

Introduction

I compiled a book on early intervention and planned development of a Down's Syndrome child from my study and experience of bringing up my granddaughter. When some special educators, therapists and pediatricians expressed their opinion that such a book is necessary for parents as well as for professionals, '*Dev Na Didhel*' (God's Gift) was published in 1997 in Gujarati.

To meet the demands of non-Gujarati parents and experts, I started writing a similar book in English. I also added chapters on behavioral problems at school and behavioral disorders with therapeutic treatment; solutions for the problems of mainstream education; sex and marriage; finance planning and law etc. This was completed in 1999 and was titled 'Light A Candle'. There were fast developments in the government policies and social approach to intellectual disabilities (mental retardation) during 1998 to 2001. Several paragraphs required modification. Moreover, I also had a strong desire to publish the book through a parents' organization in order to reach the parents directly. This resulted in the book remaining unpublished for some time. Shri Anil Joshi from Nagpur (who is an enlightened parent of a Down's Syndrome (DS) child, executive member of 'Sweekar' - a parents' association and Jt. Secretary of 'Parivaar' - National Federation of Parents' Associations) accepted the responsibility. The book was published and released in 12th National Parents' Meet at Nagpur on 9th October 2004. Sweekar, which is a very active parents' organization in Nagpur, published this book.

My interaction with NIMH, Secunderabad, during their workshops at Ahmedabad and at Secunderabad and my participation related to vocational aspects, resulted into publication of my book 'Towards Personal Independence'. This book was recommended by Dr. Reeta Peshavaria and published for us by the Society for the Welfare of the Mentally Retarded, Ahmedabad, in March 2000.

During my interaction with some Down's Syndrome (DS) and other Mentally Retarded (MR) students who had good academic achievements in normal schools up to third/ fourth standard or more, I came to know something more revealing. They could only do arithmetic, and that too to some extent, in their notebooks and examination papers, but they could not relate it with day-to-day reality. For example, they could not count items, understand money or weight. When asked to count claps, they counted even without clapping or missed counting some claps. Similarly, while counting marbles or beads on a string, they made mistakes. They were confused while

handling coins. They could not understand giving a ten-rupee note to pay eight rupees and getting back two rupees, either as two coins of one rupee or one coin of two rupees or a two-rupee note. Since one kg is 1,000 grams, they were confused about half kg as 500 grams and so on. Understanding 50 paisa, 25 paisa etc. was unquestionably not within their scope, as they did not know decimal numbers, even in their academic study. They were also confused in reading the time on the clock as hours and minutes, or dial a telephone number.

The vital link between understanding these concepts and putting them to practical use was obviously missing.

I have been working on these problems. I knew that the logical intelligence develops in normal child slowly from age three onwards. In a child with DS, it does not fully develop, even at a later stage. I have never come across any clues or tips addressing these issues in any of the books I have read. There are many books related to this topic, like 'Teaching Infants with DS', 'Parents' Guidebook to DS', 'Towards Brighter Future', 'Understanding and Teaching Emotionally Disturbed Children and Adolescents', 'Education Consultant', 'Effective Instructions for Difficult-to-Teach Students' (last one being a very helpful teaching instructor's manual by Lorna Idol and J. Fredrik). But none of these books mention anything about logical intelligence in DS and MR students. I was working on this problem and started achieving some results. Later on, a friend of mine gave me a book 'Functional Academics' by Jayanti Narayan and Vijaya Laxmi, published by NIMH in 1998. It is a good guide for academic education of MR child. After going through the book, I realised that I had, coincidentally, already done everything described in the book during 1995 to 1998 (which was before I wrote the book 'Light a Candle'). So, even before I was aware of the existence of this book, my granddaughter and some more children had happily surpassed that stage.

The results of my efforts are described in my work as 'Functional Education and Training'. I have also demonstrated and explained few of these in the Annual General Meeting of 'Parivaar' at Nagpur in October 2004. In order to know whether other parents face similar problems, I enquired if they needed information on this area of education. Predictably, most parents agreed about the inability of DS and MR students in applying their academic skills meaningfully in real life and even confessed of facing similar problems.

Many invited me to their place from all over the country, from North to South and East to West. It is not possible for me to reach everywhere personally, especially at my

age of 75 years. In this book, I have tried to do my best to explain how to achieve functional skills for MR students after or along with their academic studies. For this I have repeated some of the pre-primary and primary education methods with some modifications.

Participation of the Child

All education and training programs can be successful only with active participation of the child. All activities must be implemented in a playful and enjoyable way. Emotional and intellectual needs of the child must be considered as and when they surface, from time to time, during development. Change of activities must be ensured to break monotony. The functional skill plays are described as games to improve upon this idea.

Positive Attitude

Know the limitations of your child and split the activities into smaller steps according to the receptive ability of your child. Do not underestimate or overestimate your child. It is true that the basic intelligence of any individual cannot be changed, but the functional skills can be improved upon by continuous efforts and can decrease with overprotection or neglect or expecting too much in an area where the child has no aptitude.

Special Awareness

Special awareness is difficult to be defined. I have experienced extraordinary awareness in DS children and in illiterate tribals. My DS granddaughter would identify any scooter or car in our residential complex by its noise. Here are some more examples:

We had NCC firing range near our flat. The cadets used to practice firing at targets on Sunday. One Sunday the noise of shots was heard. Her grandmother said they were having firing practice on NCC grounds. My granddaughter said, "It's not gunfire, it's the noise of crackers, that too at a distant place." After a few minutes she added, "I told you it is noise of crackers. It is a procession and I can now hear the band also." We could hear nothing, but after sometime the procession really arrived.

In another instance, the electric supply was interrupted for long time. It was a hot day. We were playing in our room. Suddenly she said the electric supply is resumed and told me to switch on the fan, since the standby generator of the nearby hospital had stopped.

Develop their awareness. MR children have maximum potential in developing awareness. Take advantage of this quality to reduce the lacunae and make up for the shortfall.

Continuous Process

The development of different skills is a continuous process. There is a stage of learning, then a pause to assimilate the learning. At times it appears that there is no progress. Sometimes there is a stage of unlearning after learning. Parents, teachers and sometimes even experts get confused during this unlearning or a regressive process. To run fast between given points, sometimes, a player takes a few steps backwards. The period of pause and unlearning needs to be handled with lot of patience by parents and teachers. After the pause or unlearning, when the child makes fast progress, do not think he will always be able to maintain the same pace. Do not think, either, that your child does not need any special care and training. If you slacken your efforts or expect too much from him and push him beyond his ability or in a direction not suitable to him, the result could be catastrophic.

Know Your Child and Accept Him

Know the limitations and abilities of your child. He is your child and you must accept him with unconditional love and devotion.

I hope the parents will be able to help their children with the information I am furnishing in this book. To live a happy and self-supported life, very complicated reasoning and logic are not essential. Some vocational skills may be enough, duly backed by family support.

Lastly, to maintain the flow of writing, I have avoided writing 'he/ she' every time a reference is made to the child, and adhered only to writing 'he'. This should not be perceived as a gender-bias, since the book has been written keeping both the sexes in mind, and, needless to add, is applicable to both.

I wish all parents success in imparting these functional skills in their beloved children.

Navsari
23.10.2005

Bhadrashanker Pandya

1. Intellectual Challenge

Acceptance, treatment and overcoming the limitations of any disability have been major challenges faced by any civilized society. The worst disability known and accepted by civilized world was blindness. Much work was done to educate the persons with visual impairment, even before the invention of Braille in 1829 and much more work is done thereafter. However, Braille was a turning point in acceptance, treatment and overcoming limitations of the first known disability. Families of persons with speech and hearing impairment have used sign language and lip-reading techniques since early days. The same is standardized and systematically and scientifically introduced in the education of deaf and dumb. They can even be mainstreamed with lip-reading and speech development by special schools.

The physically handicapped have been helped to a great extent by artificial limbs. Electronically devised artificial limbs are as functional as real ones. Diseases like polio, leprosy and others causing such disability have been medically controlled to a great extent during last century.

The awareness about mental retardation as a handicap grew only during last four or five decades. The understanding of medical, emotional, psychological and educational problems associated with mind came under study very late. They are not yet fully understood. To understand functioning of the brain and human intelligence is the most difficult task. It is further compounded when we take into account the fact that, in intellectually challenged, the windows to the brain – the five senses – themselves are controlled by a less developed brain.

The controlling authority - the brain - is fully functional in all other handicaps, whereas in mental retardation, the brain itself is handicapped and therefore it was the last to be recognized. It is said that between a blind person and an illiterate person, a blind person is better placed, as he is handicapped only in one area of the human ability whereas an illiterate person is handicapped in many ways. MR children are further handicapped due to their inability to learn. Therefore they must be independently and exceptionally attended with priority. They need separate provisions in law and full involvement of parents, as MR persons cannot handle their own problems. The genetic, clinical, biological, organic, pathological, emotional and psychological dysfunctions are being constantly studied and partly understood only recently, but not fully.

To approach the dysfunctions of the brain and correcting its handicap through the sensory system (controlled by the handicapped brain) is like improving the managerial abilities of a

less-than-capable managing director through his subordinates. Difficult, but not considered impossible any more.

Despite so much being said and done about special education and mainstreaming, it is generally felt by everyone associated with MR students, that there are still few missing links. MR students with mainstreaming and academic achievements to near-normal level in primary school are not really able to meaningfully apply this knowledge in real life with confidence and without mistakes.

Even a totally illiterate person with no academic exposure can apply some simple arithmetic by counting knuckle points of fingers. He also can use some simple natural laws of science. Why MR person cannot do so? At this point, it will be relevant to know what is human intelligence.

The human intelligence has four strata. They may or may not be distinctly separate. Sometimes they overlap or are even blended. But each is distinct in its function of meaningful thinking. This has evolved with development of human brain over ages. They are:

- | | |
|--------------------------|---------------------------|
| (a) General Intelligence | (b) Specific Intelligence |
| (c) Logical Intelligence | (d) Abstract Intelligence |

The **abstract intelligence** is a rare quality found in moderate to good extent in one out of one million people. They are all who invented unimaginable new things. We are not going to consider it in our area of discussion.

The **general intelligence** develops with exposure of individual to the environmental, social, cultural, educational surroundings. The general intelligence can be developed in any MR child, adolescent or adult in a loving and caring atmosphere. The general intelligence will also develop into enhanced communication and better social and self-help skills. It is generally observed that the general intelligence of MR child can develop at par with normal children with early intervention.

The **specific intelligence** is the ability to understand and learn specific skills. Every individual is talented in a specific area and weak in other areas. An expert surgeon may not be able to solve a simple jigsaw puzzle. A good sportsman or musician may be weak in mathematics. Some persons have specific intelligence in more than one area but even the most intelligent persons will have some weak areas or the other.

The specific intelligence is thus an individual quotient. MR children have their quotient of specific intelligence at less-than-average to average level. But that does not matter. Most people do not get the opportunity to apply their specific intelligence during their life. You may find the man with highest intelligence quotient in structural design as a cloth merchant

or a person with surgeon's intelligence as a vegetable merchant or at the most a medical representative or an operation theater assistant. So mentally retarded have no adversity on this account.

The mentally retarded have the maximum setback on their intellectual functioning due to lack of their logical intelligence. The most ordinary human being can apply his logical intelligence without any formal education; training and social, cultural, environmental exposure.

The problem of MR persons expressed in terms of I.Q. relates mostly to measuring the general intelligence and logical intelligence. The test questions in verbal test or test methods in non-verbal test are blended to balance both spectrums of intelligence.

To summarize the analysis of human intelligence we now know that:

- (a) Abstract intelligence is not present in most normal or intelligent people.
- (b) Specific intelligence is rarely used by putting right man on right job; presence or absence of specific intelligence rarely makes any difference in living a normal life with success.
- (c) General intelligence can be developed in MR persons almost to normal level at par with other children
- (d) Lack of logical intelligence is the cause of MR person's inability to interact appropriately in real life in spite of training and education.

Phillis L. Newcomer in his book 'Understanding and Teaching Emotionally Disturbed Children and Adolescents' has given concept of 'effective education' and 'open classrooms'. His 'socialization phenomenon' perspective has inspired me.

Making use of the very good general intelligence and excellent memory in most of the MR children, some logical intelligence can be induced. The photographic memory of many MR children is amazing. The awareness of surroundings and sequence of their organized systematic output at appropriate time and place put them at a very high level of their ability in this field. The induced logical intelligence with blended general intelligence can give them functional skills for day-to-day real life needs with confidence.

Mentally handicapped children are also called intellectually challenged or challenging children. They challenge the parents and educators to an endless bout, round after round, to prove their concern, love and intellectual ability. In these rounds, the challenger and challenged can both win round after round. My granddaughter has challenged me and I have been winning rounds after rounds because she wins. We have to play many rounds year after year - may be for lifetime.

☞ ☞

2. Pre-Primary and Primary : Academic Skills

The development of few basic skills needs to be achieved, so that the child is able to go for pre-primary education in playgroup or K.G. They are as follows:

Basic Skills

- ◆ **Toilet Training**
- ◆ **Self-help or Expression**
- ◆ **Development of fine motor and gross motor skills:** pincer grip, ability to hold cubes, balls, pencil, pen, slate, notebook, walking and climbing steps with or without support.
- ◆ **Cognitive skills:** to know family members, neighbours, friends; common objects in the house; garden; in public places; pictures and real life domestic animals like dog, cat, goat, sparrow, crow, buffalo, bullock, parrot; vegetables used at home or pictures in charts; common fruits used at home or in charts and sold in market.

Socialization Skills

It implies ability to meet and accept different people and places introduced by parents; acceptance of the change of teachers, classmates, classroom therapy or playroom; ability to respond and interact with others; appropriate behaviour and expression of joy, discomfort, displeasure or need for anything through verbal or non-verbal communication. Crying or shouting or lack of any expression by MR children makes it difficult for teachers at school or special teachers to handle them, from academic education point of view.

Communication Skills

The receptive communication skills in mother tongue need to be fully developed. The medium of instruction should be in the language known to the child. Language of instruction is found to be a great problem in large metropolitan cities. The expressive communication in known spoken language or by non-verbal gestures should be good enough to be understood by teachers and peers.

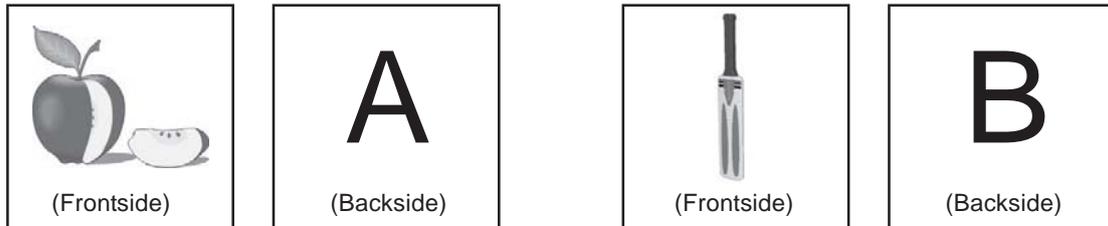
Self-help Skills

The child should be

- 1) able to keep possession of his own things like pencil, notebook, slate-pen, school bag and eraser.

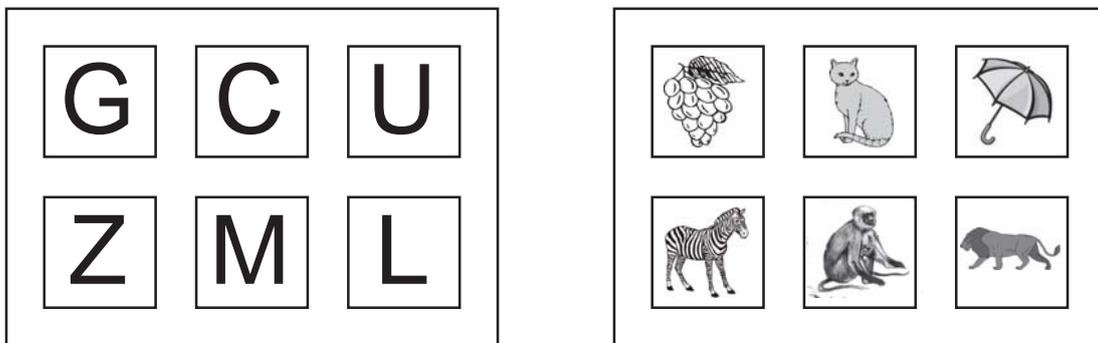
STEP 2

Cut out pictures from chart without name of picture and the alphabet. Paste alphabet on the backside of each picture. Make such cards for each letter of alphabet.



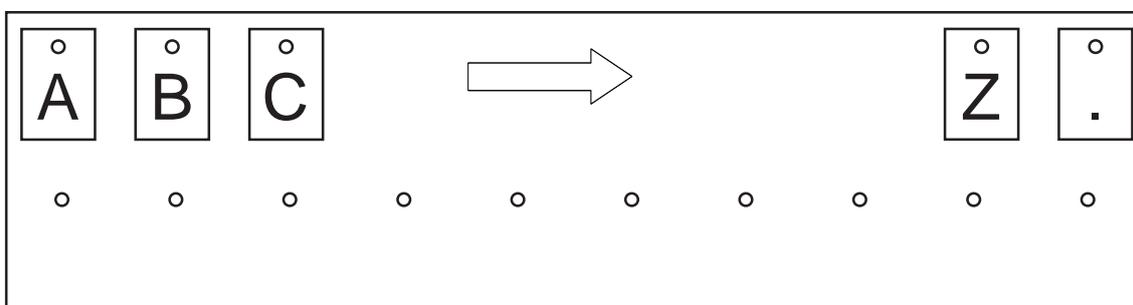
In first game, keep the pictures up and ask for giving you 'Cat', 'Dog', 'Apple'. The child will do this easily.

In second game, keep the letters up and ask for giving you 'A' 'D' 'E' 'C' 'B' at random. Do not put all cards at a time. Take only 6 to 10 cards. Make both games an enjoyable play. If a wrong card is picked up don't say it's wrong. Say, "You have picked up a 'dog' instead of a 'cat'". Say, "Do you like dog more than cat?" If he picks up wrong alphabet say, "I did not ask for D, I asked for C". When the correct card is picked up ask to see on the backside and tally picture with alphabet and vice versa.



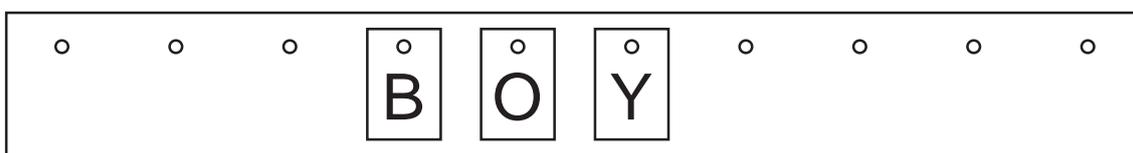
STEP 3 : Making Words from Letters on Cards

Prepare cards with letters of alphabet on each card. There should be more than one card of each letter and three/ four cards for most commonly used letters like A, E, T, I, H, N, M, N, O, U, Y etc. The letter may be punched with holes on top (use luggage tags with punched hole at the top). Hang them in sequence on pins fixed on a soft board. The lower half of board may be provided with pins to take letters from above line and fixing on lower half to make a word.



Game - 1

Initially let the child be guided to prepare words by letters as shown, on the lower half of the board. Make as many words as possible.



Game - 2

Put the picture of boy in first pin and guide the child to put words BOY, GIRL, MOM, DAD. Extend this by adding pronoun MY MOM, MY DAD, MY BOOK, MY BOOT.

(I read an article about an animal trainer who taught a dog and a horse to write few words by this method. I have tried it on MR children and some other parents also did that at very early age for the MR child, when writing by holding a pen or pencil was not possible for the child.)

Game - 3

Further add a word or two and make sentences:

I PLAY, I EAT

I PLAY GAME

I EAT RICE

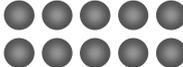
and so on. Make sentences that child is using in verbal communication. Do not select any word larger than four letters till the child masters the spelling. Add card for full stop when the child makes sentences. Let the child master the art of reading and writing fully before he takes a pencil and a paper or a slate and pen or blackboard and chalk, for actual writing.

Game - 4

Numerical awareness

The difficult part of identification is the figures and meaning of figures 1 (One), 2 (Two), 3 (Three), 4 (Four)... 10 (Ten). Most primary schoolbooks and 'Functional Academics' explain them in different ways by showing pictures of birds, fruits etc. in different numbers. I have put the same idea but displayed in different way to avoid confusion like 'eating banana while sitting on a swing only'. When a MR child counts three cats, four dogs, and six pigeons he associates three with cat, and four with dogs, and so on. It is the lack of reasoning ability, which prevents him from thinking of three pigeons, four dogs and three cats.

The following method of counting has been adopted to avoid such confusion. Take soft board as shown below.

Spoken	Number	Finger	Beads	Picture
One	1			
Two	2			
↓ Three	3			
Ten	10			

The column titles are for the parents or teacher and not for the child. The child does not have to read the first column. One, Two, Three are to be spoken while hanging the numbers in words and figures in column for the same. Raise one finger of one hand and hang one bead threaded into a string. The child will associate one / 1/ one finger / one bead. Now use the last column. The last column may be a laminated sheet/ whiteboard on which teacher can draw pictures if he is good at drawing. Use of erasable marker or coloured pen is best in such case. Teacher or parent can draw one, two, three, four birds as the case may be. If teacher or parent is not good at drawing, cutout templates can be used. Alternatively the last column may be a soft board with pin and pictures of items indicated in numbers of the other columns can be pinned opposite such numbers.

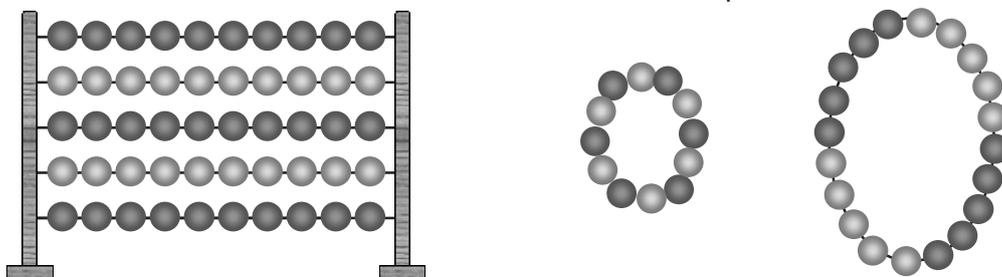
Game - 5

The learning of numbers from 1 to 10 in a meaningful way can be achieved this way. Do not hurry beyond 10. Practice it by counting threaded ten beads. Take 5 beads of one colour and five of other colour to make counting easy. Thread them in alternate colours. The idea is not to introduce the concept of odd numbers and even numbers at this stage. The two-colour scheme is suggested to avoid miscounting. Let the child count ten beads one by one as he moves one bead at a time with his forefinger and thumb. If necessary, he may use other hand to hold the remaining part of threaded beads. This is like muttering prayer while counting beads as done in almost all religions.

When the child has mastered counting beads from 1 to 10 threaded together and also when kept loose in a bowl, give more practice by counting clapping with loud noise, counting one by one. After mastering clap counting, break uniformity of clapping with a pause between claps, or giving two claps in close sequence. If the child can count threaded beads, loose beads, loose marbles, notebooks, pencils, claps from 1 to 10 without mistake, he has now known the numbers in meaningful way. Give him ten, one rupee coins and let him count two rupees, six rupees etc. (Do not give two rupee or five rupee coins or notes at this stage). Ask him to give you your desired amount. The counting of fingers, beads, claps and counting of money and transaction of such commodity as beads and coins will be understood in a meaningful way gradually.

Game - 6

The counting should now be extended from 1 to 100. The best instruction method is the one which is being used for generations, i.e. using an abacus, which is a wooden frame with stand and larger ten beads threaded in one row with ten such rows. Use one colour for first, third, fifth, seventh and ninth row and another colour for second, fourth, sixth, eighth and tenth rows. Here also the purpose is to make distinction between two rows and avoid mix-ups.



Verbal counting from 1 to 20 may be first taught. Then teach verbal counting up to 30, then 40 and so on. This is counting without any meaningful use. Then use the counting board frame with beads. Teach meaningful counting of numbers by counting beads on board 1 to 10, 11 to 20 and so on, line after line, slowly, step by step.

Also teach the child to count 1 to 10 in first row and 11 to 20 in second row by counting beads threaded into a wire. Use different sequence of colours in groups of five to make counting easy. Make sure that the child does not associate numbers with colours. Use loose beads, marbles and one rupee coins for counting step by step in increasing number. Ask for seventeen marbles and then seventeen rupees. Use small bowls for counting 1 to 10 and then 11 to 17. For larger numbers, say 28, count twenty in one bowl and eight in another. Do not extend this counting in hurry. Let the child master the art of counting in a meaningful way, step-by-step.

At a later stage, use a ten-rupee note for counting 11 to 19, a twenty-rupee note for counting from 21 to 29 and so on. This may be done according to the understanding of the child without confusing him.

Most illiterate people in tribal undeveloped areas know counting only up to twenty. They would put a large stone, wood piece or a knot on string for every twenty and count up to hundred when they do not know counting beyond twenty.

Writing Skills

Writing skill development depends on fine motor control of fingers and understanding of words, with correct spelling. To enable making different letters, practice of small vertical lines between two lines or points, horizontal small lines, dash and oblique lines between given lines, drawing circle or 'O' shape, semicircles with different orientation may be adopted. Letters and figures can be made by use of appropriate shapes as below.

Use a ruled or double-lined notebook. Shade alternate lines and draw lightly drawn vertical lines to make writing uniform and equal in size. In spite of clear understanding, most DS children cannot write purely by movement of fingers. They write instead by help of wrist and arm movements. This makes uniform writing difficult. It is better if the child writes big letters on slate or board with pen or marker pen. Once he learns good writing, writing on paper with pencil or ball pen will be achieved only as fine motor control develops. Take

care to use non-toxic soft pencil and use ball pen only when child has understood that putting it in mouth or touching the tip could be harmful. Let him write slowly and in large letters and words, initially. The important thing is learning and, not writing more, or fast. Let the child write letter by letter and words initially. All DS children see others writing fast and in trying to do so, write distorted letters, mixed up together.

		///	///	\\	\\	≡	≡	::	::
CCC	OO	))	))	∩	∩	∪	∪	OO	OO
))	CC	CC	))	))	))	}}	}}	}}	oo
/	/	/	/	\	\	\	\	\	0
A	B	C	D	E	F	G	H	I	O
BAT.	HAT.	CAT.	MAT.	DAD.					
I PLAY	GAME.	I STUDY.		I SEE.					
sal	kygja			sal	kygja				
1	2	3	4	5	6	7	8	9	

Writing Numerical Figures

Writing numerical figures is easier as they are in simpler shapes 1,2,3,4,5,6,7,8,9,10. Now is the time to teach vertical columns of numerical display, i.e. 1 to 10, 11 to 20, 21 to 30 ... up to 91 to 100. The counting board had beads threaded in horizontal lines of 1 to 10, 11 to 20 and so on. Explain that all have the same meaning.

Understanding of combination of 1 and 1 makes eleven will take some time. Explain it on counting board, by actual display of all figures.

Simple Addition-Subtraction

Teach simple addition and subtraction on counting board; say, $4 + 3 = 7$ can be taught by sliding 4 beads, then putting a paper rider on bar with plus sign. Thereafter move three beads and put a blank paper rider. Remove plus rider and count the beads, which will be seven. To explain the same, take four marbles and put them in a bowl. Then put three marbles in the same bowl. Then count them to total seven. Repeat for several examples and let the total not exceed ten initially. Later, this limit should be increased to twenty. Slowly increase to larger sums and addition of more than one figure. Subtraction can be taught in the same way first on counting board and then by loose marbles. Count 10 beads on board, subtract four by moving away four beads. Then count remaining as six to show that $10 - 4 = 6$ and so on.

Multiplication

Multiplication in Indian Pre-Primary and Primary education is taught by memorizing tabulated multiplication from 1 to 10 in ten tables e.g.

$1 \times 1 = 1$	$2 \times 1 = 2$	$3 \times 1 = 3$	... ..	$10 \times 1 = 10$
$1 \times 2 = 2$	$2 \times 2 = 4$	$3 \times 2 = 6$	... ..	$10 \times 2 = 20$
$1 \times 3 = 3$	$2 \times 3 = 6$	$3 \times 3 = 9$	... ..	$10 \times 3 = 30$
$1 \times 4 = 4$	$2 \times 4 = 8$	$3 \times 4 = 12$	... ..	$10 \times 4 = 40$
... ..				
... ..				
$1 \times 10 = 10$	$2 \times 10 = 20$	$3 \times 10 = 30$	... ..	$10 \times 10 = 100$

Normally the details are not explained to students in pre-primary or primary classes. They are remembered by mechanically reciting them daily.

However, these small multiplications can be explained to MR children by moving the beads on counting board ,e.g. $4 \times 1 = 4$, $4 \times 2 = 8$, $4 \times 3 = 12$, $4 \times 4 = 16$ etc. This can be explained by keeping four rows of beads open and covering the rest. Move one bead of each of the four lines to explain $4 \times 1 = 4$. Move two beads of each of the four lines to show $4 \times 2 = 8$. Move three beads of all the four lines to show $4 \times 3 = 12$ and so on. If the child is not able to get this idea, take 4 loose marbles in each cup make several cups, say five or six. Put marbles from two cups together to explain $4 \times 2 = 8$. Put marbles of three cups together to explain $4 \times 3 = 12$ and so on.

Repeating these games is necessary to explain difference between addition and multiplication. They have to understand the difference between:

$4 + 1 = 5$	and	$4 \times 1 = 4$
$4 + 2 = 6$	and	$4 \times 2 = 8$
$4 + 3 = 7$	and	$4 \times 3 = 12$ and so on.

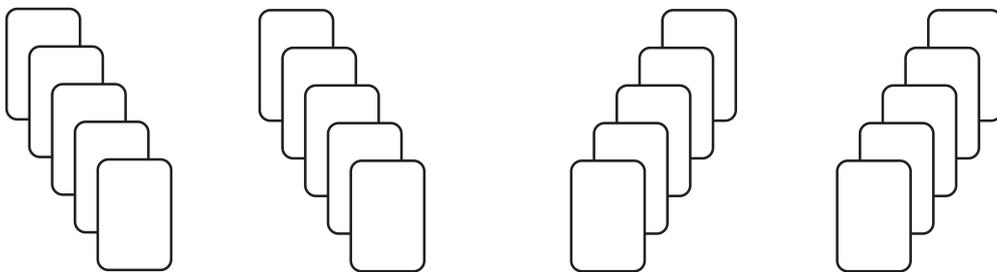
When the reading, writing and counting skills with simple addition, subtraction and multiplication are achieved the child can be sent to mainstream school.

Division is found to be a very difficult task for a MR child to understand. They may or may not be able to do division to odd figures even in later standards of primary class.

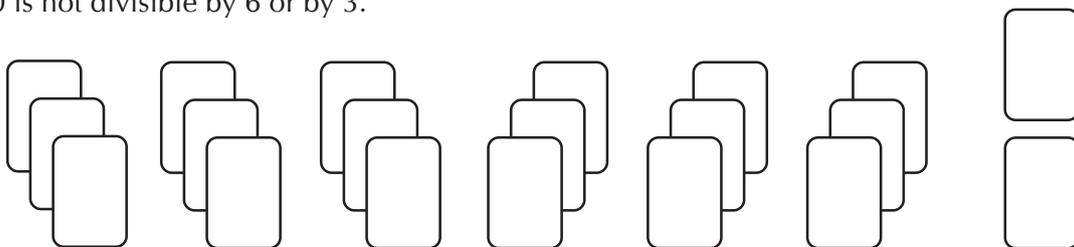
Division

They should be made to learn and use a calculator. However, division of a divisible figure by one of the multiples used in the table of multiplication can be explained and taught, e.g. $4 \times _ = 24$. If the filling up of the blank as 6 can be done by the child, he can be explained that $24 \div 4 = 6$. Alternatively, if $_ \times 6 = 24$ can be filled up as 4 by the child, he can be explained that $24 \div 6 = 4$. This will enable the child to learn division for the figures divisible by one of the multiples in the tables of multiplication, which he has memorized. This limited learning will be useful and enough for the present.

Another simple way to develop the concept of division is distribution of playing cards. Give 20 cards for distribution to four players. Let the child distribute one card at a time.



Each player will have 5 cards, so $20 \div 4 = 5$. If they are distributed to five players, there will be four cards for each player so $20 \div 5 = 4$. But if they are distributed to six players, each player will have three cards and there will be two remainder cards. So you can explain that 20 is not divisible by 6 or by 3.



The concept of remainder and indivisible number can be explained. The arithmetic expression of above may be explained only at a later stage. This game can be repeated with 30, 40, 52 and even more cards in divisible and indivisible distribution. This will give a concept of division for primary education. Division by memory of the multiplication tables is covered in chapter- 3, step 3.

Counting on Fingertips

Counting on fingertips and roots is the most commonly and universally adopted method. It is used for counting, addition and subtraction by illiterate people and engineers as well.

The norms to be followed are, a) Always use the same sequence. a) Left hand little finger root as 1, Joints 2 and 3 and finger tip as 4 b) Ring finger root as 5, joints 6,7 and tip as 8. c) Middle finger root as 9, joints 10, 11 and tip as 12 d) Index finger root as 13 joints 14, 15 and tip as 16. The child should learn by heart, the number attached to each joint, root, and the tip. Use of left hand in counting will keep right hand free to write.



Addition on Fingertips

For $5 + 4$ on finger count, remember 5. A count 6 on little finger tip, 7 on upper joint, Explain you are adding four to five, therefore, c Now the same addition may be done as $4 + 5$. ring finger and count 5,6,7,8,9; five on ring upper point and eight on lower joints and nine upto $10 + 10$ in odd figures. The child has to re- direction for addition. THIS SHOULD BE EX- DESCRIBED AS ABOVE IN WORDS (Use of two by some teachers and counting first figure 1,2, found to be clumsy. MR children do not keep thumb fixed at the place where it last comes to. We have tried method described above and it has worked successfully for those students who were unable to add by finger joint counting.) This is useful for addition of multi-digital

e finger tip. Now little finger root. e root is reached. 5 i.e. the root of 3er tip, seven on several additions umb in backward 4GERS AND NOT added as adopted counting 1 to 9 is

and addition of several figures at a time, subject to limitation of the child and figures to be added limited to 16. The addition without fingertip count will come in chapter- 4 step 2.

Subtraction on Finger Tips

For subtraction 10-7, the child has to count seven onwards from 8. Putting his thumb at little finger root count 8, then at lower joint and count nine and then at upper joint and say ten. The child has counted from 7 towards 8,9,10 while moving his thumb from position 1,2,3. Now the child has to be explained that $10-7=3$ as per the count of the joints. Supplement this information by putting beads 10 and removing 7 so that 3 remain. EXPLAIN THIS BY ACTION ON FINGERS AND BY BEADS OR MARBLES.

Make subtraction of 20-8, 20-12, 10-6 and such odd figures. However, do not exceed figures to have answer more than eight in the beginning, then go up to 12 and increase it with maturity in counting.

(Here also some teachers teach subtraction 11-4 by first counting 11 on fingertips then counting four in reverse and then counting the remaining seven joints. This is logically convincing, but the MR children forget figures during the process or their thumb moves to different joint on different finger while taking these three steps. We have therefore developed single step counting methods for both addition and subtraction. This is because MR children do not follow the logic. They go by induced skill and general intelligence. These methods have been tried successfully on several 'difficult-to-teach' students.)

With the pre-primary and primary academic skills, it becomes possible to educate the child in mainstream pre-primary and primary education, even if special education facility is not available in the nearby area.

The eligibility for mainstreaming, problems in mainstreaming of MR/ Learning Disabled child and methods to overcome the same are discussed in details in my book 'Light A Candle', published by Sweekar (9, Kasturba Bhavan, 349/2, Bajaj Nagar, Nagpur). The behavioural therapy to induce good behavior, discouraging bad behavior, and handling inappropriate behavior are also discussed in details in the same book. These details are not within the scope of this book and hence not repeated here. I only stick to the subject of functional skills in different areas of lifetime need.

✍️

3. Functional Skill : Money

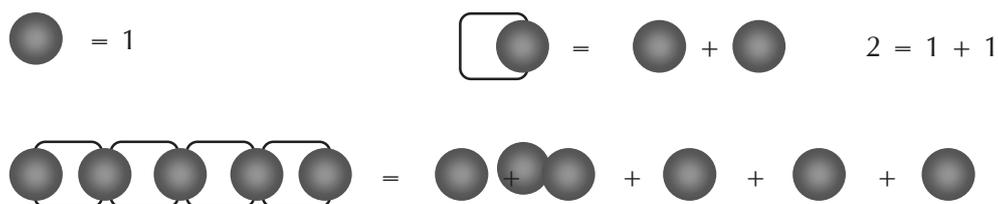
Mainstream education upto Std. IV and special education, personal tutoring and achievement of reading, writing and arithmetic skills of the level of Std. IV, will be required for the learning of money transaction games given in this chapter.

STEP 1

All mentally handicapped and learning-disabled children need special training for transactions of money, using of academic achievements as the base. They have to be explained that counting beads and marbles is same as counting money.

Game - 1

To explain the value of coins of Re. 1, Rs. 2, Rs. 5, equate them with one bead, bunch of two beads, bunch of 5 beads, respectively.



Give some loose beads to the child. Now give him a bunch of two beads and ask him to take one. Instead of breaking loose the two beads from the bunch, he can keep the bunch and return one loose bead so that he keeps one. Repeat same, until the concept is well understood by the child.

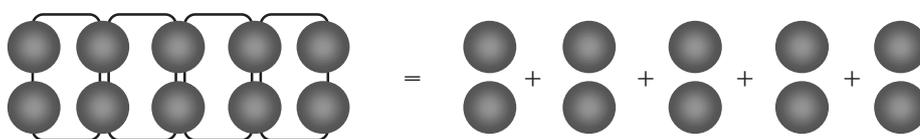
Next, give him a bunch of five beads and explain that a bunch of five beads is equal to five loose beads. Give him a bunch of five beads. Ask him to take four or three. Let him count the number he has to keep and count excess beads, which he has to return. Again explain that instead of returning the excess beads from the bunch, he can return loose beads available with him. Thus take five in bunch = keep four + return one or take bunch of five = keep three + return two and so on.

The game can be played further. Give a bunch of five and ask the child to take two beads. As he counts two to be taken and 3 to be returned from loose beads, he may be explained that he may return three loose beads or a bunch of two

and one loose bead. Now take coins of Re. 1, Rs. 2, Rs. 5. Explain value of coins printed on it and play Game-1 with coins instead of beads, after the child is conversant with the value of coins. If necessary keep bunch of beads along with Rs. 2 and Rs. 5 coins. Give a Rs. 2 coin and ask the child to take Re.1. Give a Rs. 5 coin and ask the child to take Rs. 4, 3 or 2.

Game - 2

Take a bunch of ten beads tied together.



Give him a bunch of ten beads and exchange it for two bunches of five each or ten loose beads or five bunches of two beads. Play game of taking 4 or 6 or 8 beads after giving a bunch of 10 beads by returning 6 or 4 or 2 beads.

Give a bunch of ten beads and ask him to take eight by returning a bunch of two. Take six by returning two bunches of 2 beads. Each time, explain by counting on the bunch, the beads to be taken and returned as below.

Make transactions in such a way that he is forced to manipulate the number of beads to be returned. For example, give a ten-bead bunch and ask him to take five, when he does not have another bunch of five. He may have to give five loose beads or two bunches of two beads and one loose bead to make the return of five.

Now repeat this skill in transaction of money. Take a Rs. 10 note and show and describe the figure 10 printed on it. Also make him to read the amount written in English and Hindi in large letters and in other language known to him in small letters. Again let him know that two coins of Rs. 5 is equal to a note of Rs. 10 or five coins of Rs. 2 is also equal to Rs. 10. Similarly, one coin of Rs. 5, two coins of Rs. 2 and one coin of Re. 1 is also Rs. 10. Display them on a table as below. Give all coins to the child and give him Rs. 10 note asking him to take five rupees, eight rupees, six rupees and so on. Keep equivalent bunches of beads so that similar transactions can be readily explained with the help of beads.

Functional Skills



Game - 3

Start this game only when game 1 and 2 are done without any mistake and with full understanding. To represent a Rs. 20 note, do not take 20 beads. Take a bunch of 10 Red beads with each bead to represent a Rs. 2 note which is also red in colour. First explain that one bead of red colour is equal to two beads of yellow colour. Make few transactions giving bunch of ten red beads and ask the child to take eighteen out of twenty. Explain that he can return one red bead or two yellow beads, and so on.

Game - 4

This skill of Game-3 may now be transferred in money transaction. Use only Rs. 20 notes of red colour and all Rs. 2 notes of red colour. Fix the change and all transactions in even numbers, to begin with. Let the child's idea be clear that the value of two beads or two rupees is not necessarily bunching or tying up. It is the value attached to the currency either in coins or notes.

It may take practice of long months after many months for each exercise and over a year to attain the level of understanding. Transactions in coins and notes up to Rs. 20 need lot of patience and hard work. Any hurry or taking larger steps than the ability of child to understand will confuse the child and it may take much longer time to pull him out of confusion.

Rs. 50 and Rs. 100 notes may be introduced only for identification and counting of larger sums of money, as explained in next step. Do not include it in transactions unless the child is fully conversant and comfortable with transactions up to Rs. 20 level.



Functional Skills



STEP 2

While handling money transactions, the child has to be trained for addition and subtraction orally/ mentally without writing on slate or paper. In the later stage, use of calculator can be introduced. The training in oral addition, subtraction is essential to understand the use of calculator, since use of calculator is not always possible in real life.

The beginning has to be made much earlier with the academic studies of arithmetic. In the process of counting, the figures are recited in order, from 1,2,3,4,5 etc. or 28,29,30,31. The child has to be trained to recite counting in reverse order also, e.g. 100,99,98... 91,90,89,88... 81 and so on upto 10,9,8,7,6,5,4,3,2,1. The reverse order counting should be mastered from 20 to 1 to begin at any figure say 16,15,14 etc.

Game -1

Addition

Addition of one to any number is the next number. e.g. $8 + 1 = 9$, $9 + 1 = 10$. To train the child in this game of addition, clap 1,2,3, etc. and count. Ask the child, 28 plus 1 is how much? The child may be able to say 29.

Now to add two, do it adding in pair, say $13 + 2 = 14, 15$. (Speak fifteen loudly). Either do it by two claps, clap-clap and say, 'Fourteen-Fifteen' or by raising two fingers and drop one by one as you say 14, 15. Add three to any number by an addition of three in bunch like $8 + 3 = 9, 10, 11 = 11$. Demonstrate by adding bunch of 3 beads or by three claps, clap-clap-clap saying, 'Nine-Ten-Eleven' or raise three fingers first, say 9 and drop one finger, say 10 and drop another finger and then say 11 and drop third finger.

To add four, add two pairs e.g. $5 + 4 = 6, 7... 8, 9$. Train adding by clapping, first say clap, clap 6,7, clap, clap 8,9.

For addition of five, add three and two, say $8 + 5 = 9, 10, 11... 12, 13$. Use clapping only if necessary. Slowly child's dependence on clapping and finger raising should be reduced.

Similarly, to add six, given number + 3 + 3; e.g. $11 + 6 = 12, 13, 14... 15, 16, 17 = 17$.

Addition of seven, eight, nine and ten may be deferred for some time, till the child understands and is fully conversant with addition up to 6.

Addition of seven by adding $3 + 3 + 1$, adding eight by adding $3, 3, 2$ and nine by adding $3, 3, 3$ may be practiced later.

For adding 10 the counting may not be useful. Instead, say, $17 + 10$ may be done by keeping 7 unchanged and change 1 to 2, making the figure as 27 i.e. twentyseven. Do not jump to large numbers, to begin with.

Game - 2

Subtractions

In subtraction, the habit of reverse numbers reciting will be useful.

8-1 may be done by reciting in reverse order [10], [9], 8, 7 = 7. When the child masters the reverse reciting of figures he may say eight minus one, seven (without counting from ten, nine, eight), Five minus one, four, seventeen minus one sixteen, and so on.

To do subtraction of two, use the same method of using pairs of figures in reverse order, say, $8 - 2 = 7, 6$ and $5 - 2 = 4, 3$, and so on.

Subtraction of 3, 4, 5, 6 may be done same way as in addition, by pairing in reverse order of counting. Wait for going in for subtraction of 7,8,9,10. They will be learnt only after a long pause and regular practice. Remember, learning, unlearning, pause, relearning etc.

STEP 3 : Counting Money

Counting coins and notes of same denomination and adding up to a total sum is to be taught step by step.

Game - 1

Coins

Take coins of Rs. 5, Rs. 2 and Re. 1. By this time, child knows multiplication tables by heart. Ask the child to count coins with value beginning from larger denomination first and go on adding up. There are two ways it can be done, adopt any one.



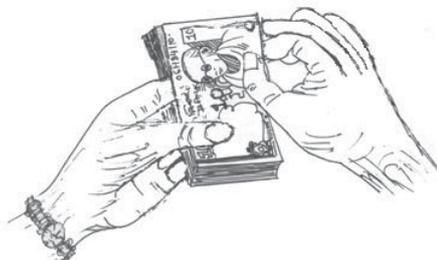
(A) Let the child touch and count $5 \times 1 = 5$, $5 \times 2 = 10$, $5 \times 3 = 15$, $5 \times 4 = 20$ and 5 times Rs. 5 = 25, $25 + 2 = 27$, $27 + 2 = 29$, $29 + 2 = 31$, $31 + 2 = 33$, $33 + 2 = 35$, $35 + 1 = 36$, $36 + 1 = 37$, $37 + 1 = 38$, $38 + 1 = 39$, $39 + 1 = 40$.

(B) If the child is comfortable with above method, which is normally good, to begin with, do not confuse him with second method. At a very later stage, when his ability to count, remember, count again and add to his previous sum from memory develops, the second method may be tried. In this method $5 \times 5 = 25$ is remembered then $2 \times 5 = 10$ is added to 25 and putting 35 in memory and then $1 \times 5 = 5$ to be added to 35 making $35 + 5 = 40$ as grand total. This is how we normally do. Make different combinations of coins say, $(5 \times 4 = 20) + (2 \times 3 = 6)$ and $+ (1 \times 4 = 4) = 30$ and so on. Do not take very large sums.

Game - 2

Counting Notes

First, train the child to hold notes between left hand ring finger – little finger and thumb, keeping index finger and middle finger free to move between notes as counting is done with other hand. Child who has learnt to hold playing cards and sorting them in order, will easily do this.



Take five notes of Rs. 10 and guide the child to count, simultaneously reciting the multiplication table of ten, as he counts one, two, three, four, five notes, $10 \times 1 = 10$, $10 \times 2 = 20$, $10 \times 3 = 30$, $10 \times 4 = 40$, $10 \times 5 = 50$. Go on adding up to ten notes. Repeat same with five notes of Rs. 20 to count Rs. 100.

Then take five notes of Rs. 20 and five notes of Rs. 10 and get him to count $20 \times 1 = 20$, $20 \times 2 = 40$, $20 \times 3 = 60$, $20 \times 4 = 80$, $20 \times 5 = 100$. Let him go ahead with Rs. 10 notes by counting 110, 120, 130, 140 and 150. If the child cannot do it, ask him to remember 100 after counting the Rs. 20 notes and let him count $10 \times 1 = 10$, $10 \times 2 = 20$, $10 \times 3 = 30$, $10 \times 4 = 40$, and $10 \times 5 = 50$. Putting together 100 and 50. Let him understand that it is one hundred and fifty.

A few notes of Rs. 5 may be added after this in first example. Let him count beyond 50 as $50 + 5 = 55$, $55 + 5 = 60$, and if there are only two notes of Rs. 5, conclude it is Rs. 160. This will require practice. Notes will drop from hands and jumble up, making counting difficult, fingers not moving between notes to keep them separate as they are moving from lot as counting proceeds, two notes moving at a time, may be some of the initial difficulties. Have patience. Do not scold. Just make a joke of a mistake. Keep the child happy and interested in learning. It should be more of a play and less of teaching session.

Next give notes and coins say $(20 \times 5) + (10 \times 5)$ and coins $(5 \times 4) + (2 \times 5)$. He has counted notes as 150, let him add coins $150 + 5 = 155$, $155 + 5 = 160$, $160 + 5 = 165$, $165 + 5 = 170$, $170 + 2 = 172$, $172 + 2 = 174$, $174 + 2 = 176$, $176 + 2 = 178$, $178 + 2 = 180$. Make different combinations of Rs. 20, Rs. 10 notes and Rs. 5, Rs. 2 and Re. 1 coins. Do not exceed the total beyond Rs. 200 for practice counting.

STEP 4 : Use of Calculator

Take a calculator with large keys and display. Select one with most simple functions. Explain the child how to operate it, On-Off key and for addition, subtraction, multiplication and division. Explain that the calculator will make mistake if you make mistake in pressing the key. If after any function, = (equal to) is pressed twice, it will do the last calculation of addition, subtraction or multiplication with first entered multiplier or division, twice. Practice operation of keys in single touch. Show result of multiple pressing or long press with variation in pressure. Demonstrate:

$$12 + 5 = 17 = 22 = 27 = 32 \quad \text{Ex-1}$$

$$12 - 2 = 10 = 8 = 6 = 4 \quad \text{Ex-2}$$

$$12 \times 2 = 24 = 288 = 3456 \quad \text{Ex-3}$$

$$2 \times 12 = 24 = 48 = 96 \quad \text{Ex-4}$$

$$64 \div 4 = 16 = 4 = 1 \quad \text{Ex-5}$$



Explain by again doing Ex-1, that each time you press = (equal to) key in Ex-1, 5 is repeatedly added. For Ex-2, subtraction of 2 is done with each pressing of =. In Ex-3, repeat and explain that each time you press (equal to) = key, it is multiplied by the multiplier 12, and in Ex-4, it is multiplied by multiplier 2 with each press of =. And in Ex-5 show $64 \div 4 = 16$, with each key operation of = (equal to), it will repeat dividing by divisor 4. $64 \div 4 = 16 = 4 = 1$.

Now the child is ready to use the calculator. For counterchecking his calculation, show Auto replay key function and check keys. (Auto replay function may not be available on all calculators. Memory function is complicated and may be explained later.)

Use of decimals and value of 50 paise, 25 paise may also be introduced later, when he has full mastery of money transactions in value of integers. Since calculator deletes the last zeros in decimal it is confusing for the child. Say the total of $2.25 + 5.25 = 7.50$, but the calculator will show only 7.5. When dealing with decimals, it may be explained that zero before integer and zero after decimal can be deleted or neglected. In $0543.50 = 543.5$ zero can be deleted, but in $5430.05 = 5430.05$ the zero cannot be deleted. It will take some time for MR child to understand, but he will do the calculations on calculator with use of decimal. Before use of decimal is taught to him, let him be fully conversant with use of calculator and transactions of money and writing it in a copy.

STEP 5 : Bank and Client Accounts

Keeping accounts like a banker and like a client will be the next step in managing money. Let it be a game.

Game - 1

Give the child some notes, say, ten notes of Rs. 10 each. Ask the child to count the amount in his hand. Let him count amount as he turns notes $10 \times 1 = 10$, $10 \times 2 = 20$, $10 \times 3 = 30$... $10 \times 10 = 100$. So he has 100 rupees in his hand. Ask him to make entry in calculator as his balance. First press 'ON' key to display [0]. Then press [1] in single touch and then press [0] in two single touches. The screen will display 100. Ask for Rs. 10. As he gives 10, ask him if his balance now is less or minus Rs. 10 or plus Rs. 10. If he can't reply, explain that he has given Rs. 10 from his balance. So he will have Rs. less 10 or minus. When he understands ask him to press minus key [-] and when [100-] is displayed show it to him on screen. Then ask him to enter [10] by pressing [1] and [0] key in single touches. Then tell him, the calculator will tell you your balance now if you press [=] and screen display [90=] Ask him to count his balance, which will be $10 \times 9 = 90$. Say, 'Correct'. Press Auto display (if available). The screen will show [100] [10-] [90=]. Tell him 'Correct'. Ask him to give Rs. 5. Let him say he does not have the change. Then ask him, if you give me 10 what amount I have to return. Let him count on fingertips or verbally 5 to 10 and say five.

If he can't take a Rs. 10 note, put two coins of Rs. 5 each besides it. Remove the Rs. 10 note and say if I take five I have to give back Rs. 5. Take back coins and start the game. Ask for Rs. 5. Let him give you Rs. 10 and take Rs. 5 from you

with full understanding that he has given you Rs. 5 as loan. Again ask him about his minus 5 and let him press [-] key and [5] key, and then [=] key showing the balance as [85=]. Again press Auto Replay and show replay [100] [10-] [90=] [90] [5] [85=].

Now ask for Rs. 8, with him giving Rs. 10 and taking back Rs. 2. Balance [-], [8] [77=]. Ask for Rs. 7. He has the change 5 and 2. He can give Rs. 7 or give Rs. 10 and take Rs. 3 back. Enter [-] [7] and press [=] balance [70=] on screen. Ask him to count balance it may be 10×7 if he has given the change or 10×6 plus Rs. 10 in coins if he has given Rs. 10 note for transaction of Rs. 7. Now say I have taken Rs. 30 from you. Take your change and return Rs. 30. Let him count Rs. 30. Ask if 30 is added [+] to your balance or less [-] in your balance. Let him understand. Press [+] key then keys [3] and [0] his balance [70+] then [30] press [=] and see display [100=]. Then say bank closed. Press Auto Replay. It will be fun.

Game - 2

Now give 5 notes of Rs. 20 and 5 notes of Rs. 10. Let him count his balance $20 \times 1 = 20$, $20 \times 2 = 40$... $20 \times 5 = 100$. $100 + 10 = 110$, 120, 130, 140, 150. Press [ON] key of calculator and enter Rs. 150. Now ask for amounts like Rs. 8, 6, 17, 12, 11. When he does not have enough change or any Rs. 10 note, from Rs. 20 note, ask for Rs. 10, Rs. 18, Rs. 15. Every time let him count the change to be received back on his fingertips. Always allow him time to think. If he commits mistake give some hint "Is it correct? Think again". Make jokes, humorous comments, "The bank is cheating" or this way the bank manager will make loss etc. When the child has no idea give him some clue. Do not always spoonfeed. Let him not feel miserable. Let him never think he is making mistakes. Let him always feel he is learning and he can do it. Such mistakes are made by all of us during learning. Also let him not feel that committing mistake is normal or his special privilege. Play many times before next game.

Game - 3

Client Account Game

In this game keep all notes with you in denominations of Rs. 20 and Rs. 10. Give enough change to the child in denominations easy for him to count. Say five coins of Rs. 5, ten coins of Rs. 2, five coins of Re. 1. Let him count his balance $5 \times 5 = 25$, $2 \times 5 = 10$ and $1 \times 5 = 5$. Total as Rs. 40. Let him enter his balance as Rs. 40 after the calculator is [ON].

Let him ask for an amount. He may ask for eighty rupees. Pretend to be afraid. Request him to ask for smaller sum. As he asks for 20, 10, 18, 17, give him the notes in appropriate denomination, and ask him to give back the change. Let him count on fingers or orally the change to be returned. Each times he gets the amount, let him understand how that amount is arrived at by subtraction of change returned from the denomination of the note. Let him understand that it is [+] in his balance. Press [+] key. Enter the amount. Press [=] key. Strike his balance and tally his balance with calculator after few transactions. Play this game for some time. Let his balance not exceed Rs. 200. Then ask him to count his final balance, which may be say Rs. 170. Ask him to check or auto replay. This will be fun.

Ask him to keep his Rs. 40 and count the remaining Rs. 130 he has taken from you. Ask him to return Rs. 130 to the bank. Make [-] and [1] [3] [0] entries, then press [=] to show his original Rs. 40 balance. Ask him to press [Auto Replay] key. Ask him what was his opening balance. If he does not remember press the check key and his original balance 40 will be displayed. Ask him to remember it. Check all transactions where the balance 170 = is shown. Display [170-], [130], [=] [40=]. Tell him he has taken Rs. 130 from bank during transaction and returned 130. He is a good client, Thank you. Game over. (Play this game several times.)

Game - 4

Now a game on daily routine of money transactions may be played. Let him have some notes of different denominations and some change in Rs. 5, Rs. 2, Re. 1. The change may not be enough, e.g. three notes of Rs. 20, two notes of Rs. 10, one coin of Rs. 5, two coins of Rs. 2, one coin of Re. 1. Let him count his balance $20 \times 3 = 60$, $+ 10 = 70$, $+ 10 = 80$, $+ 5 = 85$, $85 + 2 = 87$, $87 + 2 = 89$, $+ 1 = 90$. Enter Rs. 90 in calculator. Keep the change arranged for him to select and notes clamped in a clip or 'U' pin. He will need to take a rickshaw for going to market. Make noise of rickshaw. Ask for the fare Rs. 6. He may give change. Then purchase some grocery in small amount say Rs. 27. Pay for it appropriately. Enter the rickshaw fare and grocery payment [-] [6] and [-] [27] and calculate the balance. Count the balance. Then purchase some vegetables, say, Rs. 32 worth. Pay for it and enter [-] [32] or whatever it is; calculate the balance [=], which will be in this case $90 [-] [6] [=] [84 =] [-] [27] [=] [57 =] [-] [32] [=] [25 =]$.

Take a rickshaw. Pay a fare of Rs. 8 and compute [25] [-] [8] [=] [17 =] count his balance of Rs. 17. In this game, the billing of grocery and billing of vegetable is not yet included. That will come in the game of billing when the units of weight, length, package etc. are learnt. In the above game if the child gives first payment of Rs. 6 as $5 + 1$ He will have to pay Rs. 30 for payment of Rs. 27, and can pay Rs. 32 as $Rs. 30 + 2$. See how he proceeds. Let him decide how to pay.

Play several games with different amounts, Banking, Client, Purchaser till money transaction is mastered. Extend beyond Rs. 200 to 500 step by step according to receptive ability and retention of the child.

On some day when the child is not in good mood or when he is thinking about something else, he may commit mistakes repeatedly and will not correct himself even in spite of hints or clues. Give him a change of activity. Do not think all your efforts and his learning have gone waste. He may even have a period of pause or a stage of unlearning. But be sure nothing is going to be lost; he will regain his learning.

Game - 5

Hawker's Skill

Most of the hawkers have little academic or arithmetical skill. They just work out cost of few items by considering the rate and cost. They mentally add up and tell the total. A MR person may hardly be able to do this. However, while working on billing discussed in chapter- 5, this can be experimented for small items and simple cost.

The hawker's skill in transaction of money is very simple and useful.

If a hawker has to take Rs. 6 and a customer gives a Rs. 20 note, the hawker will count 6 onwards as he gives back the balance change, give 7,8,9,10 count as he gives Rs. 4 and then give Rs. 10 note. And says twenty.

If he has to take Rs. 32 from a Rs. 50 note, he will count 32 onwards 33,34,35,36,37,38,39,40 as he gives Rs. 8 in different coins and then give a Rs. 10 note and say fifty.

This game can be played for several transactions; even paying say Rs. 32 by giving a Rs. 100 note.



4. Fundamental Units Introduction

There are three fundamental units of physical measurements. Time, Weight and Length. In this chapter, each of these units will be introduced independently, just as done for money. Weight and length will be introduced only in metric units as being followed in India for all practical purposes by law.

The combinations like rate, involving rupees per kg. or rupees per meter, will be introduced in chapter- 6. Unit of speed like km/hour may be understood later. It is not easy even for normally intelligent persons to understand pressure as kg/cm^2 or acceleration as m/sec^2 ; so never try to confuse the child with such complications, even at later stages of functional awareness.

Time

Understanding of time comes with awareness. First comes understanding of morning, noon, afternoon, evening, night, late night, early morning. Frequently use good morning, good noon, good afternoon, good evening, good night. Say it is late night now go to bed, or you have to get up early morning tomorrow and so on. This is associated with activities during day and night.

The second understanding is of days of week. They are the same everywhere except change of names according to language. Bring more understanding by telling name of day daily and use of poem used in different languages. Same may be available in your mother tongue also.

Sunday followed by Monday.
Tuesday is at third place.
Wednesday and Thursday are at forth and fifth place.
Friday is the sixth.
Saturday is the last at seventh.
The week is thus made of seven days.

The third understanding is about months in a year. As the child goes to playgroup or K.G.; even in special education, he will understand seasons of year and months of year. Make him learn by heart names of months viz. January, February... December. Frequently talk to him about the day of the week, date and month, give him the opportunity to turn page of calendar when the month changes. Use the old-style calendar (popularly known as 'katta') in which there is one leaf for every day. Ask the child to tear one page daily in the

morning and check the day and date. Associate this calendar with the monthly calendar and let him compare that they indicate the same day.

All these games can be played with full understanding as the child can read figures of dates and names of days and months.

If learning of figures and letters get delayed and the child is not able to understand day of week and month of year use pictures/ stickups for days of week and months of year.

Say	Sun	for	Sunday
	Moon	for	Monday
	Ganesh	for	Tuesday
	A head	for	Wednesday
	A book	for	Thursday
	A mosque	for	Friday
	A temple	for	Saturday

Or any picture that the child knows and associate with each day.

Stick up pictures on calendar for each month like a kite flying event for January, flowers on February, examination hall or Holi celebration in March, playground in April, Mango in May, fan on June page, rain on July page, A festival like Rakshabandhan on August, Dusshera or Navaratri celebrations on September page, Diwali on October, woolenwear on November and a church or Christmas tree on December page.

If the child is not able to read numbers, explain daily the number as date of day. He should be at least be able to count from 1 to 31. The concept of year as 2000, 2001... 2004, 2005, and so on will be understood slowly year after year. It is enough to know that it is 2005 year now or 2006 and so on.

Time of the Day and Clock

Understanding of time comes in routine talk before the child can watch time on clock. Get up at 6.30 a.m. or 7.00 o'clock daily. On Saturday get up early at 06:00 o'clock. Take milk or breakfast at 8.00 or 8.30 or 9.00 a.m. Sister and brothers go to school or father goes to office at 10:00 or 10:30 a.m. and so on, till dinner and bed time. The train time is 11.00. We shall reach Ahmedabad at 3.30. We have to go to birthday party on Saturday at 8.30 etc. However, watching time in clock is required to be taught on a real table clock or a dummy clock by turning hands. This can be done by games.

Game - 1

Take a clock preferably a table clock with simple dial with marking of each hour as 1,2,3... 12.



The short hand is for hour. The long hand is for minute. When long hand is at 12, minute reading is zero. Show 1.00 hour, 3.00 hours, 7.00 hours, 9.00 hours etc. and let the child read hours only with minute hand at 12, i.e. zero. For this, old, non-working watches can also be used.

If the fine motor development is good, give him the timepiece to turn hands at 2,4,10 or any hour with minute hand at 12. If dummy toy clock is used or an old clock not in working order is used, the minute hand can even be removed for this game. Ask the child to turn the minute hand a full circle 12 to 12 if a real table clock is used.

Game

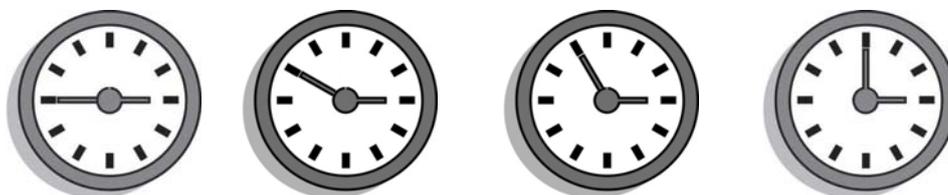
Now explain that the minute hand is the one that indicates minutes past the past hour hand reading. Also explain to the child a demonstration that as the hour hand moves by one hour from 12 to 1, the minute hand takes a full round from 12-1-2-3-4-5-6-7-8-9-10-11-12. Each division 12 to 1, 1 to 2, 2 to 3, is five minutes, with each minute marked as small dots or lines between them. Now play the game of reading hours and minutes. Only 10,15,20,25,30,35,40 minutes past each hour should be played in this game. Show time and read after each move. Explain to multiply minute hand reading 1,2,3,4,5,6,7,8, by five for time in minutes. The child has to know the multiplication tables by heart, to be able to do this. (Clock times 10.00, 10.5, 10.10, 10.15 shown in the figure.)



Repeat these games for hours between 2.05 to 2.40, 3.05 to 3.40 and so on. Every time stop the game at 40 minutes. As after 40 minutes the hour hand is almost near the next hour and the child is likely to confuse as 10:45 or 10:50 with reading of 11:00 clock. The next game is for reading of 45, 50 and 55 minutes in a different way.

Game - 3

The time at minute hand on 9,10,11,12, is to be read as below. Watch the clock from 2 hours, 2 hours 5 min, 2 hours 10 min and so on upto 2 hour 40 min.



Say, 'Now the hour hand is near 3 but it has not yet reached 3. The minute hand is yet to travel to 10, 11, 12 to reach at 3 o'clock'. Now count five minutes for each of the 12 to 11, 11 to 10 and 10 to 9 making it 15 minutes yet to reach 3. And explain it is 15 minutes to 3. Then explain 10 minutes to 3 and five minutes to 3. Demonstrate by moving minute hand from 12 to 11, 11 to 10 and 10 to 9. Move back from 9 to 10, 10 to 11 and 11 to 12. With minute hand at 12 and hour hand at 3 say that it is 3 o'clock now. Then move further to 3-05, 3-10, 3-15, 3-20 and so on. At 3-45 it will again be 15 minutes to 4. The next will be 10 minutes to 4 and 5 minute to four, and four o'clock.

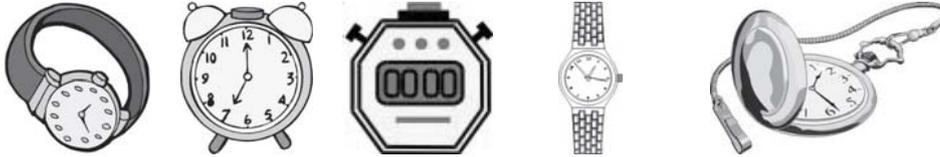
Repeat these games several times for several days and then form a habit of asking him time at random while performing different activities during day and night. Use only one type of dial.

Game - 4

To enable the child to watch time in any wall clock, table clock or wrist watch, introduce different dials of watches: round, oblong, rectangle and with different ways of marking, and different sizes: from ladies' watch to pendant clocks to watches on railway stations.

Let him read time whenever he sees a new clock. Correct him only if necessary, only after allowing him enough time to correct himself. Don't say 'wrong', always

say read again carefully, check where the hour hand is where the minute hand is and wait for him to think and read again.



Explain that the time repeats twice each day, 6 o'clock in the morning and 6 o'clock in the evening. 10 o'clock for school time and 10 o'clock as bed time. Wait enough; repeat frequently, till the time concepts are mastered and firmly rooted in his mind. The concept of railway timetable or airways timetable as 0 hours to 24 hours is to be introduced only appropriately at appropriate time and once higher level of understanding is attained. This concept of time comes to even normal students/ persons very late.

Weight

The unit of weight in metric system is gram. Precious stones weight is in milligrams. Precious metals weight is in grams. But the most commonly used commercial weight is Kilogram (kg). Single unit of weight for functional skill in day-to-day need of the MR person is only 1000 g = 1kg. Kilogram and its fractions as 500 g, 200 g, 100 g, 50 g, 20 g, 10 g will be introduced. If at the time of this introduction the child is conversant with calculator, same may be introduced as 1 kg., 0.5 kg., 0.2 kg., 0.1 kg., and 0.050, 0.020 kg., 0.010 kg. also with introduction in grams.

Make cardboard weights similar to real weight with kg. and grams both displayed appropriately.

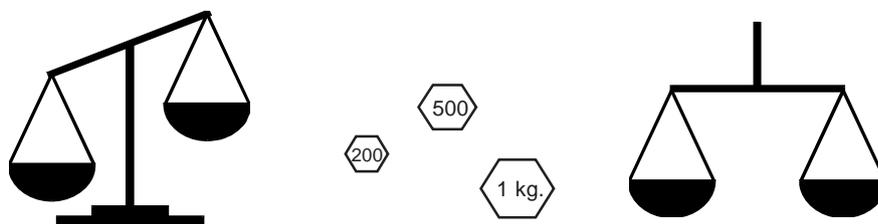
Explain 2 barts of 500 g = 1000 g = 1 kg.
 2 barts of 100 g = 200 g = 200 g bart
 5 barts of 200 g = 1000 g = 1 kg.
 and so on.

This is to be explained with the academic skill and learning acquired.

Game - 1

Borrow the conventional weighing balance and barts in the above described denominations. Use weight balance. 1 kg., 500 g, 200 g, 100 g, 50 g, 20 g. barts, few marbles or beads about 1 kg. for practice weight. One litre water

bottle, 200 ml plastic bottles with water, plastic bags filled with vegetables etc. may also be used for practice weight.



Put a one-liter water bottle in one pan and put different barts one by one in the other pan till the 1 kg. bart balances the two sides. Explain the weight of bottle and water is 1 kg. = 1000 grams.

Divide the 1 kg. water in two bottles equally. Put both bottles in each pan and show that each bottle has $1000/2 = 500$ grams. (Since weight of plastic bottle is negligible (a few grams only) Weigh one bottle by keeping the bottle in one pan and putting bart in another pan till the balance is reached at 500 grams.

Weigh 200 g and 100 g water in small plastic bottles (empty plastic bottles can be used for the purpose).

Make two bottles of 100 g from one of 200 g and weight the bottles with barts.

Game - 2

Take any item from household less than 1 kg. Put it in one pan and put barts in another pan one by one. If the bart is too large, put smaller one; if the bart is less put additional barts. e.g. if 500 g is too much, put 200 g which is less, then add $200 + 100$ g or if still less put 50 g. If that balances take all barts and count $300 + 100 + 50 = 350$ g.

Take another item, put it in one pan. Put 500 g in other pan. If it is too much put 200 in replacement of 500. If 200 is less add 100 making $200 + 100$ g. If that is too much, replace 100 g by 50 g. See if that balances. Take out both barts and calculate $200 + 50 = 250$ g. Now let the child do it himself. Give vegetables, grocery in plastic bags. Make several weight games.

Game - 3

Now take items between 1 kg. and 2 kg. weight.

Similarly take 1 kg. 350 grams and explain that the weight is 1 kg. and 350 grams. Explain that it is like one hundred and thirty five rupees where one hundred

rupee note, one twenty rupee note, one ten rupee note and one five rupee note are counted.

Now use calculator to add the weights. Use 1 kg. as 1.000, 500 grams as 0.500 g and so on. When total comes to 1.350 explain it is 1kg. and 350 grams. In the market, many people everyday refer to 500 g as 'sher'. Avoid use of such terms at this level of awareness. It can confuse the child.

Make several weights of different items for good practice.

Game - 4

Now introduce weighing items which cannot be weighed by combination of available barts. This may be done only after the concept of weight and weighing system is clear after long practice.

The weight is less than 500 g and more than $200 + 100 + 50 + 20$ g. Now put the 500 g again in the pan removing all smaller barts. The 500 g pan is heavier. Put 50 gram on the pan of load, if that balances, calculate the weight of items as $500 \text{ g} - 50 \text{ g} = 450 \text{ g}$. This is 500 grams less 50 g = 450 g. Explain appropriately and by a calculator.

Make such weighment for 1 kg. less 150 gm = 850 gm. One kg less 50 gm = 950 gm and so on. Explain each one on calculator.

Game - 5

Balancing the empty container before the weighment. When the weight of grocery is to be done in a utensil or metal box the empty vessel is to be balanced first by an equal weight or dummy weight. The dummy weight may be any item like pebble, marbles. After the empty box is balanced, the grocery is weighed using appropriate barts. Explain the process practically.

Digital and Dial Type Weigh Balances

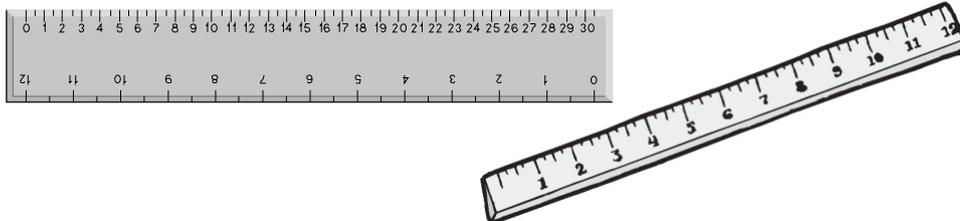
The digital and dial type weigh balances are available in different types and range. They are very easy to use as the weight is shown on digital display. The empty weight is also no problem as the balance automatically deducts the empty weight if so required. The dial types are slightly difficult to read. However, they are similar to clock dials and can be introduced to the child when available. A few practice weights will make the child conversant with it.

Linear (Length) Measurements

The commercial unit of linear measurement (measurement of length) is meter in metric system. The British standard unit is foot, yard, miles etc. and some people talk in terms of British standard units. As the metric system is legally accepted in India, the MR children should have functional skills only in metric units. It is also easier to compute metric system units like centimeter, meter and kilometer all being in decimal multiples. If a steel meter measure is not available, take a wooden strip about 3 to 5 cm wide 1 cm thick and 1 m long. Mark 10,20,30,40,50,60,70,80,90 cm marks on it and use it for the linear measurement game.

Game - 1

Take a cotton or P.V.C. string and cut same in different lengths. Measure them on the meter measure stick and let the child read the lengths.



Game - 2

Like the strings in Game – 1, take towels, bedsheets, sarees, and tablecloths and measure the lengths and widths.

Measure lengths and widths of rooms. Take a marker pen to mark one meter, two meters, three meters etc. Take the last measurements of cms by taking zero at the end of wall. Either use the meter-long stick or use a measuring tape. If the room is 3 m and 40 cm long, measure the same with tape or meter stick. Measure each tile which will measure, say, 30 cms. Count the tiles. It will be, say, eleven tiles and one half tile. The cut tile could be 10 cm.

Explain 11 tiles each 30 c.m = 330 cm.

1 cut tile 10 cm. = 10 cm.

3 meter 40 cm., i.e. 340 cm.

Game - 3

Explain that 1000 meters is one kilometer. The kilometer is used in measurement of distance between two places, two towns and so on. Explain the distance between home and school, distance between home and station, distance between home and a friend or relative's home etc. Distance of nearby places and cities. Let the child know places a couple of kilometres away and also far cities. Show milestones, kms. on railway ticket. Concept of nearby places within 1 km. within local areas 1 to 10 km. Near towns 0 to 50 km and cities beyond 50 kms. It will take long time and advanced age to fully understand this clearly.

Game - 4

Square measurements are very difficult to understand. It may only be explained that any flat surface or cloth have length and width.

Measure lengths and width of towels, bed sheets and table cloth, room floor etc. Measure room floor by counting tiles both ways.

Explanation of flooring size in square meters should be considered as beyond the scope of a MR child/ student. He may understand the same in adulthood if explained and if his vocational opportunity need such awareness. 

Kimo was born on an anonymous island in the South Seas. He was intellectually challenged, and slow in learning to talk. But Kimo very early showed that he could do something far more important than talk. Fibre mats were used on the island for everything from plates to beds. This was a job assigned to women and children. Most of them soon grew tired of the monotonous task. Kimo had a remarkable staying power, and while it took him longer to learn to weave than others, it was not long before he could turn out more mats in a day than anyone else. His mother took great pride in his accomplishment, and so, at a very young age, Kimo became valuable to the community.

Today, Kimo is chief netmaker. Since the economy of his island depends upon fishing, Kimo is an important member of his community. He can make a net strong enough to catch a boatful of fish or one delicate enough to be handled by a single man from the perch on a rock. He can mend a net, too, so skillfully that only the keenest eye can tell that it was ever torn. Yes, Kimo is a man among men.

'Mental Retardation : Nature, Needs and Advocacy' by Donald F. Sellin

5. Functional Skill : Rate and Cost

Transaction of money and materials, quantities in numbers, weight, length were handled in chapters- 2, 3, 4, independent of each other. The combined use of different units in rate and cost can be understood only after the functional skills related to money, weight, length etc. are mastered. It is necessary to achieve perfection by repetition of games in chapters- 2, 3, 4. The concept of rate and cost can then be introduced in small steps.

Step 1

Take cost in full rupee. Select quantity and rate in such a way, that they are not in fractions. Avoid price and cost computation in paisa till the child understands decimal and computation in paisa.

Game - 1

Select different items with rate in rupees for each number. Give child few toffees. Each toffee costs Re. 1. Ask him to count toffees and let it be 20 nos.

Demand one toffee and ask him what should you pay. One toffee costs one Rupee. Pay him one Rupee after he asks for it. Demand three toffees. Again ask price to be paid. Let him think correctly and ask for Rs. 3. If he does not answer correctly, ask him to think again. Put down three toffees, put one Re. for each toffee and ask how much is that. Let him think, count and ask for correct cost - Rs. 3. When he has sold all toffees ask him to count his balance. For twenty toffees he got Rs. 20. That means he has correctly done the game, repeat the game giving 30, 40 and more toffees.

Take small chocolates each priced at Rs. 5. Give the child ten chocolates. Play the game again. The cost to be paid is now five times the numbers of chocolates purchased. Also tally the cost of ten chocolates as Rs. 50 with the balance amount and remaining chocolates if any left. Repeat the game with 20 chocolates. Also repeat with few chocolates worth Rs. 10 each, Rs. 12 each and so on with different items and quantities.

Game - 2

Now introduce weights in kg. Say that potatoes are priced at Rs. 8 per kg. Give few kg. potatoes in a basket. Demand one kg. He should know how to weigh. When he weighs 1 kg. and gives them to you in a plastic carry bag, ask amount to be paid. If necessary, explain that the price is Rs. 8 for one kg. It means he has

to take Rs. 8 for 1 kg. Now ask for 2 kgs. If possible, someone else may demand 2 kgs. When weighed correctly and given in a carry bag, ask the cost to be paid. Let him think. If necessary, give clues and hints but do not spoon-feed. Give Rs. 16 for 2 kgs., when correctly asked for the cost.

Now take 1 kg. for which cost is Rs. 8. Split it equally in two pans as 500 g each. Then take Rs. 8. Change and divide equally in two at Rs. 4. Now explain that 1 kg. cost Rs. 8; the same, when split into two heaps of 500 g each, cost Rs. 4. Again split 500 g into two heaps of 250 g and Rs. 4 into Rs. 2 each. So 250 g cost Rs. 2.

Game - 3

Now take another vegetable like pods of peas or pods of pulses in a basket. Let the price be Rs. 10 per kg. Now explain that Rs. 10 per kg. is Rs. 5 for 500 g, Rs. 2 for 200 g and Re. 1 for 100 g. Use calculator if necessary or by division in 100 grams for ten times and putting Re. 1 for each 100 g.

Demand 200 grams. When weighed and delivered in carry bag, ask for amount to be paid. Let him think. Look at Re. 1 for each 100 g and count. $2 \times 100 = 200$ will cost Rs. 2. Repeat the game for different weights. Weights of range 1.5 kg., 2 kg. may also be demanded and their cost computed.

Now take another vegetable for different price, say, Rs. 8 per kg. or Rs. 12 per kg. (The cost of 100 g will be 80 paise or Rs 1.20; avoid 100 g or 200 g in the beginning.) Take 500 g, 250 g, 1.5 kg., 1 kg. And so on. If necessary, use calculator with appropriate explanation of units.

Game - 4

Another method of rate and cost is two toffees for one Rupee, five marbles for Re. 1 and so on. Play games with such items and such rate.

Another method of rate and cost is three lemons for Rs. 5. or six bananas for Rs. 5.

Take items at such price, purchase lemons, bananas, marbles, toffees in suitable quantity so that it is easy for the child to compute, first simple and then different quantities in the multiples of pricing.

Play games according to ability of the child.

Start use of calculator for correct multiplication or division. Make small costs to explain the price.

6 Bananas	Rs. 5	
6 Bananas	Rs. 5	or $6 \times 2 = 12$ bananas cost $5 \times 2 = 10$
_____	_____	rupees
12 Bananas	Rs. 10	
2 Toffees	Re. 1	or two toffies cost Re. 1
2 Toffees	Re. 1	one toffee cost Re. 0.5
1 Toffees	Re. 0.50	five toffees cost $5 \times 0.5 = 2.5$
_____	_____	On calculator $2.5 =$
5 Toffees	Rs. 2.5	Rs. Two and Fifty paise

Commodities, rates and quantities can be changed to keep games interesting. Play the games for many months. Sometimes the child will play vendor, some times customer.

Game - 5

Explain N.P. to the child, as played in chapter- 3, Functional Skill, Money for Rs. 5, Rs. 2 and Re. 1. Take coins of Re. 1, 50 paise and 25 paise. Put Re. 1 coin and two coins of 50 N.P. By now, the academic skill and functional skill should have been developed enough to be able to understand that $50 + 50 = 100$. Also explain $100 \text{ paise} = 1 \text{ Re.}$

Put four coins of 25 paise each and one coin of Re. 1. Explain that $25 + 25 + 25 + 25 = 100$. Explain four coins of 25 paise is one rupee.

Now take an item at Rs. 15 per kg. Purchase of 500 grams costing Rs. 7.5. Explain how to pay Rs. 7 and 50 paise. Use calculator if necessary, to explain the division. Again take 100 g and compute cost Rs. 1.50. Explain 1.5 is Re. 1 and paise 50.

Rates and quantities should be selected in such a way that the cost would come to such amount that either a full rupee or integer rupees and 50 paise or 25 paise are payable. Avoid 10, 15, 30, 40, 55, 60, 70, 80, 85 paise to begin with; as the currency coins of 5, 10, 20 are no longer in circulation. Later on, it may be taught that the cost in paise is to be taken as nearest 50 paise neglecting the minor difference.

Step 2

The rate and cost games in Step–1 may be played for long time with actual weights. Some games can even be devised for linear measure of strings, elastic straps, pipes and cloth. The next step is rate and cost of several items in billing. A bill can be prepared for garments, medicines, vegetables, grocery, hotel bills, shopping games.

Billing may be explained in general. A bill format may be shown from actual bills. Name of shop, address, customers name, Bill No., Date, etc may be shown. A general bill book may be prepared on blank papers.

It is now necessary to explain the columns, Sr. No., Particulars, Quantity, Rate, Amount, Total at the bottom. It is also necessary to repeat calculator functions as in Chapter 3. Also explain and repeat the [+] memory [-] memory and memory recall [MR] functions. Also [Correct/ Delete] function and [Check] fuction.

CASH MEMO			BILL NO. 116	
JAY MATANGI GARMENT STORE				
STATION ROAD, NAVSARI – 396 445. PHONE NO. : 02637-281566				
To, Mohanlala Patel			Date : 25/12/04	
S.No.	Details	Qty.	Rate	Amount
1	Stocks	3	12	Rs. 36
2	Hand Gloves	2	20	Rs. 40
3	Kerchief	6	3	Rs. 18
4	T-Shirt	2	40	Rs. 80
5	Hair Band	4	8	Rs. 32
6	Towels	1	100	Rs. 100
Total				Rs. 306

The game of billing is for awareness of rates, quantities for purchase and computation of costs. Take as realistic figures as possible. Make bills of items normally purchased by the family. If you are a doctor by profession, include medicine bills. If you are a cloth merchant,

make bills for cloth; if an electrical technician or trader, make bills of cables, wires, battery, tubelight, fan etc. This will maintain interest of the child in the games.

CASH MEMO		BILL NO. 220		
MAHAVIR GENERAL STORE				
SHANTADEVI ROAD, NAVSARI – 396 445. PHONE NO. : 02637-240201				
To,		Date :15/1/05		
Chaganlal Chauthali				
Sr. No.	Details	Qty.	Rate	Amount
1	Tooth Paste	1	35	Rs. 35
2	Tooth Brush	2	16	Rs. 32
3	Lux Soap	3	14	Rs. 42
4	Arial 500g	1	50	Rs. 50
5	Hair Oil 200 ml	1	25	Rs. 25
Total				Rs.184

CASH MEMO		BILL NO. 320		
JAY-AMBE GRAIN STORE				
DUDHIYA TALAV, NAVSARI – 396 445. PHONE NO. : 02637-259321				
To,		Date : 4/2/05		
Bhagvandas Mehta				
Sr.No.	Details	Qty.	Rate	Amount
1	Basmati Rice	5 kg	32	Rs.160
2	Wheat (Dhaliya)	2 kg	13	Rs. 26
3	Mogar Dal	500 g	28	Rs. 14
4	Chana	250 g	18	Rs. 4.5
5	Sugar	3 kg	17	Rs. 51
6	Tea	100 g	115	Rs. 11.50
Total				Rs.267.00

CASH MEMO		BILL NO. 420		
COLLEGE STORE				
FUWAR, NAVSARI – 396 445. PHONE NO. : 02637-259321				
To,		DATE : 21/1/05		
Vishal Khanvel				
Sr. No.	Details	Qty.	Rate	Amount
1	English Book	1	30	Rs. 30.00
2	Arithmetic Book	1	36	Rs. 36.00
3	100 page Note Book	6	8	Rs. 48.00
4	200 page Note Book	4	15	Rs. 60.00
5	Ball Pen	3	5	Rs. 15.00
6	Compass	1	80	Rs. 80.00
Total				Rs.269.00

(VEGETABLE VENDORS DO NOT GIVE BILLS)			
Brinjal	400 g	Rs.10/kg.	4.00
Chilies	100 g	Rs. 20/kg.	2.00
Potatoes	2.5 kg.	Rs. 7/kg.	17.50
Tomato	500 g	Rs. 15/kg.	7.50

			31.00

The normal household shopping may be done in the company of the child. He may be allowed to do shopping: take carry bag, count the items, check rates, amount, and total amount paid. When the child becomes fully conversant about the concept of money, let him make payment and take the change. To make it convenient for the storekeeper, do such shopping during off-peak hours so that the shopkeeper can patiently devote enough time for the child. Also, always do it in known shops where the shopkeeper, vendors will behave in a friendly manner and with smiling face. Appreciate the ability of the child. As for all the individuals, recognition and appreciation by others is great encouragement.

Mistakes may be pointed out for correction of the child. This training in shopping skill may slowly step up to real life functional skill.

STEP 3

The following step can be taken for mental computation of cost of vegetables and grains. One may need to use calculator when calculation is in fraction. The routine transactions are usually in 100 grams, 200 grams, 250 grams, 500 grams and 1000 grams (1 kg.). By now the child is very much aware of the multiplication tables upto 20 and has a clear concept of rate and cost through the previous chapter on billing.

The multiplication tables need slight modification. They are to be recited and memorized as follows :

$1 \times 2 = 2$	$1 \times 4 = 4$	$1 \times 5 = 5$	$1 \times 10 = 10$
$2 \times 2 = 4$	$2 \times 4 = 8$	$2 \times 5 = 10$	$2 \times 10 = 20$
$3 \times 2 = 6$	$3 \times 4 = 12$	$3 \times 5 = 15$	$3 \times 10 = 30$
⇓	⇓	⇓	⇓
$19 \times 2 = 38$	$19 \times 4 = 76$	$19 \times 5 = 95$	$19 \times 10 = 190$
$20 \times 2 = 20$	$20 \times 4 = 80$	$20 \times 5 = 100$	$20 \times 10 = 200$

For computation of weight make sure that 1000 grams = 1 kg.

$25 \times 2 = 50$	$25 \times 4 = 100$	$200 \times 5 = 1000$	$100 \times 10 = 1000$
$50 \times 2 = 100$	---	---	---
$250 \times 2 = 500$	$250 \times 4 = 1000$	---	---
$500 \times 2 = 1000$	---	---	---

Game

Explain that the multiples 2,4,5 and 10 are to be used similarly for both the calculations - the calculation for weight as well as the calculation for rates. For example, the cost of sugar is Rs. 20/- per kg. = Rs. 20 for 1000 grams.

Weight (100 grams)	Cost
$100 \times \underline{10} = 1000$	$20 = ? \times \underline{10}$ (application of same multiple)
(The multiple is 10)	$20 = 2 \times \underline{10}$

So, the cost for 100 grams of sugar would be Rs. 2.

Initially, select the digit that is divisible by 2, 4, 5 and 10. Once the concept is clear, make the child learn to calculate even the odd rates with the help of a calculator.

For example, the cost of rice grains is Rs. 35/- per kg. = Rs. 35 for 1000 grams. To calculate the cost for 100 grams, ask the child to divide 35 by 10 on calculator. That comes to Rs. 3.5 for 100 grams.

Explain that Rs. 3.5 = Rs. 3.50 and 0.50 = 50 paise.

Make the child practice with different rates. Ensure that the child is using calculator when needed. When you feel that the child is now well versed with the concept, tell him that the easy way to divide a digit by 10 is just to shift the decimal. This game can be similarly played for 200, 250, 500 grams and for 2 or 5 kg.

For example, the cost of tea is Rs. 80/- per kg. = Rs.80 for 1000 grams.

Weight (200 grams)	Cost
$200 \times \underline{5} = 1000$	$80 = ? \times \underline{5}$ (Application of same multiple)
(The multiple is 5)	$80 = 16 \times \underline{5}$

So the cost for 200 grams of Tea is Rs. 16.

Weight (250 grams)	Cost
$250 \times \underline{4} = 1000$	$80 = ? \times \underline{4}$ (Application of same multiple)
(The multiple is 4)	$80 = 20 \times \underline{4}$

So the cost for 250 grams of Tea is Rs. 20.

Weight (500 grams)	Cost
$500 \times \underline{2} = 1000$	$80 = ? \times \underline{2}$ (Application of same multiple)
(The multiple is 2)	$80 = 40 \times \underline{2}$

So the cost for 500 grams of Tea is Rs. 40.

Once the child comfortably does the abovementioned calculations, make him learn the reverse. If the rate for 100 grams is given, make him learn to calculate the rate for 200, 500 and 1000 (1kg.) grams. Extend this method for calculating rates for 2, 5, and 10 kg. As we did for shift of decimal while dividing the digit with 10, here we can make the child understand just to add one zero while multiplying the digit with 10.

The child can be made to play different combinations using same concept. You can change the weight to be calculated keeping the item static. Similarly keeping the weight static, change the items. Try to use the actual rates of items that are useful in daily life.



6. Functional Skill : Works

Work-skill in slow learners and mentally handicapped persons is most essential as in all normal individuals. It provides financial self-support by increased employment opportunity. Work-skill also accelerates the rate of development, behavioral modification, feeling of responsibility and channelizes thoughts and action. The most effective impact of work-skill is increased self-esteem and the joy of doing something fruitfully and successfully. For successful vocational training, work-culture and work-skill is the foundation. Work-culture can and should come from family environment. Like everyone in the house, the child should be encouraged to do some daily household work. In the beginning, some elder member of family may help. Then a specific work may be allotted to him like cleaning, sweeping, mopping, washing small clothes and drying them. Also peeling of beans, peas etc. Peeling off potatoes or peeling apple skin by knife may be introduced later. Self-help training during the early intervention may be extended to clipping of nails, tying of shoelaces, stitching buttons on clothes and so on. The work-skill can be developed in following work-steps.

STEP 1

Most important functional work skill for male or female is cooking. The beginning can be made from early adolescence. Preparing and serving cold drinks to guests. Helping mother in preparing the dinner table. Applying butter/ jam on bread or toast. Preparing toast or sandwiches. Preparing tea and coffee. Preparing chapaties or parathas, roasting the same with the help of elders. Cutting and mending vegetables. Preparing rice, dal with help of elders. The cooking can thus be a lifetime earning as well as functional, practical activity in self-employment. In cooking, the child finds very good opportunity at home by being a helpful family member. If the ladies at home are working women, a MR person with good cooking and housekeeping skill will be the most welcome person in house. Since the learning process is long and well known to mothers, more details are not described.

STEP 2

Thread-needle work game can be very good start for work-skill. Take a thick, blunt needle and woolen knitting thread. Take a perforated board or net available for knitting designs. The child will be able to thread the needle. He will also be able to pass the blunt needle through holes of the board. Show a design or make the board with colour for some pattern of the needling work. Many schools include such work in the subject of craft.

Take very simple designs like cross or squares or oblique lines to begin with. Use coloured threads as the design in different shapes.

STEP 3

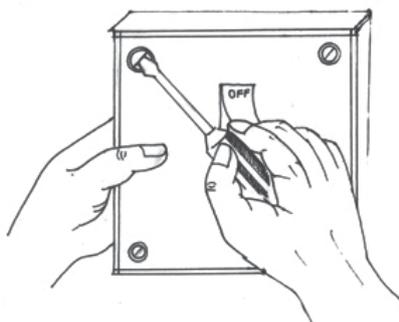
Fixing buttons is next step with smaller and pointed needle. Take large buttons for this work skill. Stitching in different stitches and embroidery is another work skill. Making a buttonhole border by thread-needle work can also be a very useful skill.

STEP 4

Work skill in use of tools like screwdriver, spanners, hammer etc. can also be developed. The sensory motor development may be checked before such practice. Also coordination of vision, thinking and action is necessary. If the child is able to catch a bounced ball thrown towards him, if he can wash, squeeze clothes, then there is enough ability for use of tool. During early intervention and special education, large and small pegs with pegboards are used. Toys with screw tops are also used. These are for development of fine motor control. Games under function-skill developments can be advanced forms of these toys. Take a teakwood board with drilled holes or a softwood board. Use appropriate size of screw and screwdriver.

Game - 1

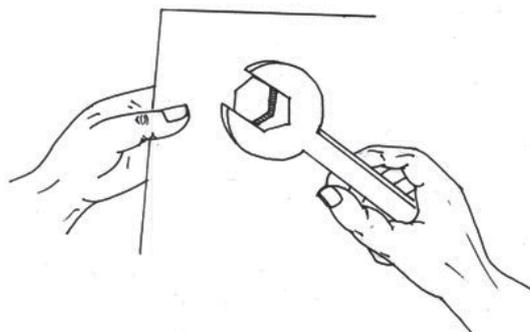
Teach child to drive screw in a soft board, or drilled hole of a teak wood. Put washers or cardboards with letters of A, B, C, D, duly punched near top edge. Ask child to fix letters with screws. To make the game interesting, arrange letters to make meaningful words or name of the child, see chapter- 2. Use of screwdriver to open an electric plug, a fixture may also be a good play.



Game - 2

Use of spanners and pliers may be taught by opening or closing several household implements fixed using bolt and nuts. If no such item is handy, take plates or plywood pieces drilled through. Get some bolts and nuts of appropriate size.

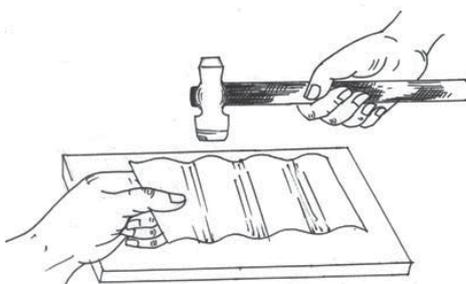
Fix and open, separate them by bolts nuts and using pliers and spanners. Mechano games have parts to be fixed by spanners and pliers, get some of these games, if possible.



Game - 3

Hammering on a specific spot in specific direction with specific force is a difficult function. It is more difficult when the hammering is to be done on a job closely held by hand. Even normal persons end up hammering on their thumb or hand frequently. Use a wood hammer of light weight. (Plastic hammers are also available. These are not useful in actual job. They may be used only to learn hammering on specific spot with specific force.) If the child has learnt to beat drum, handling a hammer will be easier.

Take a corrugated sheet strip, a hammer (wooden or plastic), and a plate or flat stone to be used as anvil. Let the child hold the corrugated sheet strip on the plate or stone at the end. Use the hammer to make it flat. Take precaution to see that the sheet does not have sharp edges or corners. The hammer should be held in the right hand at the end of hammer handle. Most people hold hammer near the head. The handle should be of smoothly finished wood, so that it doesn't harm the child's hands.

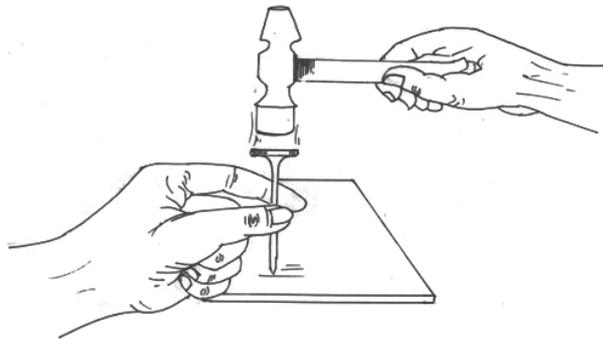


Repeated practice of hammering will improve ability of the child to hammer on exact spot with proper strike. Make jobs smaller and closely held by hand, yet do not use round jobs, as they are likely to jump and cause injury to the child.

Game - 4

When the child can handle really small strips bent at an angle and straighten them with hammer, switch on to hammering the nails.

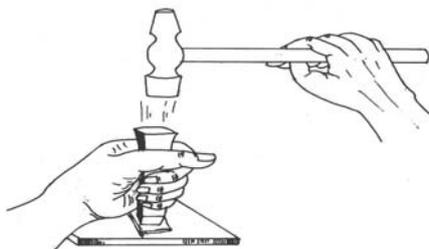
Take a 50 mm to 80 mm nail and a soft board. See that the nail can drive into board by hammering with small steel hammer and without bending of nails. Show how to drive the nail by actual demonstration. Pull out the nail with a plier. Give another nail to child for driving in the same hole.



The important points in hammering are (1) Nail should be held at right angle on the board (2) The hammer should drive by hitting in centre of nailhead and in direction of center line of nail (3) The left hand should have enough grip to hold the nail but should not be injured if the nail or hammer slips. The force to be applied in hitting is a matter of judgment that comes by feel of hand.

Game - 5

Chipping or cutting with chisels is more difficult than driving a nail. Never use wood chisel for training as they are too sharp. Use a steel-cutting chisel for



cutting bars, flats etc. Use steel hammer heavier than the one used for driving nails but not too heavy for the child. Also use flats about 3 mm x 10 mm and bars 50 mm diameter. Take adequate length so that the job does not jump while it is being cut. Someone may hold one end so that the cut piece/s will not injure someone in that direction.

Step 5

Cutting with sharp knife needs extra precaution; since, cutting edges might injure the child.

Game - 1

Games will be : cutting vegetable with a chopper, cutting vegetables with a knife on wooden plate, cutting bread into slices etc.

Game - 2

Cutting of papers with a pair of scissors. The paper can be folded in four folds and cut in such a way that a design develops when unfolded.. Papers of different colours can be used to make a colourful design.

Different coloured paper pieces may be fixed on another coloured paper. Similarly, cutting of coloured cloth and stitching on bedsheets or pillow covers can be a good patchwork art.

Game - 3

Cutting with a saw is more difficult. Use a small woodcutting hand saw with smaller teeth pitch.

The cutting skill needs following care (i) The saw has to move to and fro in the direction of cut. Swinging right and left makes saw blade too tight to move (ii) Application of slight pressure on cutting edge by applying pressure of the hand which holds the saw handle. (iii) Holding the job firm. (iv) Moving full length of saw along the cut.

There is no limitation to the areas of work skill. However, the work skill development may be extended in the area specific to the vocational training.



7. Functional Skills : General

All persons possess general functional skills in accordance with the social, economical and local conditions. Person in Mumbai has the knowledge of names of railway stations between Churchgate to Borivali and V.T. to Ghatkoper. But a person staying at Andheri may not be aware of all bus routes and streets except main roads in Mulund or Kurla. Any person from Cochin or Bangalore may easily know different crops like pepper, cardamom, cashew nuts or rubber tree. But a person from Northern or Central Indian states may not be able to identify the trees and plants of these crops. Same is true about local geography, maps, towns, cities and villages. The general functional skills requirements are therefore different for different areas and social requirements. It is not necessary to impart or try to impart skill which is not necessary for normal-like routine functions. The skill is to be imparted by information and by actual exposure to the different areas of general lifetime functions, initial training at home and exposure to the society. Then he may be allowed to be independent in these functional areas, initially under a watchful eye; when confidence levels of the child as well as the parents go up, he can be made fully independent.

Area 1

We take the most simple exposure, i.e. crossing a road. Explain how traffic moves along the left hand side of road. Explain in a drawing room or terrace. Put toy vehicles if possible. If an open ground is available nearby, mark a road with divider. Let some siblings or friends walk or ride bicycle, tricycle on left hand side of road and let the child learn to cross the road. Take him on a road with divider when the traffic is not heavy. Let the child cross the road with you. Next, you cross the road with him, and let him take the role of the person helping you to cross the road. Let him cross the road alone while you stand on footpath. Do not panic or shout to frighten him. Only keep a distant supervision. Since he has to cross the road one day alone and take the risk involved, let him learn to do it. We all take risks all the time and the MR child is no exception. However, do not take risk of giving him a bicycle unless he has mastered both - the road traffic sense and bicycle control. Never give him a motorized vehicle. It is against the law.

Area 2

Use of telephone is another area of functional skill need. Since all telephones have now digital dialing method, it is easier to impart this skill. Explain on a phone the dial tone,

engage or busy tone, line hunting tone, dead phone, no tone etc. First give understanding of receiving the phone and then dialing a call and redial function.

For Receiving a Call

Lift the receiver from cradle and say hello, or, 'Good morning, I am Palak speaking' and so on. No questions like, "Who is there?", "Whom do you want?", "From where are you calling?" may be asked. Let the caller identify himself and tell whom he wants to talk to, or the purpose of his calling. Reply appropriately. Call the member concerned. Tell the caller 'Please wait, he/ she is coming'. Or say, 'He is not at home, any message?' Take the message and caller's details on a piece of paper or on a scribbling pad and convey the message to an elder. The child may also be appropriately instructed about wrong numbers, blank calls and annoying calls.

For Dialing a Call

Lift the receiver from cradle. Wait for dial tone and dial the number.

For dialing any number the same is required to be remembered. There are several methods of remembering a telephone number temporarily between reading from directory till dialing. A five-digit telephone can be remembered by two digits, one digit and two digits or three digits and two digits or two digits and three digits. The method to be adopted is according to the figures in the number, i.e.

23468 – 23 4 68 or 234 68 or 23 468

A six-digit number can be remembered as three digits and three digits or two digits, two digits and two digits.

234683 234 683 or 23 46 83

A seven digit number can be remembered as three, one and three digits and an eight digit number can be remembered as three, two and three digits. If the child learns to remember the number, show him a number in your personal telephone directory and ask him to write it down from memory. Give him time to remember before writing. Once he can write the number correctly, ask him to dial a friend showing the number in the telephone directory. If necessary, ask the child to enter the telephone number on a calculator.

When the number is dialed, ask him to wait, hearing the line hunting tone. When the tone is cut and someone picks up the phone, he/she has to say, 'Hello, I am Palak speaking. I want to talk to my friend Reshma'. Hear the reply properly and talk to Reshma when she comes on the phone and so on.

(Most normal persons also lack these manners in receiving and dialing telephones. But they are normal and they do not face any problems.)

Since dialing a distance call involves dialing S.T.D. code number and the phone number, the total digits may exceed 12 digits. MR persons may be able to do it at a high level of awareness and good memory at a later age. Explain the telephone directory. Explain alphabetical arrangement of names and numbers.

Area 3

Information about post office, saving bank account, money orders, registered post, speed post etc. is another area of functional skill need.

Postage stamps of different denomination, inland letters, postcards and envelopes may be introduced. The child may be shown letters received in post with stamps and postal marks, franking of postage stamps etc., slowly as he knows them. Not all at a time. Items received by book-post, post parcel, v.p.p. may also be introduced.

Child may be asked to write letters, post cards to relatives and friends who may reply by similar communication. Introduce post office, post box, post-bag, postal saving scheme and passbook of saving accounts.

Later on, telegrams and phonogram may also be introduced only if necessary for the local conditions. Now these modes of communications are getting out of date due to e-mail, fax, SMS etc.

Area 4

The function of banks may be explained at home. Primary skill is imparted in function skill money while playing 'Bank and Customer'. Show bank passbook, chequebook, pay-in slip. Explain each column and details filled up. When the child is able to understand, open a minor saving bank a/c in a nearby bank and let him operate the bank account in small amounts under guidance. This is possible only upto the age of 18 years. According to present law, he cannot operate a minor account after 18 years age.

If his IQ is above 70 and he is not within the definition of mentally handicapped, his saving bank account can be opened after attaining the age of 18 years.

If he can handle his bank account, he may be explained about DD, FDR and bank interest, though these might appear to be far-fetched remote possibilities, for many.

Area 5

Functional skill of home address, local area, own town or city, tehsil, district and state are very important for all levels of mentally handicapped. This skill is to be imparted step-by-step since childhood and extended upto adulthood.

A pre-primary child has to know his family names, home address, street name. As he grows up, name of city, location of railway station, central bus stop may be introduced. He may not be allowed to travel alone but he has to know locations and roads leading to different locations. With good memory of most MR children, they remember them easily and identify as they accompany you to various places.

At an appropriate level of awareness, he may be introduced to maps. If the child is in mainstream education, the knowledge of maps, tehsil, districts and states of India is a part of study in 4th and 5th standard. As you travel by road and go from one tehsil to another or from one district to next and from one state to another, show him the boundary mark on roads if there are any. If none, just talk to him. After the journey, show where they traveled by moving a blank pen on map. Show which rivers were crossed, which towns, cities, crossroads came on the way you traveled. Next time you travel on same road, ask the child names of towns, cities, road crossing, rivers etc. as you cross them.

Similar awareness can be imparted while traveling by train. Show the railway and roads going parallel where they connect same towns or cities. Some rivers flow parallel to railway and road and appear frequently as you travel. Some rivers are across the railway and road and rivers cross one by one, show the same to him on the map.

The maps and geographical data are better understood in combination of maps and actual experience during travel which leads to better visualization. The traveling may always be made use of for imparting the functional skill of location and maps reading. However, do not make it a teaching session, keep it interesting.

Area 6

Travel by rail may be introduced step-by-step: the railway station, up and down trains, terminal trains, if the station is a junction, names of stations on each route starting from your station etc. All these details may be shown on a railway map and actually as you travel. A MR adolescent may travel alone only if and when he has full awareness and after good

practice as done in case of a road crossing. He has to know how to take right train in right direction to the right station. Also, how to know if he is on a wrong train or over-travelled beyond his destination. What to do if he reaches a wrong destination, how to come back.

Reading a railway timetable is a difficult task for a MR person, hence, different methods will have to be evolved to make it simple. Particularly, explain the timing of railway trains as 0 to 24 hours. Explain that 1.00 p.m. is 13 hours 2.00 p.m. is 14 hours and 11 p.m. is 23 hours. Let him be able to read a local time table published in newspapers etc.

Area 7

Information about various domestic services like domestic cooking gas, telephone, electric supply, water supply, municipal services can be given. Fault-complaining system, regular payment of bills and normal safety precautions about gas and electricity are also requirements of general functional skill. Most normal persons also know about it only when they are responsible for such services as head of family. But since MR persons take long time to master the skill, they have to be repeatedly informed and given practice under supervision.

Area 8

Awareness of different authorities is not essential in day-to-day life. Most normal persons also do not have adequate information about administration of governments and local authorities. Since MR persons cannot understand anything easily, without proper explanation and repetition; some general knowledge of the administration may be imparted if possible. Village, town or city administration, panchayat, municipal council, municipal corporation as the case may be, can be explained. Only the information about your locality is to be given. The function of such local authorities to maintain roads, streetlights, primary education, cleanliness, water supply, drainage etc. can be explained. Show the panchayat or municipal office. Similarly tehsil, district, state and central government may be explained. If the child is mainstreamed and is able to reach fifth/ sixth std., he has learnt this as a part of his study. As you go on tour to district place, state capital, or New Delhi, show the seat of respective authority. More information is unnecessary and beyond the scope of his functional need.

If the child has any occasion to travel by air, explain air travel, show take off and landing air terminals on map. Let the child enjoy looking at ground, sky and clouds. In short, make use of every opportunity to impart functional skill in an enjoyable and playful way. ☺ ☺

Chapter 8 : Conclusion

The real test of functional skill either for MR person or normal person is his abilities to live his life in a balanced way, which means not breaking down, becoming disgusted, clumsy or irritated in uncomfortable and adverse circumstances. One should not become arrogant, rudely proud, or express joy awkwardly in success and happy events. If any MR person, with his limitations of logical intelligence, academic achievement, and inability to earn enough from his vocational skills can do this under a protected exposure in life, it is desired. I know few MR persons with such achievements.

Miss Krishna (not her real name) is a thirty years old MR person. She helps her mother in cooking and housekeeping, takes care of young children and behaves appropriately in society and in public places. Avoids or neglects indecent comments. Smiles or expresses joy appropriately. Talks less, hears more; talks worth hearing. Dresses very decently. Can read small words and understand. Knows numbers and can dial a phone. She lives happily with parents. She has no problem with her brother and his family. Her parents are worried but are not uncomfortable or unhappy. Another young lady, Krupa Ved (not her real name) is eighteen. She can ride a bicycle. Does shopping in small quantity, grocery and vegetables. Visits her friends or near-relatives. She knows her limits of area. She had been trained at NIMH for appropriate behavior, privacy and interaction with known and unknown persons, when she was about 13. She occasionally gets irritated, also has occasional minor attention deficit and hyperactivity disorder. Sometimes behaves awkwardly. Many normal and intelligent people, some people in high places do all this, but this lady's behavior is looked upon with magnifying glass. She is living and will live a normal life in family. On the other hand, I know two MR persons who are without any training in functional skills, socialization, or behavioral modification. They are uncontrolled, violent and destructive.

The parents in the first two cases did what they knew about the subject during infancy and during childhood of their daughters. They accepted, loved and impartially brought them up. Got information and implemented socialization and functional skills even at later age. Their achievements are limited but they have satisfaction about their grown-up daughters.

The other two cases, one of a sixteen years girl (now she may be twenty three) was a case of total neglect from childhood and another case is a boy about twenty two years, a case of overprotection and isolation from society.

I have come across persons who are illiterate or educated upto only second or third standard in rural primary school but living happily, doing minor jobs very efficiently. They are happily married and have highly educated children. I have also known many scholarly

and intelligent persons in very high places and prosperous high society life but internally insecure, unpredictable and imbalanced. They are not appropriately settled at home with family and friends. They react to joys and adversities very awkwardly. These normal persons have different levels of functional skills.

My objective in writing this book is to induce functional skills by educational play. Cliff Cunningham in his book 'Downs Syndrome: An Introduction for Parents' on page 159 reflects clearly my objective. Though Cunningham refers to DS only, this concept is applicable to all MR children/ students/ adults. His words are, 'If you ask whether early intervention and continuous education make the child less retarded, the answer is 'yes' because he or she will attain the developmental milestones earlier and more quickly. If you ask whether early and continuous education will make the child less handicapped, the answer is 'yes' because he or she will acquire more skills and knowledge and will be able to do more things in life. But if you ask whether early and continuous education will make the child more 'intelligent' or more able to reason and conceptualize for him or herself, the answer must be 'It depends upon what we mean?' We certainly can not give them 'normal' mental abilities and it is unlikely that many will achieve the more complex intellectual activities involved in formal and abstract reasoning. So let us now take a more functional approach. Let us ask what can we expect them to be able to do."

I have tried to project the question asked by Cliff Cunningham in his last sentence. The answer will be different for each individual child/ student/ adult. The question, 'What can we expect them to be able to do?' will have only one common factor, 'Better than what they could have been able to do in absence of such functional skills.' This factor of a better ability to apply their limited reasoning will help them proceed towards personal independence. That will be a great relief to parents and the MR persons. The level of achievements will depend on several factors, right from early detection, early intervention, the level and cause of mental retardation, the acceptance, environmental, social, educational, therapeutical treatment available, socio-economic, location wise position of family etc. But I am sure the functional skills through educational play will not only help his academic achievements, it will also be useful for real-life, day-to-day needs. Even if he cannot live an independent, self-supported life, he will not be a burden or an unwanted person. Such persons will be reliable, helpful family members and friends. These MR persons will give much more love and be a unifying force to mother, family and friends as well as society starved of emotional needs. I know many MR mainstreamed students with these achievements.

We are all in a very large labyrinth of our life. Every one is at a different place on a different path. Each one of us has to find his own way himself. I am trying to give you a

compass and a marker to find your direction and mark your path. Some useful tips are given below to enable finding a path of your own.

Use the language that the child is most conversant with and spoken in family, between siblings, and in the neighborhood. Do not adopt English language just to follow this book as guidebook. Alphabets, figures counting, games - everything must be done in the language most comfortable to the child and to the family.

The descriptions of pre-primary education system, games in functional skills and other chapters are only indicators. Parents may devise similar games according to the availability and their own resources. The response and receptive ability of the child and ability of teachers to convey the ideas must be the governing factors. The games and playtime may be restructured, modified or extended as required.

Most of the educational techniques used are at least a generation old and are known all over the country, irrespective of religion, region, language and class. The counting board, counting on fingertips, the alphabet charts of all languages, the playing cards, colour beads, the weight measurements have no regional bar.

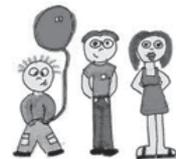
The book is very small but it is not like a storybook to be finished in few days. It may take months to complete each chapter. Each game has to be played with different aspects, repeatedly, for weeks or months. Once completed, the chapter is not to be closed. Lot of repetition has to be done. There will be some pause, some unlearning and relearning. The games may have to be re-devised with smaller steps. In real life also, many performances, many activities, many transactions are repeatedly done. The learning process, particularly for a MR child - student is longer than other students. Lot of patience and perseverance is necessary.

Learning functional skills is a lifetime and continuous learning process. In the last seven years I have learned more than what I learnt in previous seventy years. I have known myself better than I ever knew before. The real use of functional skills will be in real life and also in vocational training and employment. The vocational training starts with functional skills, and work culture, discussed in my book 'Towards Personal Independence'.

Any feedback, information or questions are most cordially welcome.



What appears to be inferior, turns out to be simply different, on closer examination!



Functional Skills

A Guidebook for Parents and Educators of Learning Disabled
and Intellectually Challenged Children, Students and
Adolescents



B.K. PANDYA

Functional Skills

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Published by:

SWEEKAR

Association of Parents of Children with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities, 9, Kasturba Bhavan, 349/2, Bajaj Nagar, Nagpur - 440 010.

Phone: (0712) 2225766

Typesetting and Printing:

Active Support Services

14, Shiv Shakti Apts., Khamla Main Road,

Pandey Layout, Nagpur - 440 025.

Email: active2s@yahoo.co.in

ISBN : 81-9025781-1-0

Price: Rs. 60 India

US \$ 5

Europe: 4 Euros

Concessional price for parents : Rs. 40

The proceeds from the sale of this book will be used for various projects of Sweekar.

**Dedicated to
All the Parents of Special Children**

Their keen interest and appreciation inspired me to put more efforts in this unexplored field of educating and training the children with special needs.

Foreword

I believe and advocate that parents are the extended clients in case of the children with special needs, because the services received by them can be appreciated by parents rather than by these children, as they have inherent problem in cognition, communication and socialization. However, parents have seldom come out with their experiences and ideas in a book form.

It is heartening to note that, now-a-days, parents are taking lot of initiatives and supporting each other in various matters concerning the empowerment of special children. There are many such examples in our country. There are also few grandparents who take keen interest in the intervention and developmental process of the children with intellectual disabilities. Sometimes they go one step further in documenting their experiences and develop conceptual framework which could be termed as a qualitative research. One such grandparent is Shri Bhadrashankar Pandya from Navsari who retired as Chief Engineer and whose granddaughter is having intellectual disability with Downs Syndrome features. He has also given many seminar presentations and conducted training programmes. He has authored a book 'Light a Candle', which has been well received by many in the country.

The present book on 'Functional Skills' written by Sri Pandya is a guidebook for parents and educators of children with intellectual disabilities. He has written this book out of abundant experiential learning through the intervention and developmental process of his granddaughter and similar other children. While giving due credits to the professional efforts in reaching the know-how in rendering the services to children with intellectual disability, Sri Pandya has provided a linkage between the conceptual framework and the step-by-step process of imparting functional skills based on various case studies documented by him. The practical tips in the self-help skills are praiseworthy. Imparting writing skills and writing numerical figures has been very lucidly dealt with by him by giving practical and tested exercises. Similarly, handling

of money, which is a very important aspect in the life of a human being, has been very simply explained with good exercises. Knowing time, handling telephone and handling other small jobs have been covered based on experiences.

Therefore, the book is a very meaningful and relevant guidebook not only for the parents but also for all those concerned in the development of persons with intellectual disabilities. This work of Sri Pandya will, hopefully, inspire many others, particularly, the professionals to chronicle their experiences and analyse in a systematic manner and share the knowledge with others. I hope Sri Pandya will continue to bring out such guidebooks for the cause of intellectual disabilities. I also hope professionals will get emulated by Sri Pandya and many more will join in this cause.

Secunderabad
28 March 2006

Dr. Govinda Rao
Director
N.I.M.H.

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ABOUT THE AUTHOR

Mr. Bhadrashanker Pandya is a seventy five years old retired Chief Engineer staying in Navsari, Gujarat. He has, to his credit, a unique first-hand experience of bringing up his granddaughter, Palak, a special child with Down's Syndrome. This experience gave him a rare insight into the problems faced by parents of intellectually challenged children, especially about early intervention and planned development, which he put together in his first book '*Dev Na Didhel*' (God's Gift) in Gujarati. The English version of this book (with appropriate additions and modifications), titled '*Light A Candle : A Guidebook for Parents of Down's Syndrome Children*', was released during the 12th National Parents Meet held at Nagpur in October 2004.

In his latest book, '**Functional Skills**', Mr. Pandya has tried to provide solutions to the hitherto unaddressed area - in the development of special children - of putting theoretical concepts and classroom teachings to practical use in real life. The aim is to make them as much self-dependent as possible, and Mr. Pandya offers solutions to achieve this by breaking day-to-day tasks into simple and elaborate steps which are both easy to follow and fun to learn. The concepts of time, money, units, rate and cost as well as general skills have been very lucidly explained, followed by exercises in the form of games, which can be easily played.

All the parents, special educators as well as professionals will definitely find this book a very handy guide in addressing the issues related to functional skills of special children.

ABOUT SWEEKAR

Sweekar is a twenty years old parents' association of special children with mental retardation, autism, cerebral palsy and multiple disabilities. Sweekar is very active in organising and conducting programmes such as early detection, intervention, family counselling and networking, advocacy as well as awareness creation and sensitizing of the different segments of the society.

Apart from reaching out to the families with special children at local and regional levels, Sweekar has also been actively participating in the activities at national and to certain extent, international levels.

Sweekar is one of the founder members of PARIVAAR, the only national level federation of the parents associations in India.

Acknowledgements

This book is about my work with my Down's Syndrome granddaughter Palak. She is in sixth standard of mainstream education. Some other parents have also tried similar work with some success. I have to go miles before I achieve full success.

The book has been actually reconstructed by Shri Anil Joshi and Shri Prashant Joshi from my rough notes. It was as if I gave them various parts of a vehicle and they turned it into a roadworthy car. I have no words to express my thanks to them.

I am also thankful to 'Sweekar', Nagpur for publication of this book for the parents of children, who are in need of such information.

I am putting my method of 'Functional Skills' on a trial run for its usefulness in general application to all MR persons. I earnestly request all the parents who try it, to give me a feedback. They may report achievements, problems faced, areas where the methods mentioned in this book do not work and need modification. They may also suggest their own ideas for improvement in the second edition.

I shall be thankful to them.

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Sweekar gratefully acknowledges the contributions and support of the following persons and institutions:

- ◆ Mr. Surendra K. Patel Navsari
- ◆ Mrs. Vimlaben P. Gandhi Vadodara
- ◆ Mr. Vipin Kamdar, President, 'Sankalp' Nagpur
- ◆ PARIVAAR - NFPA Bangalore