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Child as Discoverer of Creative Problems and Questions

KEYWORDS ABSTRACT

questioning thinking, problem finding, creativity of children

The starting point of the article is criticism of certain statements by Jean Piaget, made by contemporary researchers of children's cognitive development. It is an introduction to the basic content dedicated to specific creative competences defined by the author as interrogative (questioning) thinking. The following sections briefly present the main assumptions of the theory of children's questioning thinking and some important didactic principles due to which, according to the author, these abilities can be constantly and consciously stimulated and developed in the classroom. In this approach, asking questions and the ability to discover and formulate original problems, which we call creative questions, are an important part of philosophical and creative thinking.

“Knowledge is the awareness of answers. Wisdom and creativity are the knowledge of questions worth being asked and the attentiveness enabling one to notice the opportunities”.

Andrew Fuller (2017: 182)

“Those who believe that all important questions have already been asked, lose the joy of asking new ones”.

Alane Jordan Starko (2022: 267)

Introduction. Against Piaget.

The starting point for the considerations included in this article is the thesis that may be debatable for contemporary Polish pedagogues whose knowledge has been shaped under the influence of certain 20th century theories of human cognitive development. According to the thesis, *Jean Piaget did not believe children*. Obviously, he did not believe their formal thinking ability, i. e. their ability to think in a creative, metaphorical, hypothetical and speculative manner, which can be described as philosophical thinking. It is not my purpose to thoroughly criticise the findings of the brilliant scientist from Geneva whose (almost all) conclusions concerning the phases of cognitive development, formal operations and processes of inference and creation of new information by children have been questioned as a result of the research by contemporary psychologists and cognitive scientists. However, it is worth emphasizing that many Polish educators, hearing about the criticism and questioning of Piaget's theory, have a huge cognitive dissonance with which they fail to cope in a constructive manner. By treating Piaget's theses as scientific dogmas, and perhaps already as religious dogmas, they criticise and stigmatise almost all scientific concepts and practical applications resulting from the criticism of Piaget and directed at analysing and developing programmes stimulating children's philosophical thinking and wisdom. To put it a little more bluntly, these scholars find it inconceivable that Piaget and the developers of curricula based on the concept of phases of cognitive development could be wrong and stuck in a kind of Piagetian orthodoxy despite new scientific findings.

While appreciating many of Piaget's discoveries and related didactic principles, contemporary researchers formulate many objections against those theories. I will mention only a few that are of great importance for the present discussion. Robert Sternberg (2001: 349-350), one of the most prominent cognitive psychologists, psychologists of creativity, wisdom, intelligence and... love, and a historian of psychology and psychological research, sums up this criticism with four main objections:

1. First, the validity of Piaget's claim that changes in cognition occur solely as a result of an internal maturation process, is questioned. Piaget's theory is not confirmed by the empirical data showing that "specific experiences, training and other environmental factors can alter children's functioning in Piagetian tasks" (Ibid.: 349). Many cross-cultural studies show differences in the pace and sequence of the stages of cognitive development of children and even adults, and are in compliance with the predictions of Piaget's theory. Interestingly, these studies show that many adults are unable to perform tasks appropriate to the highest stage of development, referred to as the stage of formal operations.
2. Second, the scholars question Piaget's basic assumption that cognitive development takes place in the form of successive leaps that always occur in a certain

order, regardless of the area of science, the social context and the kind of developmental (teaching) tasks. Today, it is believed that cognitive development – including the development of creative abilities – is a continuous process rather than a leaping one, thus contradicting the Piagetian thesis that, within a given developmental stage, children exhibit the same stage-specific level of functioning in all areas of activity. However, it turns out (and this is clear to almost all good mothers and preschool teachers, as it is almost a scientific law of social pedagogy) that children’s previous experiences, their social and cultural context, as well as the influence of the family and school (educational circles), lead to clear differences in such development.

3. The third issue that is criticised are Piaget’s interpretations of children’s difficulties in particular tasks, especially those requiring deductive and inductive reasoning. It is claimed that those difficulties, contrary to Piaget’s thesis, are not based on children’s problems with such kinds of reasoning, but they result from the low capacity of working memory, poor motor skills, or even limitations in understanding instructions. The children who took part in Piaget’s experiments might have failed to understand what he meant. Furthermore, some scholars say that Piaget overestimated the importance of motor and manipulative activities for children’s cognitive development.
4. Fourth, “many theoreticians question the validity of Piaget’s estimates concerning the age at which people show the ability to perform his tasks” (ibid.: 350). In my opinion, this is the most important objection against Piaget’s ideas. Many experimental studies carried out within the last 40 years show that “children can do many things earlier than Piaget thought possible” (ibid.: 350).

A good summary of the critical texts referring to Piaget’s theory can be found in the most important work of Ross Vasta and his colleagues (2001: 309): “(...) work carried out within the last 20 years has revealed a number of problems related to Piaget’s research and theory. Various critical remarks have been put forward. Piaget often underestimated the abilities of children, especially young and preschool ones. Development does not proceed in such an orderly and coherent way as Piaget’s stage model assumes. Even if the notion of developmental stages is accurate, the logical models used to characterise them are questionable. Finally, Piaget never provided a fully satisfactory explanation of a cognitive change”. It is also worth exploring the polemics with Piaget carried out by the German philosopher Hans-Ludwig Freese (2008), and the optimistic concept of children’s philosophical, creative and caring thinking by Matthew Lipman (2021). After reading the texts of those outstanding scholars, I am able to formulate the bold thesis, similar to the principle of Michael Polanyi (Polanyi 1958; Zycinski 1993), according to which **children think more and better than they are able to express in an understandable manner.**

It can be concluded that children perform (solve) many problems or tasks better and earlier than Piaget and the supporters of his theory believed. From this conclusion, I wish derive a further statement (confirmed by my own research carried out over many years) that children are capable of discovering new problems and formulating creative questions earlier and better than the supporters of the immutability of the stages of cognitive development believed. I call this combination of competences **creative questioning thinking**.

Questioning thinking and creative questioning thinking

What I mean by questioning thinking are all cognitive processes that are related to noticing, formulating and reformulating problem questions, and that result from curiosity and constructive cognitive anxiety and are triggered by a problem situation or a task containing a difficulty of an intellectual, emotional or practical nature (Szmidt 2001; Szmidt and Plóciennik 2020, p. 22). A similar concept to this is the English term *problem finding*, although it seems that problem finding is only a part of questioning thinking. Philosopher Aldona Pobojevska (2019: 62), who also uses this term, considers questioning thinking as those processes that occur in the mind of the one who asks “before he or she formulates and utters a research question that is new to him/her”. Thus, it is justifiable to make the philosophical assumption that questioning thinking is an essential part of problem thinking, related to the processes of problem discovery, formulation and reformulation. It is because I agree with those philosophers who argue that **questions are verbal expression of problems**, and, in an even stronger form, that **questions are the definition of problems**. Like Pobojevska (2019: 62), I assume that a question is a linguistic expression of a problem situation. This mainly refers to well-formulated (asked) questions, i. e., in Pobojevska’s terminology, “problem questions”.

According to the above definition, among the abilities related to questioning thinking we can distinguish the following:

1. The ability to notice problems and problem situations;
2. The ability to formulate problem questions;
3. The ability to redefine problems (reformulating questions).

1. **The ability to notice problems** is the ability to detect gaps, flaws, deficiencies, but also difficulties (doubts, paradoxes, inconsistencies, etc.) in various situations and actions of people. This ability is related to the feeling of difficulty, which is an emotional reaction or a kind of discomfort resulting from the fact that a person lacks an accurate answer to a question or a skill that is useful in a given situation (Nęcka 1994). A person capable of noticing problems is also defined by

such commonly understood qualities as perceptiveness, inquisitiveness, sensitivity to problems and difficulties, vigilance, and observational abilities. A person capable of perceiving problems is able to notice them earlier than others.

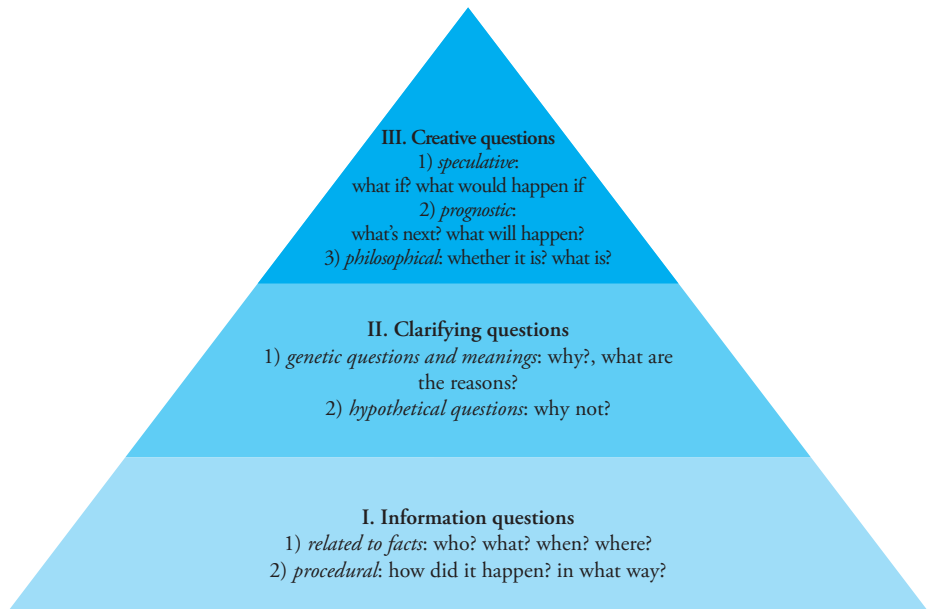
2. **The ability to formulate questions** is the ability to define a problem accurately by asking one or more questions that identify important aspects of the problem situation. This ability is reflected in the ease of formulating multiple questions.

According to Garnet Millar and Richard Himsle (2000), we can distinguish three levels of conceptualization and organization of information, as well as three related levels of questioning thinking identified with *questioning skills*:

- I. The level of questions that gather information and are aimed at understanding the problem situation (*gathering information – understanding*);
- II. The level of questions that organize (classify) information (*organizing information – clarifying*),
- III. The level of questions that extend (create) information (*extending information – creating*).

Each of these levels is characterised by typical questions that can be formulated with reference to an object (thing, event). Referring to the idea of Millar and Himsel, the author of this article made a **Pyramid of Questioning Thinking**. The pyramid is presented in the following picture:

Fig. Pyramid of Questioning Thinking. The author's own work.



Thus, I distinguish three levels of the ability to general questions:

- I. **The level of questions which gather information** about the facts (information) that we do not know but we want to know. There are two kinds of such questions:
 1. those related to facts, such as: *Who? What? When? How many/much?*
 2. procedural questions, such as: *How did it happen? What happened? Where? From where?*
- II. **The level of clarifying questions** which include:
 1. genetic questions and meanings: questions related to the reason, origin, development, current and past status, meaning, and role;
 2. hypothetical questions concerning the possible course of events: *why this way, and not in a different way? why not?*
- III. **The level of creative questions** which create new information (unknown questions), discover something new and important, speculate and “go beyond” the provided information. We can distinguish three kinds of such questions:
 1. speculative questions such as: *And what if? What happens if? What would happen if?*
 2. prognostic questions: *What's next? How will it develop? How will this evolve?*
 3. philosophical questions such as: *What is it? What is its meaning? What is/what is not? How to understand?*

Obviously, the levels of questioning thinking could be multiplied, but my task is to clarify the theory of questioning thinking and make it useful for future research and educational projects aimed at developing the questioning abilities of learners (not only children). At the top of the pyramid there are creative questions, which is compliant with the approach of many philosophers of questions (eroteticists) stating that outstanding questioning skills and, at the same time, skills related to creative thinking, are fulfilled in discovering and asking exploratory questions which are both serious and clever questions (Brožek 2007). In this way, I am indicating the direction of such development: from skills (competences) in asking information questions to the ability to generate new, fertile and original (revealing), i. e. creative questions. Such hierarchy of questioning abilities may also be the basis for constructing tools for diagnosing such abilities in various environments of students, and for preparing new tools of empirical research on questioning and creative thinking, as well as on inquisitiveness and interests in different age categories.

As we can see, creative questioning thinking involves the discovery and formulation (reformulation) of creative questions. Among many classifications of questions (e. g. resolution questions and completion questions, open questions and closed questions, simple questions and complex questions, trivial questions and serious questions, didactic questions to which the questioner knows the answer, and serious questions,

etc.), a division can be made between creative questions and re-creative questions. Let's look at examples of questions formulated by 7-10 year-old children (Włodarska 2021):

1. *Where do snails go after rain?*
2. *Why does a face mask protect us against the Coronavirus?*
3. *Why do we have to sharpen crayons, while we don't have to do this with chalk?*
4. *Why do my parents tell me to tidy up my room while it is clean?*
5. *Why do babies cry at night?*
6. *Why do dogs chase their tails?*
7. *Why is chalk cheap since it was created billions of years ago?*
8. *How did the huntsman take grandma and Little Red Riding Hood sound and safe out of the wolf's belly?*
9. *Why do people sweat?*
10. *Is the wolf from "Little Red Riding Hood" a wolf or a werewolf?*
11. *I wonder how it is to be a bee or a gardener.*
12. *How come that frogs develop out of spawn and that a dog's saliva heals wounds?*
13. *Wardrobe: isn't it boring for you to stand in one place all the time?*
14. *Why does the English teacher shout so loud?*
15. *Why do we have to wear face masks in the corridors, and we do not have to wear them in the classroom?*
16. *Why do we study Polish since we can speak Polish?*
17. *Why do we have toys in class 1, and in class 4 we do not have any of them?*
18. *What is it like to be famous?*
19. *I heard that it is beautiful in heaven. Is this true?*
20. *Why are there only few male teachers?*
21. *Why don't they teach us climbing at school?*
22. *I wonder what it is like to have a giraffe.*
23. *Why does everything has a smell, and the air does not?*
24. *Why do lessons last 45 minutes?*
25. *Why does only the teacher have a comfortable chair in the classroom?*

The question of which of these questions can be regarded as creative questions subjectively (for the child asking them), and which questions can be regarded as creative ones in a general sense (for all people) is a dilemma that is quite difficult to resolve unequivocally. When we consider what are the most important features of creative questions, the following structural, meaningful and motivational elements seem to be the most important (Szmidt and Plóciennik 2020: 88-89):

1. *Openness.* In general, creative questions are open, divergent questions to which there is no single correct or expected answer. Thus, creative questions are not, for example: *Does a larch tree lose its needles for the winter?; What is the name of a craftsman who repairs door locks? How do we call butterflies that live at night?*

However, questions such as: *What useful can we make out of fallen larch needles?; How do we call someone who can repair a scooter?; What can we do to prevent moths from dying over a burning candle?;* can be regarded as open questions.

2. *Inventiveness and novelty of the question content.* Creative questions, and especially outstandingly creative questions, include content that is new to a particular group of people and discover new areas of knowledge or redefine the existing knowledge, making them aware of new problems to solve or explore. Following in the footsteps of question researchers (eroteticists), we can say that a feature of creative questions is the *creation of hitherto unknown questions*. Truly creative or even revolutionary questions do not so much evoke known unknowns, but actually create a new unknown about which no one has thought in a particular way. Edward Jenner's question about why milkmaids do not contract smallpox was the beginning of the knowledge of epidemiology; Sigmund Freud's questions about the nature of dreams, mistakes and female hysteria were the beginning of psychoanalysis; and Francis Galton's questions about the extent and degree to which we inherit various abilities were the beginning of the psychology of creativity and ability. Therefore, we can say that **a question is the more creative the more it creates a new unknown.**
3. *The power that stimulates creative thinking processes.* Truly creative questions easily and quickly stimulate specific creative thinking mechanisms based on the fluency of ideation (ingenuity) and the fluency of association, uniqueness of thought and the ability to combine and transform ideas and things. A good creative question easily 'triggers' creative cognitive operations and can be metaphorically described as a 'springboard' to creativity.
4. *Heuristic fertility.* A good creative question gives birth to further creative questions, perhaps even better and more inquisitive ones. It provides the inspiration for asking further questions for which it is the basis and frame of reference. This feature of creative questions is reflected in the English word *germinality* which describes the ability of an idea to inspire further ideas. We will refer to this feature as heuristic fertility, as good questions have the power to generate new problems.

Returning to the above-mentioned questions of children aged 7-10, a diagnostic question can be asked about which question most closely meets the criteria for creative questions, i.e. which question is open-ended, exploratory, stimulates creative thinking processes, and can give rise to other inquisitive questions? In my opinion, question number 23: *Why does everything have a smell and the air does not?* has such qualities and can be regarded as a stimulus for interesting inquiry and research, and so it can be the start of a creative activity.

Thus, good creative questions are those that are open-ended, introduce new knowledge and easily provoke creative thinking processes, and raise new questions in a specific field. Perhaps the list of the above-mentioned characteristics, collectively referred to as the **inventiveness** of a question, should be extended by originality, non-banality and non-stereotypicalness of the question's content, or even the humour contained in it, as in the question: *why a needle is not called a 'sewer'; after all, one sews with it, and not 'needles'*. An important ability of questioning thinking is the ability to redefine problems, which complements the list of the two abilities characterised above.

3. **The ability to reformulate questions (redefine problems).** This is the ability to reveal features that are seldom noticed in the objects that are of interest to us, and to redefine a problem by formulating new, original definitions, questions or directives for action. Problem redefinition involves posing a new question related to a known, old problem, and making oneself and others realize that the problem can be looked at in a different and original way. According to Edward Nęcka (1995: 150), redefining a problem situation is regarded as a key moment of creative problem solving, and the ability to effectively redefine problems is perceived as one of the most important abilities of a creative talent. This ability is expressed in the fact that a questioning and creative person is able to "look different", "stand aside", go off the beaten track, or do something "out of the box". In this case, we are not so much concerned with generating ideas to solve some problems, but with the very redefinition of problems by „getting out” of cognitive patterns and formulating a revealing question.

Despite the fact that the three abilities of questioning thinking: noticing problems, formulating questions and redefining problems, are not all the competences associated with this art of seeing the world in a creative and wise manner, I consider them to be the most important. And, what is even more important, I believe they can be developed in the course of education. It seems (and this hypothesis is worth verifying in the course of empirical research) that it is easier for children of younger school age to notice problems and formulate questions, especially information and genetic ones, than to reformulate these questions and redefine the problem situation. This is because the latter requires extensive knowledge, critical and reflective wisdom, as well as distancing oneself from knowledge that is certain. However, the insight into the children's questions encourages us to be careful while adopting such a Piagetian, i. e. pessimistic view of children's creative abilities. After all, question number 17: *Why do we have toys in class 1, and in class 4 we do not have any of them?* can be seen as the result of the inquisitive, clever observation and highly reflective thinking of an 8-year-old boy. If five-year-old Kuba claims that, by continuously cutting an apple in two pieces, he will eventually get such a small piece that it will be nothing and will not occupy

space, and that there will no longer be an apple in it, we can treat this scientifically erroneous conclusion with seriousness and not mockery, because we know that there are objects so small that they cannot be seen (Fisher 2002: 34). I wonder what Piaget would say about this?

In an empirical study of children's questioning thinking abilities, Anna Włodarska (2021) asked pupils in grades I-III about what makes them wonder. Like many philosophers, psychologists and educators (Nęcka et al. 2005; Szmidt 2013; Płóciennik 2018; Pobjewska 2019; Lipman 2021), she assumed that wonder is an impulse to discover new questions and undertake creative activity, and it can be the beginning of philosophising. Of the numerous children's wonderings, the young researcher considered the following responses to be the most original (non-trivial; out-of-the-box):

1. *"Why do people sweat?; Who invented the first word when people could not speak yet?; Why do girls wear shoes with heels?"* – Maciek, aged 10.
2. *"I wonder why once the clouds are white and once they turn dark"* – Ania, 10.
3. *"I wonder why the universe is infinite"* – Kacper, 10.
4. *"I wonder why people have blue eyes at the beginning of life"* – Michał, 9.
5. *"Different sounds are surprising"* – Marek, 10.
6. *"Why do people die and why aren't they forever young?; What are people for?; God created the world and people; but who created God?"* – Oliwia, 10.
7. *"I wonder why me and my family experience various actions and visits to places where my friends do not go"* – Zuzanna, 10.
8. *"I wonder why people smoke"* – Oliwier, 10.
9. *"I wonder how a baby is born"* – Dawid, 10.

We may wonder which of these wonderings are creative and can 'provoke' the processes of creative thinking and philosophical inquiry. Certainly, sentence 6 (*God created the world and people; but who created God?*) contains a philosophical question that has kept many philosophers busy for centuries and is the subject of numerous answers by the greatest philosophers and theologians. Also, it is sometimes referred to as a serious question (Brożek 2007). It can also be an opening question for philosophy classes (Pobjewska 2019).

Lessons of creative questioning thinking

Alane Jordan Starko, the author of the seventh edition of the excellent textbook: "Creativity in the Classroom" (Starko 2022) and a great supporter and promoter of developing children's questioning thinking, has constructed a model of a questioning thinking lesson (Szmidt 2006; Szmidt and Płóciennik 2020). The model can be applied in working with students at different levels of education. Also, Starko specified

a kind of a code of conduct for a teacher who wants to develop his/her pupils' questioning thinking. The author, like many other researchers, criticises the existing practice of stifling children's cognitive curiosity and questioning abilities at school and in the family environment. She considers the creation of a classroom that facilitates students' questioning thinking (*Problem Friendly Classroom*) as one of the most important directions of influences in the pedagogy of creativity. She writes that for our children, who live in a constant information noise, with thousands kinds of media explaining all the mysteries of the world to them, and who grow up in the civilisation of the excess of things to consume, "problem finding, in the broadest sense of the word, is the basis for of all kinds of creativity" (Starko 2022: 20). A child, but also an adult, who does not reflect on the world and people, fails to invent, paint pictures, write literary works, or, ultimately, explore anything. Therefore, in order to teach creativity, it is necessary to stimulate processes that allow children to become more authentic and exploratory "Problem Finders" rather than "Problem Solvers". According to Starko, whom we need now are more Problem Finders.

I have described Starko's heuristically fertile model of questioning thinking lessons in detail elsewhere (Szmids 2006; Szmids and Płóciennik 2020). Here, I would like to consider what kind of educational behaviour makes it possible not only not to stifle students' questions in the classroom, which is a common phenomenon not only in Polish schools (Starko 1989, 1999; Fisher 1999; Szmids 2003; Szumna 2008; Bonar and Buła 2019), but also makes it possible to help children develop as explorers of creative problems and authors of unconventional questions. I have taken some of the principles directed to educators from the work of Alane Starko, and most of them are the result of my own research and analysis.

A teacher should avoid "the avalanche of questions". He/she should ask less, but better. One of the twenty well-known principles of the pedagogy of creativity, suggested by Eliss Paul Torrance (1995: 44), includes the duty: *Create "thorns in the flesh"*. "The father of creativity", as this most prominent American pedagogue of creativity is referred to, urges teachers to make students continually curious about what constitutes the topic or content of the lesson (Szmids 2004b). Intrigue, puzzle, arouse interest; ask what has intrigued your students recently; what puzzles, worries or surprises them. Make these concerns and interests the subject of a class discussion, even when it concerns such difficult issues as the war in Ukraine.

School is boring, or so it seems to students, and not only the Polish ones (Winter 2012; Szmids 2013; Chruszczewski 2019). Boredom during the lessons, especially in times of the Coronavirus pandemic, seems to affect not only younger pupils, who have developmental problems with prolonged concentration on what is being taught, but also high school and university students. Nowadays, it is very difficult for a teacher to arouse curiosity in students who are staring at flashing screens on which they watch

fascinating videos for hours. The teacher cannot compete with such contents using his/her lesson subject. The truth is, however, that curiosity and sustained interest are the most important conditions for undertaking a fruitful creative activity. Teachers are therefore faced with a major pedagogical challenge with which they are trying to cope in different ways.

As emphasized by many researchers (Dillon 1982, 1988; Barrell 2003; Starko 2000; 2022, Fisher 1999, 2002; Marzano and Simms 2014; Pobojevska 2019), questioning thinking skills can only be awakened in a child in a classroom atmosphere in which he/she will be confident that their questions, even the “wild” and unexpected ones, are welcomed by the teacher and appreciated as an expression of cognitive inquisitiveness and not arrogance, and that such questions may be the subject (leaven) of a creative discussion. The student should be certain that the teacher will have time for his/her questions during the lesson despite the fact that time is so precious.

The teacher should make the students familiar with the knowledge of questions, their structure (question pronouns/particles, the content of the question and the unknown of the question), types and ways of formulating clever and innovative questions. He/she can give examples of such questions from his favourite field of knowledge and explain why the questions were significant. Thus, the teacher should pay attention to this aspect of scientific and creative activity. He/she should be *sensitive* to questions related to their teaching field. Only teachers who are truly interested in it can arouse their students’ interest.

The teacher should encourage the children to explore and ask questions as often as possible and in a variety of teaching situations, at the beginning and at the end of the discussion on a new topic (*What do you know about mountain plants?; How are the stone pine and the dwarf pine similar?; What is interesting/ strange/ surprising/ disturbing in Pinocchio’s behaviour?; What else can you call Cinderella?*).

In order to diagnose the children’s level of questioning abilities, a teacher can perform a simple test based on the concept of the Pyramid of Questioning Thinking described above¹. Thus, he/she can provide the children with an ambiguous picture, such as the one below, and then ask them to formulate as many questions as possible related to this picture. These questions should be classified according to the given criteria. The highest ranked questions should be third level questions, i. e. questions which go beyond the content of the picture, as well as speculative and hypothetical questions.

¹ More in: Szmids, K. J., Płóciennik, E. (2020). *Myslenie pytajne. Teoria i ksztalcanie*. Łódź: Wydawnictwo UŁ.

Fig.1. Features of a creative personality. From the project “Adventure with the class” (Bonar et al. 2003, p. 63).



The teacher should check his/her students' knowledge as often as possible, encouraging them not only to answer, but also to formulate inquisitive questions related to the subject and to any doubts and inaccuracies. The teacher should encourage the children to wisely question the established solutions and schemes functioning in a given field of science.

The teacher should encourage his/her students to speculate and hypothesize; to wonder “what would happen if?”, and to make predictions such as: *What will happen next...*, *How will things develop...?* *What will the future be like...?* He/she should praise the students for asking questions which “go beyond the information provided”, i. e. beyond what is already known and certain. Futuristic and wishful thinking (creative ‘what would happen if...’ – questions) should not be stifled even during exact science lessons.

Asking a creative question is just the beginning of a creative process, although now it is considered that the very discovery of such a question (problem) may constitute an independent goal of scientific and, in general, creative activity (Runco and Chand 1994). However, it is worth doing something more with a child's creative question. A teacher can, for example, make it the starting point of a problem which can become a task to be solved in the course of creative activity (the phase of generating solutions, and then evaluating and appreciating them). Thus, if 8-year-old Olek asks *why everything has a smell but air doesn't*, this question can become the content of an interesting research project in which the children will be searching for the best answers in the available sources of knowledge or in a team experiment. It would be interesting to see, e. g., what solutions to the problem of *why there are only few male teachers at school* the pupils would find in their research inquiries.

Conclusion

Warren Berger (2016) calls creative questions and problems *beautiful questions*. What makes questions *beautiful*? The author replies: (<https://amorebeautifulquestion.com/wpcontent/uploads/2017/09/BeautifulQuestionBooksDefinitionx800-679x900.jpg>): “Beautiful questions are challenging yet effective questions that may change the way we perceive something or think about something, and that can serve as a catalyst for a change” (a creative change, as we may add). “Beautiful” questions are to help the person who asks them, including the child, to “go further”, to solve problems better and to acquire new knowledge faster; they are also to stimulate the imagination, which is so important in creative activity. What a pity, then, that I did not find very inventive or “beautiful” questions on Berger’s excellent website and blog. It seems that it is not so easy to formulate such questions, which was also confirmed by other experiences of mine.

In a very promising, yet very disappointing (at least for me), book: “Ask a Philosopher: Answers to Your Most Important and Most Unexpected Questions” (Olasov 2022), I found almost no creative questions at all. The author, together with several professors and philosophy students, set up a table in the centre of New York City with a card saying “Ask a philosopher”. Encouraged to think in a questioning manner, passers-by asked them questions and then discussed the answers. Among the many traditional philosophical questions such as: *What is philosophy?*, *Is there life after death?*, *What is happiness?*, *Is there objective truth?*, *What is love?*, *How to raise children to be good people?*; there were also what I would call silly questions: *Is chicken parmigiana authentic?*, *Should little Hitler be killed?*, *If Superman gets his energy from the sun, why isn’t he tanned?*. Once again, it turns out that creative questions that are open-ended, heuristically fertile, embryonic and that trigger unconventional thinking, i. e. those that are perhaps *beautiful*, are more difficult to find than we think. And, contrary to Piaget’s theory, it is not only difficult for children, but also for adults.

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