Exploring multi-modality tools of Neuro-Linguistic Programming (NLP) to facilitate better learning among Primary School students

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Abstract:

Learning takes place by use of different modalities - visual, auditory and kinesthetic (VAK). All individuals use one or more modalities in order to learn and communicate effectively. Classroom learning in schools has facilitated visual and auditory learners while kinesthetic learners have not been given adequate attention, resulting in their poor performance.

The present study is an exploration of how primary school children, high on kinesthetic modality, can be taught mathematics by combining physical movement and the principles of Neuro-linguistic Programming. A few techniques of teaching mathematics and two individual case studies that demonstrate this kind of kinesthetic instruction are presented.

Introduction

Each individual has a different learning style. All learning involves processing of information by our sensory systems. The three sensory modalities by which we process information are the visual, the auditory and the kinesthetic (Simpson, Timothy J. 1997). Most of us may use more than one mode of processing information. Individuals, who are predominantly visual processors, are able to form mental pictures of information that they have to learn. Individuals, who are auditory processors, listen and recall information like a tape recorder. Individuals, whose dominant learning mode is kinesthetic, prefer to physically move and do things in order to learn and understand them.

While these learning styles, which are also referred to as primary representational systems (Sandhu, Daya S. 1994) have been recognized in the literature, teaching children according to their different learning styles has not been given due importance. Pre-school, nursery and kindergarten class instructions make good use of all the three sensory modalities. However, as children begin formal primary education teaching methods begin to cater more to visual and auditory learners and less to kinesthetic learners.

James J. Asher (2001), the originator of the Total Physical Response (TPR), recognized the importance of physical movement in learning languages. According to him, historically, school has facilitated left brain instruction. Seating arrangements in classrooms are in rows and columns, with students facing one side to see and listen to visual or auditory media being presented to them. The “academically gifted” can, on their own switch information coming to the left side of the brain over to the right side of the brain to complete processing and achieve meaning. This leaves behind a number of students who process information kinesthetically and who may also be right-brain dominant. Research on hemispherical specialization has revealed that left-brain specializes in reasoning, language, scientific skills and calculations while the right-brain is the artistic, intuitive hemisphere.

The primary representational systems and hemispherical specialization have received considerable attention from Neuro-Linguistic Programming (NLP) practitioners. Neuro-Linguistic Programming was developed at the University of California at Santa Cruz in the 1970s (Jacobson, 1994; McLendon, 1989). Its founders and principal authors were Richard Bandler, a mathematician and information scientist and John Grinder, a linguist. The term ‘Neuro-Linguistic Programming’, coined by Bandler and Grinder, refers to links between a person’s internal experience (neuro), their language (linguistic) and their patterns of behaviour (programming) (Tosey, P. & Mathison, J. 2003).

Neuro-Linguistic Programming in Schools:

NLP utilizes a range of learning strategies and methods to optimize one's success in life. Apart from programmes for adults (Patterns of Excellence) and for teenagers ('I am Gifted and so are You), it forms the major part of the educational programme "Superkids" conducted by Adam Khoo & Stuart Tan in a number of schools in Singapore.

A typical programme begins with an introduction to successful life principles:

- ? our beliefs about ourselves will determine what we will become
- ? we have the power to choose what we want and all choices have consequences
- ? we have the power to change our future by changing the pattern of our thinking now

The programme which is conducted over three working days also includes instruction on the science of the brain, including the left and right brain theory, ways to make whole brain notes, goal setting, power of beliefs, power of state, time management among other principles. When conducted in primary schools in Singapore it is held separately for the EM1, EM2 and EM3 children. The reason for this is an acknowledgement of their different styles of learning and not on the difference in their academic abilities. As a component of this educational programme for EM3 children, is an instruction in mathematics, which is the focus of this paper.

A brief profile of Primary School students in Singapore:

Currently primary school students in Singapore undergo a streaming examination at the P-4 level. Their performance at this examination will determine whether they will go into the EM1, EM2 or EM3 streams. The academically gifted students and high achievers perform well in this streaming examination, thus finding a place in the EM1 and EM2 streams. As mentioned earlier in this paper, schools have facilitated the learning of students high on visual and auditory sensory modalities. Therefore, this paper assumes that children who are in EM1 & EM2 are high on visual and auditory sensory modalities and students who are in the EM3 stream are high on kinesthetic sensory modality. The fact that our culture teaches tests and reinforces and rewards primarily two kinds of intelligence—verbal/linguistic and logical/mathematical has been recognized. This leaves behind many others who have eight other kinds of intelligence, one of them being bodily-kinesthetic (Gardner, H. 1993).

Children high on kinesthetic sensory modality, generally find it difficult to visualize or conceptualize learning material and also to sit in one place and listen to the teacher/instructor. Traditional methods of chalk and talk, and penalizing them for moving out of their places have not helped them to perform better at all. Consequently, their low grades lead to very low levels of self-esteem and negative beliefs about their learning abilities and intelligence and this becomes a vicious circle. However, recognition of their learning styles and tailoring instructions to suit their needs would help them learn with joy and enable them to score high on tests.

The Mathematics component of Superkids programme:

The mathematics component of one such Superkids programme in a local primary school was conducted by the co-author of this paper Norman Tien, who is a Math tutor engaged in private tutoring. In his programme for EM3 students, Norman not only uses a lot of physical movement and encourages the children to do so as well; he also attempts to understand the world of these children, constantly matching his teaching methods with the experience of the children.

Typically, he starts of as a rapport builder, ways to tackle the multiplication tables in simple, yet interesting ways, including the use of fingers. This gets the children excited and motivated and they begin to understand and enjoy the process of learning. A lot of opportunity is provided for free physical movement in the classroom especially while dealing with word problems. Positive, affirmative statements are embedded in instructions, by which the children's negative beliefs about themselves and their abilities are constantly confronted, challenged and eliminated. The instructor acts more as a facilitator than a teacher, conversing with students informally while at the same time getting them to solve mathematical problems.

This kind of instruction, where the teacher converses with the student, understands his experience and world view and psychologizes the subject matter to fit it within this world view is what we see in the writings of John Dewey as early as year 1902 in *The Child and the Curriculum.*

"The legitimate way out is to transform the material; to psychologize it—that is, once more, to take it and to develop it within the range and scope of the child's life."

More recent is Suzanne M. Wilson, Lee S. Shulman and Anna E. Richert (1987) pedagogical content knowledge, where the teacher's subject matter knowledge is enriched and enhanced by other types of knowledge—knowledge of the learner, knowledge of the curriculum, knowledge of the context, knowledge of pedagogy.

The following is a sample of techniques of teaching mathematics using a combination of physical movement and many of the tools of NLP. This will be followed by two individual examples of tutoring children.

Sample of techniques for teaching Mathematics:

1. Multiplication Tables

Multiplication tables pose a major challenge for many primary school students. Norman uses a unique method of using the fingers of the hand to compute mathematical tables. When taught to children, it becomes a very good rapport builder. Children who see themselves as incapable of achieving good scores in mathematics and consequently feel inadequate, find their confidence soaring when they are able to acquaint themselves with these numbers.

An example of the 11 tables is given in this paper.

a) 24 ? 11 = ?

Step 1: Separate number 24 to 2 and 4 with space in between

Step 2: Add 2 and 4 and place the number in the space between 2 and 4

Step 3: You now have 264 which is the answer to 24 ? 11

b) 14 ? 13 = ?

This would require the fingers of the hand.

1. Put up the index, middle, ring and little finger of the left hand, with the thumb folded into the palm. You have 4 fingers pointing up.
2. Put up the middle, ring and little finger of the right hand, with the other fingers folded into the palm. You have 3 fingers pointing up.
3. Now, to solve 14 ? 13 we need to get hundreds, tens and ones. The next few steps will show you the method.
4. Gently hit your palms side ways, once, and right down 100
5. Total number of fingers pointing up is 7. Therefore, write 70 under 100.
6. 4 times 3 is 12. Write 12 below 70.
7. Add up 100, 70 and 12 to get 182, the product of 14 ? 13

2. Problem Sums

10 bicycles and cars have a total of 24 wheels. How many cars are there?

Legend: **/ - Bicycles/cars O - Wheels**

Step1: Draw the total number of bicycles and cars

/ / / / / / / / / /

Step 2: Construct all vehicles to become bicycles (Bicycles have lesser wheels than cars)

o/o o/o o/o o/o o/o o/o o/o o/o o/o o/o

10 ? 2 = 20 wheels
20 wheels have been used up, out of a total of 24 wheels
24 – 20 = 4 wheels extra

Step 3: Use up the rest of the wheels to make cars

o/o o/o o/o o/o o/o o/o o/o o/o o/o o/o
o o o o

Answer: There are 2 cars and 8 bicycles

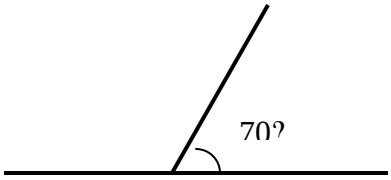
In the classroom, Norman gets the children to physically represent the vehicles.

Individual Case Studies:

Case Study 1:

Sharon was studying in P-4 when her parents sought help in tutoring her for mathematics in year June2004. She was scoring an average of 10-20 marks out of a total of 100.

One of her topics in mathematics was Angles-- Complementary and Supplementary angles.



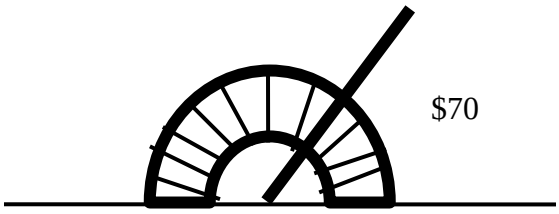
Given one angle, it is required to find out the other angle.

The working for this is as follows: 180? - 70?= 110?

However, Sharon was unable to figure this out. If it was explained, she paid attention and seemed to understand, but was unable to solve the sum on her own.

A careful attention to where she focuses her eyes when she looks at the problem revealed the fact that she would look at the periphery of the figure and could not get her eyes to rest at the angle in the centre. Angles themselves did not make much sense to her.

So, Norman drew another figure and instead of angles at the centre, drew a spiral staircase.



This is a spiral stair way. There are 180 steps on this stairway that you see. The cost of cleaning each step is $1. The cleaning cannot be done by one person alone. So, two people are hired for the job. One person cleans 70 steps and is therefore paid $70. So, how many steps will the other person have to clean and how much should he be paid?

Sharon could now understand the problem easily as it made sense to her. A stairway has to be cleaned and what would be the cost of cleaning the stairway. Angles were abstract concepts to her which required some degree of visualization which she found difficult. Also, telling a story about the problem that there was a stairway which had to be cleaned appeals to her right-brain. Story telling has been found to be very useful in language learning too (Asher, J. 2001). It stimulates the right-brain and prepares the person for logical working of the problem.

Another interesting problem for Sharon to solve was Direct Proportion.

If the cost of 2 pens was $10, what is the cost of 10pens?

Careful observation of Sharon revealed that her dominant sensory modality was kinesthetic. She was taught the following manner:

Left side	Right side
2 pens	$ 10
10 pens	$\frac{10}{2} \; ? \; \frac{10}{1}$

These steps were converted into a rhyme:

Right Over Left Times Bottom Over One (ROLTBOO)

When she still had difficulty in learning the process, she was taught a small dance that demonstrates this procedure.

This method of teaching has made her begin to enjoy doing mathematics, which earlier was simply too challenging for her.

Presently she is in P5 (EM3) and in her first Continuous Assessment (CA1) has scored 45 out of 100.

Case 2:

John was a boy studying in P-6 class of EM2 stream. He was scoring on an average 20-40 marks out of 100, when he joined the tuition class in April 2001.

John seemed to be a bright boy but for some reason could not score high in examinations. In the tuition classes under Norman's supervision he did quite well, until one day, quite accidentally Norman dropped his pen on the table quite close to John's working area. This set off a trigger in John, who was working on the second page of the assignment sheet. He started panicking and writing illegibly for the rest of the paper. This apparently was a pattern with him. In an examination, he would begin well until a time came when he heard a sound of a pen drop or papers shuffle, which in some way signaled to him that he was running short of time. He then would panic and fill up the rest of the exam sheet with illegible scribbles. This probably had its origins when his teacher asked students to put down their pens when the exam came to an end.

Conversing with him informally, Norman got to know John's goals in life. He wanted to become a veterinary doctor. The sound of a pen dropping hitherto was a strong anchor for John to trigger a negative pattern of behaviour, signifying insufficient time. This anchor was replaced with a positive affect. With the help of guided visualization and anchoring of the same sound of a pen dropping, now to signal that he is going to get an award for the best veterinary doctor instilled a positive affect in John. The sound now makes him feel good and proud of himself. He is a worthy person. He believes that he can achieve whatever he sets for himself. With this positive frame of mind, John began to work with renewed earnest.

His scores dramatically improved in subsequent examinations—88 out of 100 in the P-6 Semestral Assessment (SA1). Anchoring is a tool used in NLP to trigger a positive state of behaviour. Learning how to anchor a strong sensory impression and then link it with an internal image helped him change his unproductive pattern of behaviour to a constructive pattern (Love, M.H., 1987)

Thus, apart from tutoring children in mathematics, what Norman does is to get into the experience of the child, see things from his point of view and understand him, and gently guide him to give a more appropriate response to the stimulus. This he is able to achieve by making use of different strategies of NLP, including challenging and changing self-limiting beliefs of the child.

Summary and Conclusions:

The aim of this paper was to highlight the fact that individuals have different learning styles. In particular, we make use of different sensory modalities in order to process information. Academically gifted and high achievers usually tend to be visual and auditory processors because the school system and arrangements facilitate their performance. This leaves behind individuals who process information kinesthetically, who are unfortunately termed "slow learners", "academically dull", "learning disabled" and a host of other adjectives, which may not be true. What they need is someone who can understand and appreciate their unique learning style and be willing to develop a pedagogy that will facilitate them to optimize their potential. Teachers and educators can play a major role in making this possible.

A very pertinent point here is whether individuals fall neatly into each of the learning styles, or do they switch between styles. Research indicates that adults, with experience and practice, develop an ability to utilize more than one modality effectively, allowing them to switch modalities when appropriate to a given task. Those lacking in experience and training (children) use only one sensory processing modality, which they seem to use in all situations and contexts. Consequently, they are limited in their ability to easily and smoothly assimilate information in comparison to adults (Simpson, T. 1997). However, more investigation needs to be carried out to establish this difference in adults and children's use of modalities.

According to the Ministry of Education, Singapore, streaming in schools is a practical approach aimed at helping every student to develop himself to the best of his abilities (Minister's speech 2005). This has definitely reduced the rate of dropouts in primary school. While agreeing with this policy, we (authors) feel that students have to be streamed according to their distinct learning styles and dominant sensory processing modality. This will pave the way for developing an appropriate pedagogy, for children who have hitherto been on the fringes of the school system.

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