



Preconceptions of Gifted and Ungifted Pupils of Younger School Age on the Selected Phenomenon “Learning”

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Abstract

The subject of this paper is the area of children's thinking, especially the area of preconceptions, creating ideas about certain phenomena that surround children during their development. These phenomena are perceived as determinants of thinking. Preconceptions are constructed concepts of various objects, things and phenomena that have arisen from individual's experience with objects or phenomena, as well as other impacts (family, school, media, etc.). Preconceptions also include the emotional relationship, attitude and opinion of certain phenomena that an individual creates through experience. Based on the importance of understanding preconceptions for the development of cognition (thinking and ideas) about phenomena, our goal was to identify and compare the preconceptions of gifted and ungifted pupils of younger school age. Knowing the personality traits of gifted children (whose development is characterized by irreversible developmental advances, and the spectrum of their manifestations often ranges from hyperactivity through significant activity to introversion) is the basis for their understanding. These personality traits and characteristics of gifted individuals are a prerequisite for special and professional approach of teachers, with the aim of quality and balanced personality development of individuals of this population. The level of pupil's thinking should be the priority for each teacher. In the presented work we understand talent as a certain phenomenon posing a challenge for a completely different approach and grasp of children's thinking in education. Therefore, we were interested in whether there are differences in the level of preconceptions among gifted and ungifted pupils in primary education.

Keywords: *preconceptions, gifted pupil, young school-age pupil, meaningful education*

1. Introduction

An individual learns and gets to know the world throughout all his/her life. One of the most important periods is the pre-primary and primary education when a child acquires information from everyday life, with which he/she comes into contact, and on the basis of which a child develops certain ideas about the functioning of the world. School is a place where these ideas can be modified into a meaningful knowledge structure by proper teaching. In the current information age, there are many pitfalls that can disrupt, twist, distort or prevent the process of learning and correct understanding of individual pieces of information, and thus lead to misconceptions. Getting to know pupils' preconceptions plays an important role in their continuous and effective education. If we want to teach pupils a new concept comprehensively, we must start with known experience and what they have already come into contact with [1].

2. Role of Preconceptions in Education

Doulík and Škoda [2] define preconceptions as individual characteristics of each person, formed by all previous influences and experiences affecting the individual throughout his/her life. Similarly, Smolleck and Hershberger [3] characterize the term, according to which children are constantly researching and exploring their surroundings, thus creating naive grasps (preconceptions) of the world they live in. According to Duit, Treagust, and Widodo [4], preconceptions are mental models of objects and phenomena in the learner's mind. The basic source of children's preconceptions are cognitive processes, based on which they attribute importance to phenomena around them, they create a certain comprehensive idea of this world that, in this way, becomes meaningful for them.

Although cognitive activity is a key source of preconceptions, we cannot consider them only at this level, given the wide and diverse range of influences involved in their formation and modification. Doulík, Škoda [2] and Lee, Pang [5] present two basic groups of factors influencing preconceptions:

- exogenous (social, economic, e.g. family, school, media and other micro / meso and macro environments);
- endogenous (based on the personal psychological and biological characteristics of an individual).



Based on the above factors, together with the active involvement of a pupil in an activity, the modification of preconceptions is carried out in terms of quantity and quality. By observing the environment, experimenting with materials and objects, playing and discovering new concepts and connections between them, pupils form a comprehensive knowledge structure that needs to be further utilised. In this way we can ensure effective achievement of the pupils' learning performance. This means that the pupil will have a meaningful and comprehensive knowledge structure (not only be able to name the concepts, but also to understand the relationship between them, evaluate them and draw conclusions). In terms of specific characteristics of gifted children, we conclude that these preconceptions will differ significantly compared to peers, because, in addition to the above factors, the creation of preconceptions, as stated by Kosíková [6], is significantly affected not only by the nature, but also the level of thought operations, breadth and depth of learning concepts, and building relationships between them. It is necessary for the educational process to be differentiated with regard to preconceptions of children based on their personality characteristics, which are largely involved in their formation and modification in the educational process itself. Therefore, it should be taken into account that giftedness is a specific phenomenon in education. For this reason, the preconceptions of gifted children are no exception. They should not be overlooked, but treated as a starting point, and in this way, teachers should reflect and develop specific personality of gifted children in schools.

3. Methods and Participants

The aim of the research was to identify and compare the preconceptions of gifted and ungifted pupils of younger school age about the phenomenon of learning. Therefore, we were interested in the following:

- How do gifted and ungifted pupils understand the phenomenon of learning?
- What do gifted and ungifted pupils think would be the consequences if learning did not exist (what significance do they attach to the existence of the phenomenon "learning")?
- What is the relationship and attitude of gifted and ungifted pupils to the phenomenon "learning"?

In order to identify preconceptions, we used the method of projective techniques, specifically the method of incomplete sentences. We used the research tool of our own design and created a sheet of incomplete sentences (incomplete sentences in question are listed in the results), which students spontaneously completed at their own discretion. The sheet contained 36 incomplete sentences concerning 9 phenomena (learning, book, counting, meaning of life, loss, success, free time, friendship, family). However, in this paper we only process data related to the phenomenon "learning". 50 pupils of the 2nd grade of primary schools participated in the research, 25 of which were gifted and 25 were average or ungifted pupils.

4. Results

We evaluated the obtained data based on the principles of the analytical strategy using the constant comparative method and categorized the completed sentences with the content analysis. We further processed the data in the MS Excel program and interpreted them into clear figures and tables. We presented the evaluated data in the form of a summary protocol [7]. The evaluation can be found in the following figures and tables.

All statements of the pupils on the incomplete sentence "**Learning is when...**" are presented and evaluated in Figure 1 and Table 1. We categorized these statements into five semantic categories of how pupils understand the phenomenon "learning" (see Table 1). The most represented category was specific activities – pupils perceived learning as writing, reading, counting, sports, etc. For example, Pupil No. 8 stated that "*learning is when I put that knowledge into me*". However, similar statements occurred only in the group of gifted students. This category was prevailing mainly in the group of gifted pupils (hereinafter referred to as GP), and thus by 44%. Ungifted (intact) pupils (hereinafter referred to as IP) gave only statements like (Pupil No. 20) "*learning is when we read a book*" or (Pupil No. 11) "*...when I write a dictation or read*". The category of institutional understanding consisted of statements in which students mentioned mainly institutions or the educational environment where education takes place, such as (Pupil No. 9) "*...we are at school*", (Pupil No. 22) "*...we have classes*" or (Pupil No. 25) "*...we have a lesson*". Such statements were reported by the IP group by 16% more than in the GP group. Another category consisted of more general statements of the pupils, in which they stated only (Pupil No. 16) "*...we are learning something new*" or (Pupil No. 18) "*...we are educating ourselves*". This answer was given only by the GP group. Nevertheless, this category is



represented approximately equally in both groups. In the category of naive understanding of the phenomenon “learning”, we have included statements such as (Pupil No. 1) “...*the school bell is ringing*” or (Pupil No. 19) “...*it is a working week*”. This category is also represented in both groups approximately equally. The last category includes answers like *I don't know* or we also included pupils who could not react or answer at all, which was represented only by IP 8%.

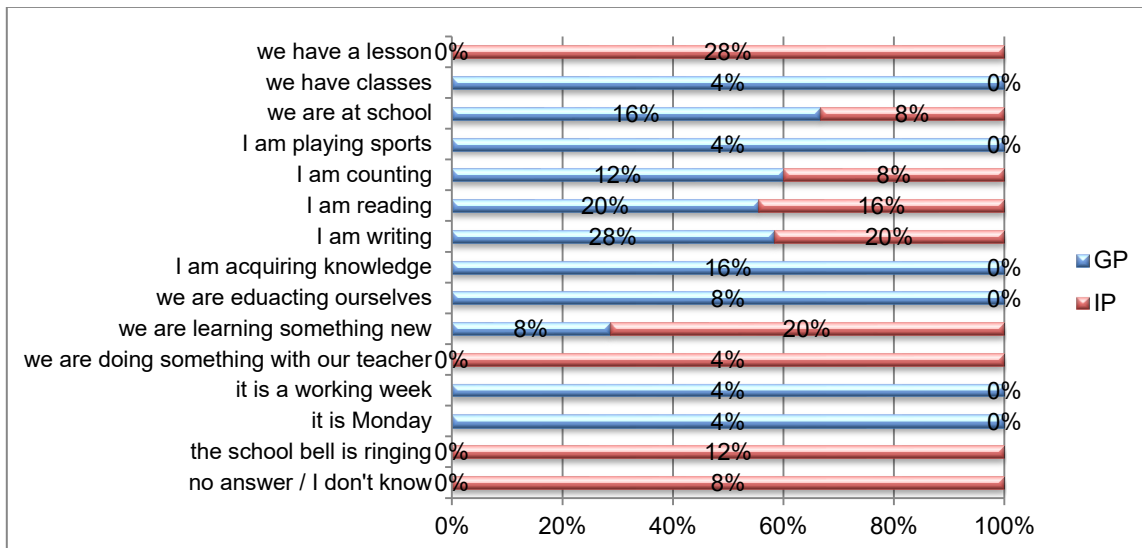


Fig. 1. All Pupils' Answers to the Incomplete Sentence: Learning is when...

Semantic Categories	Total	GP		IP	
		n	%	n	%
Understanding as a Specific Activity	31	20	80%	11	44%
Institutional Understanding	14	5	20%	9	36%
General Understanding	9	4	16%	5	20%
Naive Understanding	6	2	8%	4	16%
No Answer or <i>I don't know</i>	2	0	0%	2	8%

Table 1. Comparison Table of Semantic Categories of the First Incomplete Sentence

All the statements of students on the unfinished sentence “*If learning did not exist, then...*” are presented and evaluated in Figure 2 and Table 2. We categorized these statements into six semantic categories including the consequences that the pupils think there would be if learning did not exist (see Table 2). The biggest representation was in general statements where students stated ignorance as a consequence and thus if learning did not exist, (Pupil No. 26) “...*we would be stupid*”, (Pupil No. 32) “...*we would not learn anything*” or (Pupil No. 44) “...*nobody would know anything*”. In this category, IP answers are represented by 4% more. The GP group reported more specific consequences and thus by 20% more. In this category were included pupils' answers, in which they stated specific skills and abilities that they would not have developed in the absence of learning. GP also stated that they could not even work. Another category consisted of attitudes in which students showed what it would be like for them, if there was no learning. Here we included statements like (Pupil No. 21) “...*it would be terrible*” or (Pupil No. 7) “...*it would be bad*”. These answers were given only by GP. Answers with the opposite attitude were given by IP, e.g. (Pupil No. 39) “...*it would be great*”. Another category consisted of statements in which students also stated social consequences, such as (Pupil No. 6) “...*we would do only bad things*” or (Pupil No. 18) “...*we would think of another way to make money*”. This category was represented only by the GP group. 8% of IP were represented in the category of naive consequences, (Pupil No. 26) “...*I will be quiet*” or (Pupil No. 37) “...*we would have to learn at home with our mothers*”. Even in this case, the last category consists of answers *I don't know* or we included pupil who could not react at all and answer, which was represented by 4% of the IP group only.

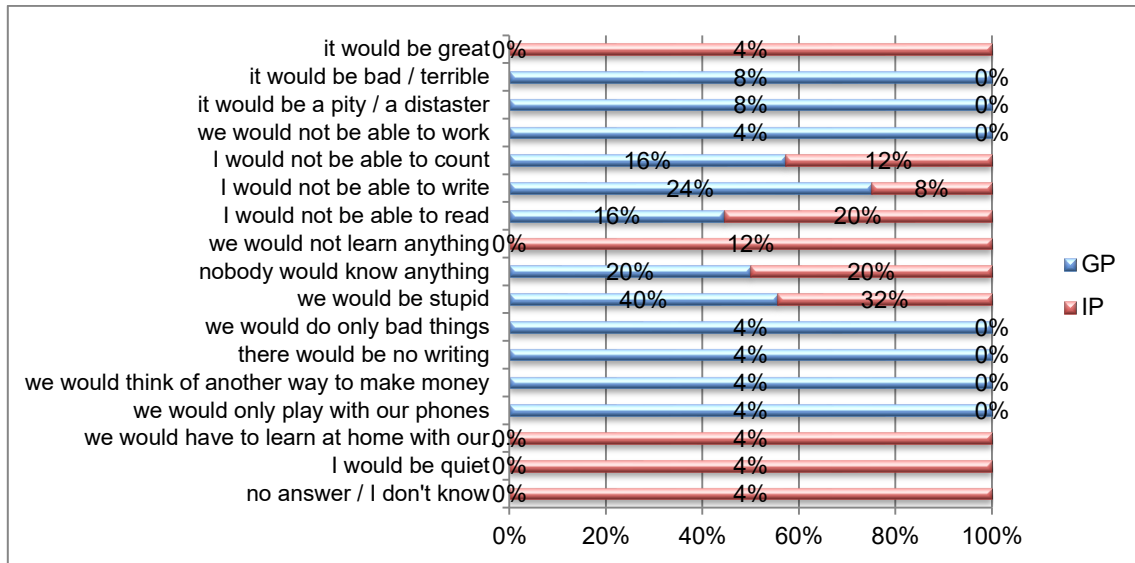


Fig. 2. All Pupils' Answers to the Incomplete Sentence: "If learning did not exist, then..."

Semantic Categories	Total	GP		IP	
		n	%	n	%
General Consequences	31	15	60%	16	64%
Specific Consequences	25	15	60%	10	40%
Attitudes	5	4	16%	1	4%
Other Consequences	4	4	16%	0	0%
Naive Consequences	2	0	0%	2	8%
No Answer or I don't know	1	0	0%	1	4%

Table 2. Comparison Table of Semantic Categories of the Second Incomplete Sentence

All the pupils' answers to the incomplete sentence "I would like learning to be..." are presented and evaluated in Figure 3 and Table 3.

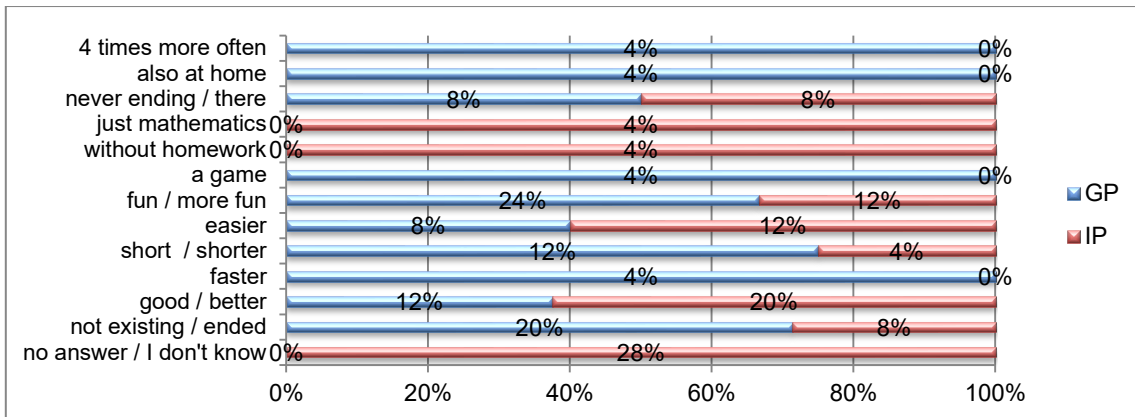


Fig. 3. All Pupils' Answers to the Incomplete Sentence: I would like learning to be...

Semantic Categories	Total	GP		IP	
		n	%	n	%
Very positive perception of the phenomenon	6	4	16%	2	8%
Rather positive perception	2	0	0%	2	8%
Perception of the phenomenon as suffering	5	2	8%	3	12%
Perception of the phenomenon as boredom	10	7	28%	3	12%
Rather negative perception	13	7	28%	6	24%
Very negative perception	7	5	20%	2	8%
No Answer or I don't know	7	0	0%	7	28%

Table 3. Comparison Table of Semantic Categories of the Third Incomplete Sentence



We categorized all statements into seven semantic categories of relationships and attitudes of pupils to the phenomenon “learning” (see Table 3). The largest representation were statements with a rather negative attitude. The pupils expressed their attitudes as follows: (Pupil No. 17) “...shorter” or (Pupil No. 2) “...faster”, which means that they would like learning time to pass faster or that it could be shorter. This category of attitudes was approximately equally represented in both groups. The second most common was the category of attitudes in which the pupils perceived learning as boredom, because they gave answers like (Pupil No. 13) “...more fun” or (Pupil No. 5) “...a game”. These statements were given in the GP group by 16% more than in the IP group. In the category of perceiving learning as suffering, we included statements like (Pupil No. 28) “...easier”. This category was also represented in both groups approximately equally. A very negative perception of learning was made up of statements in which the pupils stated that they would like learning not to exist or to end. On the contrary, answers revealing a positive to very positive perception of the phenomenon “learning” were answers, such as (Pupil No. 26) “...just mathematics” or (Pupil No. 50) “...there”. These categories were equally represented in both groups, but GP showed greater enthusiasm in the statements, e.g. (Pupil No. 20) “... 4 times more often” or (Pupil No. 9) “...also at home” and the like, which we can see in Table 3 (in the category of very positive perception of the phenomenon). Pupils who neither answered nor wanted to express themselves or answered *I don't know* are included in the last category. There is only the IP group represented by 28%.

5. Conclusion

Based on the above, we evaluated that the gifted pupils had more specific and relevant answers compared to the ungifted students. They also had less representation in the category of naive understanding of the phenomenon “learning” and were able to comment on all questions. Gifted pupils perceive the consequences of the absence of learning or education and thus the significance of the phenomenon of learning more comprehensively and broadly, not only in terms of their person, but also within society. This can be confirmed by their statements, in which they said that it would be terrible if there was no learning, and also stated that it could have an impact not only on social relations, but also on the workplace. We can see only minimal differences in attitudes and relationships to the phenomenon “learning”. However, even in this case, gifted pupils stated to a greater extent that they are bored during learning, but, at the same time, gave more positive statements related to the phenomenon of learning than the ungifted pupils. For this reason, we can conclude that gifted pupils like to learn, but with regard to education they require a more differentiated, richer content of education, so that they do not get bored and stay engaged. From this point of view, we perceive the identification of preconceptions in education as very helpful and beneficial – also with regard to more effective education of gifted pupils.

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