



SECONDARY SCIENCE TEACHERS' VIEWS ABOUT THE PLACEMENT OF CREATIVITY IN SECONDARY CLASSES: A QUALITATIVE STUDY

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Abstract:

The main aim of the present study was to find out the views of Pakistani secondary science teachers about the necessity of creativity at the secondary level. The study was qualitative in nature and conducted among 14-secondary science teachers in Pakistan. 14 detailed interviews were administered for the data collection after that the data were analyzed through coding and the thematic process of Miles and Huberman (1994). In last, the findings of the study were concluded which showed that due to intrinsic and extrinsic reasons the teachers considered creativity very necessary at the secondary level.

Keywords: creativity, secondary science teachers, reasons

1. Introduction

1.1 Creativity as an important factor

It is extremely important to say that teaching profession is the cause of the advancement of nations (Kamran, Abasimi & Congman, 2015). Creativity is the best solution to all problems in education, but unluckily in the practical fields, only a little and shallow place is offered to it. Further, in past days, creativity was only considered through the Western philosophies and no other perceptions got a proper value but now there is a

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requirement to see the creativity through other views as well (Newton & Newton, 2014). Although creativity is the essential 21st-century skill, unfortunately, it never understood properly and exactly in the way as it should be (Azzam, 2009). Creativity is not a fresh and today's phenomenon (Carruthers, 2002) but it evolved through the stages of stone into the modern technological stage. As the speedy progress and changes resulted in technologies, various complications and problems also evolved which needs creativity (Newton & Newton, 2014) for its solution. Limited resources further create the economic challenges which again need creativity to cope with it (Shaheen, 2010).

When we discuss creativity then discrimination between the two terms- teaching creatively and teaching for creativity is an important commentary. The former focuses on the teacher's ability to build such methods, factors, and lessons that motivate the learners. While the latter focuses on how to foster and cultivate the learners' own creative thinking. Both are used quite extensively in the creativity field. The term creative learning is more suitable and helpful than teaching for creativity to discuss creativity because the former is broader than the later (Jeffrey & Craft, 2004). Some researchers and educationists have stated that one popular problem is that creativity is the field of special people only (Newton & Newton, 2014), however, other researchers (e.g. Boden, 2004; Runco, 2008) claimed that every person can be creative and creative behavior can be found in every person to some extent. The second problem about creativity which attracted most of the researchers was that creativity had been attached with the arts only (Newton & Newton, 2014). But actually, creativity is polymorphic which covers several fields (Boden, 1994), not only the arts.

Many writers such as Mellou (1996), Runco (1990) and Edwards and Springate (1995) explained that teachers can encourage creativity by applying special methods and techniques. Runco (2003) claimed that teachers should motivate an interest in children and encourage them to construct their own concepts of knowledge. Several elements e.g., the pressure on teachers and lack of training in early years can affect the encouragement of creativity in early years (David, 2003; Downing, Johnson & Kaur, 2003).

2. Statement of the problem

Creativity is a basic phenomenon which is very important and necessary in schools, therefore, Sharp (2004) stated that creativity achieved an official status as one of the greatest purposes in English schools. However, it brings many questions in mind that

whether creativity is necessary at the secondary school level? If yes then what are the basic reasons behind it?

It is suitable to adopt the democratic definition of creativity because in this way every child can be counted for creativity because creativity is related to an individual's personality and emotional life (Sharp, 2004) therefore it will be of greater importance if creativity could be understood in the views of Pakistani secondary science teachers and to further examine their views that why they consider creativity important at secondary level.

The past research shows that the views and beliefs of teachers about creativity were affected by several factors. Some teachers show sympathy to creativity while others not. Some take it necessary at secondary level while others deny it. This produces a gap for the present research study. This research problem needs to be understood by the researchers in the creativity field. This disagreement led us to dig more into the matter about the problem under investigation to explore the beliefs of 14 such secondary science teachers.

2.1 Objective of the study

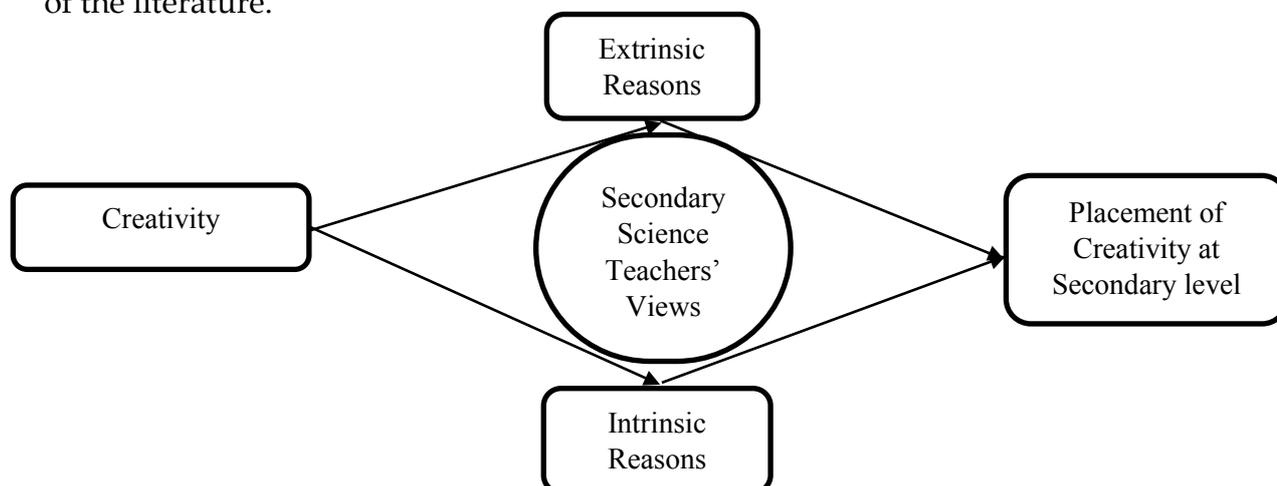
The main aim of this article was to examine those reasons that were described by the secondary science teachers in Pakistan to confirm the placement of creativity at the secondary level in Pakistan.

2.2 Research question

According to secondary science teachers, what are the basic reasons that placement of creativity is necessary at the secondary level in Pakistan?

2.3 Conceptual framework

The following conceptual frame was designed by the researchers from the broad view of the literature.



3. Literature review

With regards to creativity, Sharp (2004) in her review study stated that creativity achieved an official acknowledgment as one of the principal aims in English schools. Gardner (1999) in his research work used the "elite definition of creativity" which stated that creative people are special (intelligent) and they make difference by putting great tasks in science, social science, music and/ or art. This type of creativity is reserved only for special individuals. While Futures (1999) stated that creativity is "democratic", as opposed to Gardner's view (1999) and stated that creativity is the right of each person and cannot be applied only to special and intelligent people. It can be said that this is the most beneficial definition of creativity in relation to education because every person can be considered for creativity. Most experts agree that creativity is different from intelligence because children who get higher marks on intelligence tests are not essentially highly creative. When you will talk to parents about their children's creativity then they will undoubtedly think that you are talking about artistic or musical ability (Sharp, 2004) because most people relate creativity with arts exclusively although creativity relates to all the fields (Newton, 2012).

The Robinson Report (i.e Futures, 1999) claims that, while there are firm relations between the arts and creativity, but linking creativity solely with the province of the arts is awkward because it can cancel the role of creativity in other areas, such as science, mathematics and various other fields, therefore, it is suitable to adopt the democratic definition of creativity because, in this way, every child can have a room for creativity. Mellou (1996) suggests that the creative environment, creative programs, and creative teachers are extremely necessary for creativity enhancement. Many experts in the field of creativity such as Craft (2000), and Runco (1990) stated in their studies that teachers try to cultivate creativity by asking open-ended questions, and, by admiration of the child who gives unexpected answers to teachers. Runco (2003) stated that teachers should be devoted to children's creative potential and they should inspire the children and should lead them to make their own answers and clarifications about knowledge and questions which they asked because the children (students) need their own conceptions for creativity. Several elements i.e., pressure on teachers and a lack of training can retract the creativity (David, 2003 & Downing et al., 2003).

Various studies have been done in the field of creativity. All the studies were narrowly related to the mentioned topic because there was only limited literature in the area of creativity in which the current researchers were interested. We hope that the mentioned literature reviewed would make sense to the readers although its relevancy is limited but, this very article will open the doors for the future researchers.

4. Research method

4.1 Participants and context of the study

Secondary level is an important base for any education system; therefore, the target respondents for the mentioned study were secondary science teachers in Dera Ismail Khan and Tank City. Secondary science education is considered the third early education in Pakistan after primary and middle stage education. Purposive sampling was used because only that teacher was considered fit for the study that was qualified with bachelor or master degree in science, therefore, only science teachers were chosen for interviews. Teachers were approached by using the permission from the principal or headmaster/headmistress of the concerned institution. 14 teachers (9 females, 5 male) agreed to be interviewed in detail whose interviews were then recorded in researcher's personal cell phone by their permission. The demographic information was shown in Table 1 below.

Table 1: Demographic Information of secondary science teachers

Teacher penname	Gender	Teaching experience in years	Subject taught
1. Alfaama	F	3	Science
2. Abhaama	F	4	Science
3. Ajaala	F	9	Science
4. Asaama	F	6	General Science
5. Ajaada	F	5	General Science
6. Adaaba	F	2	Biology
7. Azlaana	F	3	General Science
8. Aiqaan	M	8	Science
9. Armaghana	F	2	Science
10. Azjaana	F	3	Science
11. Albaan	M	7	Science
12. Alqaan	M	6	Science
13. Aosaaf	M	1	Science
14. Adnanaaz	M	5	Science

4.2 Research design

The qualitative researchers in various studies already described the teachers' beliefs with regards to creativity e.g., it was mentioned in the study of Sak (2004), Fleith (2000), and Lilly and Bramwell-Rejskind (2004) therefore seeing the past research studies we (the current researchers) followed the present case and preferred to choose the qualitative method to determine the teachers' beliefs involved in secondary science education and thought that if qualitative method can bring novel and beautiful results.

Therefore, in-depth 14 semi-structured interviews were conducted face to face with selected 14 teachers (9 females, 5 male). The qualitative design was thought to be more suitable as it permits the researcher to enter into the interviewees' life to dig up deep the matter (Patton, 2002; Chan & Yuen, 2015). Interviews can also give us more data which is sometimes not possible with the questionnaires (Chan & Yuen, 2015) or other survey instruments. So the researchers in the current study desired to use the interviews as instruments because it allows the respondents to give extra information (Gay, Mills & Airasian, 2012). The interview questions were adapted from the studies/theses of Alshou (2015) and Shen (2014) that were conducted on creativity and its related areas.

4.3 Data collection and data analysis

For the current research study, 14-semi-structured interviews were administered face to face with selected 14 secondary science teachers (9 females, 5 male). An interview guide with an open ended design was used. Some extra and follow-up questions were also asked during the interview for more interpretation (Chan & Yuen, 2015) because sometimes the respondents want to give more detail about the problem under investigation. According to the main objective of the study, mainly the following one question was asked in the interview. *"In your perception, is creativity necessary at secondary level? If yes, in which way? If not, then why not? Please explain it briefly."*

Before the interviews were started, the interview questions were showed to some of the respondents because they wanted to see it. All the interviews were audio recorded in the researcher's own cell phone with the consent and agreement of the respondents and transcribed the whole data word by word after the interviews were recorded. All the scripts of the interviews were analyzed according to the coding method of Miles and Huberman (1994). The codes were then written according to the categories aroused from the interview question, and finally, themes were created after the data were coded as was done in Chan and Yuen (2015) and Saldana (2009) (as shown in Table 2).

Table 2: Major category, sub-category, themes, and codes with regards to the secondary science teachers' views about the placement of creativity in secondary classes

Major category	Sub-category	Themes		Codes
Secondary Science Teachers Views	Reasons for the placement of creativity at secondary level	Basic level for boosting creativity	Intrinsic Reasons	V-R-B-L
		Source of learning		V-R-S-Learning
		Base for scientific approach		V-R-B-S-App
		Preparation for advance level	Extrinsic Reasons	V-R-P-Ad-Level
		Prohibition of rote learning		V-R-P-R-Learning

5. Findings

The findings were mainly categorized according to the mentioned research question of the study. The themes helped in forming the codes and vice versa. All the themes supported the findings that were drawn from the interviews and it gave much support to the teachers' views about the placement of creativity at secondary level.

5.1 Reasons for the Placement of creativity at secondary level in Pakistani schools

To place creativity at the secondary level is necessary and important because the secondary level is the start of any students' academic life. If the students get much attention towards creativity at these starting years, their creative thinking will be much polished in further years. This evidence was stated by Alfaama in her interview as:

“Obviously, creativity is necessary at secondary level because this is the basic level where creativity is necessary. When you give some knowledge at this basic level it will brainstorm them (students) and they (students) will think about different aspects of life. So obviously it is very important at the secondary level.”

(Alfaama)

The students learn many things from the book but sometimes they also learn from the surrounding environment to achieve the creative behavior. For this, they need creative thinking which can be getting at secondary school level. This evidence was found in the comments of Azlaana as:

“Through creativity we can evaluate many things in our students that’s why creativity is the best thing (which is necessary at the secondary level). It must be in curriculum and

should be placed in the system. Because you can say that students learn many things from the book but sometimes they learn different things rather than books. Students make models i.e they do different things. They do something new. They need some additional knowledge."

(Azlaana)

Azjaana stated that the learning opportunities for the students are greater in doing the practice in the laboratory because when the student does practically they learn more creatively. Therefore, there is a room for creativity at the secondary level to pursue practicality. This was shown in her comments as:

"Yes, of course through creativity the students will learn more. The students don't get much information. When they perform the practical the students learn more and their knowledge is improved more."

(Azjaana)

Another important opinion which came from one of the teachers during the interview was that students should have a creative mind at the secondary level and teachers should work hard on it. Teachers should provide possible opportunities for it. This was stated by Albaan as:

"Yeah, it is really very imperative at the secondary level. They should have creative mind at this level and teachers should create things in their mind that is why science (chemistry) isn't only a simple teaching subject but it's a thing that is really related to day-to-day practical life and I think there are some students; they are looking very much creative but since lack of resources they are not showing their creativity. They are unable to express themselves because their conditions are not as suitable as it should be."

(Albaan)

It was also shown that creativity is really necessary and important at secondary level because at this level, the students are in preliminary ages and if the teachers did not help them at this very basic level then they become habitual to rote learning which is not so fruitful in the scientific field and a big hurdle to creativity. So creativity should have a place in schools at secondary level. This was explained by Adnanaz in his comments as:

"Of course, creativity is very necessary at this level because as it is a base for science because if we will not consider creativity at this class (secondary level) then students will consider it a boring subject in their minds and hurdles will be produced for them because after secondary level they study science at advance level. So if you will not make them understand the basics of science through creativity so he/she will not study science creatively. So creativity at the secondary level is very necessary because the secondary level is the start of science so you have to make every topic easy (for students) and understandable according to the minds of students so that they could not go through rote learning and memorize science through rote learning."

(Adnanaz)

6. Discussion

While with regards to creativity, in the previous literature some studies suggested that some teachers didn't feel well with the creative traits in their students (Cropley, 1992; Davis & Rimm, 1994; Fasko, 2000; Westby & Dawson, 1995) which means that their beliefs to creative traits (creative students) were somehow not well adjusted. This misconception towards creativity can also be found within the study of Westby and Dawson (1995) where teachers seemed to view the creative students' trouble making, disruptive and difficult to manage in the regular classrooms especially in science lessons. In contrast to this assumption, in the current study, the teachers highly valued the creativity in their students at the secondary level and firmly they felt the great motivation to cultivate creativity in students at secondary level so the current study findings showed a great respect for creative students. These teachers at the secondary level observed the great potential of creativity in their students, and they believed that they were able to manage the creative students in their science lessons. Further, they use specific ways when necessary to guide the creative students at the secondary level and they know how to lead creative students so that they could produce better creative products. It seems that this positive belief towards creativity and creative students could be due to the teachers' well academic background, professional training and greater experience in science education at secondary level. So this system of belief of Pakistani secondary science teachers towards creativity at secondary level could be referred to as "balanced beliefs" that were also supported by studies of Chan and Yuen (2015), Seo, Lee, and Kim (2005) and Lee and Seo (2006). In the mentioned past studies, the authors named these positive views as "balanced beliefs about creativity" and admitted that when a "balanced belief towards creativity" possess by teachers, then it results in students' creativity positively in science lessons. Science teachers that were interviewed in this current study made a positive impact about the placement of

creativity in secondary schools. All the teachers' views about the placement of creativity at secondary level were very encouraging, motivated and positive.

6.1 Implications

Generally, the findings of this article gave useful insights to future researchers about the placement of creativity at secondary level e.g., how to frame their beliefs about the placement of creativity. The teachers also accepted to shape their positive beliefs towards creativity and its placement at secondary level.

The solid and rigorous implications that were suggested by this article for teachers and future researchers are: (i) all teachers should pay attention to creativity and its related issues at secondary level; (ii) all teachers need to understand the importance of creativity at secondary level; (iii) all teachers should pay attention to the curriculum at secondary level to notice the placement of creativity in the syllabus; (iv) the government should pay attention to schools especially in improving the environment for creativity; (v) professional training should be run by the government among teachers to make the environment more conducive for creativity in classrooms.

6.2 Limitations

The current research study was limited to 14 secondary science teachers only who were involved directly in science education in their schools and they had experience in science teaching for several years. The small sample size (N=14) limits the generalizability of the current research results (Chan and Yuen 2015). The current research study can only be perceived as a qualitative small-scale research. Due to time and resource limitations, a larger and more representative group of teachers were not feasible in the current research study although there are definitely many more teachers with or without a background in science education that can make it a priority to cultivate creativity in their students but that sample was beyond the scope of the present research. More specifically, the interview method can lead to the subjective results in the current research, because it was based on teachers' self-reporting beliefs towards creativity (Chan and Yuen 2015). Finally, it is suggested by the current researchers for the future studies to use other research techniques, such as classroom observations, focus group interviews, quantitative surveys, content analysis and/or review studies which would help them more to confirm the teachers' reported beliefs about creativity.

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