Primary Physical Education Perspective on Creativity: The Characteristics of the Creative Student and Their Creative Outcomes

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Abstract

The last two decades, researchers explored teachers' implicit theories, perceptions or beliefs about creativity related issues, as they thought they are complimentary to researchers' explicit theories. Although implicit theories' studies recruited mostly K-12 participants, a research gap was noticed in literature concerning this kind of research in specific domains of knowledge or school subjects. Taking into account a trend in Europe for the promotion of creativity in primary physical education (PE), the present study is the first one that focused on physical educators' (PEds) perceptions about creativity related issues. The PAC (Perceptions about Creativity) questionnaire was developed to explore PEds' perceptions on four well-documented aspects of creativity: a) the characteristics of creative student, b) students' creative outcomes, c) the nature of creativity and d) the creativity fostering and inhibiting classroom environment. The present paper discusses the findings from the two former aspects of creativity. Concerning the characteristics of the creative student, PEds were often held inconsistent perceptions, even conflicting ones with regard to researchers' explicit theories and other teachers' perceptions.

Key words: creativity, teachers, implicit theories, perceptions, beliefs, creative student, creative product

1. Introduction

The knowledge –based economy bloomed after the industrial and post-industrial economy as the modern latest stage of development in global economic reformation and reflects the recognition of the role of knowledge and technology in economic growth. Education is thought to be at the center of this economy and it's connected with the need for creativity and innovation (OECD, 1996; NACEEE, 1999; EC 2008/C 141/10).

Especially in Europe, European Union (EU) endeavors welcomed the integration and the enhancement of creativity in education and training (*Lisboanstrategy*[1] 2000,*"Education&Training (ET) 2010"*[2], *"ET 2020"*[3].work programmes) and in school level education systems, the combination of the development of specific knowledge and skills together with that of generic capacities linked to creativity, has been noted by EU authorities(EC 2008/C 141/10). The importance and the nurturing of creativity in schools and in primary education have been, also, well-documented from many researchers (Craft, 2000, 2005; Jeffrey and Woods 2003; Wilson, 2005; Sawyer, 2006; Starko, 2005).

"The flourishing attention on creativity and its promotion in schools motivated many researchers to examine implicit and explicit theories to understand creativity" (Saracho, 2012). Explicit theories of researchers formulated, articulated, tested and shared through their publications, contributed towards the clarification and the promotion of creativity in schools. On the other hand, implicit theories of lay people, parents and teachers, which are based on their belief systems about creativity, played a critical role on the clarification of this phenomenon. Implicit theories about children's creativity and especially those of teachers are thought to be extremely important because they lead directly to expectations, and teachers' expectations are very powerful influences on students' behavior (Runco, 2007).

Prior studies addressed teachers' implicit theories which can be identified and definedusing the social-validation method in two phases (first an open-ended questionnaire is given, and later the contents of it are placed on a checklist, which is then used to collect Likert scale, quantitative, data) (Runco, 2007). Furthermore, researchers, in their effort to contribute to the promotion of creativity in schools examined in-service or pre-service teachers' views (Fryer and Colings, 1991; Tin, Manara and Ragawanti, 2010),views and perspectives (Lam, 2004),beliefs (Diakidoy and Kanari, 1999; Martin, Craft and Tillema, 2002), stances (Craft, Cremin, Burnard & Chappell, 2007), conceptions (Bolden, Harries andNewton, 2010; Kampylis, Bekri and Saariluoma, 2009; Kokotsaki, 2011), and perceptions (Fleith, 2000; Konstantinidou, Gregoriadis, & Grammatikopoulos, 2011; Tan 2001; Park, Lee, Oliver and Cramond, 2006; Chien and Hui, 2010).

A systematic analysis and synthesis of the existing literature on K-12 teachers' implicit theories, beliefs or conceptions about creativity (Andiliou & Murphy, 2010) revealed that the majority of the studies explored one of the three aspects: a) creativity as a construct, b) the profile of creative individuals and c) the creativity supportive classroom environment. The studies on teachers' implicit theories, beliefs, conceptions or other related terms offered valuable conclusions about creativity and its promotion in schools, however, many of these studies revealed a misalignment between researchers' and teachers' views. Even though many studies exposed teachers' misconceptions or contradictions on creativity related issues, there is a need for further research on educators' implicit theories, perceptions and beliefs, considering the limited number of studies attempting to clarify them (Kampylis et al, 2009; Andiliou & Murphy, 2010).

Researchers have stressed the need for exploring teachers' implicit theories, perceptions or other synonymous related terms on creativity related issues, especially in specific domains of knowledge (Andiliou & Murphy, 2010) and in specialized subjects such as music, foreign language, sport, and ICT (Kampylis et al, 2009). Few studies have examined domain specific teachers' beliefs about creativity, like Odena (2001) and Lam (2004) studies in music context, Cheung, Tse, and Tsang's (2003) study in language, Park et al (2006) and Newton and Newton (2009) studies in science and Chappell's (2007) study in dance. It seems that exploration of teachers' beliefs about creativity in various knowledge domains or school subjects and cultural contexts is only at the beginning.
Regarding the subject of PE, no prior study has explored Physical Educators' (PEds) perceptions, beliefs or implicit theories about the three aforementioned and well-documented creativity aspects. This is surprising taking under consideration that creativity research in movement, focusing on the kinesthetic responses of children, has been established and studied for many years now as motor creativity (Wyrich, 1968; Torrance 1981) or divergent movement ability, that is part of motor creativity (ClelandandGallahue, 1993; Cleland, 1994). The afformentioned research gap is, also, suprising given the fact that creativity is generally promoted through the subject of PE.

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[1]http://www.europarl.europa.eu/summits/lis1_en.htm (Lisboan European Council 23 and 24 March 2000 Presidency Conclusions)

[2]http://ec.europa.eu/education/lifelong-learning-policy/framework_en.htm

[3]http://ec.europa.eu/education/lifelong-learning-policy/policy-framework_en.htm

The study of Heilmann and Korte (2010) confirms it, at least in European level. The *relative occurrence*[4] (RO) of creativity and their synonyms in primary school curricula (eight school subject groups) in Europe (EU27) was 0.66, while in PE curriculum wasslightly above (0.77). The researchers' curriculum analysis in terms of subjects (school educational domains) in EU27 revealed that creativity and its synonyms were most prominent in the "Arts" subject group followed by the "ICT" and "PE". Countries ranking at the top, regarding the RO of creativity in PE, included Latvia (1.94), Northern Ireland (1.66), Austria (1.76) and Belgium (German speaking community) (1.68), while Greece took the fifth place (1.19).

More specifically, according to the curriculum analysis of Heilmann and Korte (2010), while the word "creativity" was most common in the "Arts" subject, this didn't happened in the cases of Greece and Germany (Lower Saxony and Saxony), where the same word was most common in the "PE" subject. Especially for the case of Greece, the RO of creativity in PE curriculum was at least two times higher (1,16) than the average value of the RO of creativity of PE curricula in EU27 (0,54).

Indeed, in Greece, in the subject of PE the Cross Thematic Curriculum Framework (CTCF) for Compulsory Education (PI, 2003) makes extensive use of creativity and their synonyms. More specifically, in grades A and B, motor creativity is referred as the objective of many lessons' activities (in 17 out of 37 lessons) and the creative teaching method is mainly suggested for the psychomotor development of children.

The purpose of this study emerged when taking under consideration: a) theresearch gap on domain specific teachers' beliefs or perceptions about creativity and its promotion in school, and specifically on the subject of PE b) the aforementioned recent curriculum analysis study (Heilmann & Korte, 2010)in EU27, in terms of subjects, which revealed that PEis among the top three school subjectsthat creativity and its synonyms are most prominent, thus reflecting a trend of the promotion of creativity in PE in Europe, c) that in Greece, in the subject of PE, the Cross Thematic Curriculum Framework (CTCF) for Compulsory Education (PI, 2003), makes extensive use of creativity and synonymous terms, d) the new action plan for primary and secondary level education[5] with a transition from the "Chore School" to the "New School of Creative Learning" presented by the Greek Ministry of Education, Lifelong Learning and Religious Affairs which sets the student on the focal point of the educational system and supports short and medium to long term changes and interventions and finally e) the latest trends on creativity research with the focus on educators' point of view.

This study is part of a larger one, which recorded PEds' perceptions about: a) the characteristics of the creative student, b) student's creative outcomes, c) the nature of creativity and d) the creativity fostering and inhibiting classroom environment. This paper presents PEds' perceptions about the characteristics of creative student (a) and their creative outcomes (b).

2. Method

2.1 Participants

The sample consisted of 220 (111 men and 109 women) in-service Physical educators (PEds) who work in Greek public elementary schools in the region of Central Macedonia in Northern Greece.The participants had a mean age of 43,77 ± 3,89 (years) and the mean of their professional experience in elementary schools was 13,43 ± 5,12 (years). The instrument's items stability was tested with 23 men and 34 women of the original sample completed the instrument for a second time. The participation in the study was on a voluntary basis.

2.2. Research instrument

The PAC (Perceptions about Creativity) questionnaire was formulated after reviewing the existing body of literature in the field of teachers' perceptions, beliefs, views or implicit theories of creativity. Many items were adopted from Diakidoy and Kanari's (1999) questionnaire and were modified by the researchers in order to address primary education and PE. PAC is a self-report, pencil-and-paper questionnaire, containing 22 items which employ quantitative and qualitative data analysis.

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[4]. Relative occurrence: the occurrence of a search term per 1,000 words
[5]http://www.minedu.gov.gr/apo-to-simera-sto-neo-sxoleio-me-prota-ton-mathiti.html*(Greek action plan "New School: Student First: Greek Ministry of Education, Lifelong Learning and Religious Affairs).*

This article discusses the analysis of PEds' perceptions about: the characteristics of the creative student (items 1, 6, 7, 10, 11, 15 and two variables of item 17) and student's creative outcomes (item 13). For both aspects of creativity quantitative data methodology was employed.The items required three different types of data analysis according to their answers' type. On five items participants had to respond in a 5-point Likert scale (1=totally disagree and 5=totally agree). Three items required answers with different approaches: one item with forced-choice and two items with multiple choice methodologies.The instrument's content validity was assured through thorough conversations between seven academic experts in the field of PE and minor modifications were incorporated. Readability, ease and time of administration were tested with 30 Greek PEds (16 males and 14 females, with mean age M=42,35 ± 5,09 years).

2.3 Research procedure and data analysis

Research took place in 2010. The instrument was mailed in a total of 800 elementary public schools from the region of Central Macedonia (CM) in Northern Greece addressed specifically to their PEds. The average time to complete the questionnaire was 25-30 minutes. 220 PEds from 205 elementary schools (24% of the elementary public schools of CM) answered and mailed back the questionnaire with anonymity. After a three-week interval, 57 PEds(23 men and 34 women) completed the instrument for a second time (after agreeing in a relevant question on the 1st implementation of the PAC) in order to check its items' stability.Kendall's tau-c (τ_c) coefficient for Likert scale items, Cramer'sphi coefficient (φ_c) for items with forced-choice answer (with three and more alternatives) and phi coefficient (φ) for items with multiple choice answer were employed to check items' stability. Moderate positive correlation ($+0,3<\tau_c> +0,8$) and medium effect sizes ($.30 \leq \varphi_c< .50$ and $.30 \leq \varphi< .50$) were found for the majority of the items, showing a moderate repeatability. Quantitative data analysis of PAC was based on descriptive statistics (frequency analysis).

3. Results

3.1. PEds conceptions for the characteristic of the creative student.

The items 1, 6, 7, 10, 11 and the 20 variables included in item 15, as well the two variables ofitem 17 examined the characteristics and the abilities of the creative student.

Item 17 variable personality (figure 1). The majority of PEds (86,2%) supported that the extent of the manifestation of creativity depends on the personality of the student. This result is in accordance with those of previous studies. Diakidoy and Kanari (1999) reported that 73,5% of the participants believed that personality plays an important role to the manifestation of people's creativity. In the study of Lam (2004) using qualitative data analysis from focus group interviews, personality and personality traits were frequently mentioned as important for the expression of children's creativity by 30 Chinese early childhood music educators. Additionally, the findings of Lim and Plucker (2001) **study** revealed that personality together with the cognitive factor tended to form the basis of people's evaluations (211 Korean undergraduates) of a hypothetical individual's creativity. According to participants' implicit theories, the personality of an individual seemed to be one of the most important factors associated to creativity. Opposing the results of the present study, 66 Korean science teachers largely neglected the components of personality, thus underestimating the importance of students' personal characteristics in facilitating creativity (Seo, Lee & Kim, 2005).

Item 6: Students can express their creativity in a variety of subjects and in a variety of ways (table 1). The majority of the participants (93%) agreed or totally agreed with this statement. Especially for the subject of PE, this viewpoint, was confirmed by a prior study of Konstantinidou, Michalopoulou, Aggelousis and Kourtesis (in press), where several children's behaviors, actions and ideas (variety of ways) were referred by their PEds as examples of creative expression in PE. A thematic content analysis on the children's creative expressions revealed that they exhibited bodily or verbally several behaviors, actions and ideas which reflected at least 11 different ways of creative expression in PE. More specifically, children attempt to modify traditional team games and their rules, create new ones, discover alternative ways of movements, improvise during drama and music - movement activities and display divergent movement and sports skills. The aforementioned finding is consistent with those of Diakidoy and Kanari (1999) and Kampylis et al (2009) studies. In the former study the 81.6% of Cypriot student teachers considered that students tend to exhibit their creativity in a variety of ways and contexts, and in the latter study the majority of prospective (95.2%) and in-service teachers (94.3%) supported that primary school students could demonstrate their creativity in a variety of application domains and in multiple ways.

Although, when participants were requested to select school subject(s) in which they consider it likely for a student to manifest his/her creativity, only 10 out of 16 school subjects were chosen from more than the 50% of the participants. PE supported from the 59,8% of the participants and occupied the 10th position between the subjects. The three artistic school subjects (Theatre Education, Arts Education, and Music Education) occupied three out of four top positions and the researchers reinforced the existence of teachers' misconception that creativity can be manifested especially in arts. The same misconception was observed, also, in Diakidoy and Kanari (1999), where artistic and literacy domains were mentioned more frequently from the participants in comparison to more academic domains (e.g. Art 93,9%, Music 71,4%, Literature 71.4 %, Dance 61,2% but Mathematics 44,9%, History 24,5%, Computer technology 14,3% and Geography, 12,2%).

Item 15. Which of the following characteristics and abilities do you think are necessary for a student to be creative? (Choose as many answers as you want), (20 variables, figure 2). "Imagination", a central feature of human cognition and information processing was recognized from the majority of PEds (92,3%) as a necessary characteristic for the creative expression of a student. "Innate talent", was also, widely supported (72,3%) from the participants. These findings are consistent with those of Diakidoy and Kanari (1999) study, in which an absolute agreement of the participants for imagination was recorded (100%) and a 67,3% for innate talent. Additionally, in the study of Fryer and Collings (1991), the majority of the participants (British and Welsh school teachers and lecturers) perceived creativity mainly in terms of imagination (88,7%). When they asked to indicate their preferred criteria for assessing creativity in pupils' work, the most popular criterion was imaginative (87,5%). Furthermore, in Chan and Chan (1999) and Aljughaiman and Mowrer-Reynolds (2005) studies "imaginative" was the second most frequently mentioned creative attribute from the participants (20,4% of Hong Kong primary and secondary school teachers and 64% of American primary teachers respectively). "Many interests" and "artistic tendencies" were supported from almost half of the respondents as characteristics of the creative student. "Many interests" may reflect the openness to experience dimension of personality (a need for variety, novelty, and change) (McCrae & Costa 2008).

From this perspective, this particular variable (many interests) was less supported by the participants than item 6, which examined a similar trait of students' personality (students' variability of creative expressions), revealing an inconsistence in their perceptions for this personality trait. Also, the PEds' perceptions about the "artistic tendencies" of a student may reflect an inclination to the misconception that creativity is often related to arts, a teachers' misconception which has been previously mentioned in the literature (Diakidoy & Kanari, 1999; Aljughaiman&Mowrer-Reynolds, 2005; Kampylis et al, 2009). Furthermore, only "self-confidence", which is a positively associated trait to intrinsic motivation, was strongly supported by the participants (76,8%) as a feature of the creative student. "Fear of failure", "need to avoid mistakes", "willingness to accept guidance" and "obedience to rules and expectations", all negatively associated traits to intrinsic motivation, weren't recognized form PEds as characteristics of the creative student. The last two features are, in some point, inversely analogous with "independence" and "autonomy", which, however, were supported by only half of the participants (51% and 44,3% respectively). Additionally, the "ability of the students to set own rules", a characteristic that reflects their autonomy, was supported only by one out of ten PEds as a characteristic necessary for the manifestation of creativity. Moreover, only one out of three participants considered the "ability of students to set their own goals", which shows their self-determination, as a necessary characteristic for the manifestation of their creativity.

The findings of the present study on PEds' perceptions concerning the positively associated traits of the creative student to intrinsic motivation revealed the aforementioned inconsistency. On the contrary, in Diakidoy and Kanari (1999) study, prospective teachers' beliefs for personality characteristic and abilities of the creative student, were positively related to intrinsic motivation. Participants supported the person's: ability to set own goals (93,9%), self-confidence (91,8%), independence (83,7%), autonomy (83,7%) and ability to set own goals (69,4%). Additionally, early childhood educators successfully identified all the creative characteristics of their students that are positively associated with their intrinsic motivation (Gregoriadis Zachopoulou & Konstantinidou, 2011). Almost all the participants agreed that the creative child is self-confident (96.8%), autonomous (94.6%), independent (89.5%) and is not afraid to make mistakes (82.7%) and many of them supported that the creative child is not afraid to takes risks and try things (62.7%) and has the ability to set own goals (60,5%). Regarding another psychological trait, "the need for recognition and acceptance" was supported approximately by ¼ of the participants. This percentage almost doubled for the "need of praise and reinforcement".

These needs are related to students' extrinsic motivation, which is generally thought that it doesn't contribute to individual's creativity (Amabile, 1997). In Diakidoy and Kanari (1999) study these two characteristics weren't supported by many participants as necessary characteristics for the manifestation of creativity (10,2% supported the need for recognition and acceptance and 28,6% supported the need for praise and reinforcement) showing their awareness to the fact that the creative student is not extrinsically motivated.

Proceeding further to the cognitive characteristic of the creative student, results don't look promising. "Critical thinking" and "problem finding ability" were supported by nearly 45% of the PEds, whereas "divergent thinking" and "convergent thinking" were supported only by ¼ and 6,2% of the participants respectively. Research findings of teachers' implicit theories and conceptions on these four dimensions of thought are inconsistent. In Aljughaiman and Mowrer-Reynolds (2005) study, divergent thinking wasn't perceived as a defining attribute of creativity. Furthermore, in the study of Fryer and Collings (1991), only half the sample (53,8%) regarded divergent thinking as synonymous to creativity. On the contrary, the majority of the participants (89,8&), of Diakidoy and Kanaris' (1999) study, considered divergent thinking ability to be a necessary prerequisite for creativity. Inconsistent perceptions about divergent thinking ability were reported by Portuguese primary and secondary teachers in the Morais and Azevedo (2011) study. 91% of the participants believed that the creative child uses alternatives in problem solving.

This finding revealed that the participants recognized flexibility or divergent thinking ability as features that characterize the creative child even though, only 48% of them agreed and 37% neither agreed nor disagreed with the statement that the creative child has ideas and behaviors divergent from the normal class routine. Moreover, results of the present study on convergent thinking are in line with those of Diakidoy and Kanari (1999) and Fryer and Collings (1991) (10% and 10,2% respectively) revealing by teachers' perceived disconnection between convergent thinking and creativity. In addition, the result of the present study on critical thinking differs from those of similar studies. In Gregoriadis et al (2011) study, two out of three early childhood educators (68,2%) believed that the creative child has a critical ability and in Diakidoy and Kanari (1999) study the majority of the respondents (81,6%) identified critical thinking as a necessary ability for a person to be creative. Nevertheless, participants' perceptions of the later study concerning problem finding ability are consistent with the ones of this study, as almost half of them recognized it as a necessary ability for a person to be creative.

Finally, "intelligence" is perceived as a necessary characteristic of creative student by nearly 45% of the PEds (the item describes a Positive Relationship of Creativity and Intelligence / PORCI). A lower percentage was reported by the participants in Diakidoy and Kanari (1999) (38,7%) who held the same belief and an even lower percentage (27%) was reported by the participants in Aljughaiman and Mowrer-Reynolds (2005) study who mentioned the word intelligent when they were asked to describe the creativestudent.

*Items 1, 10 & variable "intelligence" from item 17 (further investigation of the relationship between creativity and intelligence) (table 1 and figure 1).*More than half of the participants (61%) agreed or totally agreed with the statement that intelligence is not an index of student's creativity (the item describes a Negative Relationship of Creativity and Intelligence / NERCI) and almost the same percentage of PEds (57,5%) supported that it's possible for a very intelligent student not to be creative (NERCI). Furthermore, 47,7% of the participants believed that the extent to which students express their creativity depends on their intelligence (PORCI). Results from Diakidoy and Kanari (1999) study, revealed a clearer tendency of participants towards the negative relationship of creativity and intelligence. Only 26,5% of the participants believed that creativity is positively related to intelligence and 38,7% of them identify intelligence as a necessary characteristic for creativity (PORCI). On the other hand, 81,6% agreed that it's possible for a very intelligent person not to be creative (NERCI). A negative tendency towards PORCI was revealed from the Aljughaiman and Mowrer-Reynolds (2005) study. Only 35% of the teachers associated creativity with intelligence and 27% of them, as stated before, mentioned the word intelligent when they were asked to describe the creativestudent (PORCI). On the contrary, one of the most frequently mentioned attributes of the creative student, from the participants in Chan and Chan (1999) study, was the high intellectual ability (5th position between 42 items), while intelligent or clever took the 16th position, thus revealing a perceived PORCI from Hong Kong teachers.

Items 7 (Good students are more likely to be creative than average students) and 11 (Academic achievement is a relatively good index of student's creativity) (table 1). 57,8% of PEds disagreed or totally disagreed with the later item and almost half of them believed the same for the former item. PEds conceptions in these two items confirmed a contradiction. Together with a non-negligible percentage of undecidedparticipants (24,4% to 31%respectively), an inconsistency was reflected in the way that they perceived creativity in relation to school achievement. The above items were tested by Diakidoy and Kanari (1999), that revealed a 75,5% agreement that good students are more likely to be creative than average students and a 89,8% agreement that scholastic achievement is not a good index of creativity, showing a greater inconsistency in the perceptions of prospective teachers' perceptions than the one in the present study. Also, in Hoff and Carlsson (2011) study, the Swedish primary teachers' ratings on achievement level appeared to be strongly related to their concept of creativity. They seemed to have difficulties in distinguishing between, for instance, a student's academic achievement level and her or his creativity and more than 70% of the students with a high achievement level were also judged by their teachers to be creative.

3.2. PEds conceptions for the creative outcomes of students

Item 13 (figure 3). Which of the following do you think it's true (Please choose only one answer). 1. Creative outcomes are novel for the student and the society. 2. Creative outcomes are novel for the student and the immediate social / peer group (e.g. classroom, school). 3. Creative outcomes are novel for the student 4. Creative outcomes are not necessarily novel. The majority of the respondents chose as truest the forth statement (38,3%) and the second one (33,5%). In the study of Diakidoy & Kanari, (1999) the findings were somewhat different. The latter perception was supported only from the 16,3% of the participants and another 34,7% of them believed that creative outcomes are novel only for the person who produces them.

4. Discussion

Regarding the characteristic of the creative student, personality was recognized as the key component for the expression of students' creativity. Generally, the primary role of personality to the extent that students express their creativity has been supported by prospective teachers in a previous study (Diakidoy & Kanari, 1999). The primary role of personality to creativity confirms the fact that westerners focus on one person's abilities to produce creative products and outcomes and this focus has been reflected in their psychometric approaches studying creative personality (Gough & Heilbrun, 1965; Helson 1965; Cattell & Butcher, 1968; Taylor & Ellison, 1968; Domino, 1970; Kathena&Torrance, 1976; Gough, 1979; Runco, 1987).

Exploring PEds' perceptions about some primary personality characteristics of the creative student, revealed that they: a) were probably unaware of what the theory supports b) frequently maintained inconsistent perceptions, c) often held contradictory perceptions with ones presented by researchers (comparison with explicit theories) and d) often supported contradictory perceptions with other in-service or prospective teachers (comparison with other implicit theories, beliefs or conceptions). Unfortunately, this was revealed from the findings in all aspects of the student's personality (cognitive aspects, motivation, and personal properties).

With regard to students' psychological traits that are typically positively associated to intrinsic motivation, PEds' perceptions were inconsistent. According to Conti and Amabile (1999), intrinsic motivation fosterscreativity and is the motivation to engage in an activity solely for the enjoyment, challenge, or personal satisfactionthat arises from the activity itself. Participants in the present study devalued independence and autonomy (two closely and positively related traits to intrinsic motivation) when these two features were explicitly examined. Additionally they failed to recognize and undervalued other students' personality traits which are positively associated to students' autonomy, such as the ability to set own rules and goals. Especially, the later ability reflects students' self-determination. Self-determination and competence are the stepping stones of innate and organismic needs that support intrinsic motivation, whose primary rewards are the experience of effectance and autonomy (Deci & Ryan, 1985). The need for autonomy, that functions more as an aspect of actions, is the central need in self-determination theory. From the point of view, of self-determination theory, intrinsically motivated behavior is fully autonomous (Deci & Ryan, 2002). Therefore, according to the results of the variables associated mostly to autonomy, it was revealed that PEds' perceptions show a tendency to inconsistency and a contradiction with the relevant aforementioned explicit theories and other prospective and in-service teachers' beliefs and perceptions (Diakidoy & Kanari, 1999; Gregoriadis, & Tsigilis, 2008; Gregoriadis et al, 2011).

Furthermore, regarding the student's psychological characteristics that are typically related to extrinsic motivation, which is generally believed as detrimental to creativity (Amabile, 1997), PEds again held inconsistent perceptions. Extrinsic motivation refers to the satisfaction arising out of recognition, prizes, monetary awards, and the power that comes with fame (Gruber, 1999). In the present study, half of the PEds supported that the need for praise and reinforcement is a necessary characteristic for a student to be creative. If a student feels the need for praise and reinforcement he or she probably has an initial level of low intrinsic motivation (low self-confidence), which is considered detrimental to creativity. It seems that PEds are unaware or misunderstand some traits that underlie motivation.

Moreover, concerning the four cognitive traits of student's personality, which were examined in this study (critical thinking, problem finding ability, divergent thinking and convergent thinking), none of them was strongly supported from PEds as a necessary characteristic for a student to be creative. The most surprising is the finding about divergent thinking, a cognitive style that is strongly associated with creativity. Although divergent thinking represents the potential for creative thinking and problem solving (Runco, 1999) and divergent thinking tasks became the main instruments for measuring creative thinking (Stenberg & Lubart (1999), only ¼ of PEds supported it as a necessary characteristic for a student to be creative. However, this is not unprecedented in the literature, as teachers in previous studies revealed that they were unaware of or didn't strongly support this primary defining characteristic of creative student (Fryer & Collings, 1991; Aljughaiman&Mowrer-Reynolds, 2005). Furthermore, PEds dispensed less weight on problem finding ability than researchers do. The underestimation of this cognitive ability observed in another study's results (Diakidoy & Kanari, 1999), although researchers have stressed its important role. Problem finding ability plays an important role in creative thinking (Runco & Dow, 1999; Runco, 2007) and is a general umbrella label for various processes (e.g. problem identification, problem definition, problem construction) that precede any problem solving (Runco, 1999, 2007). According to Jeffrey (2006), problem finding is a questioning way of thinking, and puzzling and asking "what if", it is being open to possibilities and has an exploratory attitude, thus it is involved to possibility thinking. The latest has been supported as notion at the heart of creativity in education or of little c creativity (Craft 2000, 2001) and as the heart of creative learning (Craft, 2001, Craft, Cremin, Burnard&Chappell, 2007).

Moreover, not even half of PEds supported critical thinking as a necessary characteristic for a student to be creative. This was not reported in other similar studies (Diakidoy & Kanari, 1999; Gregoriadis et al, 2011) as prospective and in-service teachers supported critical thinking ability as a characteristic of the creative person or child. More disappointing was the finding for convergent thinking, as the minority of PEds believed it's a characteristic of the creative student. Convergent thinking has been usually underestimated, as a cognitive process necessary for creativity, from other studies which explore teachers' beliefs and views (Diakidoy & Kanari, 1999; Fryer and Colings, 1991). However, as Runco (1999) stated, "the selection of the best, correct, or conventional idea or answer involves convergent and critical thinking" and this is a procedure that follows the generation of options using divergent thinking skills. Thus, "what is needed is recognition that convergent thinking works with divergent thinking, and that both are necessary for creativity" (Runco, 1999). The underestimation of convergent thinking by educators probably ought its explanation to what is mostly practiced in educational systems. As Runco pointed out (2007), most educational efforts emphasizeconvergent thinking (finding or remembering one correct or conventional answer), which and therefore may do very little, if anything, for the creative potentials of a student. It seems that PEds still hold this perception about convergent thinking and devalue its contribution to a students' expression of creativity.

The conceptions regarding intelligence and its' relationship to creativity, that emerged from four related items, were wavered. The findings seems somewhat contradictory showing that nearly 44% of the PEds tend to believe that the expression of students' creativity depends on their intelligence, and almost 60% of them tend to support that intelligence is not an index of student's creativity and it's possible for a very intelligent student not to be creative. This conceptual contradiction, according to the threshold theory seems logical, though the latter conception recorded for the PEds sounds more rational than the former. According to threshold theory (Runco, 1999, 2007) there is a minimum level of intelligence (IQ of approximately 120) below which the person cannot be creative, thus, students' creativity depends, somewhat, to their intelligence. Above this threshold, the person has the potential for creativity, but there is no guarantee for its expression. As Stenberg (1999) explained those who have very high IQs may be so highly rewarded for their IQ-like (analytical) skills that they fail to develop the creative potential within them, which may then remain latent.

Thus, threshold theory describes the possibility that creativity and intelligence are related, but only at certain levels of ability. One important implication of threshold theory is that intelligence is necessary but not sufficient for creative achievement (Runco, 2007), a view that educators should embrace with regard to the characteristics or the abilities that are necessary for the expression of creativity. In the present study this belief was supported by many PEds but still, almost half of them lean towards the view that students' intelligence is indicative of their creativity.

Somewhat contradictory were, also, the PEds perceptions about the relationship of academic achievement with creativity. Nearly half of PEds who didn't believe that students' academic achievement is indicative of their creativity, either were uncertain or believed the opposite (academic achievement is indicative of creativity). The relationship of academic achievement with creativity appears like the relationship of intelligence with creativity. IQ tests and many school tests (high grades in school) ask for the individual to find a single correct answer, thus exercise their long-term memory, their convergent thinking, which is very different from divergent, original and creative thinking (Runco, 2007). So, it's clear that many PEds had vague even wrong perceptions about this relationship. With regard to imagination, the majority of PEds recognize it as a necessary characteristic for a student's creative expression a finding previously reported in the literature (Chan & Chan, 1999; Diakidoy & Kanari, 1999; Fryer & Collings, 1991; and Aljughaiman and Mowrer-Reynolds, 2005). Indeed, imagination is considered as an important, necessary, critical and key element for creativity (NACCCE, 1999; Singer, 1999; Craft, 2000, 2005; Duffy, 2006).

On the other hand, many participants in the present study recognized innate talent as a necessary characteristic of the creative student. In Diakidoy and Kanari's (1999) study, many prospective teachers had the same belief. Innate talent or giftedness, a state of having superior special abilities from birth, was equated to creativity on approaches of this phenomenon in the early years of the 20st century (eminent or extraordinary creativity). In the middle and late years of the same century, a shift encouraged perspectives that suggest that everybody is capable of being creative, given the right environment (everyday, ordinary, democratic or Little C creativity), thus, a contrasting one approach with earlier ones (Craft, 2000). When PEds perceive innate talent as a necessary characteristic of a student to be creative, they tend to confuse characteristics of gifted achievers with characteristics necessary for the expression of creativity. This teachers' confusion was, also, one of the conclusions in Aljughaiman and Mowrer-Reynolds, (2005) study. Additionally, more surprising is the fact that in the previous section (nature of creativity) PEds held contradicting perceptions, as the minority of them supported that creativity is innate and it cannot be promoted. This contradiction uncovers PEds confusion and incapability to recognize the difference between ordinary and gifted people and their connection to creativity or their confusion to understand the difference between the concept of little c and big c creativity.

The majority of PEds believed that students can express their creativity in a variety of subjects and in a variety of ways. This perception is in line with the theories which support that creative students are characterized by flexibility, even by adaptability (Runco, 2007), as well as by personality traits associated with one of the five basic dimensions of personality, "Openness to Experience" (a need for variety, novelty, and change) (McCrae & Costa 2008). However, when the item "many interests" was examined, half of the participants chose it as a characteristic of the creative student. "Many interests" may also, reflect the openness to experience dimension of personality (a need for variety, novelty, and change), and from this perspective this item was less supported by the participants than the previous one, thus showing partially conflicting perceptions regarding students' openness to experience, flexibility and adaptability.

Artistic tendencies were also supported from one out of two PEds' as a characteristic necessary for a student to be creative. This point of view reflects the misconception where creativity is often related to the arts, a teacher misconception which has been previously revealed (Diakidoy & Kanari, 1999; Aljughaiman&Mowrer-Reynolds, 2005; Kampylis et al, 2009). The cultivation of this misconception begun 40-50 years ago, when convergent thinking (one right solution to a problem) was associated mostly with children's excellence to science, mathematics and technology and divergent thinking (many possible solutions to a problem), was related with children's excellence in the arts (Craft, 2000). Regarding the student's creative outcomes in PE, the majority of PEds believed that the outcomes are novel for the student and the immediate social / peer group plus that the outcomes are not necessarily novel. These perceptions reflect a very democratic and everyday approach to creativity.

Regarding creative products or outcomes, evaluation comes together as an inevitable fact (O' Quin & Besemer, 1999). It's easier to say that a product or an outcome is baptized as creative after evaluation with specific criteria and that novelty is the most popular criterion of creativity. Evaluation of creative outcomes in an educational environment such as school, takes place inside the classrooms or the school. Thus, educators and classmates become the eyewitnesses and the evaluators of students' outcomes and perceive and/or characterize them as creative or non-creative ones. O' Quin and Besemer (1999) stated that there can be no definition of creativity in products which does not include novelty, although novelty needs to be considered relative to a given population of products (e.g., products of children should be judged relative to those of other children). PEds in this study, take probably under serious consideration that creative outcomes of students are judged not only by educators but, also, by students. Nevertheless, students when compared to teachers, have fewer experiences when encountering and evaluating their classmates' creativity. Thus, it can be assumed that students, with much fewer experiences, perceive or baptize an outcome as creative and novel more easily than teachers. Therefore, a simply different or divergent outcome for educators might be perceived as creative and novel from students. Consequently, creative outcomes inside the classroom may not necessarily look novel to educators but can be novel to the student, the class or the school.

The aforementioned clarification, due to the role of educators' prior experience, may explain the PEds perceptions about the creative outcomes and their relationship to the criterion of novelty. Another explanation is that creativity testing measures have been strongly associated with divergent thinking and productivity (e.g. Torrance Tests of Creative Thinking / TTCT), which use variability criteria (fluency, flexibility, elaboration) rather than the criterion of novelty. In addition, originality, another critical criterion of testing measures is based on response frequency in a given population and reflects unusual and not necessarily novel responses (Stokes, 1999). Everyday or ordinary creativity in educational settings is associated mostly with variability (divergent and possibility thinking and productivity) rather than novelty. Thus, from the aspect of creative outcomes, the majority of PEds (more than 2/3 of the participants) seemed to have clear and similar perceptions with what explicit theories propose when everyday creativity of students is on the microscope.

5. Conclusions

From the findings was reflected a very democratic and everyday approach to creativity, according to PEds' perceptions on students' creative outcomes. Many participants seemed to recognize the criteria to value their students' everyday creativity. However, on the other hand, it was revealed a poor agreement or disagreement of PEds' perceptions with the researchers explicit theories on many items related to the characteristics of the creative student(cognitive aspects, motivation, and personal properties).This, in turn, exposes their poor theoretical background to creativity related issuesand reflects their limited ability or even their subsequent incapability to recognize and promote students' creative potentials in their classrooms, thus not support behaviors and practices for a creativity fostering classroom environment. The PEds' inadequate theoretical background is possibly due to their poor academic experiences and the absence of further education and training on issues related to creativity. This is probably a common phenomenon in EU member states. The report of the *JRC-IPTS*[6] study on Creativity and Innovation in Education and Training in the EU Member States (Cachia & Ferrari, 2010) revealed that more than half of primary and secondary school teachers (N=7.659) from EU27, didn't receive teacher training on creativity. Only in 13 out of 27 EU member states, more than the 50% of the participants agreed that received teachers' training on creativity, while the overwhelming majority of the respondents (90%) would like to receive such training. Furthermore, a relation was observed between teachers who had received training on creativity and their perception and practices of creativity as they held a more encompassing view of creativity than untrained teachers. This indicates that further teachers' education and training on creativity related issues should be improved.

As new-high performance places and flexible enterprises stress worker qualities such as creativity (OECD, 1996), and creativity is thought as one of the new important skills need to be taken into account for working in a rapidly changing knowledge society (Ala-Mutka, 2010), educators, as well as PEds, should professionally developed on promoting creativity in every students.

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[6]The Institute for Prospective Technological Studies (IPTS) is one of the seven research institutes that make up the European Commission's Joint Research Centre (JRC).

EU has already stressed the development of positive attitudes towards further learning and creativity and the need for further development in learning, including the one of educators (EC, 2010/C 117/01). It seems that education and training of any kind, such as formal, non-formal and informal (Cedefop, 2004) for PEds is an emergency. European Council has already stressed the importance of targeted increases in investment in education and training at both national and European levels, as a way out of the economic crisis, (EC, 2010/C 117/01). Thus, we hope that it's a matter of time for the implementation of educational policies and strategies that focus on educators' education and training concerning creativity related issues and its promotion in schools.

Acknowledgments

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Table and Figures

Table 1.Results of the twelve 5-point Likert scale items

Likert scale items	Totally disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Totally agree (%)	Mean
1. Intelligence is not an index of student's creativity.	1.5%	18.5	19	44.1	16.9	3.56
6. Students can express their creativity in a variety of subjects and in a variety of ways.	0.5	1	5.6	48.7	44.1	4.35
7. Good students are more likely to be creative than	6.6	41.6	24.4	22.8	4.6	2.77
10. It's possible for a very intelligent student not to	2.6	23.5	16.3	44.4	13.3	3.42
11. Academic achievement is a relatively good index of student's creativity.	14.7	43.1	31	11.2		2.39

Figure 1. Item 17 results (multiple choice item): The extent to which students express their creativity depends on 17.1, 17.2, 17.3, 17.4, 17.5. (Choose as many answers as you want).
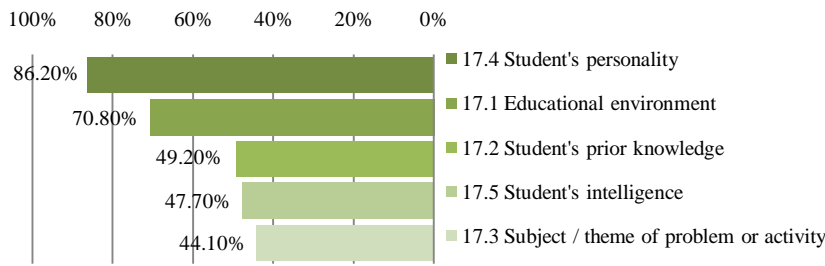
86.20%	17.4 Student's personality
70.80%	17.1 Educational environment
49.20%	17.2 Student's prior knowledge
47.70%	17.5 Student's intelligence
44.10%	17.3 Subject / theme of problem or activity

Figure 2. Item 15 results (multiple choice item): Which of the characteristics and abilities do you think are necessary for a student to be creative? (Choose as many answers as you want)
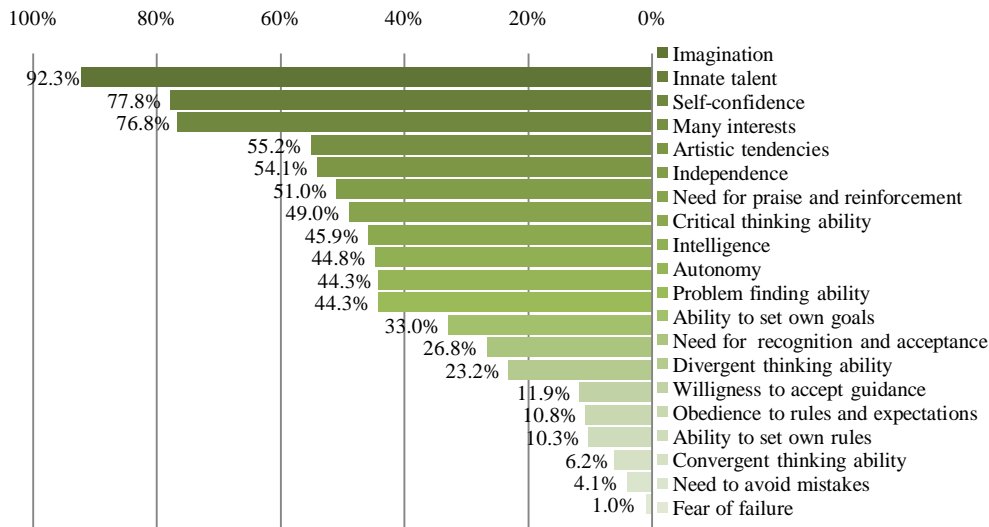
92.3%	Imagination
77.8%	Innate talent
76.8%	Self-confidence
55.2%	Many interests
54.1%	Artistic tendencies
51.0%	Independence
49.0%	Need for praise and reinforcement
45.9%	Critical thinking ability
44.8%	Intelligence
44.3%	Autonomy
44.3%	Problem finding ability
33.0%	Ability to set own goals
26.8%	Need for recognition and acceptance
23.2%	Divergent thinking ability
11.9%	Willingess to accept guidance
10.8%	Obedience to rules and expectations
10.3%	Ability to set own rules
6.2%	Convergent thinking ability
4.1%	Need to avoid mistakes
1.0%	Fear of failure

Figure 3. Item 16 results (forced-choice item): With which of the statements do you agree? (Please choose only one answer)

38.30%	15.40%	33.50%	12.80%

13.1 Creative outcomes are novel for the student and the society.
13.2 Creative outcomes are novel for the student and the immediate social / peer group (e.g. classroom, school)
13.3 Creative outcomes are novel for the student
13.4 Student's creative outcomes are not necessarily novel