

PSYCHOLINGUISTIC ASPECTS OF THE PROCESS OF TEXT CONSTRUCTION

^a JANA KUSÁ

*The Department of Czech Language and Literature, Faculty of Education of Palacký University, Žižkovo náměstí 5, 771 40 Olomouc, Czech Republic
e-mail: ^ajana.kusa@upol.cz*

The paper was written within the framework of the project named Cognitive and Metacognitive Aspects of the Text Production Process of the Primary School Pupils under the Grant Fund of the Dean of the Faculty of Education of the Palacký University.

Abstract: The submitted study focuses on metacognitive strategies applied when writing a text, both from the theoretical and research point of view. The core of the theoretical starting points is the definition of three basic indicators of the adoption of metacognitive skills which are metacognitive knowledge, monitoring and self-regulation, which jointly form an algorithm applied during the process of textual construction. In another part of the study we present progress and results of the research survey of the diagnosis of metacognitive skills and potential deficits in the group of pupils aged 14 and 15. We notice fundamental factors that present the fundament for the creation of the didactic concept aimed to support the cognitive and metacognitive functions of pupils in the development of textual competence.

Keywords: metacognition, metacognitive knowledge, monitoring, self-regulation, text production, primary school pupil

1 Introduction

Condition of the written language of current young generation seems to be problematic in many aspects. Pupils' textual communication indicate deficits in the area of communication as well as on the cognitive and metacognitive level, despite simultaneously preferred communication-pragmatic and cognitive approach to the teaching of the mother tongue. Just as questionable is also the transfer of textually-productive skills to other didactic or extra-curricular contexts. The causes may be seen in frequent focus only on the resulting product in particular and in not respecting the processing production of a text, in increasingly separating teaching from real communicative situations and insufficient activation of cognitive and metacognitive processes in the course of the communication construction.

The text production itself is a didactic task which supposes use of a variety of cognitive and metacognitive functions. The way of pupil's interaction with the given pedagogic situation reflects the nature of their cognitive structures, the rate of implementation of metacognitive strategies and possible deficient cognitive functions (Feuerstein, 2006). We believe that the pedagogical intervention on the level of the cognitive processes of pupils and targeted development of text competence should be preceded by a detailed analysis of the whole complex process of communication creation (Čechová, Styblík, 1998, Winter, 1992), including monitoring the metacognitive skills, which may significantly affect quality of the final text. The first part of this study is focused on the basic characteristics of the text production process and the algorithms used there. Then we deal with the basic components of metacognition, directly in relation to the creation of textual communication. An integral part of the study is the description of the research survey focused on the analysis of the metacognitive skills of the monitored group of primary school pupils and the presentation of the research findings.

2 Writing as a solution to a problem

The main fundament of our study is the perception of textual production as a complex problem task, in which there are more possible approaches to the solution (cf. Winter, 1992, Späker, 2006). As Merz-Grötsch says (2010), the model of textual construction is characterized by the essential attributes of a problem task:

- formulation of the problem,
- production of possible solutions,
- testing and assessment of the given alternatives,

- selection of the most suitable alternative,
- implementation itself.

The process of textual production is at the same time specific with its cyclic character (Šebesta, 2005, Tribble 1996, Larkin, 2010). The individual steps repeat in the course of the elaboration several times in all major phases – pre-writing (planning), writing (formulation), post-writing (review). Pupil therefore seeks the solution to the problem in several stages and repeatedly. This means selective activity – application of previously acquired experience and selection from the possible alternatives (both on the level of the content and composition as well as in the form of the language). This way pupil gradually acquires solution algorithm. Resulting communiqué is not the only product of the learning itself, but it is especially certain instructions, guidance strategies that can be used during repeated solution to a similar didactic task. Repetition then brings the reinforcement of the algorithm. The pupil consciously uses stable solutions (Krejčová, 2013), applies a general model of textual construction and particular textual model in those steps for which such a procedure proved useful. The algorithm is composed of several layers. It is based on the knowledge of the given textual model (particularities of individual stylistic procedures and structures) and includes the ability to apply them in successive steps (adoption of each phase of the actual textual construction process), including the ability of algorithmized manipulation of linguistic norm. Automatization and interiorization are also equally desirable among metacognitive strategies that allow monitoring and regulation of all phases of the textual production process.

3 Basic metacognitive strategies when writing

Text production is a structured training task which requires complex mental operations and their consolidation using the language. The successful implementation of the individual phases of the whole process is directly influenced by activating appropriate cognitive processes (attention, memory, perception of stimuli, problem identification, the extension of the mental field, categorization, seriality and sequentiality, deductive and inductive processes, analogical thinking, analysis and synthesis, work with hypothetical relations etc.). The development of cognitive functions is at the same time determined by the use of metacognitive strategies, which will facilitate the consolidation of the algorithm and support the interiorization of the thought process and the strategies applied in the text production (Krejčová, 2013) – then the transfer of acquired skills is much easier. With regard to the facts above, it is desirable to extend the text production by metacognitive dimension; it means conscious control of the own cognitive activities.¹

Metacognitive strategies are based on the adoption of so-called self-controlling speech (Málková, 2009). This is a certain form of inner speech that will make the perception of the didactic task structure, consideration over the solution procedures, possible alternatives and one's own thinking possible. It is applied at all stages of the text production. The pupil plans the word processing, monitors it with his/her own mental activity and evaluates the used strategies. Self-controlling speech is often hidden as a part of non verbalized mental process. When the conscious activation of metacognitive strategies really occurs, one should be able to explicitly express the given processes.

Description of partial aspects of metacognition arises from cognitive functions that are active during the text production. On their basis the rate indicators of adoption of metacognitive strategies can be generated. During metacognition two basic processes that often take place simultaneously are used –

¹ As V. Lokajčková says (2014) the implementation of metacognition into teaching is presently perceived as a challenge, which is part of the new (productive) culture in the classes. The author also points to the fact that metacognition is not reflected in the real form of teaching in the environment of the Czech education system. The emphasis is far more on cognitive knowledge than on metacognitive skills.

monitoring and self-regulation (Lokajčková, 2014, Krejčová, 2013). Many theories also work with the component of metacognitive knowledge (Krykorková, Chvála, 2001, Otani, Widner, 2005, etc.). As Harris et al. say (2009) metacognitive knowledge includes knowledge of oneself, about one's ability, weaknesses and strengths. This is related to the so-called perceived academic effectiveness – a pupil is able to assess whether the problem task is simple or complicated (with regard to previous experience), he/she thinks about himself/herself and his/her relation to it (cf. Krejčová, 2013, Bertrand, 1998). Pupils thus perceive themselves as one of the conditions of text production (Winter, 1992). Knowledge of the task, its importance and the strategies needed for its completion, general (i.e. the individual steps in textual construction) and specific for given stylistic structure is also part of the effectiveness. Metacognitive knowledge assumes the orientation in actual cognitive operations and knowledge of conditions realized in relation to the demands on the elaboration of the task given. This metacognitive knowledge is necessary for efficient management of the cognition itself.

When monitoring cognitive processes, an individual is planning the objectives and procedure – is thinking about the way how to approach the problem solution (is verbalizing cognitive processes that they need to complete the task – it means the solution algorithm) and is structuring the objectives at the same time. The more accurate and more sophisticated monitoring is, the more easily they reach the objectives (Hacker et al., 2009). Monitoring process is directly related to attention. A pupil is able to verbally describe the procedure of focusing their attention (communication takes place on the intrapersonal level) or they are considering alternative procedures (there is communication on both the intrapersonal and interpersonal level). So they are thinking about what to focus on first, on the contrary what to focus on later, which actions they must not forget about, which actions they will devote sufficient amount of time for, etc. (so-called selective attention). On this basis they are able to generate constituent activities which lead to the final solution of the didactic task. The individuals also activate their working memory (planning each stage, recording the steps that they have already finished, etc.).

Self-regulation lies in metacognitive control. The pupils register the steps leading to the solution of the problem and at the same time they evaluate them. They consequently formulate why the certain activity is important, they are able to consider alternative solutions, to evaluate them and to assess their potential effect, the importance for further learning or transfer outside the educational environment – on the basis of evaluation they may modify the original solution plan (self reflexive metacognition). In the framework of the metacognitive check of the text production process the pupils knowingly work with memory, i.e. that they fully register this process. They consider what information they recall, monitor their own association, think what information should be reinforced etc. (metamemory). At the same time they map in which areas it will be necessary to extend their own mental field. They knowingly approach to the perception of ideas and their processing (at all stages of the text production). Metacognitive strategy shall be applied on the intrapersonal level (e.g. they register how they will analyse information, process it and relate it to earlier experience), as well as on the interpersonal level (the extension of the mental field occurs in interaction with other individuals – the pupils therefore think about their way of thinking, and not only in the phases of pre-writing, but also during shared revision of the texts). During the self-regulation process the pupil registers and is able to comment on the procedure of information processing – they are able to describe the criteria for categorisation, consciously use analogical thinking, clarify the principle of generalization, they work selectively (distinguish between relevant and marginal information, knowingly choose appropriate linguistic means etc.), they can explicitly express the procedure of argumentation and verbalize relevant cognitive processes that are active during this procedure.

4 The object of research and methodology

In the submitted study the authors present the partial results of the first phase of a qualitatively oriented research project *Cognitive and Metacognitive Aspects of the Text Production Process among the Primary School Pupils*, which is aimed at monitoring, systematic description and evaluation of metacognitive strategies that pupils knowingly use for text production. Thus the objective is:

- to capture the state of metacognitive knowledge and the level of demonstrated metacognitive skills of the monitored group of pupils;
- to determine to what extent they are aware of the importance of mental operations used in the text production;
- to diagnose possible deficit functions that will determine subsequent specific educational objectives.

Monitoring of the metacognitive skills of the pupils and diagnostics of possible deficits is needed as a basis for a qualitatively aimed forming experiment which forms the core of the next phase of the research and whose aim is the systematic activation of cognitive processes and metacognitive strategies of pupils during the construction of text communiqués. The research survey is based on long-term work with the experimental group of 18 pupils aged 14 and 15. It is during the adolescent period when metacognition improves – pupils' thinking is already more comprehensive, more abstract, executive functions also develop greatly (Krejčová, 2013). Pupils' writing in this developmental stage is oriented predominantly on interpretative, reflection and argumentation texts whose mastery is subject to significant levels of cognitive functions and metacognitive knowledge and skills. This fact has been respected during the construction of the research tools.

For the purposes of the first phase of this research survey a research tool in the form of record sheets (protocols) was composed. Methodologically it is based on so-called knowledge space theory, which will allow a deeper understanding of the examined situation and will also arrange metacognitive skills to a structure. We define knowledge and skills domain of the metacognitive level of the text production process in relation to the above described indicators (perceived academic efficiency², monitoring and self-regulation). Recording sheets include monitoring assignment, which is based on the individual items of the knowledge domain on the level of metacognition and allow capturing knowledge structure of the investigated group of pupils, subsequently to assess the degree of adoption of the given items. Recording sheets were subsequently subjected to content analysis based on coding of the data material.

5 Research Results

When processing the research data we watched three selected indicators of the metacognitive knowledge level and skills of pupils which substantially determine the final text of the communiqués.³

Indicator 1: The first indicator monitors relationship of pupils to themselves with regard to the given task (i.e. production of a text) and relation to the task itself. Monitoring assignment led pupils to think about the process of text production (pupils reacted for example to the following questions: *Do you like writing essays? Are you confident when facing this task? Do you*

² Other monitored indicators point at the rate of adoption of other components of metacognitive knowledge (knowledge about the task and strategies).

³ We only indicate the method of implementation of the first phase of the research investigation; we are at the same time aware of certain generalisation when presenting the results. Detailed description of the research tools and detailed analysis of the data collected including monitoring of the relationship between the demonstrated level of metacognitive skills and real form of text communication will be an integral part of the research study *Cognitive and Metacognitive Aspects of the Text Production Process among the Primary School Pupils*, which will be published at the end of the research in 2017.

consider the writing to be easy or difficult task?). Analysis of the replies draws attention to the following points:⁴

- The observed group of pupils consider writing texts to be their favourite activity, but given topic is the defining and motivating factor. They appreciate mainly possibility to freely express their own ideas, work according to their own pace and creative freedom. Two pupils confirm their negative relationship towards writing and they justify it with the lengthy nature of the whole process and a vague idea of its course. This fact points at the possible deficits at the metacognition level.
- The majority of pupils consider the writing to be simple activity, but again only if they consider the instructions to be interesting. If the topic is unknown or unattractive, the whole process of text production is demanding for them. They consider writing stories to be easy (they can write freely, work with fantasy), that is the stylistic structure they have been facing almost whole study life. They perceive the structures of factual nature (interpretation, biography, etc.) to be demanding to elaborate. Therefore, the dominating determinants are the particularities of specific text models.
- The demonstrated academic effectiveness of the observed group is at a considerable level – pupils mostly do not reflect the concerns of the task, they believe in their own abilities in the field of text production and they do not perceive themselves as a factor which could negatively affect the text process. If opposite, they admit only initial fears of the course of the task processing and from the final form of the text. These pupils perceive the positive influence of the monitoring process (i.e., planning) to eliminate the initial uncertainties.

Indicator 2: The second indicator points out level of pupils in the area of monitoring. The observed pupils were invited to verbalize the solution algorithm when writing an interpretative text. In the first stage the pupils were again instructed using guidance questions (*What is your goal? What will you concentrate on first and what will follow? Which procedures proved effective? What complications may arise?* etc.). In the second stage the pupils were assigned a problem task (interpretation on the topic "Modern communication technologies") – the assignment given in the protocol instructed the pupils to verbalize the monitoring process once again.

Level of the monitoring process is in the observed group of pupils greatly differentiated. Students could be divided into three groups: pupils on level A are able to plan how to resolve the didactic task, structured at all stages (pre-writing, writing, post-writing). They follow the sequence of focus, remind of the necessary elimination of interferences, plan the way of gathering information (looking up, verification of information from unfamiliar sources, work with their own memory), their reinforcement, categorization and selection. They prefer to work with a mind map that clarifies information and indicates the sub-thematic areas (they judge its effect), but they also remind the possibility to work with a classical outline – they consider alternative solutions. They consistently plan the stage of writing, which they divide into several phases (work with the concept and its partial alterations); the same way they monitor all the steps that are part of the stage of post-writing (focusing on the structure of the text, its clarity, richness of vocabulary, text coherence and spelling accuracy). The pupils of the level A perceive the planning process as an activity which has already been made automatic. When verbalizing, they work with all the entries of the examined knowledge domain. The pupils of level B (highest representation) show partial lack of their ability to verbalize monitoring process, which may indicate real deficits in metacognition. These pupils most frequently do not respect three phase model of text construction – during planning of the

solution process they omit partial steps in the phase of pre-writing (forming the outline is often the first mentioned step, they do not pay their attention on the collection and classification of information, they do not distinguish between the work with their own memory or with somebody else's resources when expanding the mental field), more often they do not incorporate phase of post-writing at all. They do not keep in mind fixation and processing of information either, they prefer so called writing out of their heads – so they do not monitor the process of categorization and selection of information. When verbalizing the monitoring process they work only with selected items of the knowledge domains. It can be assumed that the knowledge structure on the level of monitoring is partially deficient in this group of pupils. Answers of pupils on level C (the least represented) indicate significant deficits in the monitoring process – explicit description of the individual steps of the algorithm is problematic for the pupils. They usually plan very limited number of steps needed to complete the task, they often use very general formulation (*I will write the text, I will invent the text, I will rewrite obtained information, I will use imagination*). Their knowledge structure is in the area of demonstrated metacognitive skills of monitoring significantly deficient.

Indicator 3: The third indicator of the level of the demonstrated metacognitive skills is self-regulation. This was monitored again in two stages: 1. registration of cognitive processes: pupils verbally glossing over all the steps that led to the creation of text communiqué; 2. the evaluation of the cognitive processes and the awareness of the possible transfer: in the second, reflexive stage, pupils summed up these activities again and at the same time assessed what was their necessity in relation to the given task and what is their further possible use.

The research findings in the third indicator correspond to the results of the monitoring indicator - pupils knowingly use and are able to identify those mental operations included in the scheduled procedure (for self-regulation they focused their attention in particular on the description of the work with a mind map or outline). During self-regulation pupils name only basic steps – they do not verbalize complex mental operations (categorization, selection, generalization, analogy etc.), although working notes (e.g. the mentioned mind maps) or the resulting products point to their real application. Deficits are therefore manifested on the level of verbalization in particular. It can be stated that in the area of self-regulation pupils mostly work only with certain items of the knowledge domain. Then the evaluation of individual steps appears to be especially problematic among the observed group of pupils. Only rarely we encounter realized possibility to transfer the acquired skills to other didactic or extra-curricular situations (using an outline to plan a procedure of any activities, using proofreading not only when writing an essay). In other cases pupils evaluate meaning of partial steps only in relation to the given task and they admit that they are not aware of further use (*a mind map will clarify the information needed for the text, then the text is not chaotic, thanks to it I stick to the topic, I can find information and use it when writing a text*, etc.), so it is possible to assume that the conscious transfer is not made.

6 Conclusion

The carried out research probe responds to the fact that the pedagogical intervention in the area of terms of cognition and metacognition should necessarily be preceded by a thorough monitoring of pupils in both areas. The initial diagnosis of metacognitive skills defines problem of practice and is the first step in individual long-term and intensive work with a research group of pupils. The submitted study provided a description of the factors which have a direct influence on the creation of the didactic concept and the formulation of specific educational objectives in the next stages of the research, it also presents a research tool that is methodologically built on the theory of knowledge space and subsequent analysis of three basic indicators – perceived academic efficiency, the ability to monitor and self-regulation. It can be concluded that the observed group

⁴ In the submitted study we notice the knowledge the structure of the group as a whole. When formulating educational objectives, creating the teaching concept, performing the experiment and its evaluation, the research team assessed the knowledge status of all studies individuals separately.

of pupils has only partly adopted metacognitive strategies – deficits were found both in the ability to verbalize the procedure of dealing with the problem task as well as during self-regulation. The most problematic is the evaluation of the different stages of the text production process and the assessment of the possible transfer of acquired skills. A prerequisite for further development of text competence and thinking of pupils involved in research is with regard to these research findings represented especially by targeted activation of their cognitive processes and metacognitive strategies, a systematic approach to the verbalization of mind processes, which will support the development of the self controlling speech, consistent structuring of the didactic task and the inclusion of activities supporting conscious transfer of acquired skills – e.g. Feuerstein's methods of mediated learning.

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