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Cognitive Map – an example of practical use

Czech language lesson - dictation

The Cognitive Map helps us **to analyze a learning experience** and understand why and where the student has difficulties, thus to plan suitable mediational intervention. By describing seven different aspects of a task, we can realize the specific challenges of the task.

Bellow we are going to analyze a task - a short dictation in Czech language lesson. Dictation has been used for hundreds of years, an exercise that is not very much welcomed by students/pupils/children, but with many cognitive functions being developed, though.

Pepík si do hrnečku nalil čaj s mlékem. Čaj byl málo sladký, a proto si ho osladil medem. Pak se posadil na židli a přisunul se ke stolu.

Pepík poured tea with milk to his cup. The tea was not sweet enough, therefore he put some honey in it. Then he sat down on a chair and moved to the table.

The analysis according to seven parameters:

1. **Content** of the mental act
 - dictation; transcription of a spoken text; comprehension
2. **Modality** or “language” in which the mental act is expressed (receiving information and expressing the results of the mental act)
 - combination of verbal and written (symbolic)

3. **Phases** of the mental act

Mental acts required in the **Input phase** (data gathering):

- clear and detailed auditory perception to identify the right sounds;
- systematic exploratory behavior;
- well-developed verbal tools;
- well-developed orientation in space and time;



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- conservation of constancies;
- well-developed need for precision and accuracy;
- ability to consider two or more sources of information at once

Mental acts required in the **Elaboration phase** (organizing and analyzing the data):

- ability to identify and define the problem
- ability to distinguish between relevant and non-relevant cues
- well-developed spontaneous comparative behavior
- broad mental field
- need to pursue logical evidence
- internalization processes
- well-developed planning behavior
- availability of verbal concepts that support reasoning processes

Mental acts required in the **Output phase** (expressing what is concluded):

- need for precision and accuracy
- ability to project virtual relationships
- well-developed self-regulation – no trial-and-error responses, no blocking
- well-developed visual transport
- ability to restrain impulsive behavior

4. **Cognitive operations** (what happens during the elaboration phase; what steps does our brain in order to organize, manipulate and generate a new information)

- Hearing the phonemes of words
- Identifying the sounds (auditory)
- Comparing in the system of sounds
- Differentiating the sounds in words
- Ordering the sounds
- Identifying the proper symbol (letter) for the sound
- Recording the word
- Applying grammatical rules
- Analogical thinking
- Classification

5. **Complexity** (quantity of information to be handled in a mental act, novelty or familiarity of the information):



It depends on the level of auditory perception, on the novelty of content and context of the dictation as well as grammatical rules to be applied, on length of the dictation, and on the environment in which the dictation takes place

6. **Abstraction** (the distance between a given mental act and the object or event upon which it operates)

High - the task requires many abstract mental acts with no reference to concrete objects

7. **Efficiency** (matter of speed, accuracy, and an experienced amount of effort invested in the performance)

Pupils who perform the task accurately and speedily, perform efficiently. If, for example there is a novelty in grammatical rules to be applied, or the auditory perception is weakened, we can observe slower performance, or more mistakes, or huge effort invested. Efficiency may be a function of any of the above-mentioned parameters. Deficient cognitive function, unknown content, too much abstraction, many units of information, or not preferred modality, these all may result in inefficient performance.

To maximize efficiency, paying attention to criteria of mediated learning experience may be important, particularly to mediating meaning, intentionality and reciprocity, and transcendence.

Also, mediating the feeling of competence may be appropriate, as well as reflective thinking: what did you practice or what did you learn from this dictation; what improvement did you experience; etc.

Dictation is a specific form of grammatical exercise. Used mainly to control orthography it can be a useful tool in the process of learning and practicing the application of grammatical rules, and various orthographic phenomena. Teacher has to think about the length and content of the dictation – aspect of complexity. Too long dictation may bring errors due to fatigue, too difficult content may bring errors due to misunderstanding. Level of complexity depends on the number of orthographic phenomena in the text. Typically, 15 – 20 phenomena in the text of 100 words for pupils aged 12 – 15.

Dictation may be focused on one phenomenon that is currently practiced or on practicing various phenomena. Dictation requires the teacher to be skilled in dictating: reading the whole text, part of the text, reading clearly, giving enough time, etc. The phase of controlling is mostly important. Working with mistakes is one of the most important parts of the learning process – pupils should be encouraged to find errors, identify them, correct them and reflect or understand why the mistake happened and what is the correct form.

Dictation helps the pupils to become independent learners.