NEURO LINGUISTIC PROGRAMMING AND DIFFERENTIATED TRAINING

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Abstract: This article analyses the different modalities of applying the theory of learning styles in the teaching-learning-assessment process.

On the assumption that the mode of receiving information influences how we learn, the researchers Richard Bandler and John Grinder created the Neuro linguistic programming theory. Learning that considers the neuro-linguistic paradigm is an inclusive learning type, which harmonizes the individual needs of the learner with concrete ways to meet those needs. This type of differentiated training represents a tool which allows teachers to achieve the best possible correspondence between their teaching strategies and individual learning styles.

To support our arguments, we created an example of teaching activities using the Neuro linguistic paradigm in mathematics lessons. This example illustrates how each student can be directed in the process of solving tasks useful in the issue demonstration, tasks which are appropriate to his learning style.

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Introduction

Neuro linguistic programming is exploring how we communicate, think and produce changes. This type of exploration enhances skills related to learning, communication, confidence, motivation, and one's personal level of success.

This paradigm was created around 1976 by Richard Bandler (a mathematician and student in gestalt therapy) and John Grinder (a linguist) who set out to discover the structure of human excellence (Grinder, 1976)

The main foundations of neuro linguistic programming come from a collection of theories and practices such as Albert Bandura's social-cognitive learning theory (Bandura, 1986), a theory of thought belonging to Gregory Bateson (Bateson, 1972) on the logical levels of learning and a unified field theory, the theory of Miller, Galanter & Pribram (Miller, 1960) on the final orientation of human actions, Noam Chomsky's transformational grammar (Chomsky, 1965), the concept of "time binding" by Alfred Korzybski (Korzybski, 1933), Glasersfeld's radical constructivism (Glasersfeld, 1996), William James' theory (James, 1950) concerning sensory representations as foundations for the theory of information processing and the fundamental orientation of human action towards goals (Miller, 1960).

The strategy of Richard Bandler and John Grinder (Bandler, 1976., Grinder, 1976.) was to focus on finding answers to the question of how people work. The researchers noted that language (both its discursive level, through which we address others, and its inner form, which is a comprehensive summary of all our experiences) is the support of communication and highlights that thinking patterns determine how we react in a certain context, depending on the culture to which we belong, the education offered in the family and in school.

They revealed the following types: with visual dominance – prefers visual information: graphs, tables, figures, charts and other graphical representations of what is exposed through words; with listening dominance – prefers heard information: lectures, audio tapes, discussions; and with kinaesthetic dominance - prefers exercise and practical connection to reality through experience, examples or simulation. It should be noted that each of us has a unique perceptual style, consisting of a combination of preferences: visual, auditory, and kinaesthetic (VAKOG) (Stanciu, 2012).

VAKOG and Learning

The representational systems we tend to use most frequently are: Visual (V) seeing, Auditory (A) hearing, Kinaesthetic (K) feeling, and we also use our Olfactory (O) – Smell and Gustatory (G) - Taste. Visual representation is used outdoors for research and information about the

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outside world in images, and inside to view our thoughts. Similarly, the auditory representation system is used for listening to the voices from outside or inside. The kinaesthetic component is used externally to perceive pressure, temperature, humidity and balance, and balance our internal emotional states, beliefs, etc. In Western cultures visual (V) representation systems (65%), listening (A) (30 %) and kinaesthetic (K) (5%) are primary systems. The senses of smell (O) and taste (G) are less prominent and are often included in the kinaesthetic representation system.

Teachers should encourage students to develop the ability to elaborate and use certain words, gestures, emotions, and sounds in order to facilitate learning in agreement with one or more perceptual styles. In the literature, these are also called anchors or mnemonic techniques.

Applying the theory of learning styles in teaching-learning-assessment process

Many researchers have tried to apply the theory of learning styles in the teaching-learning-assessment process. Among them, Dr. Rita Dunn and Dr. Kenneth Dunn (Dunn, 1978) believe there are ways to rebuild the instructive educational approach so as to be useful to every student, regardless of their learning style.

Their so-called "Contract Activity Packages" are educational plans that use: 1) a clear statement of the learning need; 2) multisensory resources (auditory, visual, tactile, kinaesthetic); 3) activities through which the newly mastered information can be used creatively; 4) the sharing of creative projects within small groups; 5) at least three small-group techniques; 6) a pre-test, a self-test, and a post-test.

Marilee Sprenger (Sprenger, 2003) also believes that the VAKOG approach generates useful methods of the teaching-learning-assessment process. She details various ways of teaching – visual, auditory, or tactile/kinaesthetic. Methods for the visual learning style include ensuring that students can see written words, use pictures, and draw time lines for events. Methods for the auditory learning style include repeating words aloud, small-group discussions, debates, listening to books on tape, oral reports, and oral interpretation. Methods for the kinaesthetic learning style include hands-on activities (experiments, demonstrations), projects, frequent breaks to allow movement, visual aids, role play, and field trips.

The representations that students give of mathematical language, operations and problem solving strategies.

Therefore, since problem solving strategies differ depending on the pedagogical profile, mathematics teachers must provide: for the visual learning type, a spatial representation of the problem, entailing all the items referred to the utterance; for the listening learning type, a reflection of the problem that can concatenate successive actions; and for the kinaesthetic learning type, an overall successive reconstruction of the problem. Among the strategies of visual learners, we can mention analogy, the spatial reorganization of the problem, the search for regularities and because they are more interested in the situation than in the players, they create representations of all data before they start solving. The strategies for the listening learning type comprise iterative processes, they resort to the decomposition of the problem into chains of simple problems or they think of numerical relationships, and because they have knowledge of the problem gradually their reason unfolds progressively. Strategies for a kinaesthetic learning type include approaching the whole as a part, they treat the issue on the whole, "feeling it," rediscovering the ideas progressively after each reading and analysis of the problem text, identifying specific tasks that can be performed in their attempts.

Methodological route of training methods differentiated by learning style

In their activities, teachers should tailor the teaching-learning-evaluating strategies they use to the students' individual learning style.

The methodological route for each specific training method used in lessons with a mathematical content is different depending on the particularities of individual students to whom it is addressed. In the context of the exposure method, the teacher has to organize their discourse, so they are well received by each student regardless of their learning style. This means that the ideas must be accompanied by drawings, slides, images from a book or displayed on the projector, and they must make graphs, charts, tables which are useful to visual learners. It is important that the main ideas are expressed clearly, possibly accompanied by quotations or excerpts from readings taken by others, to capture the auditory learners' attention. They should also plan a moment for the kinaesthetic learners,

which involves the exercise of practical skills such as editing a text for note taking, building or construction of conceptual schemes, "spidergrams" and frame patterns (templates) in order to highlight certain ideas.

We constantly asked for feedback from students with auditory learning skills, so they can express points of view, arguing or questioning the opinions of others during the discussion. We can ask the students with a kinaesthetic dominance to answer using practical experiences and descriptions of past tasks, to use role play and enact a situation related to the lesson topic and use this as a basis for discussion or we can assign a sequence of the discussion to these students and ask them to chair the discussion and thus ensure equal participation of all students.

In the context of the exercise method, the teacher must organize the training method, so they are well received by each student regardless of their learning style. This means that students with a visual dominance are encouraged to observe the teacher's demonstration first so as to see links, to practice and understand what to do, and image-based instructions should be made available where necessary. Students with a listening dominance can be asked about the connection between theory and practice in the exercise given or can be encouraged to talk about the task with the teacher or a classmate. Students with a kinaesthetic dominance can be encouraged to "help" or to work together with others, to practice, to make mistakes and try again.

In the context of the demonstration method, the teacher should organize the exchange of ideas, so they are well received by each student regardless of their learning style. This involves the use of posters, schemes to illustrate what needs to be demonstrated, using colored overhead sheets to allow students to see clearly the dominant visual assumptions and what needs to be demonstrated. In addition, students with a listening dominance should be encouraged to ask questions and discuss the demonstration, explaining each point of view in minute detail, and each sequence of the demonstration must be presented orally. Students with a kinaesthetic dominance should be involved in different ways, for example they can be assistants, they can search for examples to support the demonstration or procedure, they can write on the blackboard while the teacher explains.

The teacher should organize the exchange of ideas, so they are well received by each student regardless of their learning style. This includes supporting visual learners to express their ideas about the solution to the problem, using the color scheme to indicate connections between knowledge which favors the resolution approach, writing down useful ideas for solving the problematic situation by using crayons, "spidergrams," images and symbols. Auditory learners can be stimulated to describe in their own words the ideas they have on solving the problem, talk and exchange ideas with other students. The students with a kinaesthetic dominance can compile a list of actions necessary to approach the resolution and rank these according to their degree of priority actions; can write on the board or flipchart ideas generated by other students using different colors.

Assessment must also be organized in a variety of ways. Homework can be assigned to address simultaneously the students with a visual dominance (the text must use different fonts, different styles, images, symbols, diagrams, "spidergrams"), with a listening dominance (text reading of problems for home and discussing the task set) or with a kinaesthetic dominance (include practical tasks that require the development of activities / investigations that have written elements, but the emphasis is not on writing as such, but on the description of what they have done or discovered).

Assessment of worksheets is an evaluative method common to mathematics lessons. These must be designed to address both visual dominance (layout is very important, important elements of the text should be highlighted and underlined or written in bold, especially the important points and key points in the text of the problem), listening dominance (worksheets can have gaps so that students have to listen to a presentation by the teacher to understand the missing elements, there must be discussions on charts to understand their content and requirements better) or kinaesthetic dominance (worksheets can have empty spaces, so that students need to hear a presentation by the teacher and then complete the missing elements) (Stanciu, 2006).

Assessment of project work is a technique which has its strong points in the field of evaluation of the students with different learning styles. In a project conducted by a team, the students with a visual dominance can be encouraged to use various processes related to the visual scoring of project ideas or to build a new image of the project conducted by the students with a kinaesthetic dominance, the

students with a listening dominance can be employed in the early phases of the project, in which they are required to answer questions related to the given task, to talk about the theme in larger groups with each other or with the teacher, to record information on tape and the students with a kinaesthetic dominance may be involved in carrying out practical activities that require teamwork and skills management or to make a PowerPoint presentation of the final project.

Evaluation by testing can be organized so as to simultaneously address students with a visual dominance (using symbols attached to tasks or questions), students with a listening dominance (it would be preferable to use a "Amanuensis", i.e. a person who asks questions and records the responses as they were given by students in their own words) or students with a kinaesthetic dominance (by formulating questions that must be of a practical nature). The objective items must contain graphics / pictures to expand written information (visual dominance), to encourage students to silently repeat questions (listening dominance) and incorporate practical activities, such as a task or demonstration of certain skills (kinaesthetic dominance) (Andersen, 2008). The half-objective or subjective items must include graphics in the worksheet to turn it into a "chart" filled with blanks (visual dominance), to encourage students to silently repeat various aspects of the requirement or formulating a response (listening dominance), but also to allow students to relate to their past experiences (kinaesthetic dominance) (Radu, 1978).

An example of teaching activities using the neuro linguistic paradigm in mathematics lessons

An example of using neuro linguistic training in mathematics lessons teaching is the next sequence illustrating the "problematization" methodological route, in a consolidation lesson for multiplication in the fifth grade.

At the stage of organizing the problem situation the teacher shows an 8x8 chessboard with identical squares and eight castles, leaving the children to examine board and game pieces, the students with a visual dominance are allowed to identify the game pieces and how they operate, the students with a listening dominance are asked to comment on what they think will happen when the game pieces are positioned on the board and how they can be moved them so as not to attack, the students with a kinaesthetic dominance will be guided to move the pieces on their own, so as to comply with the conditions of the problem. Also, the problem is stated, which is the subject of the teaching sequence that we want to illustrate (Consider a checkerboard (8x8) and 8 castles. In how many different ways can we place 8 castles, so the attack becomes impossible?) (Havarneanu, 2009).

At the stage generically called "perception," the students should observe the elements of the problem. It involves a chessboard and 8 identical castles.

At the stage generically called "analysis," students must recall the particularities of movements can shift when attacking two castles. Now it is important that the students notice that the castles are the same color and so identical configurations can be created, and therefore recurring cases should be eliminated. For example, the two diagrams are the same as shifts have the same shape and color (Figure 1).

Figure 1: 8x8 chessboard diagrams according to VAKOG style of learning

1										8									
		3										3							
			4										4						
	2										2								
							7									7			
				5										5					
					6										6				
								8										1	

Source: Havarneanu

Students with a kinaesthetic dominance write the schemes proposed by the teacher on the blackboard; these are useful in solving the problem. Students with a visual dominance observe the proposed

schemes and pupils with a listening dominance comment on the ideas on the schemes presented by the teacher.

At the stage generically called "processing," we considering the number of distinct positions that each turn can do. For the first castle 8 lines and 8 columns are available, that means 8×8 positions. For the second round, there are 7 lines and 7 columns (we excluded those occupied by the first turn), so 7×7 positions. To continue the reasoning, we obtain that for the eighth castle there are one row and one column, so 1×1 positions.

At the stage generically called "selection" it is found that the first castle has 8×8 positions available, but no matter which of the eight castles is chosen as the "first round" it implies that the 8×8 : 8 is the real number of distinct positions. By repeating an analogous reasoning, we obtain that the second castle has only 7×7 : 7 distinct positions and so the last castle has only 1×1 : 1 distinct positions.

In the stage generically called "application," the problem is solved completely and the operations discussed above will be updated.

For each of the 8 different positions of the first castle we build the scheme (Figure 1).

At this stage, students with a kinaesthetic dominance write on the blackboard the schemes proposed by the teacher, which are useful in problem solving and students with a visual dominance observe these schemes, while students with a listening dominance remark ideas related to the same schemes, and

interpret the previous scheme to be read as follows: for the first position of castle 1 we can form seven distinct positions for castle 2, which correspond to six different positions of castle 3 and so on. Thus, for each of the eight castles which are first placed, we could create a scheme of the type previously generated. That means we must perform multiplication. So, the answer to the problem is $8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 8!$ (Figure 2)

At the stage generically called "systematization and setting new knowledge gained by solving a task," children are asked to solve the same type of problem with 4×4 checkerboard squares and with 6×6 squares.

Conclusion

Learning that considers the neuro linguistic paradigm is an inclusive learning type, which harmonizes the individual needs of the learner with concrete ways to meet those needs, representing a tool to allow teachers to achieve the best possible correspondence between their teaching strategies and the individual learning styles. In their activities, teachers should tailor the teaching-learning-evaluation strategies used to the students' individual learning styles, and throughout the methodological route of each training method specific to lessons with a mathematical content, to differentiate sequences that directly address different learning styles, depending on their dominance (visual, listening/auditory or kinaesthetic). This type of training has the advantage of enhancing mental activity both in the cognitive system (sensation, perception, representation, thinking, memory, imagination) and of the affective and volitional ones, thus significantly improving learning outcomes.

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