

Dynamic Picture in Advancement of Early Childhood Development

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The beginning of school education marks the opening of a pivotal chapter in every person's life, a period which affects further success or failure in adulthood. It is from school and their families that young people acquire knowledge and abilities which enable them to accomplish their future goals successfully.

The educational atmosphere, as well as social and material conditions, constitute the most significant factors which contribute to the positive development of an individual. The educational atmosphere ought to be based on friendliness and the acceptance of the individual skills, capabilities, interests and needs of every person. Such an atmosphere encourages not only shaping and maintaining high self-esteem and self-confidence based on major as well as minor accomplishments, but also a successful development and acquiring more and more complex abilities. It also encourages the differentiation of requirements and motivation. This in turn stimulates an individual's high activity and enables individual capabilities to be utilized in the educational process.

However, not every individual is a success at school and in life up to the standards of their own potential and developmental capabilities. Such is the case of the underachievement syndrome. Significantly, the basis and the main cause of this problem, which affects intelligent and gifted individuals, does not lie in the lack of abilities. It lies in the lack of opportunity to utilize those abilities for various reasons.

1. Underachievement syndrom

The underachievement syndrome is often confined only to the school environment. There it takes the form of a discrepancy between student's grades or school behaviour, and his or her high potential, intelligence and creativity assessed through standardized testing and the

opinions of teachers and parents (Ekiert-Grabowska, 1994). As pedagogical research shows, the underachievement syndrome can affect up to 10% of the student population (Karpińska, 2002).

The underachievement syndrome is believed to be caused by the following activators: educational methods, school organization, social environment at school and certain attitudes of teachers. These can include the preference for imitative rather than creative students, the promotion of conformity and convergence skills, and the suppression of initiative, independence and the originality of thinking by using traditional and verbal methods of teaching (sf.: Wiechnik, 1987; Dyrda, 2007). On the basis of my own observations and experience I can find the same factors (either activating or escalating the problem of underachievement or suppressing the natural activity of a child) in the kindergarten environment unless the process of education follows the rules of support, inclusion, integration and comprehensive development.

A school grade can be also an activating factor of the underachievement syndrome. A nominal grade, as opposed to a supporting assessment or a formative assessment, may lower student's motivation to learn if it is unfair, if its main goal is to criticize the student in front of the class, or if it is overused and utilized as an educational or statistical measure. What is more, a traditional (nominal) grade usually indicates the extent of student's inability to perform certain tasks or lack of certain knowledge. Such a situation necessitates focusing on student's mistakes and failure rather than accomplishments and success. What is more, the nominal grade does not constitute a component of an appropriate pedagogical diagnosis-it does not reflect student's skills and capabilities and does not indicate his or her problems. As a result, the planning of any therapeutic and compensatory actions, which are aimed at filling in the gaps of knowledge and practical skills, are significantly hampered. According to B. Niemierko (2002), the system of grading students' educational achievements is the most neglected field of didactics and makes following generations question the validity and objectivity of nominal assessment. And it is the lack of objectivity that leads to students' low self-esteem and disrespect for both the teacher and the students' responsibilities.

Although nominal grades are not used in kindergartens, there still is a problem of the correct assessment of a child's achievements in accordance with his or her abilities and skills. The assessment should be based on systematic and accurate diagnosis of the child's competences made by a teacher through observation, registering and analysis of the child's behaviour in all the fields of his or her skills and activities. Nevertheless, such assessment should not only aim at informing the child about his or her abilities and skills, but first of all it

should help to develop educational process taking into account of operational aims and monitoring the child's progress, his or her self-esteem, being active and involved in achieving further competences.

Self-confidence and self-acceptance play a key role in the processes of building self-esteem and motivation to overcome learning difficulties because they shape students' behaviour in task situations, their motivation and the effort they put into working. For that reason, they also affect carrying out school responsibilities and learning success. Low self-esteem can also influence student's non-school interpersonal relationships, satisfying safety and identity needs, as well as the attitude towards new situations and reluctance to take risk. As a result, student's aspirations for success both at school and in life may become considerably lowered (Dyrda, 2000, s. 134-135). According to the research by B. Dyrda (2007), most students afflicted by the underachievement syndrome demonstrated disproportionate self-esteem in relation to their intellectual capabilities.

The psycho-pedagogical literature suggests various measures to prevent this phenomenon from expanding, such as therapeutic programs based on redefining the role of a teacher in the classroom. A teacher-expert would then transform into an advisor, an animator, an observer, a listener and, finally, a partner. Such a teacher automatically and quite naturally activates processes which prevent the underachievement syndrome similarly to the model of therapy for the underachievement syndrome based on successoriented education, as devised by S.M. Baum, J. Renzulli, T. P. Hebert (Dyrda, 2000). The therapy, which *predisposes students towards success*, engenders the self-fulfilling prophecy mechanism: while utilizing their cognitive and creative capabilities, students explore their awareness and motivation to act and take effort to achieve given goals. The following table presents this model with the possible results of the underachievement syndrome therapy:

Table Nr 1. *Underachievement Syndrome Therapy by S.M. Baum, J. Renzulli, T.P. Hebert.*

Underachievement Syndrome	Therapy, influence, intervention	Satisfactory school results
Emotional problems	Teacher as a mentor (advisor)	Understanding oneself and one's needs
Learning problems	Developing student's interests	Self-regulation
Social functioning problems	Focusing on student's strong points, developing high self-confidence	Positive relations with adults, positive influence of peer group
Inadequate curriculum	Mutual respect, teacher and student are subjects in nurturing and learning	Curriculum adjusted to student's capabilities

Inadequate teaching methods	Activating teaching methods, problem based methods	Student motivated to learn
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Source: Dyrda, 2000.

However, as people are unable to succeed up to their potential in many areas of life, the underachievement syndrome should not be limited only to the school context. The factors which activate the underachievement syndrome can also be found among the changes which occur in the modern society. The psycho-pedagogical literature suggests the following causes of this problem, all of which are of social origin: unstable family model, overworked parents, the disorganization of the family rules and principles, the liberalization of moral norms, incoherent influence of each of the parents. Other factors which are believed to have an adverse effect on the achievements of an individual could include the consumerist lifestyle and models for success promoted by the media, but also the modern society competitiveness pressure which provokes mental tension and stress. Still different causes can be found in the family environment: the standards of behaviour, single parentage, sibling rivalry, overprotective attitude towards a longed-for or a frail child and disproportionate expectations (too high or too low) of child's achievements may all contribute to the underachievement syndrome (sf.: Rimm, 1994; Dyrda, 2000, 2007).

The characteristics of a pre-schooler's development may play a vital role in building the child's behaviour model in the social environment since it is a family that sets the most important example of behaviour and establishes norms of conduct, very often imprinted in the personality for the whole life and influencing the individual's educational success and failures.

The examples of internal factors which hamper the accomplishments of an individual include: disturbance or damage of the central nervous system, emotional disorders, physical defects and somatic disease. All the above factors hinder the functioning of an individual at school and in the society (absences at school, numerous sick leaves, frequenting hospitals, medical rehabilitations, sanatoriums, the meetings of occupational therapy, etc.) and thus constitute the root of all the problems, including educational problems. The underachievement syndrome can also be activated by low self-esteem, lack of self-acceptance or lack of others' recognition-the effects of health and school problems, as well as failure in building social relations, which may result from disturbed relationships with peers, parents or teachers. What is more, the disproportion between expectations and actual achievements may be influenced by special talents and creative abilities. A gifted child/student can display oversensitivity in some of the following spheres (Dyrda, 2007, s. 22-23):

- intellectual (sensitivity is exhibited by changeability, impatience, inquisitiveness, etc.),
- emotional (excessive sensitivity leads to impulsiveness, obstinacy, withdrawal, etc.),
- psychomotor (oversensitivity causes heightened tension, impatience, agitation, heightened activity, etc.),
- imaginary (high sensitivity leads to absent-mindedness, seclusion, fantasizing, daydreaming),
- sensory (oversensitivity causes excessive facial expression and gesticulation, twitches, inadequate reactions).

High sensitivity of a gifted and creative individual may result in behaviour differently interpreted by parents, teachers and peers. While in certain situations such behaviour will be approved, in others it may be regarded as antisocial, egotistic or aggressive. The possible differences of the social reception of such behaviour are contrasted in the table Nr 2:

Table Nr 2. *Behaviour of a gifted individual*

Feature	Positive reception	Negative reception
activity	motivation-driven, energetic, has wide interests	overactive, stubborn and intransigent, may be disorganized, focuses excessively on one field of interest, has concentration difficulties
creativity	predisposed towards problem solving	does not like routine activities
communicative competence	has rich vocabulary, can debate, argue and persuade with ease	tends to manipulate people around, is quarrelsome, intransigent, invents endless excuses
independence	independent, prefers to work individually	nonconformist, is quarrelsome, may be noisy and pretentious, lacks discipline and opposes instructions of parents or teachers, has teamwork problems
sensitivity	sensitive and empathic	oversensitive to criticism and judgment, egocentric
cognitive skills	fast learner, learns new things willingly and with ease, enjoys challenges connected to interests, vast but often “non-school” knowledge	impatient, gets bored fast, does not complete assignments which are too easy or not connected to interests, puts minimal effort into schoolwork, focused on individual interests and problems
responsibility	high expectations of self and others	perfectionist, intolerant, does not finish work which is imperfect, often gives up after first failure

morality	high level of moral judgment	does not acknowledge authority and nurturing rules
cognitive curiosity	interested in the world around, has many interests	asks many questions at the same time, diversified interests prevent focus on specialization
sense of humour	good sense of humour	may exaggerate in making fun of others, may be cynical
imagination	developed visual or spatial thinking, tends to fantasize and daydream	makes things up, lives in a world of his/her own, secludes him/herself

Source: *compilation by the author based on the sources: Rimm, 1994; Dyrda 1997, 2000.*

Many psycho-pedagogical sources draw attention to the fact that school education which does not develop students' creativity, only lowers their cognitive curiosity and blunts their interests. Such school does not encourage question-based thinking (Szmidi, 2006). Moreover, it provides strong negative reinforcement based on negative messages, such as "wrong!," "don't fantasize!," "don't be clever!" Additionally, it hinders imagination, as well as intuitive and divergent thinking. As a result, student's independence, openness, creativity and self-confidence are hampered (sf.: Dobrołowicz, 1995), which may ultimately lead to a negative attitude towards school in general.

In Poland there are no universally operating schools which develop students' special abilities, as there is no system of supporting gifted students in the pursue of their individual goals and unique (artistic and social) interests. On the contrary, the school system demands high results in typical school subjects without considering students unique needs regarding their interests and education, as well as their diverse ways of learning. One cannot say that such a school exists for the student, for it is the student who is to adapt to the school model of functioning and education.

Still educators and professionals involved in the development and education of children at a pre-school age are seeking ideas and methods which will help them to prepare the child for the next stages of education in an optimum way. Creating proper conditions for identifying and stimulating imagination as well as creative thinking and skills of the child when performing various development tasks may therefore be essential for the preparation of the individual for an active and creative life (sf.: Szmidi, 2007).

2. A dynamic pictures technique as a stimulus for imagination and thinking development

A specific and indispensable means in the educational process of a pre-schooler are various illustrations and pictures widely used by teachers as substitute examples of the surrounding reality.

Pictures activate the situation, they evoke curiosity and the ability to carry out tasks on one's own. To understand an illustration, you should see many things which are not visible in it. The illustration is a fragment of life (or a fantasy novel), stationary at some point in its lifetime - you have to imagine the movements and actions of a person being motionless in the picture, guess what preceded the depicted moment in order to draw right conclusions on the topic, content, and "thoughts" of the presented image. Its understanding is therefore the result of perception as well as completion of the content by imagination, abstract thinking and reasoning.

As perceived S. Szuman (1951) children do not limit their perception of a picture to bare naming the depicted object and creatures. They imagine different events and situations connected with the picture in which both the objects or creatures act, reason and investigate against the background. The mind of a small child does not only copy the picture's individual elements, but explores the image - notices different things, classifies and combines them which finally makes the child create his/her own ideas and conclusions (Szuman, 1936/1937). Thus work with the picture should be directed to "explain" the image (and not just enumerate the objects or describe and name the activities of the people), which means spotting the details, making comparisons, detecting possible relations and the main and most important subject of the picture.

Images teach concentration, memorizing and reasoning which support the intellectual development of a child. They provide the material for creative work and stimulate the motivation to use the material to do something original. Tests, trainings and techniques applied in psychometrics which incorporate the elements of perception, reproduction and transformation of images, show the importance of imagination and visual thinking used for determining the individual's current level of the development of their abilities (sf.: Matczak, 1994; Karwowski, 2006; Szmidt, 2008). The above mentioned abilities and skills are being developed primarily by dynamic pictures. These are the images of situations in which the content may change under the influence of imagination (Młodkowski, 1998).

a. The dynamic pictures technique

The technique of dynamic pictures developed by me is a set of images, some of them depicting scenes or events whose content may change under the influence of imagination. Due to the partial indeterminacy, ambiguity and allusion in the content of these images, they require not only description, but also the explanation of the cause-effect relationships, some interpretation and completion. With the above mentioned advantages these pictures can be a stimulus for a child to create his/her own stories on the basis of imagined or anticipated events, which initiate or determine the illustrated situation. What is more, they may also inspire the child to invent their own titles, characters, stories, adventures, unusual architectural features, vehicles, objects and events (Płóciennik i Dobrakowska, 2009).

When implementing this technique, I noticed that creating an image-inspired stories by children can provide a teacher with some information about the child's vocabulary, speech making abilities, attention span, memory, and above all - about the child's understanding of the visual content, the degree of his/her imagination being stimulated, cause and effect thinking and the involvement in the content perceived in the picture.

The dynamic pictures technique which I developed has become an essential element of the pedagogical experiment. The main objective of this pedagogical research was to investigate and describe the effect of the dynamic pictures technique on the development of creative abilities in a child in their late pre-school age. Therefore I formulated the following research problem: "What is the impact of the dynamic pictures technique on the development of selected creative abilities of 5 and 6 year old children?" This problem has been divided into more specific issues: "What impact does the dynamic pictures technique have on the development of the abilities of generalization of verbal and visual content (logical thinking), inference (logical thinking), to give reasons (critical thinking), imaginative capacities (imagination), commitment and perseverance in the task (motivation), the readiness to take cognitive risk (motivation), flexibility, originality, and elaboration (divergent thinking).

The research, whose main aim was to verify the effectiveness of the dynamic picture technique in developing creative abilities of a pre-schooler, confirmed that creativity should be developed and diagnosed among all school children because revealing and activating potential abilities is only possible when they are being stimulated in accordance with the dynamics of their development in different fields and different areas of the undertaken activity. In addition, the studies also confirmed the dependence of divergent thinking on other skills and motivation - their development is through the use of different and varied methods of problem and heuristic learning that foster integration and development of all cognitive processes and mechanisms on

the foundation of motivation to act (Płóciennik, 2010). The studies confirm the findings of other studies that were conducted in the past on:

- the effectiveness of training works to increase the flow of ideational (number of ideas),
- the effectiveness of wider integration of creative abilities and environmental conditions for improving product quality,
- the effectiveness of the environmental conditions to stimulate thinking in relation to pre-school children,
- improving the results of “image-visual” thinking through the integration of imagery and verbal systems during tests,
- the effectiveness of creativity training in relation to creative competences acquired by pre-school children in the course of learning,
- selection of learning conditions for a child to match goals or objectives set or planned by a teacher of elementary education and ways to monitor children’s work and activate them (Płóciennik, 2010, s. 185-186).

After applying the dynamic pictures technique higher ideational fluency and originality of children’s ideas in comparison with the group has been noticed in posttest studies. It was visible both when the children invented titles, formed associations to the content of the pictures, came up with epithets, analogies and comparisons of selected objects as well as when they developed interesting ideas to complete the content of the pictures with probable and improbable events.

b. Supporting the child’s development – the analysis of individual cases

Further analysis of my previous research have revealed the possibility of applying the dynamic picture technique both in therapy and supporting the child’s development. Below I present the description of individual cases which show examples of reducing the level of difficulties in performing certain tasks and activities.

- A child with an identification number E-1/KW/19

He is a six-year old boy, an only child brought up in a two-parent family, attending the kindergarten for two years. Both parents have secondary education (mother is a nurse, father- a

knitter). They have pointed out in the survey that they do not devote enough time to their child and the child's main occupation at home is watching cartoons and playing with blocks. They have also admitted that their son is very keen on playing and talking with adults as well as being read books by them.

As for his developmental achievements, the parents have noticed his spontaneous curiosity, eagerness to play and reluctance to stop. However, as for his developmental problems, the parents have mentioned difficulties in clear articulation of sounds, shyness, lack of interest in doing jigsaws and a tendency to get easily tired while performing tasks which need more concentration. The survey also shows that the child must have suffered from some health disorders as the mother consulted various specialists such as a pulmonologist, an allergist and a gastroenterologist.

Teachers in the kindergarten have noticed that the boy most often chooses only construction games. Among his developmental achievements they point out his friendliness towards peers and a lot of skills in a perceptive-cognitive sphere: intense concentration on a task, the ability to analyze and synthesize, to notice the differences and similarities and to build cause-result relations as well as good memory and fast remembering things. However, the teachers have also observed the boy's manual and communication problems, the dislike of artistic and expressive activities, shyness, lack of self-confidence, unwillingness to participate in new and more difficult tasks. You may find the comparison of raw results achieved by the child in a table below.

Table nr 3. *The comparison of pre-test and post-test raw results of a child from an experimental group with the highest increase of an artistic skill indicator.*

group of the variables	Pre-test		Post-test	
	raw results of a child	avarage results of a group	raw results of a child	avarage results of a group
general abilities	10	9,74	19	14,3
task commitment	10	12,5	17	13,1
creative skills	23 (including 6 original ideas)	22 (with average 7.5)	63 (including 22 original ideas)	32,5 (with average 14.0)

The source: own study based on the results of own research (Płóciennik, 2010).

In the pre-test phase the child chose a task from a box "easy tasks", however, in the post-test he picked "more difficult tasks". When thinking up a title for a picture, in both the pre-test and post-test the child came up with one title, however, as for the titles for stories, in the pre-test he put forward one idea whereas in the post-test - several ideas. When creating a picture

story, in the pre-test he mixed up the pictures while in the post-test he put them correctly. Both in the pre-test and post-test the boy was able to explain logically the order of the pictures and create the content of the story. When completing a picture, in the pre-test he added 6 extra elements to the original and in the post-test – 7. Both in the pre-test and post-test the boy painted science-fiction reality (in the pre-test: “*little rainbow people*”, “*little monsters*”, “*volcanoes*”, in the post-test: “*a dessert man*”, “*a snake called Water*”, “*a town which is opening out*”, “*a volcano on a snow island*”). Despite some manual difficulties, the boy was able to express his thoughts in the picture. There was a small **disproportion** in the scope of ideas used for describing the picture (in the pre-test – 3 epithets, in the post-test – 2). Nevertheless, there was a discrepancy in a task involving making up rhymes for a given word (in the pre-test – no ideas, in the post-test – 9 rhymes including 6 neologisms: *koty* > “*oty, moty, toty, soty, zoty, egzoty*”). As for finding similar patterns in the pictures, in the pre-test the boy put 13 pairs together and three pictures in a row for two times according to the “colour” category. However, in the post-test he put together one row of two elements and four three-element rows according to the “geometric figures” class. When making transformations and specifying geometric figures in the pre-test the boy drew two objects on the basis of a circle belonging to two categories, but in the post-test he created ten objects based on a rhomb belonging to eight different categories. During the assessment phase of the task in the pre-test the boy admitted that he had liked the task because “*he was happy*” while in the post-test he explained that “*he liked all the tasks because they were nice*”. The **disproportion** between painted pictures and created titles **was** also noticed by a competent jury and their grades are presented in a table below.

Table nr 4. Comparing the grades given by a competent jury to the child from an experimental group with the highest growth of an creative skill indicator.

the output	1 juror		2 juror		3 juror		4 juror	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
the title of the picture	0	0,25	1	1	0,25	0,25	0,25	0,5
the title of the story	1,5	0,8	1,75	1,35	1,25	1,05	1,25	1,35
transformations	0,5	0	1	1	0,5	0	0,5	0
elaboration	2	2	2	2	2	2	2	0

The source: own study based on the results of own research (Płóciennik, 2010).

As the table shows the jurors assessed the output in post-test lower (the average 0,82) than in the pre-test (the average 1,11). The analysis of the child’s achievements may indicate

that the big **disproportion** between the raw results of the pre-test and the post-test does not comply with the assessment provided by the competent jury. In the case of this child there was an improvement of abilities in the scope of the variables groups (with the ideational fluency being the leading one), and first of all in presenting original ideas compared to other children in the same group (as far as 22 ideas created by the boy in the set of post-test tasks were not repeated in E1 group).

- A child with identification number E-1/PZ/23

He is a six-year boy, an only child from a single-parent family, attending a kindergarten for the second year. His mother is a shop assistant with secondary education. In a survey she admits spending four hours a day with her son.

At home the child is mostly keen on playing with toy cars, stuffed toys, mechanical and construction toys, he also draws and paints, watches cartoons, does jigsaws and plays with blocks. The child also likes the company of adults. The mother also points out that her son is skillful at painting, constructing and dancing. In addition he has a sense of humor, asks a lot of questions, tries to solve problems by himself, is eager to play and reluctant to stop. As for his developmental problems she mentions difficulties in counting, correct articulating of sounds and focusing on one activity only, as well as aversion for mental effort and playing outdoor. He also withdraws from new and difficult tasks. She also stresses the child's misbehaviour and not obeying the instructions. The mother consulted specialists (a psychologist and speech therapist) who gave the diagnosis of hyperactivity as a result of premature birth (the boy was born in the 25th week of pregnancy).

Teachers at the kindergarten have observed that the child is eager to take up different artistic and constructive-manual activities. They have noticed only two developmental achievements (his being friendly towards peers and perceptive skills). In addition, they have also mentioned numerous developmental problems: verbal, communicative, difficulty in verbalizing thoughts and following instructions, being often distracted and unwilling to do mental or expressive activities and cooperate with the group. What is more, the boy has been described as shy, lacking in self-confidence, able to withdraw easily and having difficulties in presenting both his outputs and himself to others. You may find the comparison of raw results achieved by the child in a table below.

Table nr 7. Comparison of raw results achieved by the child (from an experimental group) with a significant increase in a quality and quality of the his outputs.

	Pre-test	Post-test

group of the variables	raw results of a child	avarage results of a group		raw results of a child
general abilities	9	9,74	10	14,3
task commitment	15	12,5	16	13,1
creative skills	18 (including 4 original ideas)	22 (with average 7.5)	47 (including 12 original ideas)	32,5 (with average 14.0)

The source: own study based on the results of own research (Płóciennik, 2010)

In the pre-test phase the child chose the tasks from a box “*most difficult tasks*” with a view to completing them. However, in the post-test he picked a set of tasks from a box “*more difficult tasks*”. When thinking up the titles for a picture, the boy came up with one title both in the pre-test and post-test (in the pre-test: in a descriptive form, in the post test: in a concise form). As for creating the titles for a story, he gave one title in the pre-test and two in the post-test, both in a concise form. While building a picture story, in the pre-test the boy put all the pictures together with one mistake (putting the third picture as the last one), but he was able to combine only two pictures logically. However, in the post-test he did not put the pictures correctly and did not want to say what was happening in them. When completing the pictures, in the pre-test he added only four elements in a very simple and schematic way not using the whole space on the paper. In the post-test, despite the fact that the tests were held in April, the boy used the basic elements to build a Christmas tree with presents adding only 5 extra elements. As for giving epithets for the provided object, both in the pre-test and post-test he came up with only one correct term, however, in a “rhyming task” he was not able to think of any rhymes. As for finding similar patterns in the pictures, in the pre-test he managed to put one pair together and one set of five pictures. When looking at the pictures he paid attention to more distant similarities (“*the stripes*”). Nevertheless, in the post-test he put together four two-element rows and one four-element row belonging to two different categories.

When transforming and specifying geometrical figures in the pre-test the boy drew four objects on the basis of a circle belonging do class one (“*the vehicles*”), all four vehicles being drawn on the basis of two or more circles. The boy did not colour his pictures. However, in the post-test he created 15 objects based on a rhomb belonging to eleven different groups of objects. All the pictures contained many details, were accurately finished and beautifully coloured. In the pre-test the boy justified his highest note for the tasks suggested by a tester saying “*because it was nice to draw something*”. In the post-test he also rated the suggested tasks highly and admitted “*because I had many ideas and felt like drawing*”. In the pre-test the

boy went back to the transformations (task 8) but he did not add any elements. However, in the post-test he used additional time when completing the picture.

The **disproportion** between the quality of the painted pictures and created titles **was** also noticed by a competent jury. A table below presents the comparison of the jurors' grades given for the boy's output in the pre-test and post-test phase.

Table nr 8. Comparison of the grades given for the output of the child (from an experimental group) with a significant increase in quantity and quality of the output.

the output	1 juror		2 juror		3 juror		4 juror	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
the title of the picture	0,25	0,5	1	1,5	0,25	1	0,25	1,25
the title of the story	0,5	0,63	1,25	1,5	0,75	1,13	0,5	1,75
transformations	2	2	2	2	1	2	2	2
elaboration	0	0	0,75	1,25	0,25	1	0	0,75

The Source: own study based on overall results of own research (Plóciennik, 2010)

Although his manual skills have improved significantly, they were not specified as the indicator of “*general abilities*” but as a variable of elaboration in “*creative skills*”. Nevertheless, the most outstanding abilities may be noticed in making transformations and working out the base object, in this case geometric figures. This task was highly scored in the post-test and received average grades in the pre-test. The competent jurors gave it good grades both in the pre-test and post-test. I have also observed that the boy had more difficulties in expressing his thoughts graphically rather than verbally.

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My research confirmed the role of the individual experience, education and culture in cognitive development. It also proved the thesis that the development and identification of potential creativity is relatively easy if you use heuristic techniques, ask questions, stimulate curiosity, and make associations. The child's mind was stimulated by transformation of ideas and images, handling issues from different perspectives, playing with ideas, information, and inventing new and unusual things. As a result it improved and developed during the course of experimental activities, especially in the capacity to perceive relationships, understand the hidden meanings, reason with the use of inductive, deductive and divergent thinking.

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