

## Students and Teachers Implicit and Explicit Theories of Creativity

*If creativity were one day to come to my school, it would have to try standard thinking, of a very ordinary kind (Pupil, 12 years old).*

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### ABSTRACT

The current research aims to analyse ways of conceptualising the term *creativity* with the help of drawings, as a form of cognitive rendering by primary school students, pedagogy students and primary school teachers. The research seeks to find answers to three questions: What common notions of creativity are held by both primary school pupils and teachers and pedagogy students? Are there any differences in the understanding of this term among these groups of people? How far is the implicit, personal understanding of *creativity* in line with the scientific notion of this term? The visual ethnography method was applied in the study. Qualitative visual data (177 drawings of pupils, students and teachers) were used as the main source of data for analysis in addition to verbal data (written descriptions by the participants). Empirical data were analysed from the perspective of both an elitist and egalitarian approach to creativity, and using various ways to define creativity, as well as selected understandings of the term. Analysis of the qualitative data, demonstrated that pupils, students and teachers are able to treat creativity holistically and systematically, although they tend to associate creativity with the person who is the creator or with a broadly understood product, rather than the process or external circumstances that support creative activity. The research suggests that pupils' definitions of creativity focus around four aspects of meaning: 1) creativity as self-expression; 2) creating new things; 3) ability to utilise the internal resources of imagination and creative thinking *outside the system*; 4) participation in solving everyday problems. Furthermore, it is possible to say that the knowledge of teachers in this matter is more consistent (cultural knowledge) and that of students is more personal (atypical, original, referring to a larger number of different problems and themes).

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## INTRODUCTION

The aim of this research is to provide an analysis of the methods of conceptualising the idea of *creativity* with the use of drawings as a means of cognitive depictions? representations? by primary school pupils, teacher trainees and primary school teachers. In this paper, we review definitions and concepts of creativity, re-iterate the elitist and egalitarian approach to creativity, and key concepts such as The Four Ps of creativity - person, process, product, and press (Rhodes, 1962). We also refer in our discussion to other popular theories of creativity (for example: Craft, 2001, 2012; Glaveanu, 2013).

Creativity is often highlighted as an important skill for pupils to develop during their education (Ahmadi & Besançon, 2017; Barbot, Besançon, & Lubart, 2011; Yates & Twig, 2017). For that reason creativity has been present in schools for years, but it is true to say that: *creativity in the schools is many things to many people - a promise, a threat, a hope, a distraction, or a goal* (Kaufman, Beghetto, & Dilley, 2016, p.133). Although perceptions of creativity in school undoubtedly vary according to the individual participants of the education process, it is important that creativity itself should be considered to be a goal, as well as a basic value in education. This is necessary to support the growth of creative capacity, not only among pupils, but also among teachers, in order to help them develop their creative competence. There are a number of factors that affect the development of student and teacher creativity (Barbot, Lubart, & Besançon, 2016; Kaufman, Beghetto, & Dilley, 2016; Rubenstein et al., 2018). One of these relates to the knowledge of both students and teachers concerning creativity. There are two types of knowledge that should be highlighted here: 1) scientific knowledge - declarative and procedural (practical) that provides a broad frame of reference for the problems of creative teaching and learning, 2) personal knowledge, a common type that provides clues for reflection on the two aspects of teaching and learning (Wieser, 2016). Personal knowledge broadly understood in the spirit of constructivism (as a combination of information, skills, beliefs and attitudes) is often referred to as reflecting *implicit theories* and is acquired as the result of a person's unique way of experiencing the world. Personal knowledge (implicit theories) can be shared or agreed upon among all or some participants of the education process (students, teachers, parents) which in turn can lead to the emergence of cultural knowledge (Hong et al., 2000). Cultural knowledge with regard to creativity, shared by a chosen group of people, covers their beliefs, values, attitudes and other constructions that are essential for the understanding and interpretation of educational events occurring in various social contexts and educational environments. Cultural knowledge of creativity could be a platform for understanding of educational reality and

the rules and guidelines that define this reality are applied with various degrees of awareness by children and teachers in the process of education. They can be amplified or modified during interaction in the learning process (Lau, Chiu, & Lee, 2001). Brownlee and Brthelsen (2006) argue that the epistemological beliefs of teachers are directly connected with applied praxis and then in turn, influence the decisions of their pupils with regard to their choices of creative solutions to various tasks and problems that they face, both in and out of the classroom. Therefore, it is important, when designing a given programme of support for students in the classroom, to acquire knowledge of the implicit theories of creativity of given students and teachers, by creating an environment that encourages them to share these ideas. This in turn, would facilitate being able to negotiate meanings and create a platform for building cultural knowledge together, which could be shared by all the participants of the learning process.

### **Teachers' knowledge of creativity**

So far the research on creativity has aimed at identifying the creative features which characterise creative teachers (Cheung, 2012; Rinkevich, 2011) as well as factors that hinder (Beghetto & Kaufman, 2013; Cheung, 2012; Turner, 2013) and improve creative thinking (Claxtonetal, 2005; Cachia & Ferrari, 2010). Other research has sought to find arguments corroborating the significance of creative thinking (Grainger & Barnes, 2006; Zeterogluet et al., 2012) and creative activity (Beghetto & Kaufman, 2013; Turner, 2013). There has also been research aimed at analysing teachers' skills in evaluating creativity (Black, Harrison, Lee, Marshall, & William, 2004; Gralewski, 2019a; Karwowski, 2008), their perception of creativity itself (Gajda, 2010, 2019; Gralewski, & Karwowski, 2018; Karwowski, Ciak, & Grubek, 2009) and how it might be introduced to schools (Al-Nouh, Abdul-Kareem, & Taqi, 2014). Karwowski, Gralewski, Patston, Cropley and Kaufman (2020) analyzed the structure and characteristics of teachers' perceptions of the qualities of a creative student in countries including: Australia, Italy, Poland and the UK. The main conclusion of this study was that teachers place a strong emphasis on the cognitive components of creativity. Research shows that according to teachers, the most typical features of creative students are: curiosity, imagination, seeking new solutions to a problem, having many ideas of their own, seeing relationships between ideas, coming up with many solutions to a single problem, having the ability to think independently, having initiative, noticing many aspects of a single problem, and combining knowledge from distant domains.

A great deal of research is focused on the perception and evaluation of creative procedures undertaken in schools, as well as on individual techniques aiming to boost

creativity employed by teachers themselves (Roy & Carter, 2013). As stressed by Jeffrey and Craft (2004) it is important to be able to tell the difference between the various meanings of the terms *teaching creatively* and *teaching for creativity* and also to see their interrelation in the area of education. Both *teaching creatively* and *teaching for creativity* require that teachers should be aware that creativity is a multi-meaning term, which is not entirely clear, so that individuals undergoing the process of education may have a somewhat different understanding of the term. Thus it is of importance to monitor pupils' knowledge about creativity, their experiences and beliefs. Lack of communication regarding partially established common understandings of creativity in the classroom can lead to a number of misunderstandings during the learning process and can cause a person to lose faith in his/her creative abilities, which in turn can result in their withdrawing from creative tasks.

As far back as in 1991 Fryer and Collings drew attention to the lack of research into understanding of creativity by teachers. Since then little has changed in this particular area, especially with regard to research into the implicit theories of creativity held by teachers and students as compared to educational research on creativity in general. Treffinger's (1968) research showed that there is a group of teachers who neither understand what creativity is nor do they comprehend its meaning for education and their ideas are contrary to scientific knowledge in the field (Aljughaiman & Mowerer-Reynolds, 2005; White, 2000). Simmons and Thompson (2008) claimed that the reason behind the failure to develop creativity among students in the process of education was that creativity is difficult to define. If teachers do not understand what creativity is, they are unable to appreciate its value and are not aware of the main directions and principles of supporting its development, then it can be said that the probability that they could effectively support the educational environment so that it could be profitable for the growth of creative potential among students is very low indeed (Beghetto & Kaufman, 2013; Kaufman & Begheto, 2014). The research shows that understanding of creativity varies widely among teachers (Craft 2003; McWilliam & Haukka 2008), a finding that is confirmed by the analysis performed by Kaufman, Beghetto and Dilley (2016) covering all types of research conducted over the years in various countries (Bolden, Harries, & Newton, 2009; Chan & Chan, 1999; de Souza Fleith, 2000; Diakidoy & Phtiaka, 2002; Newton & Newton, 2010; Tan, 2003; Westby & Dawson, 1995;). Similar conclusions have been reached by Gralewski (2016, 2019b) and Gralewski and Karwowski (2019) based both on their own research as well as studies worldwide dealing, amongst other factors, with the beliefs of teachers concerning the characteristics of creative students.

### **Student knowledge on creativity**

It is important to notice that the voice of students is a neglected area of research in studies designed to improve education for small children, and including education about creativity and through creativity. In order to get acquainted with the child's perspective, one must reject ill-founded protectionism towards their standpoint and by showing respect and patience, listen carefully to what they have to say. It is worth keeping in mind, though, that if the research is a single unique event, created just one time for the purpose of that research, it could create difficulties, as children immersed in a culture that robs them of their voice or does not take their voice seriously, when asked for an opinion, could have reasonable doubts or even inhibitions about expressing themselves or might merely say what they think adults would like to hear. Hence it would be advisable to look for other means of expression besides verbal.

Analysis of the scholarly literature leads to the conclusion that there is little research into the knowledge of children on the subject of creativity (Ligeża, 2017; Pietruńko, 2018). There is even less concerning both children and teachers (Turner, 2013) in order to discover any similarities or differences in the understanding of creativity of both groups in the process of education. It is important then to understand, whether implicit theories of creativity have common elements which can form a base for building culturally shared, social knowledge, (for instance in a given school community). As the research shows, most naïve theories are well within the competence of most children and can be elicited in the form of their verbal and nonverbal output. It has been shown (Bartsch & Wellman, 1995; Flavell, 1988; Gopnik & Wellman, 1994; Wellman, 1990) that children have a much broader knowledge, than adults give them credit for, even in matters that may seem to be somewhat *serious* and at first glance seemingly *far removed* from their everyday world. Children, then, not only can, but rather should be, full-time participants in the extended dialogue on various themes connected with their education. Taking into account their experience and their understanding of reality, their emotions and their point of view, recognising them as conscious explorers of the reality which surrounds them, can bring about a new quality in education and have a positive influence on their place in the modern school (Wiśniewska-Kin, 2013).

### **Implicit and explicit theories**

Differentiating between scientific and personal knowledge is not always precise, because any differences are usually quite subtle. They are expressed in the availability and content of a particular construct. Scientific knowledge, culturally shared, is more generally available than personal knowledge. Regarding content, scientific knowledge that is cultur-

ally shared, is more concerned with laws and generalities, is more consciously available, and thus the attitudes derived from this kind of knowledge can be intentionally controlled and given to reflection (e.g. Wegner & Bargh, 1998). Personal knowledge focuses more on individual and unique experiences (e.g. memories) (Smith & DeCoster, 2000) and beliefs built on ways of experiencing and interpreting the world that are characteristic of a single person. Knowledge built on personal involvement in gaining these experiences and beliefs is relative, because it is personally assembled and verified within a given context and former experience. This kind of knowledge is never objective and even though individuals are aware of its relativity, personal beliefs are more valued than others. Implicit knowledge, sometimes called *active* (Barnes, 1988), procedural (Stemplewska-Żakowicz, 1996) or conjunctive (Mannhaim, 2008) is usually atheoretical, incorporated, more incorporeal than conscious, obvious to a circle of people that share common experiences. It is a kind of knowledge that is difficult to verbalise, that is limited in terms of communication features, especially in the case of children. For this reason we believe it was valid to look for non-verbal channels of its expression.

### METHOD

In our research on the implicit theories of students and teachers we formulated several important assumptions: 1) the conceptual system of a person, based on experience, is no less important than the rational one (Epstein, 1990); 2) a person, through gathering personal experience *constructs* a picture of the world for themselves and does not take it from others; 3) understanding of the world and cognitive handling of it is done through building implicit theories (Białecka-Pikul, 2012; Haman, 2002; Miller, 2012; Putko, 2008); 4) creating implicit theories happens through interaction with society and culture as a result of interpersonal communication; 5) implicit world concepts influence a person's functioning (i.e. influence their personal concept of education and interactions within that scope); 6) implicit concepts can be communicated to others through the text of culture, which can be more than words or poetry. A text of culture can also be a drawing, as a form of communicating implicit concepts of the world; thus of implicit theories of creativity as well; 7) it is important that each participant in the education process, students and teachers, can learn each others' beliefs on the nature of creativity, understand them, share and negotiate meanings and possibly create cultural knowledge, incorporating scientific knowledge as well (explicit theories).

The research aims to analyse ways of conceptualising the term *creativity* with the help of drawing as a form of cognitive rendering, by primary school pupils, pedagogy students and primary school teachers. The main research questions are: What implicit theo-

ries of creativity are held by pupils, students and primary school teachers? Are there any differences in the understanding of creativity among the research participants? How far are the implicit, personal theories of creativity in line with the scientific and research conceptualisation of creativity?

In our research we employed the method of visual ethnography, which is an example of *gaining knowledge* from the language of a picture (Nowotniak, 2012; Kunat, 2015; Pink, 2008). We assumed that research which was based on visual materials had a great interpretative potential: open to various concepts of interpretation and researcher experience (Banks, 2009; Nowotniak, 2012). According to visual ethnography, visual data are recognised as legitimate and valid empirical materials and can be used for formulating certain theories and theoretical proposals. They have to be analysed in combination with other material, as an additional type of data or can be used as a main source in research projects (Nowotniak, 2013). In our research, visual data (pupils' drawings, students' and teachers' drawings) were taken as the main source of data, but they were supplemented with verbal data. We assumed that through the analysis of both visual and verbal data, it is possible to rebuild the world of the subject of the research, and to understand meanings that they project on the world and their life within the world (Zdanowicz-Kucharczyk, 2010).

### **Sample**

The sample studied for the purposes of the research consisted of primary school pupils, teacher trainees at the University of Białystok, Faculty of Education and primary school teachers. The study was carried out in the academic year 2018-2019. The sample consisted of 1) a total of 89 teacher trainees in the 5<sup>th</sup> year of study from the Preschool and Primary Education Programme (86 female and 3 male), 2) 45 primary school pupils (23 girls and 22 boys), 3) 43 primary school teachers (43 female).

### **Research procedure**

In order to discover the different ways of cognitive visualisation of the concept of *creativity*, pupils, teacher trainees and primary school teachers were asked to perform a drawing task: *Draw creativity*. Participants were provided with a white A4 sheet of paper and a pencil or pen. The drawings were made individually with no time limit imposed. Drawings were usually completed within 20 minutes. After the drawing was finished, participants were asked to write their opinion on what creativity is and what this term means. It was posited that implicit theories of creativity expressed through language might help us to discover the sense and meaning expressed in the visual form.

### **Procedure for qualitative data analysis**

In the process of qualitative analysis of the visual and verbal data obtained, we referred to the conception for visuo-verbal analysis proposed by Kress and van Leeuwen (2006). The drawings depicting the concept of creativity were considered to be the key elements for the analysis, whilst the written expressions were treated as supplementary data. The process of data analysis of the drawings followed three stages: a transcription of the drawings, open coding and categorization. Substantive coding of the data was used in the coding process (Charmaz, 2006), according to which, the pieces of empirical material were labelled in order to specify the subject matter represented. Two researchers decided and agreed on the individual code labels used.

### **RESULTS**

In choosing the approach for the research, we assumed that *not all that is important can be measured and not all that can be measured is important* (Robinson & Aronica, 2015, p. 211). Data obtained from the pupils, teacher trainees and primary school teachers was analysed according to the method of content analysis which aims to discover the meaning of the concepts and topics associated with the notion of creativity, which otherwise might have remained undiscovered by means of quantitative research. After preliminary analysis of the drawings, we concluded that there were no significant differences in the content of the implicit concepts of the pupils, teacher trainees and teachers. Therefore, we decided to perform the analysis of the implicit concepts of creativity simultaneously for all the participants without selectively analysing the groups individually. Any noticeable differences between the groups will be communicated in the analysis of specific topics, which in turn allows for the comparison of similarities and differences between implicit theories and scientific theories of creativity.

In the presenting the results of the research, we first review the definitions and concepts of creativity, re-iterate the elitist and egalitarian approach to creativity, as well as key concepts such as the four Ps (person, process, press and product) and we analyze other popular theories of creativity (for example: Craft, 2001, 2012; Glaveanu, 2013) in relation to the data obtained.

#### **The elitist *versus* egalitarian approach to creativity**

The main purpose of this part of the paper is the analysis of the drawings from the perspectives of both an elitist and egalitarian understanding of creativity held by the pupils, teacher trainees and teachers. According to the elitist approach, creativity applies only to distinctive individuals, whose products are highly valued socially, because only a distinctive author is capable of providing society with useful values. According to an egalitarian understanding of creativity, all individuals have creative potential and their work can dis-



The participants, irrespective of age and their role in the education system, were more likely to perceive creativity as a property of the individual (child or adult), in terms of *an ability to generate ideas, infinite numbers of ideas, an ability to do something in a number of ways, doing something* that was not precisely defined (i.e. *changing the world, seeing the world from a different perspective*) - but new. The majority of participants did not put emphasis on doing something socially valuable, they often emphasized that creativity *means an infinite number of ideas that go beyond established frameworks. It is something new, original, , one of a kind, unique, surprising and interesting.* Egalitarianism was also treated, both graphically and verbally, as a kind of *return to childhood, crossing known borders and departing established routines.* One example of understanding the meaning of everyday creativity which refers to solving difficult life issues is drawing 1(b). It is a perfect example of the concept of possibility thinking (Craft, 2001), thinking about the consequences of one's actions, problems they cause, and of ways of solving them. It is a kind of thinking that moves from what is, to what might be. It allows the person to see and analyse various possibilities, make a choice and solve the problem. It is expressed in the question *What if?* and in the conviction that *I can do it* (Craft, 2001, 2012). The author of drawing 1(b) (a student of pedagogy, 24 years old) expressed this in the following way: *Uhm... I would like to go somewhere on holiday, but I have no money for the trip. The tickets are very expensive. I know! Birds can fly wherever they want. I will be like them. Now I am free and I can travel anywhere without limitations.*

Everyday creativity is the answer to the constant and rapid social, economic, environmental, technical and spiritual changes that a more and more complicated life requires. An increasingly unpredictable world requires better adaptation, individual effectiveness and flexible planning. Those that are involved in everyday creativity are characterised, like those with exceptional creative abilities, by curiosity, open mindedness, flexibility, imagination, independence and the courage to take risks combined with perseverance. The listed features are plainly seen in the work of the participants of our research.

### **The key concepts of creativity such as the four Ps**

Rhodes (1962) proposed four Ps of creativity - person, process, product, and press (e.g., environment), whereas Glaveanu (2013) has conceptualized the Ps in the form of five As. The person, for instance, becomes an *actor*; the process becomes an *action*; and the product becomes the *artifact*. Press is divided into two concepts: *audience* and *affordances*. The creative process involves generating, applying and evaluating ideas. The creative product refers to the results i.e. conceived ideas, behaviours or material objects. Research in this area can also include ways of evaluating the creative

process. Finally, research relating to the external conditions governing the development of creativity may focus on determining what environmental factors are capable of supporting or hindering creativity. This last approach to explaining the phenomenon of creativity may be a way of helping teachers/educators to consider the various interrelated elements that are necessary for fostering the growth of creative potential among their students.

### Ps of creativity - person

Research on creativity can cover analysis of the personal traits that are decisive for creativity (i.e. creative thinking, imagination, openness to experience, sensible risk taking and confidence regarding one's own ideas, etc.). In analysing the drawings of the participants, it is possible to conclude that the vast majority of primary school pupils and pedagogy students, as well as primary school teachers have a narrow understanding of creativity, associating it with divergent thinking and less frequently with a creative imagination (see Figure 2). *My picture shows a fan inside the head of a man as the mechanism for driving creative thinking* (see Figure 2c). However, divergent thinking is not a synonym for creativity; divergent thinking is a thought process that lends itself to creative thought. This process allows people to think outside the norm and to create new solutions (Runco, 2008). Indeed, concepts of creativity that are too narrow can become the basis for establishing mistaken negative stereotypes and observations about creativity (Plucker et al., 2004).



Figure 2. Creativity as a personal trait - narrow approach  
- thinking and creative imagination

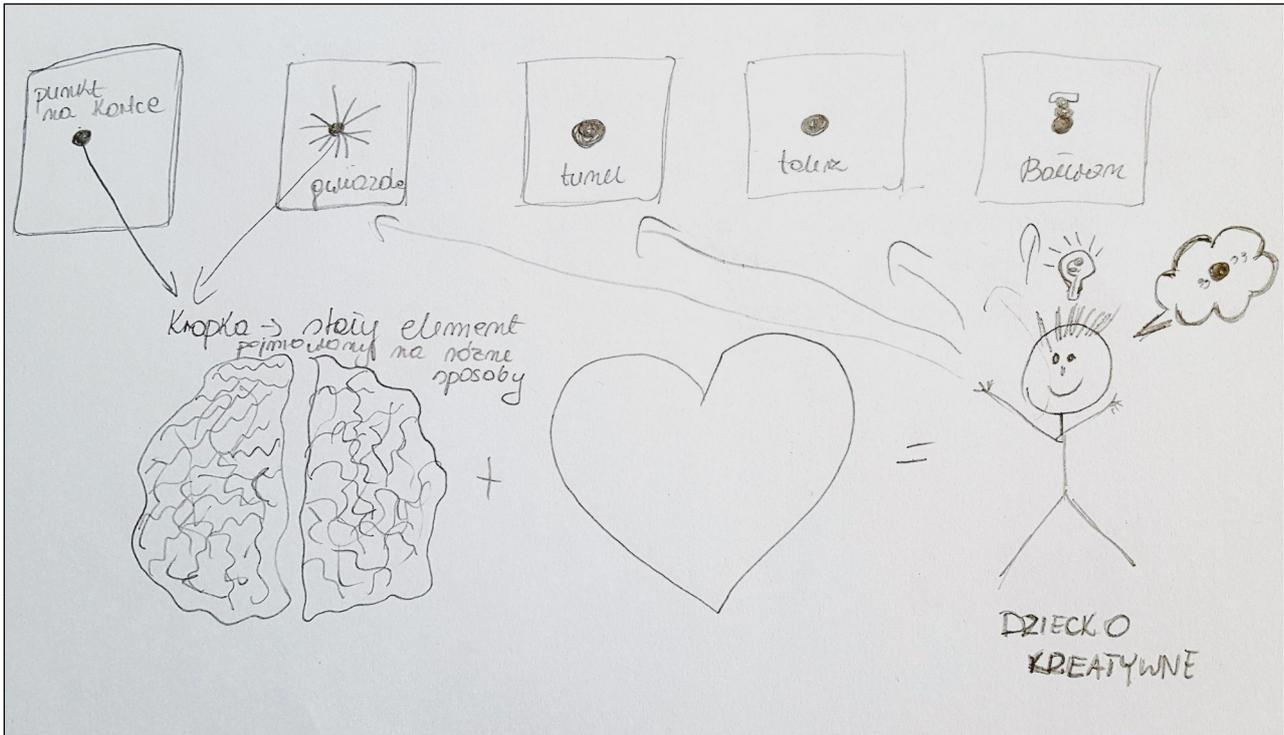
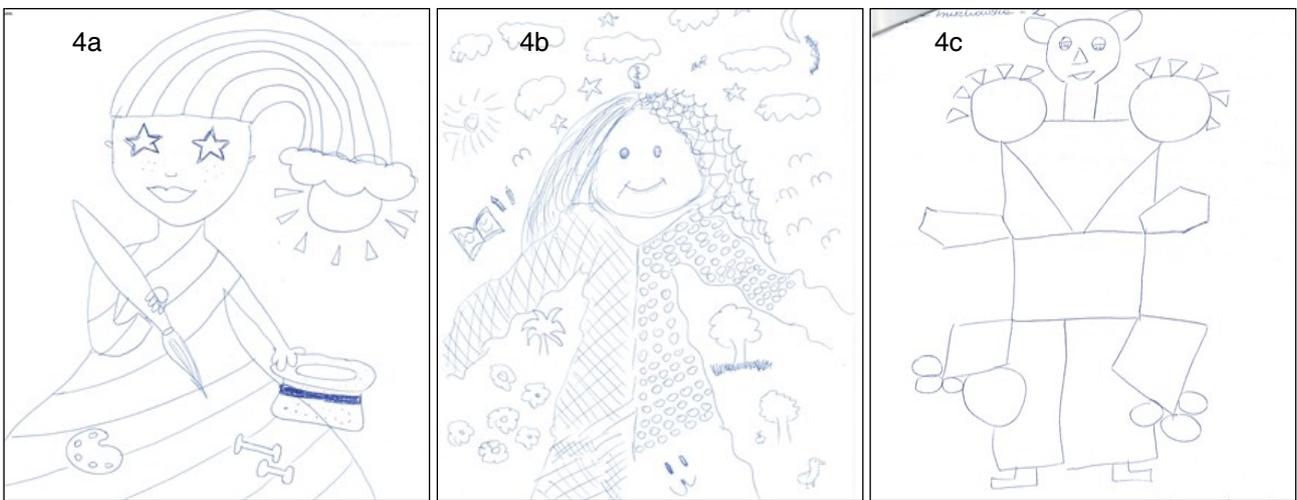


Figure 3. Creativity as a group of personal traits - broader approach -



cognitive capabilities and emotional traits

Figure 4. Creativity as personality (4a - child, 4b - dual, 4c - deformed)

The second most frequent way of presenting creativity graphically were drawings depicting creativity in a somewhat wider sense, not only as a set of cognitive features (creative thinking and creative imagination) but also in terms of other features such as feelings, emotions and motivation. Creativity was presented (see Figure 3) as a set of characteristics which were broader than the cognitive properties of a person (*intellectual resources, the hidden potential of their creative and emotional abilities, which allows them to bring into existence unique and exceptional products of inimitable value*). The least

frequent interpretation of creativity was in terms of a broad context, namely that of personality. This meaning was encapsulated in those drawings, where creative personality was expressed in at least three ways: 1) a *child-like* personality, which is easily transferable to the world of fiction, imagination, a *fairytale personality* (see Figure 4a), 2) a *dual personality* - presented as being able to function equally well in the real world and in the unreal; having common sense and being creative, a personality that is both sensible and romantic (see Figure 4b), 3) a *deformed* personality, completely different from the accepted image of an average person (see Figure 4c). The participants who described this type of personality, pointed to the fact that *a creative person is a little weird. Original in the extreme.*

Other studies have also shown that teachers' implicit theories of creativity are reflected in the fact when describing creative students, they tend to refer to three main determining factors, namely: cognition, personality traits, and motivation (Andiliou & Murphy, 2010; Bereczki & Karpati, 2018) or to cognitive creativity, nonconformity, and adaptiveness (Karwowski, Gralewski, Patston, Cropley, & Kaufman, 2020).

### Ps of creativity - process

Analyses revealed that, out of the 117 drawings and verbal descriptions, only 28 works defined creativity as a creative process (see Figure 5).

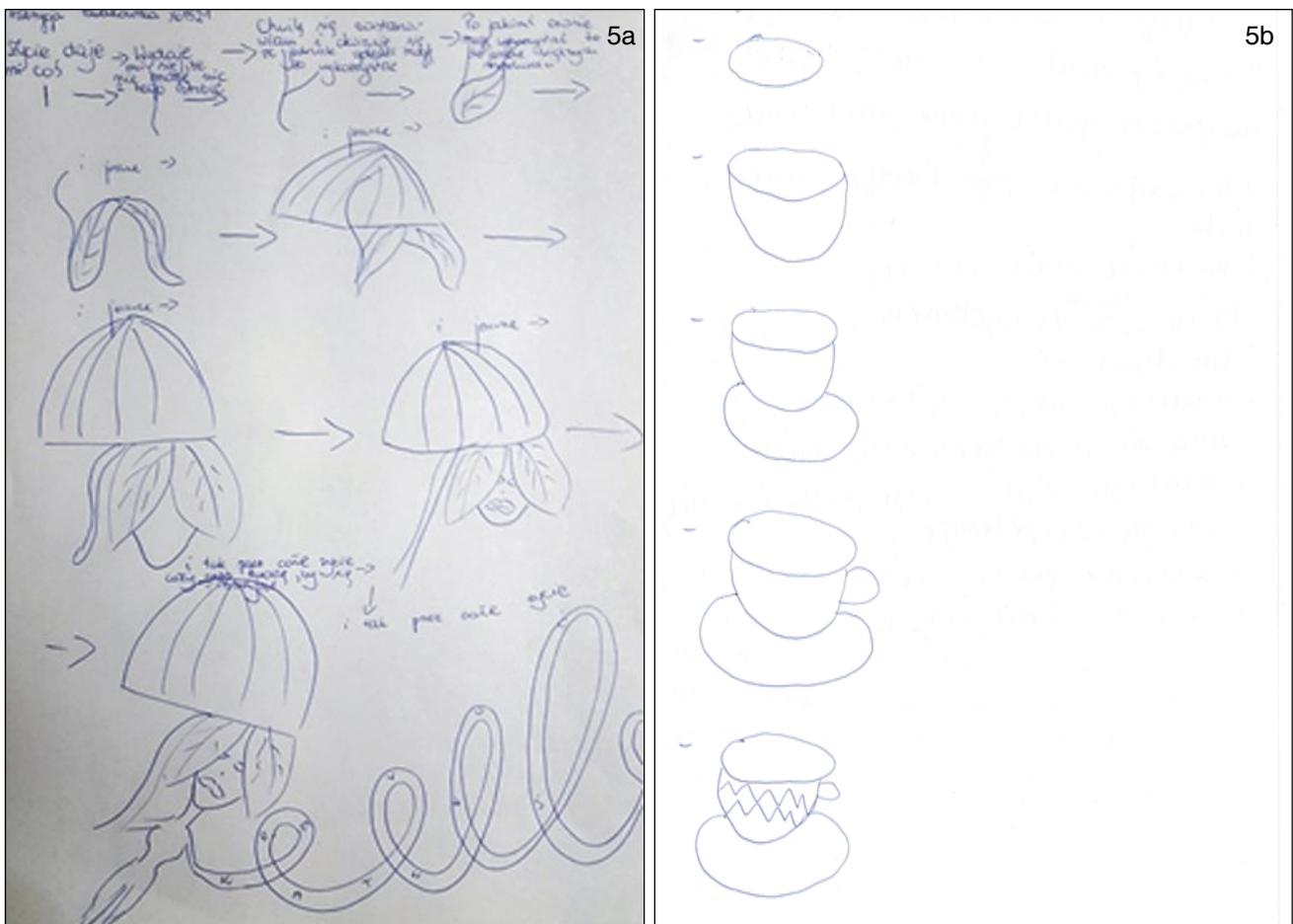


Figure 5. Creativity as a process

Their verbal descriptions contained expressions such as: an *intellectual process*, an *intellectual mechanism*, a *process of non-stereotypical thinking*, a *process of solving new tasks*, the *process of creating a work of art*, a *non-organised chain of thought*. The popular concepts of creativity held by the participants however, did not refer to what happens in the process of creating a work of art or how open-ended problems are solved, such as what is meant by the period of incubation, illumination or enlightenment). In six cases, the authors presented creativity as the process of solving a particular, single problem by listing the consecutive stages of problem solving (see Figure 5b). From this analysis of the graphic representations of everyday concepts of creativity, it can be seen that the essence of creativity is expressed also in terms of the process of self-realisation. A very interesting illustration of this approach is shown in picture 5a. The text accompanying the picture is as follows:

- 1) *Life gives me something.*
- 2) *It seems to me, that there is nothing I can do with it.*
- 3) *I think about it for a while and it turns out that I can make use it somewhere.*
- 4) *After some time I can use it toward even more possibilities*

*And more*

*And more*

*And more*

*And more*

*And this happens throughout the whole of life, I am creative all the time in order to grow.*

*And so on throughout the whole of life.*

No information was found in the study on the role of internal or external motivation in the creative process. However, it was quite often the case that participants recorded the view that creativity is about the process of solving the real and difficult problems of everyday life. An individual's needs were often seen as being the force behind creative acts (see Figure 1b).

### **Ps of creativity - product**

In the analysis of creativity as a product, it should be emphasised that in the opinion of the participating pupils, future teachers and teachers the work does not have to be an exceptional project, invention, new scientific theory or new and original method. Analysis of the graphical conceptualisations of human creativity lead to the conclusion that in most cases, the participants gave examples of works of art (art, music, literature) but seldom viewed creative products in terms of technical, medical or natural science achievements (see Figure 6a and 6b).



*Figure 6. Creativity as a product - fields of creativity*

There were single examples of creativity being perceived as a way of developing one's own personality (see Figure 5a), or as the product of modern accomplishments (see Figure 6a). Participants, however, did not perceive creativity as the product of autonomous cultural activities or in terms of designing progressive developmental changes in human social behaviour. Single products were rarely used to illustrate the concept of creativity, whereas it was more likely to be seen as a field of activity in various aspects of life, the products of which were loosely interconnected (see Figure 6b) or areas that are autonomous but closely interconnected - like a jigsaw (see Figure 6a).

### **Ps of creativity - press**

From an ecological perspective, creativity is seen as the result of activities which stimulate or inhibit the development of creative potential in people and thus as the result of educational processes that may stimulate or inhibit creative activity. This perspective rarely appears in the implicit concepts of creativity demonstrated by the participants. Very few of their drawings (only 9) presented creativity as a human capability that requires nurturing, support and protection (see Figure 7a and 7b).

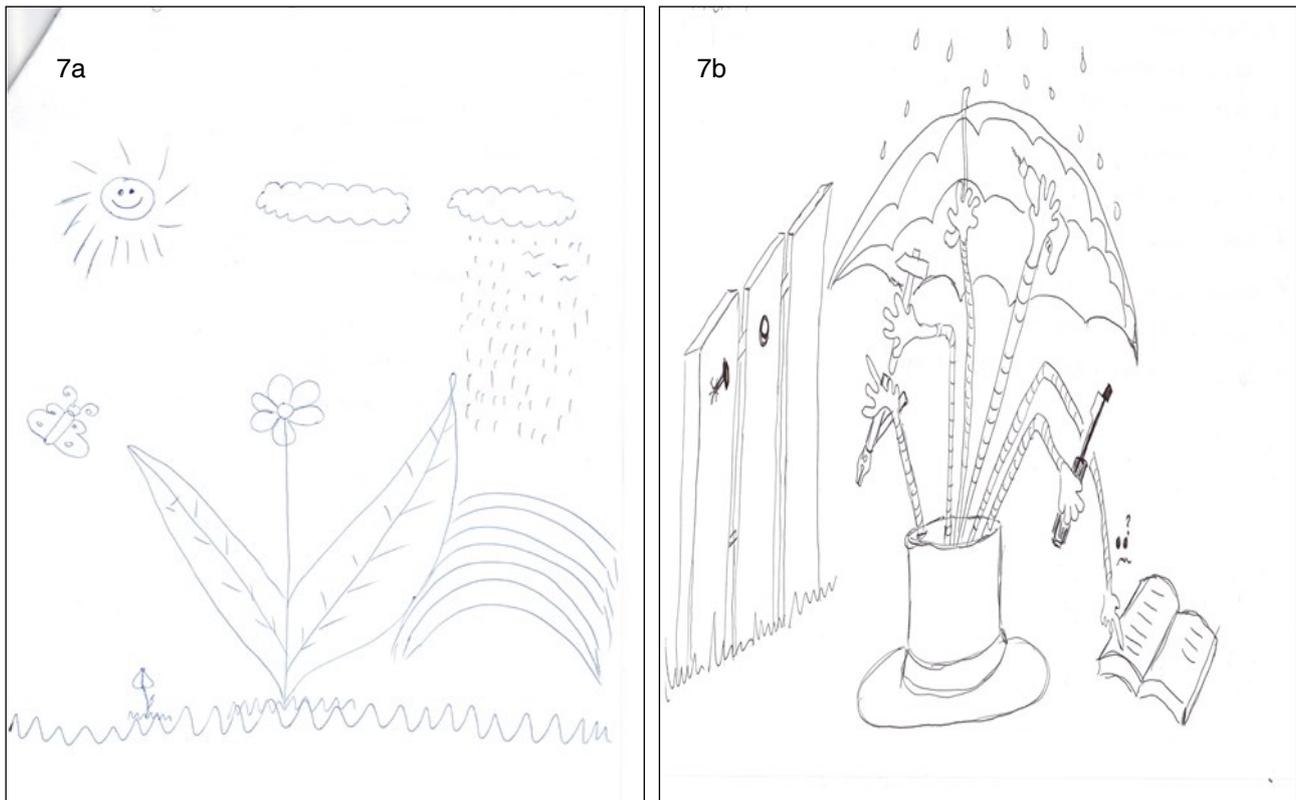


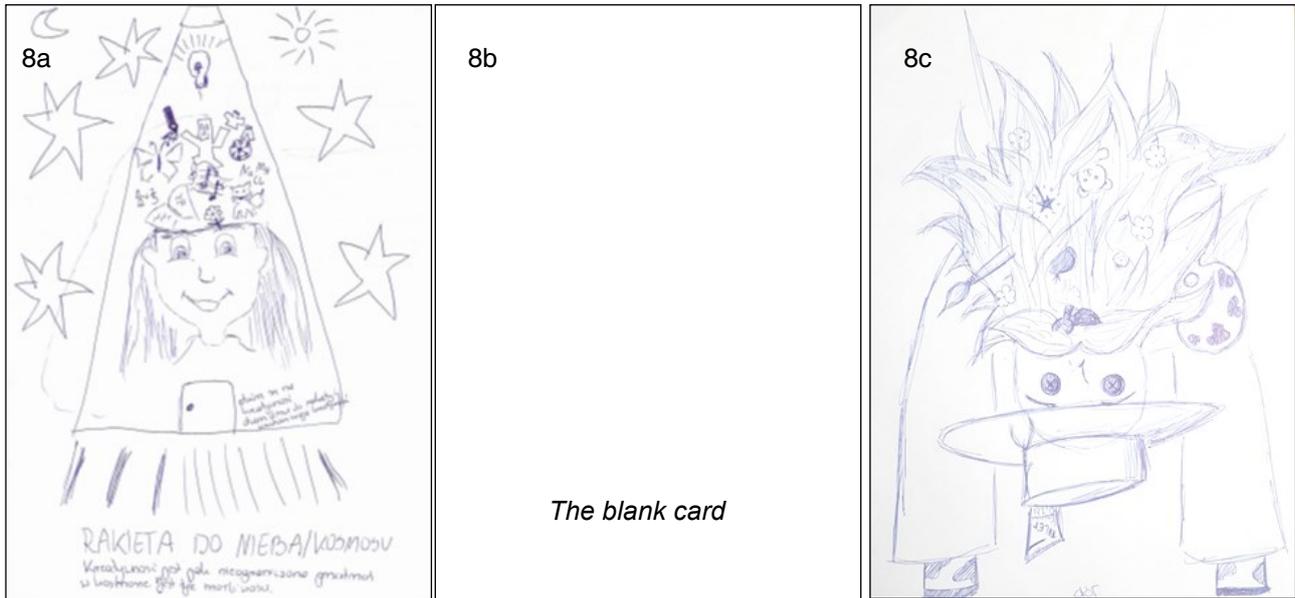
Figure 7. Creativity as a conditioning factors (press)

One of the primary school pupils noted on her drawing: *If creativity were one day to come to my school, it would have to try standard thinking, of a very ordinary kind.* The author of the drawing vividly pointed out the negative role of the school in the development of creative thinking among students.

*A broad metaphorical and holistic understanding of the phenomenon of creativity*

Analysis of the drawings showed that the participants (students, teacher trainees and teachers) quite often (56 cases) presented the phenomenon of creativity broadly, and holistically levels and areas, at the same time indicating their understanding of creativity as a product, a process and in terms of the creator's personality). *I left the page blank because I believe that creativity depends on one's own interpretation and everybody can understand a blank page differently or see various things in it. Creativity is also very flexible like this page. It is also very useful; one can modify it in various ways. It can be represented in any way that a person may wish - as with a blank page, in general one can do whatever one desires with it, because creativity is not limited by shape and colour. Everyone sees it in any they want* (Student, 12 years old). (see Figure 8b) Another student had a more holistic view of creativity (see Figure 8c) and wrote *Creativity is up-side down which symbolises non-standard thinking. The elements in its mane refer to its being specialised in all fields of science. The buttons symbolise its being different, but the shape of the person/human being means that everybody has it and nobody has more or less of it.*

*A ticket instead of a feather in the hat represents the aspiration that creativity should, at certain moments, take precedence over logical thinking.*



**Figure 8.** Metaphorical and broad (holistic) understanding of creativity

### **False beliefs concerning human creativity**

The analysis of the verbal descriptions demonstrates that teachers are more likely to present false beliefs concerning creativity<sup>1</sup> than teacher trainees or primary school pupils. They most frequently made the following types of conceptualisation: *creativity means making mistakes, creativity is equivalent to flexible thinking, creativity is creating something from nothing, creativity is the ability to express thoughts and desires, creativity means understanding the world, creativity cannot be learned, transferred or developed, because it is something that one is either born with or not, creativity is like observing the world through rainbow-coloured glasses, creativity refers to a holistic perception of the world, creativity cannot be defined, it is just a product of the imagination, creativity means self-development.* These explanations, accompanying somewhat enigmatic drawings pointed to partially or completely false beliefs about the essence of creativity.

### **CONCLUSIONS**

Analysis of the results of the study was aimed at determining how the pupils, teacher trainees and teachers understood the term *creativity* and to what extent their cognitive representations of this concept, in the form of drawings and written texts, was in keeping with a scientific explanation of creativity.

<sup>1</sup> The Admittedly Karwowski, Gralewski, Patston, Cropley and Kaufman (2020) suggested that the discussion about the “rightness” or “wrongness” of implicit theories of creativity is problematic, as it assumes that there is an objective criterion upon which what is right and what is wrong could be authoritatively determined in the definition of creativity. The purpose of this analysis is to determine the extent to which implicit concepts of creativity are in line with scientific concepts.

**Table 1**  
**The main analytical categories and their frequency**

Key descriptors		Frequency	Example
<b>Different perspectives on creativity</b>	Elitist approach	6	Drawings included symbols of outstanding creative achievements: awards (incl. Nobel Prize), medals, commendation letters or diplomas
	Egalitarian approach	171	Based on the analysis of verbal descriptions: <i>an ability to generate ideas, infinite ideas, an ability to do something in a number of ways, doing "something"</i>
<b>Ways of defining creativity</b>	Person	70	Creativity as thinking and creative imagination Creativity as cognitive capabilities and emotional traits Creativity as personality
	Process	28	Based on the analysis of verbal descriptions: <i>an intellectual process, an intellectual mechanism, a process of non-stereotypical thinking, a process involving solving new tasks, the process of creating a work of art, a non-organised chain of thought.</i>
	Product	14	Drawing included representations of works of art (art, music, literature) The creative product is associated with technical, medical or natural science achievements
	Press	9	Creativity is seen as a result of educational processes that stimulate or inhibit creative activity
	2, 3 or 4P	56	
<b>False beliefs on human creativity</b> (based only on the analysis of verbal descriptions)			verbal descriptions: <i>creativity means making mistakes;</i> <i>creativity is creating something from nothing;</i> <i>creativity is the ability to express thoughts and desires;</i> <i>creativity means understanding the world;</i> <i>creativity cannot be learned or transferred, or developed, because it is something one is either born with or not;</i> <i>creativity is like observing the world through rainbow-coloured glasses;</i> <i>creativity refers to a holistic perception of the world.</i>

The research shows that in the definitions formulated by the primary school pupils creativity is seen as: 1) self-expression, 2) creating new things; 3) the skill of being able to utilise one's internal resources of imagination and creative thinking *outside the box* in a sensible way; 4) involvement in everyday problem solving. The understanding of creativity demonstrated by the students is similar to that of both teachers and teacher trainees. On the basis of the results, it is possible to conclude, that the knowledge demonstrated by the teachers is of a more collective type (cultural knowledge), whilst the children show a more personal type (atypical, original, concerning a larger number of diverse problems and subjects). Similarly research by Gopnik and Wellman (1994) also confirmed that in comparison to models of reality constructed by adult scientists, children's models were, characterised by a smaller degree of generality, coherence, and precision and were less systematic. In conclusion, it should be noted that irrespective of age and level of education, the participants were able to treat creativity systematically and holistically, although, they tended to associate creativity more with a person or broadly understood product and less with the process or external conditions that support creative activities. Their opinions on creativity are in line with categories described in the subject literature presented by Mooney (60-ies of the last century).

### **Limitation of this research**

Human creativity (including that of pupils, teacher trainees and primary school teachers) can be perceived and evaluated on a continuum from the level of implicit creativity up to the level of exceptional creativity, a distinctive form represented by compositions in various fields of art, science or social life. The research did not deal with such issues as creative levels, described by Nęcka (2002) namely, fluid creativity, crystallized, mature and distinctive types. Another possibility, not employed in this research, was the analysis of concepts of implicit creativity and their comparison with the scientific concept of creativity types as described by Beghetto, and Kaufman (2007): creativity on a mini *c* level (children's creativity), little *c* (everyday creators), pro *c* (professional creators), capital *C* (distinctive creators). There can be no doubt, that analysing these implicit creative concepts and comparing them to such types as: expressive, professional, inventive, innovative and distinctive types (after Taylor, 1975) or recreational, amateur, masterly and transgressive types (after Szmidt, 2013) could provide interesting results.

Another limitation of the research is the size of the sample size examined in the study. A larger number of participants would result in a more balanced distribution of responses in order to achieve greater reliability of the results and would allow for greater generalisation of the conclusions.

Participation in the research was voluntary and based on a subjective interpretation of the concept of creativity. It is thus not possible to draw more general conclusions, or to suggest that they are wholly objective and representative for the population as a whole, with respect to any similarities and differences as regards the contents of implicit theories compared to scientific ones.

### **Implications**

The results of the study suggest that some of the participants may have had certain misconceptions with regard to activities that help to stimulate creativity or had experienced structural barriers in the development of the creative process. The results suggest that the teachers had a good understanding of creativity and its importance in the classroom; however, it appears that some of them may have held various false notions concerning activities that support creativity or barriers that hinder them. There was very little reference in the graphical representations to external factors (both material and social), including factors concerned with the school or with teachers themselves, which may have had an influence on the creative growth of a person or the quality of their work

### **Recommendations for Future Research**

In future research on this subject a larger, more representative number of participants should be employed. The data should be gathered from various types of schools (private and public), at various levels of education and from divergent geographical areas so they can be used to formulate more general conclusions for the population as a whole. This research dealt only with teachers, teacher trainees and primary school pupils from one big town. A larger group, including people from a number of regions or countries might be expected to show differences in beliefs, depending on their region or a more general consensus in their understanding of creativity in education. Thus, further research is necessary, both in the light of the limitations of the current study and in order to gain better insight into implicit theories of creativity. For instance, it would be important to understand the basis for scientific knowledge as compared to that of personal ideas concerning creativity and to elaborate the conditions that determine when one of these types of creativity is activated.

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