The Intellectual Assumptions and Critical Thinking in Preparing a Child for School Education

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Abstract – The study deals with the development of pupils' intellectual assumptions and cognitive functions. The optimization strategy in the subject research are educational activities that are applied in primary education. The subject of the investigation is the identification of the impact of educational activities on the level of pupils' intellectual assumptions, operationalized at the level of pupils' general knowledge (factual, conceptual, procedural). The research design is based on a pedagogical experiment with pupils in the transition period. According the results, pupils who have been applied educational activities achieve a higher level of intellectual prerequisites at start of the primary school.

Keywords – intellectual prerequisites, beginning pupil, pupil of primary education, critical and creative thinking, cognitive functions.

1. Introduction

The systematic and deliberate preparation is essential for the future pupils in order to be possible to successfully handle the cognitive, social-emotional and psychomotor challenges of school education.

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In the period of transition from kindergarten child to pupil at primary school, the maximum formation of the individual prerequisites of the child is desirable [6], [15]. If a child has related deficiencies his success in initial teaching is at risk and difficulties may occur during school adaptation [9]. The given issue belongs to the discussed topics of experts, it is made concrete by several scientific studies [2], [3], [13], [10]. The situations stimulating thinking, interest in learning new things, curiosity and intellectual effort become predictors of a child's positive attitudes towards school and learning [19], [20]. The focus is also on the development of the intellectual field, which includes increasing the level of general knowledge, forming learning prerequisites and improving cognitive functions. The requirements of modern education point to the formation of a child's critical thinking during the transition to primary school so that it can progress successfully in education.

The social and global situation in society brings an oversaturation of information, which affects everyday life and the progress of children's education. The current importance includes the need to educate critically thinking individuals with a focus on the pupils and their cognitive processes of learning content. In terms of supporting the pupils' critical thinking in the education, various educational strategies are emphasized, which should be implemented in pedagogical practice. The author [7] emphasizes that the most important thing for the formation of the critical thinking is its concretization in the practical activity. A space should be created early for children with plenty of stimuli for the creative and critical thinking, the comparing opinions, the evaluating ideas, the finding out information, the asking questions and the getting answers. The emphasis is placed on forming the child's prerequisites for the implementation of given activities, which are the starting point for relevant critical thinking in the future.
The personal attributes of critical thinking on the part of the individual include dispositional aspects such as the inner person to act towards persons, events and react to them. It is a characteristic of an individual, his tendency to think in a certain way under certain circumstances. We consider dispositions towards critical thinking to be a necessary determinant of this type of thinking.

2. The cognitive area of the child's personality during the transition from kindergarten to primary school

The prerequisites for successful entry into the 1st year of primary school are formed before. The attention of preschool training and the family environment is thus directed at the increased cognitive level, which is the most assessed area for the child to cope with the requirements of primary education [25].

A prerequisite for a pupil's successful education at school is an adequate level of the cognitive functions and knowledge according to the set outcomes of pre-primary education. These are determined through performance standards, which represent "observable and evaluable performances" for children in the last year of kindergarten. The future pupils therefore have a set level of knowledge from individual educational areas, which is a prerequisite for general education in primary school [21].

The intellectual prerequisites are also emphasized like one of determinants of successful school adaptation of the pupil. The several authors [21], [11], [1] clarify the determinants of the school adaptation within the intellectual dimension (knowledge, curiosity, the child's interest in learning new things, creativity, imagination) and also within the social dimension (people's demands on the child, social competences, acceptance of the school regime, communication, feeling of security), the biological dimension (age, coping with physical load, formation of the movement system), the psychological dimension (the will of the child, assumptions, ideas, plans).

The existing demands on cognitive processes, e.g. intellectual development, changing ways of learning, the required level of attention, the pupil's concentration and adequate performance are also sources of stress on the psychological area of the pupil's personality. The deficiencies in the cognitive functions (perception, thinking, memory, attention, speech) and the deficiencies in the psychological field [22] represent potential risks of difficulties for the pupil at the beginning of schooling, during the school adaptation period.

The several authors [5], [12], [24] single out weaknesses in the intellectual activity, insufficient intentionality of the psychological functions, the intellectual passivity, the level of psychological maturity as a cause of difficulties at the beginning of school education. The author [24] adds the presence of inattention, weakening of the verbal and working memory, the disruption of executive functions, the inability to select essential information and their subsequent analysis, or synthesis.

An essential part of the preparation of the future pupils, focusing on the development of the cognitive area of their personality, is the improvement of thought operations. After entering the 1st year of primary school, the skills of comparison, the classification and the generalization are desirable for the implementation of learning activities. The deliberate preparation should be oriented towards stimulating the child's curiosity, interest in learning. According to author [16] this is a child's natural age-related need, but she sees room for providing adequate stimuli and opportunities for its development in the preschool and family environment.

3. The activities to develop the intellectual area of the child's personality in preparation for school

As part of the preparation of children for initial teaching, we prepared a set of intentional activities for future and beginning pupils. The starting point was the focus on the formation of intellectual assumptions, strengthening the child's general knowledge of objective reality with the assumption of raising the level. The compiled activities point to the importance of education for life, fixing acquired knowledge in new situations, stimulating creativity and critical thinking by expressing the children's own ideas. Considering the target group, the role of the pupils, the acquisition of new skills and the handling of related duties are emphasized. The aim of the set of activities is to consolidate and improve children's general knowledge, or pupils about the phenomena of objective reality. The set of activities contains four activities for the oldest age group of children in kindergarten, which included reading pictures about school, dramatizing a story with a school theme, naming and sorting the school supplies, answering the questions. A worksheet solution for consolidating knowledge and a social game focusing on reading, writing and counting were intended for the family environment.
4. Methodology

In accordance with the theoretical starting points and empirical findings so far, our intention was to experimentally verify a set of activities. The goal of the research activity was to determine the impact of selected activities on the level of intellectual assumptions of pupils at the beginning of schooling. We formulated hypothesis H for the research: We assume that there will be a statistically significant difference in the level of intellectual assumptions between the experimental and control groups in favor of the experimental group.

The selection of the research sample was available, it consisted of 95 future pupils of whom 85 became pupils at the beginning of primary education. Due to the design of the research, the sample includes an experimental group with the implementation of activities and a control group without the implementation of activities. The methodological framework of our research activity was an experiment, the starting point of which was the application of selected activities. We conducted a pretest with both groups, then applied an independent variable - a set of activities in work with the experimental group. After the intervention, we conducted a second measurement through the output measurement, the posttest.

The research method used was a modified and supplemented Test: general knowledge and knowledge [4]. The test contained ten questions that were read to the respondents and their answers recorded in writing. The one point was awarded for the each correct answer and at the end the total number of points was calculated. We statistically processed the obtained research data using the Wilcoxon one-sample test.

The observed characters will be the characters X, Y, where the values of the character X are the results of the respondents of the experimental (control) group in the pre-test and the values of the character Y are the results of the respondents of the experimental (control) group in the post-test. We tested the hypothesis: the medians of characters X, Y are equal against the alternative hypothesis that the medians are different.

We implemented the test in the STATISTICA program.

After entering the input data for the experimental group, the value of the test criterion Z of the Wilcoxon one-sample test (Z = 4.457) and the probability value p (p = 0.000). It is a small number we reject of the tested hypothesis at the level of significance. This means that the results in the test were significantly changed by the respondents of the experimental group due to implementation of intentional activities. We graphically illustrated the situation in Figure 1:

![Figure 1. Experimental group - comparison of average values (pretest and posttest)](image)

Respondents in the experimental group achieved an average of 14.8 points in the initial measurement (pretest) before the application of the experimental variable (a set of intentional activities). After completing the activities, the average number of points increased by 0.7 points, i.e. the average score was 15.5 points. Based on the findings, we can conclude that the implementation of the activities significantly increased the level of pupils' intellectual assumptions. From the point of view of the individual questions in the test, the respondents achieved significant progress, which becomes a prerequisite for successful adaptation and initial education at school. The respondents have the desired knowledge for school education. Considering the number of points achieved, the increase in the number of points for the respondents in the experimental group, we state the effectiveness of the set of activities at the level of the pupil's intellectual assumptions. Analogously, we were interested in the situation with the respondents of the control group. After inputting the input and output measurement results in the control group as input data, we got the Wilcoxon One-Sample Test Criterion Z value (Z = 1.6805) and the p-probability value (p = 0.092) in the computer output. The calculated probability value p is a large number, which means that we cannot reject the tested hypothesis.

The statistical analysis shows that the results did not change significantly for the respondents of the control group. We graphically displayed the situation in the control group on Figure 2:
The same comparison of the differences in the results of the input (pretest) and output (posttest) measurements was also carried out among the respondents of the control group. The average number of points in the pretest was 14.8 points, while in the posttest it increased by only 0.3 points, i.e. 15.1 points. At the end of pre-primary education (implementation of the pre-test) and at the beginning of primary education (implementation of the post-test) the respondents of the control group were almost at the same level. The deficiencies in the intellectual field, missing or incomplete knowledge required for school education can cause failure in initial teaching, the emergence of adaptation difficulties for the pupil. The increase in the number of points, the change in the level of intellectual assumptions are minimal, or the difference between the input and output measurement results is not statistically significant.

5. Discussion

According to the mentioned findings, we can conclude that the hypothesis H1 was confirmed, in which we assume that there will be a statistically significant difference in the level of intellectual assumptions between the experimental and control groups in favor of the experimental group.

After completing the deliberate activities, the respondents of the experimental group have a higher level of intellectual assumptions, which confirms its influence. According to the results of the test used, we also found progress in the respondents of the control group, but compared to the respondents of the experimental group, we consider it to be much lower and milder.

According to the results of the output measurement (posttest), the average number of points of the respondents of the control group was comparable to the minimum number of points of the experimental group.

Based on the comparison, the experimental group has adequate knowledge required for school education. The lower level in the respondents of the control group represents a threat to their academic success in initial teaching and successful adaptation.

Similarly, the author [14] considers the cognitive indicators of the school readiness to be determinants of pupils' results and performances in school, the success of their involvement in school education. An adequate level of knowledge about the phenomena of objective reality is desirable for school education, in which it is adequately increased [17]. If the pupils don’t have sufficient knowledge of the given phenomena, then in terms of Vygotsky’s theory of the zone of proximal development [18] continuity between the existing and a higher level is not possible. For the pupils, the content is unknown and uninteresting, which can potentially affect the success of his education and school adaptation. Similarly, according to authors [8] the academic success of a beginning schoolboy is conditioned by knowledge and also by the predictability of experiences, the level of positive experience.

The challenge for actual education remains the inclusion of activities to increase the intellectual prerequisites of children. In this context, it is also necessary to expand the forms of the cooperation between kindergarten and primary school teachers.

6. Conclusion

In conclusion, we can state that by conducting pedagogical research, we managed to point out the need for deliberate training of future pupils. It is essential that during the transition from preschool to school education, they are provided with deliberate stimuli to increase the level of their prerequisites for school education, including intellectual prerequisites. Related opportunities can take different forms, e.g. intentional activities in working with future and beginning pupils. Similarly, the development of critical thinking takes place on the basis of a long-term, deliberate and purposeful process, which has a fundamental impact not only on the quality of learning, but also on the personality and social learning. The active participation of the kindergarten, the family and the primary school is desirable during this period. According the research results, it was confirmed to us that the intentional activities included in the preprimary and primary education affected the level of the pupils’ intellectual assumptions.

A related aspect in preparing a child for school education is the formation of the critical thinking. It represents thinking in the depth and the creating new knowledge based on already existing foundations.

It is a deliberate decision to accept or reject a claim based on chosen standards and criteria.

The starting point is the certain knowledge, the intellectual skills, the personal assumptions, the arguments, the reasons and the evidence, which are developed through the practical activity.
Pupils demonstrated a sufficient level of necessary general knowledge resulting from the role of a pupil and the characteristics of school education. The comprehensive and timely approach positively influenced their readiness in the given area, so we can predict their better academic, personal, and the social adjustment in the school environment after entering the 1st grade.

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References


