nature, which guides the methodology by which the study of nature is supposed to be approached in African. This line of thought permits the integration of diverse ethnocultural realities and disparate theoretical threads into a common conceptual system. The embedded knowledge, skills, and values are massed together as integral to social interaction, cultural life, economic activities, and daily routines (Nsamenang, in 2005).

Oral Mode of Communication

Under African oral communication patterns, the members tend to be related to each other in relatively long lasting relationships (Hall, 1976). The communication patterns of these cultures are conceptually associated with the cognitive abilities of concrete experience, leaving from observed particular realities to general theories (Inductive approach). These cultures require its members to become sensitive to immediate environments through feelings. For their effective communication, its members need to be situated in a specific surrounding circumstance, which results in the production of tacit knowledge that serves to distinguish covert cues. This kind of knowledge relies on the concrete experience abilities. In addition, interpersonal relationships are crucial in cognitive styles (Tape, 1976).

On the other hand, in Eurocentric written modes of communication, most information is conveyed in explicit and written codes; thereby, explicit communicative styles in logical forms are valued to a high degree. Interpersonal relationships in these culture last for a relatively shorter period. Communication patterns of these cultures are conceptually associated with the deductive cognitive abilities of abstract conceptualization, to the extent that abstract and symbolic presentation in logical forms performs as central methods of communicating with others.

Collective Social Pattern

In relation to collective (interdependent) and independent cultures Markus and Kitayama (1991) examined different people across cultures in Africa and proposed interdependent-self and independent-self, each of whose attributes differs among cultures. Interdependent-self is viewed as connected to the surrounding social contexts where the self and others are concretely situated. Experience of interdependence with others makes people see themselves not as detached from the social context but as part of an encompassing social context with its concomitant personal relations. Hence, research on groups of people require naturalistic and

participant observations that follow and inductive process. People here are required to watch and listen to others with great carefulness and to reflect upon their observations in their minds. They tend to spend time for reflection with subtle observations before taking actions and expressing themselves to others.

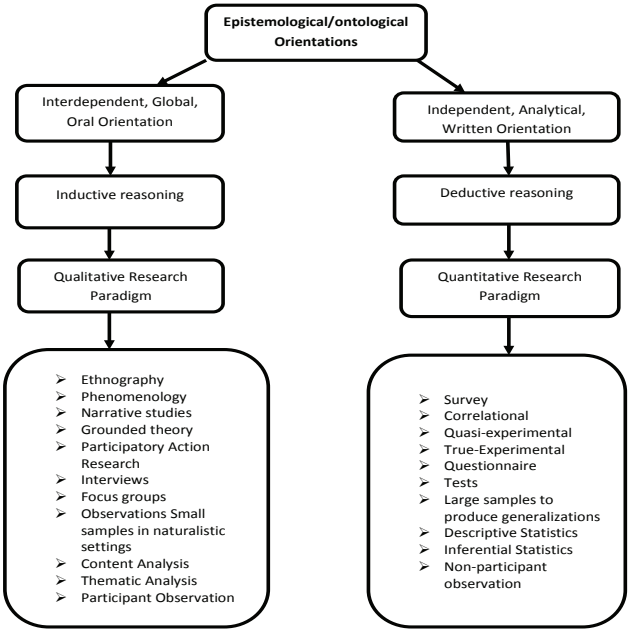

Figure 6: Epistemological/ontological orientations depicting different modes of reasoning and research paradigms.

In contrast, independent-self, the American and western European notion of self, is seen as an entity that contains important characteristic attributes and as that which is separate from context. There is a belief that people are inherently detached and distinct in American and many western European cultures where the cultural norm is internal control of reinforcement in order to become independent from others and

to express one's uniqueness. Although people with independent-self must be responsive to surrounding social circumstances, their social responsiveness arises relative to their need to determine the best way to display the deductive and inner attributes of the self (Markus and Kitayama, 1991).

The above epistemological and ontological orientations and how they apply to research are illustrated in the figure below.

The Figure 6 illustrates the two arms of epistemological/ontological orientations. On the one hand, we have the interdependent, global and oral orientation (common to African cultures). Induction is mostly used as a form of reasoning, thereby giving rise to more of qualitative research paradigm, exemplified by ethnography, phenomenology, grounded theory, interviews, content analysis and participant observation. On the other hand, we have the independent, analytical and written orientation (common to Europe and American cultures). Deduction is mostly use as a form of reasoning, hence, quantitative research paradigm is outstanding, with typical examples like survey, quasi-experimental, true-experimental, questionnaire, descriptive and inferential statistics and non-participant observation.

From Inductive (Qualitative) to Deductive (Quantitative) Methods: Innovative Research Approach for Authentic Outcomes

Qualitative approach to research is closely linked to the process of induction and is characterized by its aims, which relate to understanding some aspect of social life like people's experiences, perceptions, attitudes, emotions, beliefs. In such cases its methods will generate words, rather than numbers, as data for analysis. In situations (like in Africa) where little is known, it is often better to start with qualitative methods (interviews, focus groups, observations, narratives, conversations, analyzing figures, picture, infrastructure, etc). It can help with generating hypotheses that can then be tested by quantitative methods.

The quantitative approach is underpinned by the process of deduction. Quantitative methods are used to examine the relationship between variables with the primary goal being to analyze and represent that relationship mathematically through statistical analysis. Quantitative methods emphasize objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, tests and surveys, or by manipulating pre-existing statistical data using computational techniques. Quantitative research focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon.

While the primary aim of the qualitative approach is to generate a theory (induction) the primary focus of the quantitative approach is to confirm a theory (deduction). Nonetheless, social science researchers use mixed methods (both quantitative and qualitative) depending on the nature of the inquiry and the expected findings and results. This paper advocates the adoption of an inductive approach to understand the reality of the context before subjection to deductive methodologies

Principles of Inductive (Qualitative) Research

Bryman and Bell (2011) suggest four principles of qualitative research, which have an important link to the type of knowledge inductive research can produce. These are:

***Naturalism:** Seeks to understand social reality ('as it really is') and provides rich descriptions of people and interactions in natural settings. This is the most commonly used tradition.

***Ethnomethodology/Participant Observation:** Seeks to understand how social order is created through talk and interaction and a conversation analysis needs to be conducted.

***Emotionalism:** Seeks to understand the inner reality ('inside' experience) of people. This tradition has not been used in a significant

stream of research but yet, it can be included in innovative research methodologies.

^**Postmodernism:** Seeks to understand the different ways social reality can be constructed. The impact of culture for example can be included in innovative research methodologies.

Creativity and Innovation in Inductive (Qualitative) Research

Qualitative researchers often aim to produce original and useful knowledge from the subjective meaning of social action. Creativity therefore seems to play an important role in the knowledge management process. Torrance (cited in (Afolabi, Dionne & Lewis, 2009) observed that creativity is "a successful step into the unknown, getting away from the main track, breaking out of the mold, being open to experience and permitting one thing to lead to another, recombining ideas or seeing new relationships among ideas" (p.2). Innovation is the process of both generating and applying creative ideas in some specific (research). In other words, innovation involves the introduction of something new and valuable – an artefact or a method – into a functioning production, marketing, or management system according to Cropley (2008). Innovation in social research can be categorised in three levels of novelty according to Wiles, Crow and Pain (2011), namely:

*The lowest level of innovation relates to adoption where established methods are taken and applied; or methods are combined; or where established methods are taken into a new discipline or sphere of study.

*The mid-level of innovation relates to adaptations. The research method is adapted or changed to improve the method or to meet the needs of a specific research context.

*The highest level of novelty relates to inception where researchers claim to be using a new or novel method.

Vision for Research in Africa

The research vision is conceptualized here as constituting a programme and set of approaches that are situated within the decolonization politics of the indigenous peoples' movement. The agenda is focused strategically on the goal of self-determination of indigenous peoples. Self-determination in a research agenda becomes something more than a political goal to embrace goal of social justice which is expressed through and across a wide range of psychological, social, cultural and economic terrains (Smith, 2003). This is illustrated in the figure below.

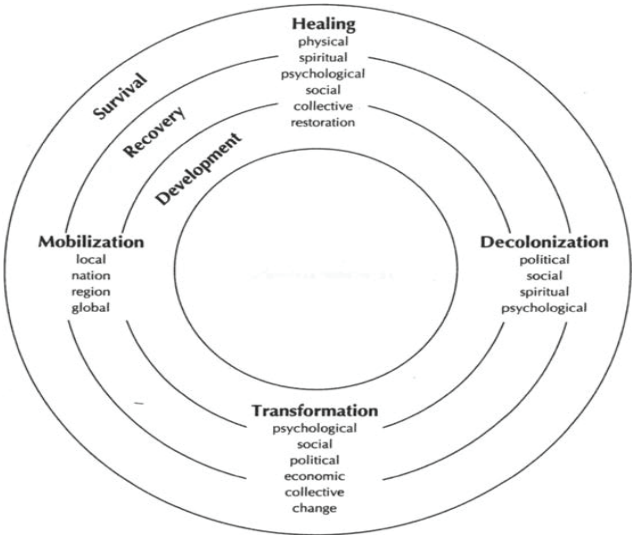

Figure 7: The indigenous Research Agenda:
Source, Smith (2003)

The four directions named here are decolonisation, healing, transformation and mobilisation. They are processes which connect, inform and clarify the tensions between the local, the regional and the global. They are processes which can be incorporated into practices and methodologies. Four major tides are represented in the chart as: survival, recovery,

development, self-determination. They are the conditions and states of being through which indigenous communities are moving (Smith, 2003).

CONCLUSION AND RECOMMENDATIONS

Whether conducted for specific purposes (action research) or as an academic pursuit by policy makers or academics, research has an impact on all areas, especially in the context of human and social development. However, there is a growing need to question the paradigms of knowledge and innovation that inform the research carried out in Africa. Harnessing local knowledge is important in prioritising the local community as the object of development (Teasdale and Rhea, 2000). With the increased recognition of the social role of higher education in development (Bok 1984), universities are called upon to conduct projects and programmes aimed at local communities (and the world) and provide services to local people. There is need to promote stronger integration of training and research and closer interaction with stakeholders in the development process. There is also an urgent need for African Universities to create a South and South and even North South network not only for collaborative research but also put in place a mechanism to enhance publications and the valorisation of the outcomes of research in Africa to inform the others and enrich their knowledge and understanding of African scholarship.

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EVALUATION OF EDUCATIONAL POLICIES IN INDIA FOR INCLUSIVE EDUCATION SYSTEM

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Special education[1] and Integrated education[2] concepts were prevalent in India for long. However, consequent to the ratification of UNCRPD, adopting the principle of inclusive education is mandatory for the education system and therefore it should be included in all the policy documents. This paper attempts to analyse the percolation of the concept of 'Inclusion' in the policy and programme documents in India after ratification of UNCRPD. The policies taken for study are the RTE 2009, RMSA 2013, RPWD Act 2016, and SSA. These documents are analyzed in the light of concepts of inclusion. The concepts of inclusion are studied at two main places i.e. in the definition of 'inclusion' and 'disability' given in various policy documents. Further the concept of inclusion and its amalgamation is probed with other principles of education such as 'equity' and 'quality'as these are two wheels of inclusion. It is found that policies and programmes have not operationalised the concept of inclusion in their activities. Instead the concept of 'Integration' is being operationalised in most of the policies and programmes. This absence of the concept of inclusion in the policy and programme documents is first hurdle for its implementation. The paper highlights the major gap in the percolation of the vision of 'inclusion' from UNCRPD i.e mother policy document to further sub policy documents. The gaps need to be addressed by policy makers.

INTRODUCTION

All parents want their children to lead independent lives on their own. To lead an independent life individual need to interact with the environment that demands certain capabilities or skill sets to sustain the interaction. Besides the skill set of the individual, there are also some infrastructural and attitudinal factors that either facilitate or hinder the interaction of the

individual with the environment. For example, if a person has to ride a bus to reach market, s/he requires skill set of reading the bus number. A sighted person would have acquired necessary reading ability through education that helps him/her to ride the bus to reach market. On the other hand, a person with visual impairment (VI) would require alternate support such as provision for information in Braille at the entrance and tactile path to the bus station to ride the bus to reach market. In this way, skill of reading as well as facilitation of the infrastructure leads all citizens with or without impairment to equally utilize common public services.

India is well known for its vision of inclusive society and therefore, the values of equality, justice and brotherhood have been propounded in the Constitution of India, the first policy document of the country. All sub policies, be at the national or state level emanated from the values enshrined in the Constitution. Ever since independence, all policy documents have included equality as the goal to be achieved. However, for many years equality has been understood as equity because constitution does not mention equity per se, it only talks about equality before law (article 14). Equality means treating everyone equally while equity means treating people according to their need. The reservation policies in the country are geared towards bringing marginalized at par with non marginalized and not about lifting them as per their need or capability. All educational policies have been in tune with the goal of equality in India. For example, in the Mid Day Meal programme of the county, the funds are sanctioned for a definite quantity of grain say 20 gram per child. It is based on equality principle. Similarly, special schools and integrated schemes of CwD are based on equality principle. Contrary to that, UNCRPD propagates the principle of equity for inclusive education and not equality. Lately, the concept of equality is replaced by equity in text but it may not be in practice.

The percolation of a value enshrined in the policy document is to be supported by sub policy documents. For example, if vision of a policy is to provide equal opportunity for education to all, then the vision needs to get translated into such policies as right to admission and many other related educational activities in the school to facilitate such ethos. If these sub policy documents are not available or propagate different value other than main policy, then the value does not get transmitted to the society. This paper attempts to analyze sub educational policy documents in India to find out how far they are supportive of inclusion of 'Children with Disability' (CwD) in schools based on the UNCRPD principle of inclusion if not what could be the reason for the gaps and how to fill that.

METHOD

The objective of this paper is to analyze the content of policy documents related to education–UNCRPD 2007, RTE Act 2010, RPWD 2016, and SSA and RMSA schemes with reference to the concept of 'inclusion'. A few codes have been developed for content analysis. These codes are disability, inclusion, equity and quality. The codes on 'disability and 'inclusion' are examined from the perspective of similarity in the concept with UNCRPD, whereas the code of 'equity' and 'quality' from the perspective of agent of inclusion.

CONTENT ANALYSIS OF POLICY DOCUMENTS

All the above mentioned policy documents can be categorized into three tiers of policy documents. The first tier is of UNCRPD 2007. It is an international treaty and is a mandatory legal framework for the country. The Supreme Court relies on international commitments in case national Acts are different and not in conformity. The second tier of policy documents is of national and legal policy documents i.e RTE 2010 (amendment) and RPwD Act 2016. Both the Acts have been notified after the international treaty; therefore it is presumed that they should be in consonance of the UNCRPD. The third tier of policy documents

are national schemes namely SSA and RMSA launched with the purpose of transmitting national vision to society. Though these schemes are launched prior to UNCRPD but have annual monitoring and targets. Therefore it is presumed that these should also be aligned and updated regularly and are in conformity of main policies. If these schemes are non responsive to the value of the main policy document say mother policy document i.e UNCRPD, the value will remain not transmitted to the society.

Disability: The first code is disability. The analysis, different meanings and definitions associated with the term disability in different policies and at any section of the policy has been collated and is presented in the table -1.

As evident from the Table-1, the concept of disability as given by UNCRPD in 2007 has not been incorporated in the policy documents of India. Even the latest policy document i.e. 'The Right of Persons with Disability Act 2016' has also not incorporated the complete definition of the disability. Another important change observed, is that the word 'evolving' has been replaced with the word 'long term'. This change has many repercussions with respect to nature of disability, onus and cause of disability. The word evolving denotes the nature of disability as dynamic. It may exist due to other factors and may not exist if those factors are not present. Therefore the concept of the origin of disability is very important. In the definition given by the UNCRPD, the origin is not the individual per se but the **interaction** of the individual with the environment both physical and attitudinal. This concept has far reaching impact while designing the policies and programmes. It is a key game changing concept as it brings many paradigms shifts in teaching and learning. It shifts focus from demand to supply, access to outcome, charity to right etc.

Table -1
Definition of disability as given in the different policy documents

UNCRPD 2007	RTE mendment 2010	RPWD Act 2016	SSA	RMSA (IEDSS)
Preamble (e) recognizes that Disability[3] is an evolving concept. Disability results from the interaction between persons with impairments and attitudinal and environmental barriers that hinders their full and effective Participation in society on an equal basis with others.	Accepted definition of PWD Act of 1995 as 'person with disability" i.e., a person suffering from not less than forty per cent of any disability as certified by a concerned authority;	Person with disability" is a person with long term physical, mental, intellectual or sensory impairment which hinder his full and effective participation in society equally with others.	SSA will ensure that every child with special needs, irrespective of the kind, category and degree of disability, is provided education in an appropriate environment. SSA adopts 'zero rejection' policy so that no child is behind the education system.	Accepted disabilities as defined under the Persons with Disabilities Act (1995) and the National Trust Act (1999). The type of disabilities range from blindness, low vision, leprosy cured, hearing impairment, locomotor disability, mental retardation, mental illness, autism and cerebral leprosy, speech impairment, learning disabilities etc.

For example, if a person has not been able to reach a destination due to environmental barriers such as staircase and his interaction with staircase due to being orthopedically impaired, is a cause of concern for government. Similarly, a person with visual impairment (VI) may not be able to go to school and learn due to attitude of the community, for instance Why to send a VI child to school when s(he)cannot see the blackboard and read books? Here attitude is the main cause of concern for policy planners besides making available right learning material. These attitudinal and environmental barriers need to change as they enhance disability more than the impairment itself. If an orthopedically impaired

person is provided with ramps and wheel chair s (he) can participate fully and equally in the society. Similarly, if a person with VI is provided with the books in Braille, s (he) can learn like any other sighted person.

There is difference in use of the terms like 'long term' and 'evolving' in the policy documents. The UNCRPD uses both the terms[4] whereas RPwD Act uses only 'long term'. The use of both the terms in the policy document and of only one term changes the concept of disability. As use of 'long term' denotes it as condition of the individual whereas the concept of 'evolving' denotes it as condition of the associated environment. The concept of 'long term' puts responsibility on impairment of the individual where as the concept of 'evolving' makes the environment and its interaction with impairment responsible. This is the genesis of social model where disability is not restricted to impairment of the individual alone. The analysis of SSA and RMSA shows that the definitions of disability are based on nature and degree of disability which is not in conjunction with UNCRPD.

Nature and degree of Disability:

Policy documents reveal the difference in the nature of disability too UNCRPD does not include any list of specified disabilities whereas the definitions given in the SSA and RMSA schemes have classified disability as per PWD 1995 and National Trust Act of 1999. Though PWD ACT has been replaced by RPwD Act but as seen in the table it has also listed disabilities. The concept of 'long term' condition of impairment is adopted, which is restrictive in its approach. The restriction resulted in listing of disabilities and percentage of impairment. As a result RMSA covers only eleven types of disabilities in its ambit, which has been increased to twenty one in the RPWD Act of 2016 with the scope to add more.

One may argue that SSA has taken view of 'zero rejection' irrespective of kind, category and degree of disability and does not mention the percentage of disability for admission. But the definition of disability is based on the meaning of long term condition of impairment of the individual of the Act and not as per UNCRPD.

Thus the definition of disability as long term condition without mentioning its evolving nature as stated in the policy documents such as RTE Act, RPwD Act, SSA and RMSA indicates that they are deficient in some manner and may restrict the participation of certain individuals. Thus next code is 'inclusive education' to be analyzed in the policy documents.

Inclusive Education

Inclusive education is a heuristic term. It means different things to different groups. For example it may mean gender to some and to others social and economic marginalized groups. Inclusive education in the context of children with disability means that educational provisions are not to be made available in segregated settings in the form of special schools or in the form of integrated sections in the regular schools. The education has to be made available in the inclusive settings only. It is a technical term which needs to be given operational definition in educational policies for better implementation.

The definition of inclusive education as given in the policy documents is reproduced in the Table-2.

UNCRPD has defined the term 'inclusive' by placing emphasis on 'quality', on 'equal' basis and 'communities in which they live'. It is evident from the table that these three terms are not used in the policy documents of India. However if we derive the inferences from the terms used in the documents , it is found that these terms are present. For example, in case of the RTE Act the emphasis is on the word 'completion. This can be interpreted as completing elementary education of same

quality and on equal basis as others. Further the term 'Quality' may be interpreted as same curriculum and 'on equal basis' as any other student. The RTE Act also uses the term 'in neighbourhood' which may mean as same as 'in the communities they live'.

Similarly RPWD Act is also found using different terms but one may infer the same meaning. For example, the words used is ' learn together' it may means same as in 'communities they live'; and the words ' system of teaching and learning suitably adapted' may also mean 'of same quality on equal basis'. In case of SSA, the same analysis does not hold true. Because the terms used such are 'home based, ''special', 'integrated education', 'open education' and 'part time classes' these neither means 'in the community they live' nor with peers. It may remotely mean same curriculum, though it is not explicitly mentioned. Contrary to SSA, the document of RMSA adopts the terms 'inclusive and 'enabling environment in its framework of education'. These two words may mean equal and of same quality of education to all. RMSA document thus can be interpreted as facilitating same type of education in the regular school in its textual interpretation. In brief, except SSA, other policy documents could be considered in line with UNCRPD in textual interpretation.

The text of the policy is transmitted by the implementation level activities. These activities should align with the vision. Therefore, the activities funded under SSA and RMSA are examined from the perspective of 'Equity' and 'Quality' as these two concepts are inherent to inclusion. The activities funded under SSA in the year 2014-15 are given in Table 3.

It is evident from the documentation and associated interpretations of the activities shown in the Table-3 that activity are supportive of integration and inclusion both. But if we interpret it in the context of practice, in reality, the education of CWD under SSA is based on appointment of resource persons and their training.

Table -2
Definition of Inclusive Education'

UNCRPD Act 2007	RTE Amendment 2010	RPWD Act 2016	SSA revised framework 2003	RMSA (IEDSS)2009
Persons with disabilities can access an inclusive, *quality* and free primary education and secondary education on an equal basis with others in the mmunities in which they live;	Every child of six to fourteen years shall have a right to free and compulsory education in a neighborhood school till *completion* of elementary education	Inclusive education" means a system of education wherein students with and without disability learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities;	To providing integrated and inclusive education to all children with special needs in general schools. This includes education through open learning system and open schools, non formal and alternative schooling, distance education, special schools, home based education, itinerant teacher model, remedial teaching, part time classes, community based rehabilitations (CBR)	The aim of this scheme is to enable all students with disabilities to *pursue* four years of secondary education in an inclusive and enabling environment, after completing eight years of elementary schooling.

Table-3
Activities funded under SSA for education of CWD

S.N.	SSA PAB minutes of Delhi 2014-15	Activity leading to Inclusion/ integration	Activity leading to equity/ quality
1.	Assessment Camps for CWD	Inclusion	equity
2.	Aids and Appliances/ equipment/ assistive devices	Inclusion	quality
3.	Salary of Resource Persons	Integration	quality
4.	5 days training of General Teachers on Autism and Multiple Disabilities	Inclusion	quality
5.	International day for PwD	Inclusion	equity
6.	Inclusive exposure visit of peers and CWD	Integration	quality
7.	Corrective Surgery	Inclusion	equity
8.	Transport facility for 9 months	Inclusion	equity
9.	Parental Counseling	Inclusion	equity
10.	5 days training of RP on curriculum adaptation	Integration	quality
11.	5 days non- residential training of General Teachers on curriculum adaptation	Inclusion	quality

Resource persons teach CWD in resource rooms once a week. Appliances are provided to CWD specific to their disability to cope with the impairment. The teaching learning aids are very few and are given to the resource rooms. As a result integrated approach is followed. Secondly, Let us examine the activities leading to equity. As interpreted earlier equity means same curriculum and 'on equal basis' as any other student

in the system. The activities aimed at bringing CwD to school may be classified as leading to equity. These activities are parental counseling, assessment camp, corrective surgery, and transport facility. It is assumed that once a CwD is enrolled would be learning same curriculum as other. Learning achievement of same level as others is defined as quality. So to achieve quality, provision of aids and appliances, appointment of resource persons, training of resource persons and training of general teachers are funded under SSA.

However it is not inferred as inclusive due to the fact that under SSA resource persons are appointed for resource rooms at cluster level and not for school. CwD goes to resource room for learning. That makes the education being imparted to CWD not equal or of same quality. As a result CwD are found not learning as they are dropping out of the system. The analysis of the DISE data suggests that 95% CWD are dropping out of the system (Gupta 2016). Therefore, it can be concluded that the inclusion is not supported by SSA.

As discussed earlier, RMSA has included 'inclusion' in its document as guiding principle. However, it is yet to be studied whether these activities are leading to inclusion or not. The activities which are funded under RMSA are also analyzed from the perspective of 'inclusion' 'equity' and 'quality'. The analysis is shown in Table-4.

Table 4 shows that the inclusion is supported by the vision of the activities under RMSA. The provision of resource room under RMSA is indicated as supportive of inclusion unlike SSA because it is located in the school as well as at CRC/BRC/district. Further, the analyses of the terms of all the activities are also inferred as leading towards either equity or quality.

Table-4
Activities funded under RMSA for education of CWD

S.N.	Activities Under RMSA **	Activity leading to Inclusion/ integration	Activity leading to equity/quality
1	Resource room	Integration	quality
2	Equipments for resource room	Integration	quality
3	Special Toilets	Inclusion	equity
4	Removal of Architectural barrier (Ramps)	Inclusion	equity
5	Assessment camp	Inclusion	equity
6	Aids and appliance	Inclusion	quality
7	Large Print books	Inclusion	quality
8	Braille books	Inclusion	quality
9	Uniform	Inclusion	equity
10	Transport allowance	Inclusion	equity
11	Escort allowance	Inclusion	equity
12	Reader allowance	Inclusion	equity
13	Stipend for girls with disability	Inclusion	equity
14	Sports and cultural programme	Integration	equity
15	Special pay for General teachers trained in special education	Inclusion	quality
16	In service training for existing teachers	Inclusion	quality
17	Orientation of principals, administrators and parents	Inclusion	quality
18	Environment building programme	Inclusion	equity
19	Inclusive cell at state level for monitoring	Inclusion	quality
20	Inclusive cell at District level for monitoring	Inclusion	quality
21	Research Monitoring and Evaluation	Inclusion	quality

** Office order no. F.14-52/2013-IEDSS for Chhattisgarh 2013-14

To triangulate the inferences drawn, findings of implementation of IEDSS scheme as published by NCERT (n.d) are also examined with respect to equity, quality and thereby inclusion.

The state of Kerala has made highest number of aids and appliance available to CwDs. If the types of aids are probed further, it is found that all appliances are related to medical condition of the CwDs and none is related to learning. Medical aid can help in inclusion and could help in accessing educational opportunities but failure to provide educational aids is failure to provide quality education of equal quality. It is also reported that except Odisha and Madhya Pradesh, resource rooms are only constructed at block and cluster level. Accordingly this provision is also not leading to inclusion, equity and quality. The other findings are also indicative of not providing equal and quality education such as special teachers are recruited one for five CwDs, evaluations provisions are not made available to CwDs, removal of architectural barriers, provision of special toilets remains limited. In the study, three major hurdles are reported to make education inclusive. These are: buildings are not accessible, same teacher is not there to teach all, learning aids and accommodations during examination for CWD are not being practiced. The practice to teach CWD by special teachers in resource rooms is against the spirit of inclusion.

DISCUSSION

It is evident from the ensuing discussion that though India was having many schemes for education of CwD prior to ratification of UNCRPD, but the concepts related to disability and inclusion were not the same. In India, disability was considered as specified impairments of the individual therefore these were listed. And the same approach continued even in the RPwD Act of 2016 as it specified twenty one disabilities with the scope to add more. The concept of disability as a result of impairment of the individual resulting due to interaction with environment and

attitude of others; the concept of 'evolving' of UNCRPD, is not reflected in any of the policy document in India. The concept of disability impinges upon the concept of inclusion. In other words, if disability is exclusionary and can be listed, inclusion is paradoxical. If disability is due to interaction resulting between impairments of the individual and also of the environment consisting of physical and attitudes of others, it can be improved upon or included. Therefore the meaning of disability in policy document occupies important place for inclusion.

The word inclusion has two inherent concepts of equity and quality. It means include an individual on equal basis as others for same quality of experiences. If the impairment of the individual is limiting condition, inclusion is difficult if not impossible. But if the cause is 'interaction' between two types of impairments, inclusion is feasible by removing two impairments so that interaction is smooth. Therefore identification of both types of impairments is important for inclusion. Indian policies are found deficient with regard to identification of environmental barriers and attitudinal barriers in definitions. Though the activities funded in the schemes are found supportive of equity and quality but the impact of these activities is insignificant on ground.

It could be due to the gaps in the definitions of these terms in various policy documents. As evident from the time line of policies, schemes were launched prior to the legislative policies. The paradigm shifts in definitions could not be taken care of by already existing schemes. Therefore the results on ground as found by survey are not directed towards inclusion. The gap may get reduced if the schemes are redesigned in the light of new paradigm shifts. It also reflects upon policy making processes to be streamlined in India.

CONCLUSION

Earlier discussion shows that the concept of inclusion is well rooted in the political and legal context of India. It is supported by the Constitution, Acts and through government schemes and programmes. However, it is also observed that transition of concept is partial as concept of disability and inclusion is not in consonance with the latest concept as given by UNCRPD. The other two concepts of equity and quality, integral to the concept of inclusion, are found missing from the policies, schemes and programmes in India. Mainly the concept of integration is found to be supported by the schemes such as SSA and RMSA. Centrally Sponsored Schemes like SSA and RMSA are edifice of education system in the country. If there is deviation or absence of a concept in the vehicle, certainly it would not reach its destination. No doubt, inclusion is found missing as being practiced in the country.

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Endnotes

1. Special education means educating CwD in separate schools.
2. Integrated education means , CwD are studying in the same school but are placed in a separate section. They mix with other students for selected activities.
3. Article 2 (definitions) does not include a definition of disability. The convention adopts a social model of disability. But does not offer a specific definition.
4. Article 1(purpose) reads as " Persons with disabilities include those who have long –term physical, mental, intellectual or sensory impairments which in interaction with various barriers mat hinder their full and effective participation in society on an equal basis with others."

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AN EVALUATION OF THE TWO - YEAR B.ED COURSE IN NAGALAND : INITIATIVES, ISSUES AND THE WAY FORWARD

Buno Liegise
Khotole Khieya

In the context of rapid changes taking place in the schools in Nagaland, teacher preparation has become a primary concern. Several initiatives have been taken to boost the development of quality school education in recent times, one being the introduction of the new two-year B.Ed course in 2015 as per the National Council of Teacher Education (NCTE) norms. Since then much as been expressed on the issues that have been encountered in the process of implementation of the course such as the prolonged duration of the course, the fee hike, the contested value of the degree, the difficulties to get cooperating schools for internship and the like. A relook into the efficacy of the two-year B.Ed Course is highly warranted and robust plan drawn up in the best interest of children's education.

INTRODUCTION

The school landscape is changing rapidly in Nagaland, as elsewhere in the country, with the launch of several flagship programmes of the Central Government, such as the *Sarva Shiksha Abhiyan* (SSA), *Rastriya Madhyamik Shiksha Abhiyan* (RMSA) and more recently the *Right to Education (RTE) Act* 2009. The State of Nagaland experienced an additional paradigm shift when the State Government introduced the *Communitisation of Elementary Education in Nagaland, 2002*, wherein the State Government transferred the management and ownership of the Government primary and middle schools to the community.

All these educational schemes and policies have made huge impact on school education in all aspects – infrastructure, management and

administration, curricular and co-curricular, pedagogy, teacher education and training to mention a few, with both positive and negative results. These changes have been introduced within a short span of time and so in a way causing uncertainty in many schools particularly in the rural areas. In such a situation it has become necessary for teachers to understand the new educational schemes and policies, on the one hand, and the best way of implementing them. Quality teacher preparation has become of utmost importance today.

SCHOOL EDUCATION IN THE CONTEXT OF UNTRAINED TEACHERS

The edifice of school education in the State is expanding by the years and with it the number of teachers and students. The type and number of schools by the number of teachers - trained and untrained, in Nagaland, 2007-2008, is given below in Table No. 1

Table No. 1

Type of School	Number of Schools	No. of Teachers	No. of Untrained Teacher
Higher Secondary	69	2394	1803
High School	337	6628	5202
Middle School	465	5804	4702
Primary School	1162	7956	4995

Source: Government of Nagaland (2013) *Statistical Handbook of Nagaland*. Department of Economics and Statistics, Kohima.

One serious concern in all of this is, the number of trained teachers have not caught up with the ever increasing number of teachers. The overall percentage of untrained teachers in schools of Nagaland in 2007-2008 stood at 74% as seen in Table No. 1. It may be noted that the present

status of trained/untrained teachers in the State is not readily available. The picture may have improved to some extent, but it may not have drastically changed in the recent past. Hence, it may not be out of turn to say that much remains to be done in the field of teacher education.

There is an urgent need to improve the quality of teachers to improve the quality of school education. A nation that wants to progress and rise in the comity of nations therefore cannot afford to sideline the preparation of its teachers. Herein lies the urgency to push for quality teacher preparation programmes in the state.

BRIEF HISTORY AND STATUS OF TEACHER EDUCATION IN NAGALAND

The history of teacher education can be traced to the establishment of Nagaland College of Teacher Education in 1975 by the Government in Kohima. After twenty years, in 1995, Salt Christian College of Teacher Education Dimapur started its B. Ed. course. This was followed by the Bosco College of Teacher Education Dimapur in 2003. The latter two colleges are private institutions. It was only recently that five more colleges of teacher education was set up, namely, Mokokchung College of Teacher Education, Sazolie College of Teacher Education Kohima, Modern Institute of Teacher Education Kohima, Unity College of Teacher Education Dimapur, Ura College of Teacher Education Kohima and the Mount Mary College of Teacher Education, Dimapur.

Today there are nine colleges of teacher education in the State - two government and seven private colleges. While the IGNOU began offering B. Ed. course through distance mode in 2002 and the Certificate in Primary Education (CPE) in 2005, the latter programme has since 2009 been discontinued. The State Council of Educational Research and Training (SCERT) and the National Institute of Open School (NIOS) are providing D.El.Ed course for primary school teachers. There are six

Government District Institutes of Education and Training(DIET), and two private institutions offering pre-service teacher education course for primary school teachers.

The most popular course of teacher preparation in Nagaland appears to be the Bachelor of Education Course. A glimpse of the growth and development of colleges of teacher education in Nagaland providing 2 year B. Ed. is given below.

PROFILE OF COLLEGES OF TEACHER EDUCATION IN THE STATE

All the nine colleges of teacher education in Nagaland - 7 private and 2 Government Colleges that provide the 2 year B.Ed. programme are affiliated to the Nagaland University. The two Government colleges of teacher education functions under the Directorate of Higher Education, Government of Nagaland, while the seven private colleges of teacher education are being managed by private societies/organizations.

Table No. 2
Number of Teacher Educators and Student-Teachers in the Colleges of Teacher Education, 2018 in Nagaland

Name of the Institution	No. of Students		No. of Teachers
	1st Year	2rd Year	
1. Modern Institute of Teacher Education	100	99	08
2. State College of Teacher Education	100	102	15
3. Bosco College of Teacher Education	99	97	13
4. Mokokchung College of Teacher Education	56	65	08

5. Mt. Mary College of Teacher Education	100	95	16
6. Salt Christian College of Teacher Education	100	96	10
7. Sazolie College of Teacher Education	50	52	08
8. Unity College of Teacher Education	100	98	12
9.Ura College of Teacher Education	100	100	09

The student-teacher intake capacity is two hundred for most of the colleges of teacher education providing B.Ed., however, the number of faculty in most of the colleges are not adequate. In this regard, it may be noted that the colleges are in a transitory period of moving from having one unit to two unit of student intake capacity and the colleges seem to in the process of recruiting faculty.

Most of the colleges and institutions of teacher education have hostels for the student-teachers. All institutions have library and laboratory facilities even if access to computer and internet connectivity is still limited. All the colleges organise a variety of co-scholastic activities - games and sports, red-ribbon clubs, social works, variety cultural shows to cite a few. The two Government colleges of teacher education are Sl. No. 2 and 4. All the rest are manned by private societies.

THE TWO- YEAR B.ED. STRUCTURE & CURRICULUM : INITIATIVES

All the colleges of teacher education have started the 2 year B.Ed. course in July, 2015-16. The last of the one year B.Ed. Programme in Nagaland ended in December 2015. The present course is spread over four semesters beginning from January to June and July to December every year. It has

120 working days in a semester excluding examination and admission days. The course is made up of nine core papers, one optional papers and one pedagogy paper and four papers on Enhancing Professional Capacities (EPC). The practical works include pre-internship, Internship at school and post internship, school-based activities and observations, co-curricular activities and work experiences.

SEMESTER I

Paper Code	Title of the Paper	End Semester	Sessional works	Total	Credit	Teaching Hours
Course 1	Child hood and Growing up	70	30	100	4	64
Course 2	Contemporary India and Education	70	30	100	4	64
Course 3	Language across the curriculum	35	15	50	2	32
Course 4	Understanding discipline and subjects	70	30	100	4	64
EPC 1	Understanding Self	25	25	50	2	32
Total		270	130	400	16	256

SEMESTER II

Paper Code	Title of the Paper	End Semester	Sessional Works	Total	Credit	T.hrs
Course 5	Assessment for learning	70	30	100	4	64
Course 6	Learning and Teaching	70	30	100	4	64
Course 7a	Pedagogy of school subject (any one): Methodology of Teaching English Part-I / Social science Part-I/ Science Part-I / Mathematics Part-I	70	30	100	4	64
EPC 2	Drama and Art in Education	25	25	50	2	32
Total		235	115	350	14	224

SEMESTER III

Paper Code	Title of the Paper	End Semester	Sessional Works	Total	Credit	T.hrs
Course 8	Knowledge and Curriculum	70	30	100	4	64
Course 9	Gender, School and Society	35	15	50	2	32
Course 10	Creating an Inclusive School	35	15	50	2	32
Course 11	Optional Course (any one) Vocational /work Education / Guidance and Counselling / Health and Physical Education / Peace Education / Fundamentals of Horticulture & crop production	70	30	100	4	64
EPC 3	Critical Understanding of ICT	25	25	50	2	32
EPC 4	Reading and reflecting on texts	25	25	50	2	32
Total		260	140	400	16	256

SEMESTER IV

Paper Code	Title of the Paper	End Semester	Sessional Works	Total	Credit	T.hrs
Course 7b	Pedagogy of school subject (any one) : Methodology of Teaching English Part-II / Social science Part-II / Science Part-II / Mathematics Part-II	70	30	100	4	64
Course 12	Internship		250	250	10	200
Total		70	280	350	14	264

Total marks =1800 Total Credit = 60, Total working hours=1000 hours

EMERGING ISSUES AND CHALLENGES OF THE TWO - YEAR B. ED. COURSE

Following the promulgation of the new 2 year B.Ed. and M.Ed. Programmes by National Council of Teacher Education, the Nagaland University decided to adopt the revised two year B.Ed. Course from July 2015-2016 session onwards. The syllabi for the new two year courses have been worked out in line with the NCTE guidelines and also incorporating elements that are relevant in the context of Nagaland.

Consultation with experts was conducted. Several rounds of deliberations were held with the principals and the University teachers and officials. A 3-day workshop on *Development of Curriculum for 2 year B.Ed. and M.Ed. programme in Nagaland* was held from 5 - 7 May 2015. The draft syllabi thus framed have been passed by the respective Boards of Professional Studies (B.Ed.) and passed in the School Board of Humanities and Education. The syllabus of the course was approved by the Academic Council of the University in June 2015, and thus the journey of the 2 year teacher education programme started in July 2015.

The State of Nagaland is standing at the threshold of the 2 year B.Ed. programme. As expected, much has been expressed on the issues and challenges of the new course. It has become practically almost impossible for an in-service teacher or an aspirant teacher, after the three-year Bachelors Degree, to afford two more years to do the B. Ed. course - money-wise, time-wise, career-wise and family-wise, since the time duration has become twice longer, the fee of the new two-year course has doubled the one-year course, while the value of the course remain the same!

Then again, there is the question whether the quality of teacher have improved proportionately in terms of the extended period of the programme to 2 years? The premise of the 2 year programmes, of course, is that there would be thorough training of student-teachers and thereby improves the quality of student-teachers. However, till today there has

not been any serious study conducted to assess the impact of the two-year B.Ed course on the quality of teachers in the State. Perhaps, what also needs to be kept in mind and also examined is whether the difficulties/ issues that arise as a result of the prolonged period far outweigh the merits of the two-year course? Moreover, college authorities have underlined the huge investment they have to make on infrastructure facilities, which is taking a toll on the financial resources of the colleges.

Another much talked about issue is that too much focus has been given to the internship period in the new B.Ed. programme with as many as five months earmarked for it. When in Nagaland, as in many other states, CTEs were struggling to get schools to cooperate with them to allow their student-teachers to practise their forty lessons in the schools for a month, one can only imagine how the schools would afford basically five months time to these student-teachers to do their internship? Many schools are reluctant to allow such practices to disrupt their school annual academic calendar. There is also the question of the student teachers using the constructivist approach to teaching and learning. This new approach which has been advocated with the introduction of the new NCTE curriculum, it appears, is usually not approved by the schools as it is starkly different from the traditional way of teaching in the classrooms.

Perhaps, this problem may not arise for in-service teachers as they can practise in their own schools and experiment with the new teaching method. But in Nagaland there are pre-service teachers who are pursuing B.Ed. course along with the in-service teachers. In such a scenario, one is beginning to think whether B.Ed. course should be extended to in-service teachers only? Which would mean that only when a person gets a teaching job in school would s/he would be entitled to apply for the B.Ed. programme. Such and many more queries are being raised in many forums and meetings.

SUGGESTIONS FOR IMPROVEMENT OF THE TWO -YEAR B.ED COURSE: THE WAY FORWARD

A relook of teacher education programmes at all levels is warranted at this juncture in the light of the changes that have been introduced as a result of the new educational policies and Acts related to school education, above all in the context of the revised two-year B.Ed. programmes launched in the country.

1. Notwithstanding the recent spurt in the growth of colleges of teacher education by both private and Government initiative, there are still several aspects of infrastructure facilities that must be strengthened. The library in some of the CTEs and the laboratory in almost all the colleges must be improved and robust plan drawn up to provide state-of-the-art facilities in the near future. The State Government may plan for establishing, for instance, central libraries and laboratories in major towns in the State in phase-wise manner, so that every teacher educator and student teacher can have access to such facilities, which will go a long way in leveraging the quality of teacher education.

2.Information Communication Technology which occupies a central place to transform teaching- learning process in such a way that it enhances learning and at the same time also stimulates creativity deserves a special place in the curriculum. It may be well advised for colleges/institutes to gradually adopt features of smart classrooms to increase productivity and boost innovation.

3.Apart from the B.Ed. course, the Government should look into the merits of introducing several short-term courses in a variety of disciplines to retrain and refresh its primary/middle/secondary school level teachers. There is a growing concern of school teachers relying heavily on outdated teaching methods and techniques.

4.Teacher absenteeism, proxy teaching, lack of discipline and dedication is eroding the quality of school education in the State. Hence maintaining professional ethics must begin from the colleges of teacher education by teacher educators and student-teachers. The Authorities should enforce the rules and regulation in the CTEs throughout the entire period of training. Pledge-taking ceremony can be made an integral part of all teacher education courses so as to underline the importance of professional ethics.

5.Teacher education institutions and the Nagaland University, should draw up plans to rekindle interest among teacher educators and student-teachers for research and innovation. Institutions should provide scope and incentive for conduct of serious high impact research projects. Inter-disciplinary approach of investigation into various methods of teaching and construction of instructional materials may be encouraged.

6.The cloud (read anomalies and complexities) that has engulfed teacher education in many parts of the country as a result of the new teacher education policies and programmes should be addressed and the new policy reviewed in a year or two in the light of practical difficulties that are arising in the process of implementing the revised two-year B.Ed programmes in the country, particularly, in the North Eastern states of India. For one, the behaviourist approach to teaching and learning, which has been in existence for a long time, cannot be totally replaced with the constructivist approach in the present school setup. Hence, it is suggested that teachers combine the best aspects of both the approaches, and training in this regard may be organised. Besides, whereas the EPC courses like the Drama and Arts in Education have been well received by the student teachers in the colleges, the college authorities are facing immense difficulty to find qualified manpower to teach the course.

7.A policy may even be suggested that the B.Ed. programme be provided to only in-service teachers. After all, not all who undergo B.Ed. programme become teachers in the long run, which is a wastage of time, energy, money and more. Besides, the Government can also then strictly follow a recruitment policy that will ensure that only trained teachers can be appointed in the schools. Such a policy will improve the quality of education and also check the inflow of non-serious teachers.

Where the two-year B. Ed. Course will go from here is anybody's guess. If writings in the newspapers *(The Telegraph,* Plan to Scrap the 2-year B.Ed., Sat, September 15, 2018*)*, are to be believed at all, the two - year B. Ed. Course may even be scrapped altogether. Meanwhile, all out efforts are being made to promote the integrated course - BA-B.Ed./ BSc-B.Ed. It appears that teacher education in the country is in a state of flux and engulfed in speculations, which is, to say the least, adversely affecting the general health of education.

However, as of now, what 'knowledge workers' can do is to relook into the relevance and efficacy of the two-year course in the interest of the entire nation. The NCTE must have the courage to conduct an impact study and take any course correction(s) that may be necessary. The sooner that is done, the better. Meanwhile, what stakeholders can do for now is to meticulously plan, prepare and implement two-year course in the best way possible and await the response of the NCTE.

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GOODS AND SERVICES TAX: A CRITICAL ANALYSIS IN CONTEXT TO ACCESSIBILITY, HUMAN RIGHTS AND EDUCATION OF PERSONS WITH DISABILITIES

Rajendra Prasad

Government of India has notified Goods and services Tax (GST) in 2017 as a great economic reform for strengthening economy of country. This paper tends to analyze the Goods and Services Tax in context to accessibility, human rights and education of persons with disabilities (PWDs). Disability and inclusion is a significant issue but it is an ignored panorama in educational research. Secondary data was used to support and justify the arguments and logics. The analysis reveals that GST will influence adversely accessibility, human rights and education of PWDs. Philosophy of inclusion to PWDs has not been addressed adequately. GST is a discriminatory and exclusionary practice to PWDs. It is not only counters with national law but also with international law. It will make assistive technology costly. The case of Brazil and Philippines is given as a model to exempt PWDs from tax, and make GST inclusionary to PWDs.

INTRODUCTION

In India, there are 2.68 cores persons with disabilities (Census report, 2011). Surprisingly, total population of persons with disabilities (PWDs) in India is more than total population of many other countries of the world. For instance, Cuba, Qatar, Australia, Kuwait and Sweden (World Atlas, 2017). PWDs is an under privileged group of Indian Society. Students with disabilities experience various kinds of exclusion which prevent and limit them to participate in society, family and community life. They have to face many barriers in different phases of life. The attitudinal and institutional barrier influences them most. An attitudinal barrier refers to any kind of psychological harassment while an institutional barrier refers to discrimination through policy and law. Economic Experts considered that Goods and Service Tax (GST) is a great economic reform to country.

But one of the greatest human grounds has been ignored. GST has been put as extra financial burden on PWDs. According to report of GST Council (2017) under chapter 87, 90, and 91 of GST rate schedule for goods .GST has been imposed ranged 5% to 18 % on assistive technology/ devices such as Braille typewriters, Braille watch, Braille paper, and orthopedic appliances. These appliances are very much important and essential to persons with disabilities. Assistive technology is an umbrella for PWDs which enable them to be independent in movement and support in education, and employment. Assistive technology contribute a lot in improving academic achievement of PWDs (UNICEF, 2014) But now, appliances would be more costly. Subsequently, it would influence accessibility, employment, education and daily life of PWDs. Generally, the economic condition of PWDs is not much good. Many poor PWDs have to look towards charity for assistive devices, orthopedic appliances, and its implantation. They are dependent on their family to fulfill different requirements of daily life. It enables many states of country to think for granting financial assistance in the form of monthly pension and other assistance .Uttar Pradesh Government has increased monthly pension Rs 300 to 500 and exempted debt of Rs. one lakh recently. One side, Government is expressing sympathy towards PWDs addressing them as 'Divyang' while another side, instead of granting subsidy for assistive devices and orthopedic appliances; extra financial burden has been imposed as GST. Unfortunately, many disability organizations have to come on road to protest this decision of GST council. Therefore, this article would analyze. How GST would influence accessibility, human rights, and education of PWDs.

This paper is structured into five sections; first, based on secondary data, an attempt provides a fact finding analysis of SWDs with reference to education in general and particular in higher education. Second section, covers influence of GST on accessibility, education and human rights. Treading further, in third section, this paper attempts to provide

contradiction of GST with international legal framework, and best international practices. In the last section it provides some constructive suggestions to solve the problem and inclusion of PWDs in mainstream of society.

EDUCATIONAL STATUS OF STUDENTS WITH DISABILITIES (SWDS) IN INDIA: A FACT FINDING ANALYSIS

Education is not merely reading, writing, and passing examination. It is pillar of all round development of students. Education is the most important component of empowerment to all sections of society. The literacy rate amongst PWDs in India is only 54.5% which is very much lower as compared to 74% of national literacy rate (The census report, 2011). Similarly, the representation of SWDs in higher education is also very critical. Indian higher education is one of the largest education system in the world. There are 799 Universities and 39071 colleges where 34.6 million students are enrolled which constitute 18.6 million boys and 16 million girls. The total Gross Enrolment Ratio (GER) in higher education in country is 24.5%. It is 25.4% for male and 23.5% for female. As regard to social category, GER stands 19.9% for scheduled caste and 14.2% for scheduled tribe. But unfortunately, as far as concern of SWDs, the figures of enrolment in higher education sector are very poor and critical. Only 74435 students are enrolled in higher education which constitute 39718 male students with disabilities (MSWDs) and 34717 female students with disabilities (FSWDs) as reported by (AISHE 2015-16) .The enrolment of FSWDs is lower as compare to MSWDs. The social category wise share of PWDs in higher education sector is too much low particularly in scheduled tribe category where only 2.5% PWDs are enrolled which shared 2.7 % of MSWDs and 2.3% of FSWDs. In case of PWDs of other backward class, 32.6% PWDs are enrolled which constituted 31.2% of MSWDs and 34.2% of FSWDs whereas the figures are very much critical for schedule caste. Only 10.9% PWDs are enrolled in higher education which represents 9.9% of MSWDs and

11.9% of FSWDs in higher education. The persons with disabilities (Equal opportunities Protection of rights and full participation) Act (1995) directed to all Government institutions and other institutions (which are receiving funds on the name of aid) to secure 3% seats for SWDs. Now reservation increased 3% to 5% in its amendment (RPWD Act, 2016.) In spite of having reservation, surprisingly, the figure reported adverse representation and share of SWDs in higher education. If we analyze the statistics given in Table - 2, it is very disappointing that state wise enrolment distribution of SWDs in higher education is very low in various states and UTs such as Andaman & Nicobar (20), Arunachal Pradesh (72) , Dadra & Nagar Haveli (19), Daman &Diu (1), Goa (46), Lakshadweep (0) , Manipur (86), Meghalaya (46), Mizoram (8), Nagaland (20), Pondicherry (166) ,Sikkim (5) , Tripura (127), and Uttarakhand (393) .The above statistics are sufficient to understand the critical situation of SWDs and mostly students are still out of higher education system which is prolonged exclusion. Indian higher education system fails to accommodate students with disabilities in its structure. Therefore, let's analyze. How would GST influence this underprivileged section of society (PWDs)?

Table 1

Social Category Wise Distribution of SWDs in Higher Education

Category	% Out of Total PWD Male	% Out of Total PWD Female	% Total PWD	Female per hundred male
Total	-	-	-	87
Schedule Caste	9.9	11.9	10.9	105
Scheduled Tribe	2.7	2.3	2.5	75
Other Backward class	31.2	34.2	32.6	96

Source: All India Survey on Higher Education (AISHE, 2015-16)

Table 2
State Wise Enrollment of SWDs in India

State & UT	SWDs in India		
	Male	Female	Total
Andaman & Nicobar Island	13	7	20
Andhra Pradesh	1185	765	1950
Arunachal Pradesh	48	24	72
Assam	458	282	740
Bihar	1663	799	2462
Chandigarh	195	70	265
Chhattisgarh	343	158	501
Dadra & Nagar Haveli	9	10	19
Daman & Diu	0	1	1
Delhi	2470	1301	3771
Goa	31	15	46
Gujarat	1042	555	1597
Haryana	344	240	584
Himachal Pradesh	280	323	603
Jammu & Kashmir	349	223	572
Jharkhand	416	187	603
Karnataka	2314	1856	4170
Kerala	1415	1807	3222
Lakshadweep	0	0	0
Madhya Pradesh	1939	1221	3160

Maharashtra	3265	2525	5790
Manipur	35	51	86
Meghalaya	31	15	46
Mizoram	5	3	8
Nagaland	12	8	20
Odisha	757	517	1274
Puducherry	110	56	166
Punjab	488	454	942
Rajasthan	1268	1175	2443
Sikkim	2	3	5
Tamil Nadu	3161	2112	5273
Telangana	1414	1022	2436
Tripura	109	18	127
Uttar Pradesh	12124	15868	27992
Uttrakhand	308	85	393
West Bengal	2115	961	3076
All India	39718	34717	74435

Source: All India Survey on Higher Education (AISHE, 2015-16)

ACCESSIBILITY, HUMAN RIGHTS AND EDUCATION OF SWDS : INFLUENCE OF GST

The loco motor disability is listed under the rights of person with disability act, 2016 which means that 'a person's inability to execute distinctive activities associated with movement of self and objects resulting from affliction of musculoskeletal or nervous system or both'. The orthopedic appliances play a significant role in compensating for a defect or impairment or disability. Generally, these appliances are either carried or worn or implanted in the body of PWDs which help them in

movement from one place to another place but surprisingly, 12% GST on orthopedic appliances has been imposed by GST Council, 2017 which includes surgical belts and trusses, crutches, splints and other fractures appliances, and artificial parts of body, etc. Additional expenditure would create financial problem for poor families of PWDs and limit their movement. The movement is very important in the life of every person. GST would hamper the movement of orthopedic disabled. The independency in movement makes life more qualitative and happy while dependency on others may hamper the self - concept of PWDs. When PWDs go to attend the education institutions they not only go to attend the classes but also visit the library, hostel, computer lab, bank, post office, and other administrative offices, etc. The classes of the schools and higher education institutions are not disability friendly. Even, the furniture of classrooms is not suitable to orthopedically disabled due to non-sufficient gap between desks or chairs. They cannot fold or straighten the leg when they feel the pain. Hence, underdeveloped infrastructure is already present as a barrier in education sector whereas another side the taxing of 12% GST on orthopedic appliances would be another financial barrier particularly to those PWDs who are poor and could not afford the high cost of orthopedic appliances and look towards charity.

The transportation system is also a great barrier in education and employment of PWDs. Generally, buses, and trains are being used to attend the educational institutions and employment offices by PWDs. But it is very difficult for them to get in and get off alone due to non-disability friendly transportation system. There is worst situation in nuclear families where father is only source of earning bread and butter. Naturally in the working class nuclear families, it is neither possible for father to leave his job and accompany the PWD child to educational institutions nor it is possible to arrange an escort. Therefore, when PWDs crossed the adolescence period the guardians generally prefer to arrange a disability friendly hand control car so that PWDs may attend the

educational institutions independently but unfortunately, 18% GST has been imposed on disability friendly car. The market prices of disability friendly Wheelchair Van Car with lift is approx. Four Lakh (Mobility Aids Sale and Service, 2017). If we add 18% GST, It will be four lakh seventy thousands. Thus, PWDs have to pay seventy two thousands extra while as report of planning commission, chaired by Rangrajan (2014) mentioned that 29.5% of total populations of India still fall under below poverty line (BPL). Hence, this assistive disability friendly Wheelchair Van Car with lift would prove very expensive and out of affordable capacity of persons with disabilities. At the result, many PWDs have to look forward for donation not only for orthopedic appliances but also for disability friendly Wheelchair Van Car with lift. Here, it is very important to point out that Jagadguru Rambhadracharya Handicapped University, Chitrakoot, UP, was established in India by a blind saint (Jagadguru Rambhadracharya) which is completely dedicated only for higher education of PWDs where all kinds of PWDs take higher education under one roof. Another University (Dr. Sakuntala Mishra Rehabilitation University, Lucknow) based on module of inclusive education was established where both general and PWDs share 50% seats equally. Therefore, number of SWDs comes to take higher education from different parts of country. Even, PWDs from North-east India are also studying in these universities. Apart this, they also approach to rest of Universities and National institutions of country. Train is main source of travelling. Indian Railway provides train tickets to PWDs on concessional rate. But under the GST, 5% GST has been imposed (IRCTC 2017). No point of time, it has been quoted that PWDs would be exempted from GST for train tickets. Apart from it, those PWDs who are suffered from severe disability have to travel with an attendant/escort. The cost of train ticket of attendant/ escort is already an additional burden. In this scenario GST would also be an extra financial burden. If they choose Rajdhani train for travelling then they have to pay dynamic fair and catering charges extra. Hence, GST would create difficulty to SWDs to go outside for study.

Let's further analyze GST, transportation and employment. As regard to employment of PWDs, Singh (2014) stated that "PWDs are involved in both paid and unpaid work. MWDs do paid work while FWDs do unpaid work like domestic work". The poverty alleviation programme like MANREGA doesn't have any provision for employment of PWDs. Similarly, NCPEDP(2009) conducted a survey in top 100 Multinational Companies and reported that the rate of employment of PWDs in private sector is only 0.28% which indicates about worst employment status of disabled people . The door of private sector is almost closed to them. They are not under employment agenda of Multinational Companies. Market provisions are insufficient to cater the needs of PWDs as market stimulates to price, selling, purchase, profit to increase assets. PWDs are considered as unskilled labour. However, some of PWDs have employment and have to attend employment office to earn bread and butter. 18% GST on disability friendly wheel chair car would reduce the purchasing capacity of PWDs and would create a barrier in attending employment offices. Above evidences are sufficient to make understanding that human rights of PWDs will be influenced negatively?

Normal people can observe everything .The world is full of green scenery to them. But the persons who do not have eyes, the world becomes dark to them. They see the world with eyes of others. They depend for most of the work of daily life on either parents or other family members. Even, they cannot read and write like sighted people. Braille language plays a significant role in education of blind students. Therefore, RPWD Act, 2016 under section 3(v) ,has made it obligatory on the part of the educational institutions to "ensure that the education to persons who are blind or deaf or both is imparted in the most appropriate languages and moods and means of communication". Similarly, section 3(iv) of this act also mandate to goverment and local authorities to "provide necessary support individualized or otherwise in environments that

maximize academic and social development consistent with the goal of full inclusion.''. But unfortunately, Govt. of India has imposed 5% GST on Braille typewriters, Braillers and Braille papers, etc. Originally, 18% GST for typewriters and 12% GST for Braille papers were set up. But it is reduced up to 5% due to protest of various organizations and disability activist like Blind Federation of India, Disability Rights Organization Forum, and National Center for Promotions of Employment of Disabled People (NCPEDP, 2014). The great contradiction is emerged that on one hand , "RPWD Act, 2016" recommended for providing education in most appropriate language to visually impaired persons (VIPs) but on the other hand , Govt. of India is imposing 5% GST on Braille typewriters and braillers which is basic educational tool for VIPs. How is it justified? This is a great question mark, if we analyze the importance of Braille script to blind students. The dream of education to visually impaired students cannot be visualized in absence of Braille language and Braille material. The normal students make notes, read and write in their concerned language like Hindi/ English /Bengali and any other language but VIPs make notes and record the material only in Braille script. They read and write through embossed words of Braille script. Now, the imposition of GST would make Braille equipments more expensive which may be out of purchasing capacity of poor blind persons and their guardians. For instance, the current market price of Braille type writer is about Rs. 35,000 (Thirty five thousands) if we add 5% GST in the market rate of Braille typewriter. It would be Rs. 36750 (Thirty six thousands seven hundred fifty rupees). The market price of Braille typewriter is already too high. After the imposition of 5% GST, it would be more costly. First, if we glance at status of below poverty line (BPL) in India, the figure is still 29.5 % (Rangrajan, 2014). Secondly, the monthly income per capita & per month in rural areas is less than Rs. 972 (Nine hundred seventy two only) while it is only Rs. 1407 (One thousand four hundred seven only) in urban areas (Rangrajan, 2014).Hence, a very justified question arises. How can a father belonging to BPL category

arrange a Braille type writer to his blind son/daughter? Blind persons who are already struggling with societal and attitudinal barriers. GST would be an additional financial barrier. How will they come in the mainstream of society? When PWDs themselves require support, how can they be a support to economy of country by paying GST for basic assistive devices to survive in the field of education? RPWD Act, 2016 under section 1(m), has made a comprehensive definition of 'High Support' means an intensive support, physical, psychological and otherwise, which may be required by a person with benchmark disability for daily activities, to take independent and informed decision to access facilities and participating in all areas of life including education, employment, family and community life and treatment and therapy. Hence, legally, Govt. of India must grant high support but surprisingly, Government has imposed GST on basic assistive devices of PWDs.

Another very important assistive device i.e. Braille watch is also under 5% GST regime. First, Let us analyze. How is the Braille watch work and assist to PWDs? The Braille watch is standard smart device. It has twenty four sensors in form of embossed Braille dots. VIPs touch the embossed Braille dots and judge the real times which help them in making time management. Second significant question is that how would high cost of Braille watch hamper academic performance of blind students? Many Researchers already proved that study habits significantly influence academic performance of learners. Poor study habits is cause of poor academic achievement as reported by researchers (Guadaganavar and Halayannavar, 2014; Aquino, 2011; Ergene, 2011 and Premalakshmi, 2012) . Time management is one of the very important components of good study habits (Palsane and Sharma, 2010). A person, who has the ability to manage the time and make study schedules and distribute time according to interest, subjects, and suitability of environmental conditions, may have high academic achievement. By budgeting time, students can optimize their success in study, extra- curricular activities

as well as different activities of daily life. Braille watch is a significant supportive device to know exact time and make appropriate time schedule for structured study. But 5% additional tax as GST would lead to reduce the purchasing capacity of poor guardians of PWDs (blind). Subsequently, it would hamper time management of PWDs. Thus, GST would make assistive technology more expensive. Therefore, assistive devices and orthopedic appliances must be given at subsidized rate instead of putting tax like GST.

MULTIPLE TAXES: GST AND INCOME TAX

Multiple taxation would contribute a lot in pushing back PWDs from different fields of social life and education. The parents of PWDs have to spend extra money not only on education but also for health, rehabilitation, therapy and guidance and counseling. Now, they would have to buy various assistive devices and aids as per nature/type of disability under new GST regime. This over burden expenditure starts from being disabled and continues until their proper settlement in job and other phases of social life. Despite huge expenditure of parents on rehabilitation, therapy, education, travel, health, guidance and counseling, and consultation with doctor for medical treatment, Income tax is being taken from parents and PWDs themselves. Another side, GST has also been added as sugar and salt. There is a great question how much is justified to take income tax from PWDs and their parents. There is great policy discrimination with PWDs in comparison to other social categories with reference to income tax. The rule of social backwardness is applied in case of tribals who are enjoying 100% tax rebate particularly in North East India but the rule of social backwardness is not applied in case of PWDs. However, Govt. of India has given some relaxation in income tax to PWDs which is just like a drop of water in the ocean.

GST provides safeguard the livelihood of agricultural workers and farmers. The tools which are used for agriculture have been exempted

from GST regime. For instance, shovels, spades, mattocks, cultivators, thresher, etc. Even, the services relating to cultivation, harvesting, threshing, plant protection and processes carried out an agricultural farm like cutting, cleaning, cooling, tending, and sun drying , etc. have been exempted from GST but assistive technologies which are very essential and play a pivotal role not only for education of PWDs but also to be independent and earn livelihood, have been included in the tax items of GST. Govt. of India requires protecting the rights of PWDs similar to agricultural workers and farmers. Exemption to assistive devices and orthopedic appliances of PWDs would be a step to make society inclusive and bring them in mainstream of society and get education.

WHAT INTERNATIONAL LAW AND LEGAL FRAMEWORKS SAYS

The imposition of GST on various assistive devices and orthopedic appliances does not only counter with national law but also with international law. United Nations (UN) placed Convention on the Rights of Persons with Disabilities to states parties (Countries) to sign on 13 December, 2006. India had signed on the convention on the opening day i.e. 30th March, 2007. It was the first convention of United Nations on which highest 82 state parties signed on the opening day. GST has countered with following articles of United Nations Convention of the Rights of Persons with Disabilities, 2007.

> Preamble (J) 'Recognizing the need to promote and protect the human rights of all persons with disabilities, including those who require more intensive support'.
>
> Preamble (o) 'Considering that persons with disabilities should have the opportunity to be effectively involved in decision – making processes about policies and programmes, including those directly concerning them'. No suggestions were taken from disability organizations before imposing GST'.

Article 4 (b) 'To take all appropriate measures, including legislation, to modify or abolish existing laws, regulations customs and practices that constitute discrimination against persons with disabilities'.

Article 4 (g) 'To promote availability and use of new technologies, including information and communication technology, mobility aids, devices and assistive technologies, suitable for persons with disabilities, giving priority to technologies at an affordable cost'.

Article 5(3) 'In order to promote equality and eliminate discrimination, state parties shall take all appropriate steps to ensure that reasonable accommodation is provided'.

Article 20 (b) 'Facilitating access by persons with disabilities quality mobility aids, devices, assistive technologies and forms of life assistance and intermediaries, including by making them available at affordable cost'.

Article 24 'State parties shall ensure an inclusive education system at all levels and lifelong learning'.

Article 24(2c) 'Effective individualized support measures are provided in environments that maximize academic and social development, consistent with the goal of full inclusion'.

Article 24(34) 'On facilitating the learning of Braille, alternative script, augmentative and alternative modes, means and formats of communication and orientation and mobility skills'.

CONTRIBUTION OF PWDS IN WORLD ECONOMY AND INTERNATIONAL EXAMPLES OF SUPPORTING DISABILITY

The persons with disabilities contributed a lot to the world where their country facilitated the services of health, education, social services, and assistive technology. For Instance, Franklin Delano Roosevelt who was an

orthopedic disabled and used wheelchair became 32nd president of Unites States from 1933 to 1945. A unique work has been done by Jagadguru Rambhadracharya who is blind founded Jagadguru Rambhadracharya Handicapped University in Chitrakoot District of Uttar Pradesh. This University is dedicated only for disabled where all kinds of persons with disabilities get higher education under one roof not only from India but also from other countries of the world. Stephen Hawking the famous physicist who had motor neuron disease yet significantly contributed to the field of cosmology, general relativity and quantum gravity especially in the context of black holes. Helen Keller despite being deaf and dumb became famous American author, activist, etc. John Milton, a completely blind person wrote the famous epic 'paradise lost'. Tilly Aston, was a writer and teacher, who founded Victorian association of Braille writers to facilitate material to blind students. Stevie Wonder, a completely blind person, became the famous musician and singer. Johan Huckleberry suffered from spinal cord injury and became famous journalist and author. Albert Einstein suffered from learning disability but gave us the Theory of Relativity. Erik Weihenmayer despite being the blind became the first blind person to reach the summit of Mount Everest. Isaac Newton suffered from 'Attention Deficit Disorder' but discovered law of gravitation and Thomas Alva Edison despite being a disabled discovered electric bulb and developed telegraph system and Carbone micro phone. Dr. Janice Brunstrom suffered from cerebral palsy and become leading scientist of neurology in CP Centre Washington University. Tanni Grey-Thompson despite being physically disabled won 16 medals in para-Olympic. The list is endless .Therefore, We need to remove various financial barriers and facilitate assistive technology . Govt. of India needs to make liberal financial policies so that assistive technology may be accessible, affordable, and adoptable to persons with disabilities.

TAX EXEMPTION TO PWDS IN THE WORLD: CASE OF BRAZIL AND PHILIPPINES

There are some practical examples in the world with reference to tax exemption or discount to PWDs. Brazil which is a developing country of the world, has developed a national plan for disabled persons *(The Plano Nacional dos Direites da Pessoa com deficien-viversem limited)* and grant tax reduction for vehicle used for mobility and assistive devices of PWDs. Even, imported assistive devices such as cochlear implants, Braille machines, electronic magnifying glasses, calculators, hearing aids, and wheelchairs , etc are exempted from federal tax (The Brazil Business, 2016).. In addition, Philippines is another good example in the context to India. As per census report of Philippines (2010),1.57% of total populations have different kinds of disability. The republic Act (2007) of Philippines is known as *"Magna Carta for Disabled Persons"* in Philippines .It secures 20% discount on various assistive devices of persons with disabilities along with education. Besides 20% discount has been given on various services and goods in Philippines such as services of hotels, restaurants and recreation centers for exclusively for PWDs, Air, Domestic and sea travelling, Dental and medical services, laboratory and diagnostic fee, Special discount on basic commodities, and Medicine and all other drugs which are exclusively necessary for PWDs.

SUGGESTIONS

In order to address the problems and challenges faced by PWDs following measures may be considered:

GST council should make GST more practical for PWDs. A committee must be constituted to re- examine the matter and solve the problems of PWDs. Taxation policies of other countries of the world for PWDs must be examined to adopt innovative and behavioural practices. Full tax exemption on all imported disability appliances of PWDs must be granted. PWDs and their parents should be exempted from all federal

taxes including GST and income tax to bring them in mainstream of society. Govt. of India should export disability appliances rather than import. Government and Private Companies along with disability organizations should be encouraged to develop disability appliances under 'Start up India' scheme. Parents and PWDs may be invited to take views on design, usability, and evaluation of disability appliances. Foreign investment should be encouraged for development of assistive technology to PWDs under 'Make in India' programme. More liberty may be given to foreign investors to attract them to invest in India to develop disability appliances. Fundamental researches should be promoted under major/ minor research programme of UGC, ICSSR, DST, and other funding agencies of India. Government of India needs to review Goods and Service tax and exempt all assistive devices which are basic requirement of PWDs and their education. Finally, criticism of GST doesn't mean that one is opposed to such measures . We should evaluate GST on the ground of logic, arguments, and its merits and demerits in context to Accessibility, Human Rights and Education of PWDs. On one side, social issues like gender, caste, class, norms, and closed society are already creating barriers. On the other side, neither educational nor employment status of PWDs is satisfactory. Additionally, GST is a discriminatory and exclusionary practice for disabled people's human rights and education. We should examine five very pertinent points/ issues. First, what do we want? Second, what are we doing? Third, do various provisions of GST fit to constitution and the RPWD Act, 2016? Fourth, how can we adopt inclusionary act, schemes, and policies in future? Fifth, how can we make GST practical to PWDs?

ABBREVIATIONS:

PWDs- Persons with Disabilities.

SWDs- Students with Disabilities.

FSWDs-Female Students with Disabilities.

MSWDs-Male Students with Disabilities.

MWDs-Male with Disabilities.

FWDs-Female with Disabilities.

RPWD-Rights of Persons with Disabilities.

GST-Goods and Services Tax.

VIP-Visually Impaired Persons

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DOES KNOWLEDGE OF MATHEMATICAL LANGUAGE PLAY A ROLE IN MATHEMATICAL ABILITY? -A PRELIMINARY STUDY

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Mathematics has always been associated with knowledge of digits and number words. Limited thought is given to the language system that binds digits and number words for meaningful computation. The lexicons of mathematics such as series of alphabets, numbers and digits become meaningless unless semantics or the meaning component is loaded into mathematical problems. Therefore, language skills related to reading, writing and comprehension are linked to performance in mathematics. In order to understand the role of language in mathematical lexicons, tests were developed for math vocabulary reading and math language incorporating general language vocabulary and syntax. The tests were administered on 47 children studying in IV Grade with Kannada as the medium of instruction. Results indicated poor performance by children on tasks where the general language vocabulary terms are shared between math and language. The study emphasizes the importance of teaching meaning of the mathematical lexicons in the classroom.

INTRODUCTION

Mathematics is often characterized as the language of science. As early as 1975, the superiority of mathematics as a language system is supported by the views of Beilin, supported by Lamb (1980) who attribute successful performance in mathematics to the ability to represent abstract ideas using symbols. Mathematical text reading requires two salient components of language of mathematics- *understanding mathematical*

technical vocabulary and *specialized symbols*. These components are facilitated by the knowledge of language. Children acquire knowledge of mathematical terms through arithmetic processes such as counting, problem solving strategies, working memory, that are necessary for both their daily functional living as well as academic activities. Vocabulary understanding is a major contributor to overall comprehension in many content areas, including mathematics. Effective methods for teaching vocabulary in all content areas are diverse and long standing. Teaching and learning the language of mathematics is vital for the development of mathematical proficiency. Mathematical vocabulary learning by students is an important part of their language development and ultimately mathematical proficiency (Riccomini, Smith, Hughes & Fries, 2015).

The human brain must contain mental representations and processes for recognizing, understanding and producing various notations of numbers for the purpose of translating it from general language to the language of mathematics. The number domain, therefore, provides an interesting dimension to study the representation of symbolic information in the human brain and the interplay between language (verbal) and number symbols (non-verbal) forms. The study of organization of number system in human brain would possibly throw light on the organization of linguistic domains related for processing number symbols.

The relationship between language and mathematical symbols has been documented for English language and Arabic numerals consequent to which several models have been proposed. The architecture for mental representation of numbers and their interconnections are detailed in McCloskey's modular model of number processing (1992) in which a single central abstract quantity representation interfaces with notation-specific input and output modules. On the other hand, the triple-code model (Dehaene and Cohen, 1995) describes both the functional architecture and the neural substrates of number processing accounting

for many types of numerical deficits, widely known as acalculia / dyscalculia, generally defined as a developmental arithmetic disorder leading to failure to develop arithmetic competence. Children with dyscalculia may make a variety of errors during math performance due to difficulties in understanding numbers, counting skills, computational skills and solving problems. Kosc (1974) suggested that dyscalculia could occur in different combinations and also with other impairments. Owing to the significance of number processing, there is greater awareness in the past few decades that difficulties in mathematics frequently occur concurrently with language difficulties (Chinn and Aschroft, 1993). In general, the neuropsychological models of number processing attempt to explain manipulation of numbers using Arabic notation, spelled-out numerals or as an abstract quantity representation accounting for certain inabilities manifested by children with dyscalculia.

While literature is available for English language and Arabic numerals, similar studies in non-English languages are scanty. Kannada, a Dravidian language has terms that are borrowed as its origin is from Sanskrit. For example, the specific lexicon of mathematical terminology such as '*dashaka*' in Kannada language means 10's; terms used for general language purpose, such as '*hadi*' indicating the teen numbers which is also symbolically used to represent the meaning of 'teen age' (*hadi haraya)*; the bilingual lexicon (the term 'bilingual' is used here to indicate words that cut across general language and mathematical language as explained in the examples) such as '*kaalu*' meaning 'quarter' (specific mathematical lexicon), and '*leg*' (general language lexicon) in Kannada language has not been studied till date. There is a need to understand its relevance to develop suitable tests and remedial programs for children with dyscalculia. The origin of mathematical symbols, the semanticity of abbreviations used in mathematics and the bilingual nature of numerals is language specific and therefore, is an important area of study to evaluate the relationship among language-reading-mathematical symbols.

The relationship among language, reading and mathematics can also be drawn from several other examples. Reading numerals is similar to reading alphabets or letters (2, 3, 4 as numerals as against a, b, c as alphabets); reading combinations of mathematical symbols that form mathematical lexicon (for example, 2x) is similar to reading words; need to interpret words with differential meaning in general language compared to mathematical language based on the context (for example, square, root, point, slope, etc.,) is closer to the semantics of language. For example, in Kannada, /*hattu*/ meaning 'climb' is used to denote number 'ten'(10); /*elu*/ meaning 'get-up' to denote number 'seven'; words with multiple meanings in mathematics ('square' would mean 'a geometric figure' or a 'mathematical operation') is used as /*chouka*/ in general language meaning 'square' as well as 'towel'. Common mathematical root words in English with different suffixes such as multiply, multiplier, multiplication and multiplicand for which the equivalent words in Kannada are also confusing (/*gunaka*/ 'multiplier'; /*gunya*/ 'multiplicand'; /*gunalabdha*/ or /*shesha*/ 'answer') as it requires morphosyntactic knowledge; Further, the mathematical sentences (for example, 3+3=5) that do not conform to traditional sentence patterns pose additional challenges. The above examples suggest that there is a need for children to develop the ability to derive context specific meaning since communication in mathematics is primarily a linguistic behavior. Schleppegrell (2007) conducted a review of research by applied linguists and mathematics educators that highlighted the pedagogical challenges of mathematics. The review suggests that since the mid-1980's researchers have been pointing to ways that language is implicated in the teaching of mathematics. A key influence has been the discussion by Halliday (1978) on the 'mathematical register'. Halliday pointed out that counting, measuring, and other 'everyday' ways of doing mathematics draw on 'everyday' language, but that the kinds of mathematics that students need to develop through schooling use language in new ways to serve new functions, such as mathematical performance (Schleppegrell, 2007).

The different aspects of language involved are indicated by the summary of key linguistic features of the mathematics register. There are a few studies examining mathematical ability among children with learning disability (Geary, 2004) reading disability (Jordan, Hanich & Kaplan, 2003; Fuchs & Fuchs, 2002), and specific language impairment (Fazio, 1994) as well. However, there are not many studies on the knowledge of language of mathematics in typically developing children. Thus an effort is made to explore the language of mathematics and its relation to mathematics performance.

While the bilingual lexicon of general language and mathematical language as explained earlier for Kannada language offers certain challenges for learning, there are also specific challenges within the domain of the language of numbers. When a child is learning in a bilingual medium with English as a second language (ESL learners), s (h) e has to learn two representations for each number, the digit as well as the number word. For example, while the notation using the Arabic numerals would be (4, 40), the spoken number is (/four/, /forty/) and the written or spelt number is (FOUR, FORTY). Whereas in Kannada, the numbers are spoken and written the way it is expressed (/*mu:ru*/ = 3) since the orthography is direct (transparent, with letters and not alphabets). Children receiving education of Kannada medium are taught Arabic numerals even though digits in Kannada are available since Arabic numerals are used as standard notation across the world. Therefore, the bilingual children's brain must contain mental representations and processes for recognizing, understanding and producing these various notations of numbers and for translating across the notations that highlight the complexity in learning mathematical language. This calls for an understanding of the lexicon of mathematical terminologies in the context of children learning in Kannada medium with mathematical symbols being represented using Arabic numerals that is in practice not only in Karnataka State but also across several schools in other States of India.

OBJECTIVES OF THE STUDY

The main aim of the study was to examine the relationship between knowledge of terms in general language as well as mathematical language and mathematical ability in children. Hence, the study was designed with the following objectives:

To construct a math vocabulary reading test in Kannada for children in Grade IV.

To construct a math language test in Kannada for children in Grade IV.

To determine the relationship between reading math terminology, mathematical language and performance on mathematics by Grade IV children.

METHODS

The study was designed with a purposive sample of IV Grade children studying in Kannada medium. 50 children in the IV Grade (only one section per Grade) were screened for intellectual deficiency if any, using *Gessel's Drawing Test (GDT,* Verma, Pershad & Kaushal, 1972) standardized on mentally retarded children and revalidated on clinical population (Venkatesan, 2002). For ease of administration and scoring, selected drawing test items were arbitrarily classified into:

Preliminary domain that consists ten items at or / below 36 months mental age level.

Intermediate copying domain that consists of 25 items for mental age equivalence between 36 to 120 months.

Advanced three dimensional drawing domain that consists of 10 drawing items with three dimensional perspective at or / above 120 months mental age.

Since the children were in grade IV (approximate age range 9-11 years), the preliminary sections of GDT with simple drawings were not administered. All the children were seated comfortably in a chair with a writing table. Paper and pencil were supplied to draw the picture. The GDT was administered as a group test, for which thirty two picture cards were projected on the wall one by one by using an over head projector (OHP) in the classroom. Children were instructed to draw the picture projected on the wall. The pictures drawn by them were rated as average, above average or below average in intellectual functioning but not quantified (for more details on scoring, please see Venkatesan, 2002). 47 children whose performance was in the average and above average range were selected for the study.

Further, the adequacy of sampling was also examined by setting the confidence level at 95% based on Raosoft sample size calculator (http://www.raosoft.com/samplesize.html). The suggested sample size was 45. However, a total of 47 (28 M; 19 F) children were selected for the study. Children who had minimum of three years of formal schooling with exposure to textbook terminologies were selected. Ethical formalities were followed to avail permission, informed consent and cooperation from teachers, parents and children. Data collection was done for a period of two months in the initial term of the academic year.

Test materials

A battery of tests for math vocabulary, reading math terms, test of arithmetic ability were developed / adopted for the study. Screening test of intelligence was administered to rule out intellectual disability. Table I shows the list of tests.

Table 1

List of Tests

Skills	Test	Developed
Knowledge of Math Language concepts	Test of Math Language (TML)	By the investigators in the project
Math Vocabulary Reading	MathVocabulary Reading Test (MVR)	By the investigators in the project
Arithmetic performance	Arithmetic Diagnostic Test (ADT)	Ramaa (1994)
Intelligence screening	Gessel's Drawing Test (GDT)	Venkatesan (2002)

i) Description of tests and administration procedure

a) Test of Math Language (TML)

TML was developed based on the review of vocabulary in the textbooks of Grades I to IV. Vocabulary used in the textbooks was selected to test knowledge of language concepts related to mathematics in participants of Grade IV. The basic concepts which are prerequisites for mathematical skill such as symbol decoding were included in the TML along with technical terms used in math books such as synonyms in math vocabulary and language vocabulary (for example, /*hattu*/ meaning number 'ten' as well as 'to climb' in Kannada language), terms having different meaning in general language usage (for example, /*biDi*/ means units in mathematical context while in language usage, it means both 'request to leave' as an honorific term and also to represent meaning of 'single', 'free'). A total of 60 items were classified into sub sections to assess math vocabulary in TML

The TML comprised of questions with multiple choices, fill-in the blanks and matching tasks. Small groups of 5-6 participants were made to sit comfortably and the TML was administered as a group test. The participants were able to complete the test in one sitting taking

approximately 30 minutes. Each correctly answered item was given a score of 'one'. Total score was 60.

b) Test of Math Vocabulary Reading (MVR)

MVR test was developed based on the math textbooks of Karnataka state syllabus (Kannada) of Grade I through IV. The books were extensively reviewed and a list of words was prepared. All the words in the text that either explained the concept (for example, concept of addition) or used to give instructions to solve problems (for example, addition) were collected. The test was short-listed to sixty words and arranged based on the complexity as per the Graded books.

MVR was administered individually to all the forty-seven participants. They were informed that the test was not for allotting marks and/or grades, but only to note how they read. Each participant was asked to read aloud as many words as possible in the list. They were Approximate time taken by each participant was about 10 minutes. Each correctly read word was given a score of 'one' and the total score was 60.

An item analysis with biserial correlation was carried out for the words in TML and MVR to ensure that the words chosen from the Grade IV text books may be incorporated as test items. Table 2 shows the components and number of items chosen for TML & MVR tests.

Table 2

TML & MVR test components and the number of items

Type of math vocabulary	No. of items
Prerequisite concepts	16
Math terminology	17
Terms with both math and language lexicon	7
Symbol decoding	12
Synonyms	8
Total	60

c) Arithmetic Diagnostic Test (ADT)

ADT was developed by Ramaa (1994) to identify the specific difficulties encountered by the primary school children (Grades I-IV) in solving arithmetic problems. The test covers three major areas of arithmetic namely, number concept, arithmetic processes and arithmetic reasoning. Since the test facilitates diagnosis of arithmetic disability, it includes problems that represent each type and subtype of task to solve arithmetic problem that fall under each major area. Each subtype of the task is represented with two items to examine the difficulties faced by the children in solving arithmetic problem. The sub item and items are arranged in the order of increasing level of difficulty within and between the subsections. The test was administered in small groups. A score of 'one' was given to each correct response. The scores of the addition and subtraction sections of the test were further split into numerical, verbal numerical, verbal-spatial and numerical test scores based on the nature of the task. Table 3 shows the number of items in ADT for Grade IV.

Table 3
Total number of items for Grade IV in ADT

Concept/Operations	Total No. of Items
Number Concept	47
Addition	56
Subtraction	86
Multiplication	46
Division	40
Total No. of Items	275

ii) Content validity, Item analysis and Reliability of the tests

Content validity was established by giving the test items to six experienced teachers and four experts in the field to judge for its appropriateness. . Based on their suggestions suitable modifications were done. The assessment of test reliability was based on the correlations between the

individual items or measurements that make up the scale, relative to the variances of the items. Owing to the time constraint (project was run for a period of 6 months only due to want of qualified research officer) and in view of the literature support (http://www.statsoft.com/Textbook/Reliability-and-Item-Analysis#index), other methods of reliability were not executed. Since Item Analysis aids in the design and evaluation of sum scales, that is, scales that are made up of multiple individual measurements (e.g., different items, repeated measurements, different measurement devices, etc.) through which a researcher can evaluate scales following classical testing theory model the items were subjected to Biserial Correlation. Validity index of each item of TML and MVR was determined by the extent to which a given item discriminates among the examinees on the function measured by the test. In order to carry out item analysis the number of participants who responded to the items correctly in selected upper and lower subgroup was noted. The discriminative power of the item, its consistency with total score on the test is gauged by the correlation of the item with the total test score. The biserial is read from a standard table. As a general rule, items with validity indices of 0.20 or more are regarded as satisfactory, and that items with validity indices lower than 0.20 are discarded. Thus, in TML, two items were re-structured to remove ambiguity. In the MVR the validity index for all the items was 0.20 and therefore all the items were retained in the final version. The test was administered individually to a group of 47 participants of Grade IV.

RESULTS AND DISCUSSION

The data obtained from the Test of Math Language (TML), Math Vocabulary Reading Test (MVR), Arithmetic Diagnostic Test (ADT) was analyzed. Descriptive tests of statistics were employed to examine the performance of participants. Table 4 & Figure 1 indicate the mean scores and SD of boys and girls on each of the tests in the battery with p value derived using 't' test.

Table 4

Mean, SD & 't' test scores in MVR, TML, & ADT

Test	Max. Score	Mean score (Boys)	Mean score (Girls)	t test
MVR	60	36.07 (23.85)	43.84 (24.19)	1.08
TML	60	23.18 (14.11)	27.95 (13.27)	1.16
ADT	120	53.79 (34.93)	62.79 (35.75)	0.86

MVR (Math Voabulary Reading); TML (Test of Math Language); ADT (Arithmetic Diagnostic Test)
N=47 (28 Boys; 19 Girls); $p>0.05$

a) Comparison of performance of boys and girls on TML, MVR, and ADT

Descriptive statistics was used to compare the mean scores on Test of Mathematical Language (TML), Math Vocabulary Reading Test (MVR) and Arithmetic Diagnostic Test (ADT). The results indicated that the girls performed better than the boys on all the three tasks (Figure 1). However, there was no significant difference on 't' test when the performance of boys and girls was compared.

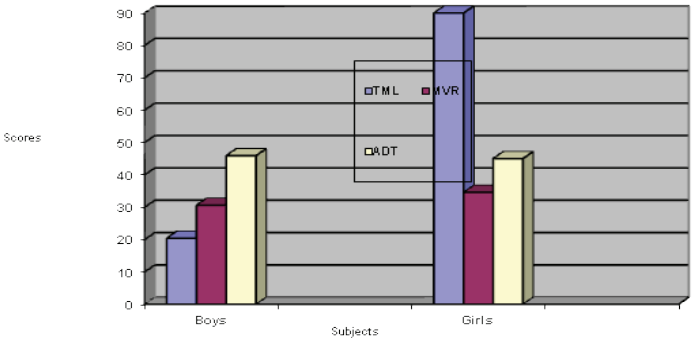

Figure1: Performance of boys and girls on TML, MVR & ADT

b) Comparison of performance of boys and girls in different subtests of TML

The data obtained on the subcomponents of TML was analysed to compare the performance of boys and girls on pre-requisite skills, math technical vocabulary, common terms in both math & language usage, symbol decoding and synonyms. Table 5 shows the details. The mean score difference between boys and girls on subtests of TML shows that girls have performed fairly better than the boys in all the categories of the test, except on synonyms. However, the difference was not significant ($p>0.05$).

Table 5
Mean, SD & 'p' values on sub-tests of TML

Subtests and no. of items	Mean scores (Boys)	Mean scores (Girls)	p value
Pre-requisite skills (16)	8.71 (4.49)	10.32 (4.97)	0.27
Math Technical Vocabulary (17)	3.54 (3.21)	4.47 (3.08)	0.32
Math and language terms (7)	3.00 (1.92)	3.89 (1.82)	0.12
Symbol reading (12)	5.04 (3.98)	6.26 (4.05)	0.31
Synonyms (8)	2.39 (2.70)	2.32 (1.92)	0.92

N=47 (28 Boys; 19 Girls); $p>0.05$

Correlational analysis

The raw scores obtained in the Test of Mathematics Language (TML), Math Vocabulary Reading (MVR) test, and Arithmetic Diagnostic Test (ADT) were analyzed to check for correlation among language,

reading and mathematics for the entire group as well as for boys and girls separately. Table 6 shows high correlation among the three tests suggesting interrelationship among the skills necessary to perform on all the three tests.

Table 6
Correlation among TML, MVR, and ADT

Test pairs	Correlation	Significance
TML-MVR	0.88	0.00
MVR-ADT	0.78	0.00
TML-ADT	0.88	0.00

* df = 46; P<0.05

The data was also analyzed qualitatively to examine the pattern of errors on items of MVR, TML and ADT. It was observed that the errors were seen on all the domains under study-prerequisite concept, math reading vocabulary, math and language terms. The errors were often related to spatial terms such as short vs. long (3%), up vs. down (4%), right vs. left (6%), More vs. less (7%), first vs. last (8%), before vs. after (16%), , horizontal vs. vertical (16%). In addition, when there were common terms used in both general language as well as in math, the percentage of errors was observed to be more than the terms indicating spatial relationship. For example, percentage of errors ranged from 12 to 18 for terms such as /*hattu*/ meaning 'ten' as well as 'to climb', /*yeLu*/ meaning 'seven 'as well as 'to get up', /*aaru*/ meaning 'six' as well as 'to cool down'.

DISCUSSION

The study was conducted with the objective of understanding if there is relation between language knowledge and mathematical ability. Therefore, the study was designed to explore the relation among language, reading and mathematical abilities in Grade IV children

with Kannada as the medium of instruction. The results on correlation analysis indicated that the ability to read math vocabulary, understanding of math language and performance on arithmetic diagnostic test is highly correlated with each other. The scores of ADT, MVR and TML showed a high positive correlation. The correlation among these constructs support the view point proposed by Riccomini, et al., that students' mathematical vocabulary learning is important for their mathematical ability. While average performance was observed on prerequisite concepts and symbol decoding of TML, performance on math technical vocabulary was poor by IV Graders indicating that they are yet to align their general language skills with mathematical language skills. Qualitative analysis showed more number of errors on the basic language terms which act as prerequisite lexicon to math learning concepts (terms like above, below, latter, middle, and so on). The results emphasize the need to incorporate mathematical language teaching in the early Grades at schools. However, there was no significant gender difference in the performance in the study population.

Percentage of failure was observed to be the highest in the category of TML in which there are linguistic terms that are shared between math language and general language. Among the items that required to decode symbolic representation, majority of participants failed in greater than and lesser than item (>&<) which could be either due to poor concept of direction (left-right confusion) or confusion with size adjectives. In general, the results support our premise that language, reading & mathematics are closely related to each other and therefore, any child with mathematical learning disability should be evaluated for general language skills also and supported, if necessary during remedial education. The findings are in support of the findings from Chinn and Aschroft (1993).

The results of the preliminary study emphasize the need to pay particular attention to the linguistic features of the 'mathematical register' as

proposed by Halliday (1978) in the process of teaching math to school children in the earlier grades. Teaching prerequisite language concepts before teaching formal classroom math is essential for success in math performance by children. Therefore, language teacher as well as math teacher should make an effort to teach the dual meanings of terms that cut across general language and math language in order to facilitate math-ability. Since majority of children perform better on problem solving when it is in oral mode than in written mode, they should be encouraged to read and understand questions before solving math problems. In general, the results of the study emphasize the relationship among language, reading and mathematics supporting Beilin (1975), Lamb (1980) among others. The results indicate that an adequate foundation in language skills along with the necessary thrust given to build up mathematical language in the early Grades is necessary to develop adequate ability in mathematics in young children.

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