Article

Fostering Creative Thinking

What do Primary Teachers Recommend?

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ABSTRACT | Background: The fostering of creative thinking has become a key target for Greek primary education and for music education in particular. Creativity researchers have proposed numerous recommendations concerning fostering creative thinking in the context of primary education. However, there is limited research regarding creativity recommendations (CRs) proposed by primary teachers.

Focus of Study: The qualitative study presented here aims to investigate and analyse Greek primary teachers' CRs because they are the professionals who foster (or should foster) students' creativity in practice.

Setting: Three comparable focus groups were formed. Discussions took place in June 2008 in Athens, Greece, and lasted approximately two hours each. The first author of this paper acted as moderator.

Participants: Twenty-one Greek primary teachers with diverse backgrounds and expertise participated voluntarily. All participants were in-service teachers in primary schools in the Athens region, and three were music teachers.

Research Design: Qualitative study relying on data collected through recordings of discussions within the three focus groups.

Data Collection and Analysis: Transcriptions of discussions within the three focus groups resulted in an electronic document of approximately 45,000 words. A six-phase thematic analysis was adopted for locating, analysing, and reporting teachers' CRs.

Results: Primary teachers' CRs were classified under three broad categories: (1) features of the creative teaching and learning process; (2) common traits of the creative student, and (3) characteristics of the creative environment. Data analysis revealed that teachers' CRs deal mainly with the characteristics of the creative environment, particularly the inhibiting features. Very few of

the teachers' CRs are student-centred, and even fewer are student-oriented or student-originated. Finally, we propose four essential CRs missing from the previous taxonomy.
Conclusions: The study provides a starting point for further research on CRs provided by primary teachers. We conclude that primary teachers need a comprehensible and practicable set of recommendations on how and why students' creative thinking should be fostered.

Keywords: fostering creative thinking, creativity recommendations, primary teachers, primary education, manifold thinking

1. INTRODUCTION

The fostering of creativity in students has become a key target of primary education in countries around the world, such as Australia (Ministerial Council on Education Employment Training and Young Affairs, 2008), China (Vong, 2008), Finland (Saarilahti, Cramond, & Sieppi, 1999), Greece (Greek Pedagogical Institute [GPI], 2003), Hong Kong (Wong, 2008), and the United Kingdom (Qualifications and Curriculum Authority [QCA], 2005). However, human creativity is a complex phenomenon, and its facilitation in real classrooms is not an easy task (Kampylis, 2008).

Further, the fostering of *creative thinking* through schooling has been studied by researchers in diverse fields, who have proposed various sets of recommendations (e.g. Sternberg & Williams, 1996). Teachers are the professionals who are called upon to implement these *creativity recommendations* (CRs) in real classrooms, which is why it is important to investigate how well teachers have adopted the extensive research conducted into how to foster creativity and creative thinking.

However, no studies have focused on (a) the awareness of Greek primary teachers about these CRs, (b) the extent to which they implement these CRs in classrooms, and (c) the CRs that they consider to be the most essential for fostering students' creative thinking. Hence, the main purpose of the present study was to investigate, classify, and discuss the CRs provided by Greek in-service primary teachers.

By providing researchers and practitioners with a comprehensive and comprehensible list of primary teachers' CRs, we aim to (a) establish new knowledge and communication channels between creativity researchers/theorists and teachers/practitioners, (b) improve our understanding of CRs that work in classrooms, and (c) set the groundwork for further research on these CRs. In addition, curriculum designers, educational authorities, and policymakers will find valuable insights from primary teachers' CRs because these are based on situated knowledge, derived from classroom realities.

In the next sections, we will clarify the terms *creative thinking* and *creativity potential* and explain why we consider the role played by primary teachers in the development of students' creative thinking to be crucial.

1.1 Creative Thinking and Creative Potential

In this work, the authors focus on the fostering of students' *creative thinking* because (a) it is the prerequisite for any creative process(es) and outcome(s), (b) it presupposes the active and intentional involvement of the person who creates, and (c) it can be taught (Kampylis, 2010). According to the

British National Curriculum (Department for Education and Employment/QCA, 1999), creative thinking is among the key thinking skills that primary-education students should develop and is defined as enabling students "*…to generate and extend ideas, to suggest hypotheses, to apply imagination, and to look for alternative innovative outcomes*" (p. 22).

Within the Greek education system, the Cross-Thematic Curriculum Framework (CTCF) for primary education (GPI, 2003) declares that

> *…the principles and the activities introduced in the new curriculum aim to develop critical and creative thinking abilities, imagination, and positive attitudes towards learning through exploration and discovery. All these are necessary for individuals to become creative and contributing members of a multicultural society during times of dramatic changes (p. 36).*

Though the previous seem to be explicit guidelines for school teachers, in the field of creativity research there is an inherent conflict over whether we should study performance or the potential for performance (Mumford, 2003). The authors of the present paper support the view that when the group targeted for the enhancement of creativity is primary students:

> *"…it is creative potential that is the primary concern, rather than unambiguous creative performance"*
>
> *(Runco, 2003, p. 317).*

In addition, we agree with the opinion that the fostering of students' creative potential:

> *"…should not be aimed only within the context of 'special programmes'… Efforts to nurture this important element must be part of any activity inside and outside school"*
>
> *(GPI, 2004, p. 44).*

Thus, within the school environment (though not solely), one of the main concerns of primary teachers should be to provide their students with the means and opportunities to realise their creative potential to the highest degree (Runco, 2003).

1.2 The Role of Teachers

Human creativity is a multifaceted phenomenon with cognitive, attitudinal, intrapersonal, interpersonal, practical, socio-cultural, economic, and environmental aspects that suggest "*…specific targets for enhancement efforts*" (Plucker & Runco, 1999, p. 670). As mentioned earlier, the potential for creative thinking and performance is innate; it is present to a greater or lesser degree in everyone, although it is not expressed in the same way (e.g. National Advisory Committee for Creative and Cultural Education [NACCCE], 1999). This potential can further be developed within the broad limits set by the genetics and environment of the individual concerned (Sternberg, 2003b).

Recent studies have shown that Greek primary teachers in general (Kampylis, Berki, & Saariluoma, 2009) and primary music teachers in particular (Kampylis & Argyriou, 2008) consider the fostering of students' creative thinking to be one of their professional duties. However, the fostering of creative

thinking has presented serious challenges to teachers (Sternberg, 2003a), who need to have a full understanding of *what* creative thinking is and a clear idea of *how* to foster it (e.g. Murdock, 2003). This also means that, to some extent, the outcomes of academic creativity research should be turned into effective school practices.

The term *creativity* and its cognates tend to be used in two ways within the Greek CTCF (GPI, 2003): (a) to describe specific activities and (b) to emphasise the value of creativity as a desirable "thinking style". However, the term and its cognates are used in the CTCF in a vague way, and it is not clear how their teaching and development could be realised in real classroom settings (Kampylis, 2008; Kampylis & Argyriou, 2008). Thus, Greek primary teachers in arts subjects (Kampylis & Argyriou, 2008), and generalist teachers (Kampylis, Berki, & Saariluoma, 2009), commonly interpret creativity and its teaching in personalised ways. This is also true for teachers in arts subjects and generalist teachers in the education systems of other countries (Diakidoy & Kanari, 1999; Dogani, 2004; Fryer & Collings, 1991; Odena & Welch, 2007). Regardless of their subject expertise, Greek primary teachers understand and appreciate the credentials for (a) the creative student, (b) the creative process, and (c) the creative outcome (Kampylis & Argyriou, 2008; Kampylis, Berki, & Saariluoma, 2009).

Regarding other international creativity research studies, the following points are worth mentioning. Many primary teachers in England strive to foster students' creative thinking in the classroom, although they face a number of limitations such as confusing terminology, conflicts in policy and practice, and centrally controlled pedagogy (Craft, 2003, pp. 118–120). Many teachers in Finland also face a dilemma about what items of the syllabus to omit in order to make room for adding creative strategies to the school curriculum (Saarilahti, Cramond, & Sieppi, 1999). In Greece, primary teachers often encounter several inhibiting factors such as excessive workloads as well as limited time and resources for creative activities (Kampylis & Argyriou, 2008; Kampylis, Berki, & Saariluoma, 2009).

On the other hand, and in real classroom settings, some primary teachers demonstrate rather negative attitudes and little acceptance for student behaviours that are associated with creativity, such as tolerance for ambiguity, willingness to take risks, and nonconformity (Fasko, 2001; Westby & Dawson, 1995). These teachers probably provide limited, if any, opportunities for their students to realise their creative potential.

A possible explanation for such discrepancies between theory and practice is that teachers' first imperative remains to "*keep control of their class*" and "*cover the syllabus*" (Vosniadou & Kollias, 2001, p. 341) rather than to facilitate the otherwise "ambiguous and confusing" construct of creativity. Craft (2003) offered an additional explanation emphasising that *teaching for creativity*, *teaching creatively*, and *creative learning* are limited because of the centralised control in pedagogy, curriculum, content, and teaching strategies and because teachers are treated as technicians rather than artists. Finally, primary teachers very often do not feel sufficiently well-trained or confident in fostering students' creative thinking in practice, although they regard creativity as a key factor for personal and social progress (Kampylis & Argyriou, 2008; Kampylis, Berki, & Saariluoma, 2009).

Alencar (2002) investigated the profile of teachers who typically facilitate students' creative thinking and discovered that these teachers demonstrate the following characteristics:

1. Good preparation and rich content knowledge in a particular domain.

2. High interest in both their discipline and their students.
3. Talent to stimulate students to produce ideas and search for new knowledge.
4. Respect for their students' individual personalities.
5. Ability to use varied instructional techniques.
6. Flexibility and openness to criticisms and suggestions by students.
7. Belief in the value of students' ideas.

Naturally, even when the teachers possess these characteristics, they also need an appropriate school environment in which to foster students' creative thinking successfully. Alencar (2002) found that contemporary education systems are characterised by a number of widespread practices that inhibit creativity through the overemphasis on the following:

1. *"Correct" response* that reinforces students' fear of making errors.
2. *Reproduction of knowledge*, which overloads students' memory with out-of-context information.
3. *Focus on students' ignorance and incapacity* rather than on their strengths and competencies.
4. *Students' obedience and passivity* instead of their personal characteristics fundamental to realising their creative potential.

Undoubtedly, the above practices ignore the importance of imagination as important aspects for students' creative thinking and, further, constitute a hostile environment for the expression of any creative performance (Alencar, 2002).

It is important and encouraging that some creativity researchers (e.g. Alencar, 2002; Craft, 2003) have examined particular hostile school conditions and suggested ways to instigate progressive change and improvements such as the establishment of a psychological climate in the classroom that reflects strong values of supporting creativity. To achieve such a psychological climate, a number of researchers have formulated specific CRs for teachers, such as *modelling creativity* and *asking open-ended questions* (e.g. Sternberg & Williams, 1996). Other researchers have shaped their CRs by placing more emphasis on equally important issues such as *the appreciation of humour*, and *the tolerance for ambiguity* (e.g. Cropley, 1997).

These studies are significant and have revealed key CRs from various countries and diverse educational contexts and programmes. However, what seem to be undervalued are the beliefs and proposals suggested by teachers-practitioners for fostering students' creative thinking. After all, it is they who are called upon to implement these CRs in practice.

In the next sections, we present the method we used in our qualitative study to investigate what Greek primary teachers recommend for fostering students' creative thinking, based on their situated knowledge and experiences gained from real classrooms.

2. METHOD

In this paper, we present the data from a focus-group study that was part of the first author's Ph.D. research aimed at investigating primary teachers' conceptions and implicit theories of creativity. In the focus-group study, participants were called upon to reflect on their experiences as primary teachers with regard to the fostering of students' creative thinking. Here we present qualitative data from one out of the five research themes of the focus-group study, and more specifically teachers' reflections when asked "What are your recommendations for the fostering of creative thinking within the context of primary education?"

Focus groups were used as the most appropriate qualitative research method for determining and cross-referencing assumptions and beliefs that dominate teachers' thinking and practices when they attempt to foster students' creative thinking in real classroom settings. Morgan (1997) defined focus groups as "*…a research technique that collects data through group interaction on a topic determined by the researcher. In essence, it is the researcher's interest that provides the focus, whereas the data themselves come from the group interaction*" (p. 6).

2.1 Participants and Procedure

The focus-group discussions took place in June 2008 in Athens, Greece, and each lasted approximately two hours. Twenty-one Greek primary teachers (see Table 1 about their demographics) participated in each of the three equivalent focus groups (see Table 2) were formed for the purposes of this study. The first author of this paper acted as the moderator of the focus groups, while the primary teachers participated on a voluntary basis. As shown in Table 1, the participants in each group included not only generalist teachers but also teachers specialising in specific school subjects such as music and foreign languages, representing the staff of a typical Greek primary school. The diverse backgrounds and subject expertise of the participants was expected to guide interaction during the focus-group discussions and the many (convergent and divergent) answers to the research question (see Table 2).

The researcher/moderator videotaped and transcribed discussions within the three focus groups, resulting in an electronic document of approximately 45,000 words. *Thematic analysis* (Boyatzis, 1998) was applied to the transcribed text through *NVivo* computer-assisted qualitative data-analysis software. Braun and Clarke (2006) define thematic analysis as "*…a method for identifying, analysing and reporting patterns (themes) within data*" (p. 79) and advocate it as a useful, accessible, and theoretically flexible method for qualitative research that has been widely used although rarely acknowledged.

Table 1

Participants' Demographics and their Allocation in the Three Focus Groups

Sex	Female	15
	Male	6
Age	20-30	6
	31-40	7
	41-50	8
Years of experience	0-5	5
	6-10	4

	11-15	5
	16-20	5
	21-	2
Additional studies	None	9
	2nd degree	4
	Two-year in-service training	5
	Master	9
	Ph.D.	3

Table 2

Allocation in the Three Focus Groups

Focus Group A	3 Generalist teachers (2 women, 1 man)
	1 Music Education teacher (man)
	1 Project-coordinator teacher (man)
	1 Drama Education teacher (man)
	1 Foreign-language teacher (woman)
Focus Group B	4 Generalist teachers (3 women, 1 man)
	1 Music Education teacher (woman)
	1 Project-coordinator teacher (woman, musician)
	1 All-Day school teacher (woman)
Focus Group C	3 Generalist teachers (3 women)
	1 Music Education teacher (man)
	1 Project-coordinator teacher (woman, musician)
	1 Physical Education teacher (woman)
	1 Special Education teacher (woman)

The six phases of thematic analysis proposed by Braun and Clarke (2006, p. 87) were used: (a) transcribing data, (b) generating initial codes, (c) searching for themes (recommendations), (d) reviewing themes, (e) defining and naming themes, and (f) producing the report.

2.2 Limitations

Before presenting the results, we would like to point out the main limitations of the study. First, the participants constituted a small but representative sample of Greek primary-education teachers (N=21). The participants were at the time teaching in schools in Athens, but they were born in other cities and had studied at various universities in Greece and, in some cases, abroad. The convenience of the sample served well this qualitative study's main aim, which was to obtain a deeper understanding of the issues under enquiry rather than seek generalisations.

The second limitation is that the participants comprised only Greek in-service primary teachers. Therefore, the study outcomes are limited to the Greek education system and its socio-cultural context. We currently plan to duplicate the study in other educational and cultural contexts in order to generalise the results. However, rather than considering cross-cultural differences, it is important to

determine the underlying presuppositions in teachers' concepts about creativity. Teachers formulate tacit models about creativity and these models direct how they ask questions, form concepts, and even implement theories (Saariluoma, 1997).

The third limitation is that the focus-group discussions were conducted in Greek although the results are here presented in English. Therefore, some misinterpretation of the collected data may have occurred despite our efforts to reproduce the teachers' CRs in English as accurately as possible.

2.3 Results

The thematic analysis of the collected qualitative data is presented in Table 3, which lists primary teachers' recommendations for effectively fostering students' creative thinking. In the table, the proposed CRs found in the literature are also classified according to (a) the features of the *creative teaching and learning process* (CP), (b) the common *traits of the creative student* (CS), and (c) the *characteristics of the creative environment* (CE). We should note here that these categories are quite broad and that some of the CRs may belong to more than one of the three classes suggested in this taxonomy. For instance, the need to take into account students' individual differences and potential (see Table 3, CR no. 6) belongs to all categories, as it may refer to traits of the creative person as well as features of the creative process and characteristics of the creative environment.

In so classifying them, however, we aim to further our understanding of the specific target(s) and scope of each CR. This focus may prove to be very useful in assessing a creativity facilitation strategy and its potential outcomes. At the same time, this broad classification is neither school-subject-specific nor does it offer very specialised information. By being sufficiently general, this taxonomy may provide significant information for decision-makers and policy-makers regarding forming and adopting in schools particular educational policies for facilitating creativity.

Table 3 shows that the majority of primary teachers' CRs deal with the characteristics of the CE. More analytically, the participants emphasised the need for appropriate infrastructures for creative activities, such as laboratories and related equipment, as well as more "creative" school spaces (Table 3, CR nos. 1 and 22).

The participants in the focus groups consider the provision of appropriate resources such as teaching materials, infrastructures, and laboratories to be a key factor for both teachers' and students' creative expression. For example, a participant in the second focus-group discussion (FG2-T6) suggested that primary teachers need "*…to have a quiver full of arrows! With all the appropriate means, materials, space, and infrastructures we need in order to express our creativity. This would be the first step.*" Another teacher (FG1-T3) placed special emphasis on the school space: "*We need more colourful and creative school space. How can you be creative when you have to work in a classroom that has not been painted for the last ten years?*" Johnson-Laird (1988) has also emphasised the importance of appropriate means; he makes a peculiar analogy between creativity and murder, saying that *"…both depend on motive, means and opportunity*" (p. 208).

Table 3

Primary Teachers' CRs

Classification	Recommendations
CE	1. More appropriate infrastructures for creative activities (e.g. laboratories)
CE-CP	2. Teachers' in-service training on how they can utilise creatively every moment in the classroom
CP-CE	3. Cooperation and collaboration between teachers
CE	4. Less extensive curricula
CE	5. More time for creativity in the syllabus
CE-CP-CS	6. Taking into account students' individual differences and potential
CE	7. Support in practical issues that consume teachers' valuable time and energy that can invest in the fostering of creative thinking
CE	8. Teachers' initial education on creativity
CE	9. Appropriate textbooks and educational materials that incorporate teachers' experiences and situated knowledge
CE	10. Concrete and specific targets for the fostering of creativity – not general and vague targets like those in the applied curricula
CE	11. Diffusion of knowledge and good practices about creativity
CE	12. Official portal for creativity by the Ministry of Education
CE	13. To employ as teachers highly-motivated creative people and artists
CE	14. School libraries with a variety of up-to-date books and materials on creativity
CE-CP	15. Assessment of educational outcomes in which creativity would be a basic parameter
CP	16. Teacher should act as role models for creativity
CP	17. Teachers need self-observation, self-critique and reflection on creativity
CE	18. Smaller number of students in each classroom (maximum 20)
CE-CP	19. More empowerment to teachers about time and space arrangements
CE	20. More hours per week in the curriculum for the Arts
CE-CP	21. Establishing communities of practice between teachers
CE	22. More "creative" space arrangements in schools
CE-CS	23. Asking students about how they want their school

***Note*. CP= Process, CE= Environment, CS= Student**

A number of participating teachers stressed the urgent need for initial education and in-service training in how to foster creative thinking (e.g. Table 3, CR nos. 2 and 8). In the words of FG3-T1: "*Teachers do not have adequate training in what is creativity and how they can utilise* any *moment in the classroom in order to foster students' creative thinking. No, we are not well-trained in creativity.*" Several other teachers supported the need for adequate training in creativity. As stated by FG2-T2, "*I think that there is no systematic training in creativity. Therefore, our knowledge about creativity remains a personal search… There is no well-organised, official training in it. In my opinion, what we really need is official, efficient, and constant training in creativity.*"

The participants of this study also highlighted the extensive teaching curricula, mentioning that they are so rigidly constructed and attached to the school timetable that they do not allow enough time for creative activities; this is why they often require more freedom with time and space arrangements (Table 3, CR nos. 4, 5, 7, and 19). It was also mentioned that the participants quite often

feel overloaded with the plethora of daily compulsory tasks, such as administration duties, that leave no time and energy for creative activities let alone the facilitation of creative thinking itself. For instance, according to an experienced teacher in general subjects (FG2-T3), "*…the first thing is to have time to act creatively. We have to stop 'running behind the syllabus'. In addition, we need not only the appropriate means but also support in practical issues in order to have the time and energy to teach creatively.*"

All the participating teachers seemed to be very concerned regarding this particular issue and insisted on discussing the need for flexible and less-extensive curricula and syllabuses that would allow more time for creative activities. According to a music teacher (FG3-T3), "*…'running behind the syllabus' eventually works against creativity*". In the same vein, a generalist teacher (FG3-T4) expressed the view that "*…the 'enemy of creativity' is intensiveness. Nowadays, teachers as well as students suffer from an overload of work. We should reduce the syllabus.*"

Furthermore, the participants of the focus-group discussions recommended the implementation of updated textbooks and educational materials in order to offer students more opportunities for creative thinking and action (Table 3, CR no. 9). For instance, FG1-T2 suggested that "*…the present textbooks bring an unnecessary intensiveness that 'kills' any creative effort in the classroom. I strongly believe that we need new, flexible, and less-intensive textbooks and curricula.*"

The participants also stressed that the number of students per classroom is a key factor that must be taken into account when planning creative activities; they suggest that the number of students in each class must be less than 20 (Table 3, CR no. 18). For example, FG1-T1, an experienced music teacher, recommended that "*…if we really want to nurture creativity in primary education, we have to work with a limited number of students per class. The maximum must be 20 students per class!"* FG3-T6 also illustrates this point: **"***Even if we have the appropriate training and the means, we cannot actually foster students' creative thinking. What we really need is a very new educational context and culture. For instance, we cannot foster creativity in a class that consists of 30 pupils!*"

On the other hand, only one participant (FG3-T7), a sports-education teacher, placed emphasis on the need to take seriously students' suggestions and ideas for creative schools (see Table 3, CR no. 23):

> *I would ask students first! What do they want their school to be like? They may respond that they want it "to be more colourful", with more creative spaces in which, for example, they can draw and so on. Maybe they want to bring into the school things that they love. What are their hobbies, their real interests? Where are their hobbies and interests in the school as it currently is? We should encourage students to "bring their personalities" to school, arranging everything according to their needs! It may sound like anarchy, but I think that students are quite flexible and adaptive.*

In conclusion, the main recommendations proposed by the participants in the study can be summed up in the following words of a generalist teacher (FG2-T4):

> *There are three important prerequisites for fostering creativity in the classroom. The first prerequisite is to have the appropriate training in how to be creative*

> *teachers and how to help our students to be creative. The second prerequisite is to have the appropriate means and infrastructure in order to express our creativity, and the third prerequisite is to have the appropriate time–space framework to do it in!*

In the discussion section that follows, we present some critical comments on the CRs proposed by Greek in-service primary teachers. In so doing, we attempt to determine, as far as possible, the most important steps and guidelines needed to foster creative thinking in the context of primary education.

3. DISCUSSION

Several important issues emerged from the analyses of the CRs provided by the participating Greek in-service primary teachers (see Table 3). The majority of their CRs deal with the characteristics of the CE, particularly those features that are inhibiting. For instance, teachers' recommendations for adequate in-service training confirm the results reported by Kampylis, Berki, and Saariluoma (2009) and Kampylis and Argyriou (2008), which show that Greek in-service and prospective teachers in the first study, as well as music teachers in the second study, do not feel well-trained and, therefore, not very confident in facilitating students' creativity.

Moreover, several creativity researchers (Aljughaiman & Mowrer-Reynolds, 2005; Fleith, 2000; Kampylis, Berki, & Saariluoma, 2009; NACCCE, 1999; Starko, 2005) have stressed the importance of time in fostering creativity, as the participants of this study did. For instance, a report by the British NACCCE (1999) stressed that curricula should be thinned out and teachers should receive more freedom to use their own creative and professional skills in creative teaching, which is essential for promoting creative learning (e.g. Jeffrey, 2006). Berki and Valtanen (2007, p. 162) refer to the need for a "*breathing curriculum*", which answers the need for learning effectively and creatively, stating that "*not everything is worth learning*" in a tight schedule.

Greek primary teachers' CRs concerning students' active participation in planning creative education were limited in number (see Table 3, CR nos. 6 and 23). This suggests that the participants consider creative teaching from a methodological rather than a communicative point of view. They do not place as much weight as they perhaps should on the ways that students experience and mentally represent creativity. Most likely, they lack functional and workable concepts for that type of teacher-student interaction. Notably, only one participant emphasised the need to take seriously students' suggestions and ideas for creative schools (see Table 3, CR no. 23).

Another emerging issue was that the sets of CRs proposed by the participants are numerous and diverse. Each teacher places emphasis on different aspects of the multifaceted phenomenon of creativity and formulates his/her own recommendations according to his/her discipline, specialisation, and background. Thus, the authors feel that it is fair to say that only a "super-teacher" could implement all of these CRs in a real classroom, especially when considering the tight schedules and demanding curricula that add to teachers' workloads. What is really needed is a comprehensible, feasible, and practical set of CRs that a "typical" teacher could understand and realise in typical classroom settings. In other words, we argue that what is needed is a functional collection of well-integrated CRs, derived not only from theory and research but also from school practice. Thus, there is a need to answer a crucial

question: "Should all these recommendations be considered and realised while fostering students' creative thinking?"

It seems that the primary teachers' CRs presented in Table 3 suggest general and rather abstract strategies; they do not actually give any concrete behavioural patterns or any learning-process guidelines to follow. When we need to form explicit teaching aims and learning objectives and include ways of enhancing creativity, clear and simple recommendations and strategies are required, based also on the availability and utilisation of resources present in the educational environment (Georgiadou, Hatzipanagos, & Berki, 2005). If a resource-based strategy is not considered (e.g. Valkanos et al., 2005), then human and environmental resources may prove to be constraints in an otherwise effectively designed strategy for fostering creative thinking. It is one thing to know that creative thinking can be fostered and another to know how this can be done in a variety of interactive situations in the real classroom with the given environment, tools, and infrastructure. This is why it would also be important to understand what type of interaction models would best improve creative teaching and how the general strategies can best be realised at the teacher-student level of interaction.

It is equally important to consider general thinking skills as well as ethical and philosophical issues before establishing key CRs that should be followed. In other words, there is a need to adopt a top-down, holistic approach in order to re-think and re-structure the main target(s) and the learning outcomes of a more creative education. Valtanen, Berki, Kampylis, and Theodorakopoulou (2008) proposed such a holistic approach, called *manifold thinking*, which is based on the integration of *creative*, *critical*, *reflective*, and *caring* thinking.

Moreover, when observing and studying the classification of CRs, the present authors feel strongly that there are some unspoken recommendations that ought to be set out more explicitly. These CRs lie (and sometimes are lost) "between the lines" of other recommendations. In the next section we reflect upon our findings and, based on the manifold-thinking framework (Valtanen, Berki, Kampylis, & Theodorakopoulou, 2008), we propose our own recommendations for fostering students' creative thinking within the context of primary education. We consider these CRs to be fundamental although they were not proposed by the teachers participating in the focus groups of this study.

3.1 The "Missing" Recommendations

Dineen and Collins (2005) stressed that creativity researchers overemphasise the superficially understood *knowledge-what* rather than the experiential *knowledge-how*, and suggested a synthesis of the two. Based on our data analysis, we will go even further, emphasising the need for a third pillar, the *knowledge-why*. Knowledge-why is connected with reflective and caring thinking (components of the manifold-thinking framework), which are almost completely absent from the primary-school learning environment. We also agree with Gibson (2005) in that the ethical dimension of creativity is missing from current educational discourses. Therefore, we argue that teachers should reflect not only on "How can I foster students' creative thinking?" but also on other critical questions such as "Do I really want to foster students' creative thinking?", "Why do I want to foster their creative thinking?" "What do I do *intentionally* to foster their creative thinking?", "What do I do *unintentionally* that might inhibit their creative thinking and performance?", "How can I help students to use their creative thinking for constructive/ethical purposes?", "What complementary types of thinking do students need in order to

use their creative thinking for constructive and ethical purposes?", and "Who should benefit from the fostering of students' creative thinking?"

Thus, the use of manifold thinking as an analytical framework should be encouraged and practised by creativity agents and facilitators. What should additionally be emphasised is that, despite the positive connotations of the term *creativity*, practical use determines whether it is used in constructive/ethical or destructive/unethical ways. It is within the teachers' caring responsibilities to encourage students to adopt a critical stance, considering and distinguishing between positive/constructive and negative/destructive aspects of creativity from the early stage of primary education. In doing so, teachers will advance primary students' thinking from the oversimplification of "good/bad" and/or "right/wrong" dualistic types of thinking and direct them towards more reflective and caring modes of thinking.

For the above-mentioned reasons, in our CRs (see Table 4, CR nos. 1 and 2) we highlight the need to help students to distinguish between constructive and destructive aspects of creativity through the analytical framework of manifold thinking.

Table 4
Authors' CRs

Classification	Recommendations
CS-CP	1. Encouraging manifold thinking, namely a combination of creative, critical, caring, and reflective thinking.
CS-CP	2. Helping students to distinguish between constructive and destructive aspects of creativity.
CP-CE	3. Providing students with various hands-on activities, emphasising the role that the body plays in creativity.
CE-CP	4. Appreciating that all school subjects can be taught creatively and acting accordingly.

Another issue that is not emphasised is the role that the human body plays in creativity. The role of the body in the individual's creative performance is essential and was established long ago also as a form of intelligence, i.e. *kinaesthetic intelligence* (e.g. Gardner, 1993). Particularly for younger school children, who do not yet have fully established rich language skills and articulated forms of expressions, their bodies can be used to enrich their feelings and expression of thoughts. For this reason, we suggest that primary teachers should provide students with creative forms of hands-on activities emphasising the role of bodily activity in creative expression (Kampylis, Berki, & Saariluoma, 2006, 2009).

A major problem, however, is how these teacher-student and student-student communication patterns can be realised in concrete interactive situations. Interaction, for instance between a teacher and a student, presupposes that the teacher understands (a) how the student's needs concerning creative expression could best be met, (b) where the student has difficulties, and (c) how the student's creative resources can be activated for longer periods.

We also strongly recommend that all teachers should be suitably trained and encouraged to foster students' creative thinking in every school subject. Based on recent and consistent research findings (Aljughaiman & Mowrer-Reynolds, 2005; Diakidoy & Kanari, 1999; Kampylis & Argyriou, 2008; Kampylis, Berki, & Saariluoma, 2009), we argue that teachers associate creativity mainly with Arts. It thus appears that primary teachers do not strive to promote students' creativity in all school subjects. Limiting creativity to the artistic school subjects implies that general class teachers transfer the responsibility for enhancing students' creativity to specialised teachers such as Music Education and Drama Education teachers (Aljughaiman & Mowrer-Reynolds, 2005; Kampylis, Berki, & Saariluoma, 2009).

In general, it appears that the complexity of creative thinking has not been fully understood by primary teachers and, consequently, it has not been fully incorporated in their teaching practices so far. Thus, the challenge both for researchers/theorists and for teachers/practitioners is to develop good practices for advancing students' creative thinking and performance. In this developmental work, the comparison between creativity researchers' findings and teachers' conceptions is an essential step.

4. CONCLUSIONS AND FUTURE WORK

According to Ripple (1999), we can identify two general models concerning the fostering of creativity:

1. The *deficit model*, which assumes that creative skills and abilities must be enhanced through specific instruction and training.
2. The *barrier model*, which assumes that creative potential is inherent in everyone; there is a need simply to increase the individual's awareness of her/his potential and remove the barriers for its fulfilment.

The Greek primary teachers who participated in our study seem to adopt mainly the barrier model (Ripple, 1999). Thus, they place more emphasis on the inhibiting factors of the school environment for the fulfilment of students' creative potential. Factors such as the absence of appropriate infrastructures and extensive curricula that do not leave enough time for students' creative expression were frequently emphasised.

Based on our data analysis, we argue that primary education needs flexible and reliable recommendations for the fostering of students' creative thinking. These CRs should be easily adapted and followed by all teachers while also taking into consideration the constraints of the primary-school environment. For this reason, we intend to further analyse, classify, and review all the CRs that we have already collected, aiming at delivering a comprehensive model that would encompass the most essential and reliable creativity strategies for the primary-school context. In addition, we will repeat the same study, with the same participants, in three years' time in order to investigate the potential fluctuation of their views during their professional lives.

Further research based on larger, more-representative samples is also needed in order to investigate whether the same CRs could or should be utilised by teachers working in secondary or higher education, and whether there are different sets of creativity-boosting strategies for different levels of education. Further research is also required to investigate how the domain-general CRs

provided by in-service teachers can be adapted for domain-specific strategies for fostering students' creative thinking in the context of particular school subjects such as Music Education.

Several issues that require further research also emerged from our data analysis. First, further research is needed regarding the awareness of creativity researchers about the CRs proposed by primary teachers, and vice versa. Second, more research efforts must be devoted on both the facilitative and inhibiting factors for the realisation of these CRs in real classrooms. Last but not least, more research is needed to the investigation of ways for better communication, interaction, and collaboration between teachers and researchers for the fostering of students' creative thinking.

Arguably, CRs for primary education should be derived through interaction and collaboration between researchers, teachers, *and* students. It would be an arrogant and self-centred teaching strategy to impose anyone's recommendations on any student without taking into consideration students' opinions before doing so or, at least, after doing so. This interaction and collaboration can be established through workshops, seminars, research programmes, conferences, and so forth, investigating how practices can best be connected to the concrete patterns of teacher-student interaction and contextualised to the needs of local schools and students' particular preferences.

On the groundwork of the present study, we argue that primary teachers possess valuable situated knowledge and experiences that should be taken into account in any attempt to foster primary students' creative thinking. We must create observation, diagnostic and communication patterns for teacher practical classroom action so that they can identify the missing skills in student and communicate their suggestions to them. Only in this way enhancing creative thinking can become a working practice. On the other hand, there is an obvious need to further research not only teachers' but also primary students' conceptualisations of creativity and solicit their opinions on their preferred methods of creative learning.

The selection of our own CRs (see Table 4), are equally oriented towards environment (CE), process (CP), and student (CS), and thus consider all the previously exposed factors and roles in the creativity-fostering process. It is equally important to consider the current practices and the conception of creativity embedded in them. Fostering creativity can resemble a game in which all three sides – researchers, teachers (including educational authorities), and students – must undertake an active responsibility in the process. A small number of previous CRs are student-centred. Our set of recommendations considers environmental resources and learning strategies while at the same time empowers the students to be active participants with critical, creative, caring, and reflective thinking. We therefore consider this holistic treatment of the fostering of students' creative thinking in the context of primary education to be essential.

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