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SHAPING A CONTEXTUALIZED THEORY FOR THE DEFINITIONS OF CREATIVITY: A CASE OF PAKISTANI SECONDARY SCIENCE TEACHERS

Muhammad Kamran[1*], Fazal Hayat[2], Muhabat Khan[3]

[1]Assistant Professor, Department of Education, University of Loralai, Balochistan, Pakistan. Email Address: kamrankundi86@gmail.com

[2]Lecturer, Department of Education, University of Loralai, Balochistan, Pakistan.

[3]Assistant Professor, Department of Education, University of Loralai, Balochistan, Pakistan.

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Abstract

This paper was designed to investigate the Pakistani secondary science teachers' understanding about the definition of creativity. The design of study was qualitative based on grounded theory method. This study recruited 20 (08 males & 12 females) teachers, which wereselected purely based on the purposive sampling technique. All the recruited teachers were from District Dera Ismail Khan, Pakistan. The teachers were interviewed through a semi-structured interview guide, and their responses were recorded in the researcher's cell phone through their consent. Data were analyzed according to the coding method of Miles and Huberman (1994). All the interviews were transcribed word by word from which themes were generated. Totally four themes, i.e., newness, new tutoring methods, practicality, and natural/God-gifted phenomenon, were drawn from the interviews. This made the theory of creativity that exclusively grounded in Pakistani context on which an explicit definition of creativity was made.The other astonishing finding that

came from this study was that creativity is a multifaceted concept rather than singly defined. So, this paper definedcreativity as newness, new tutoring methods, practicality, and natural/God-gifted phenomenon. Since Pakistani teachers' definitions of creativity were supported by past literature, therefore, their conception of creativity were referred to as informed views towards creativity. Several limitations of this study have been discussed in last of this article forwhich suggestions have been made for the future researchers when they have to encounter with the concept of creativity.This study contributed to the knowledge in varous areas like context, area of study and in shaping the theory about the definition of creativity.

1. Introduction

This paper talks about the definitions of creativity. It further highlights that creativity has not yet been deeply explained from the Pakistani perspective. Thus, the key question which is explained by this paper is "what are the definitions of creativity that Pakistani teachers think of in their perspective?"

If we talk about creativity, it comes to know that it has been documented in 1950s(Simonton, 2000), when in 1950, in a presidential speech aninspirational statement was made by J.P. Guilford who was the president of the APA (American Psychological Association), said that creativity is a topic of greater interest that need an attention of the scholars. After this presidential talk, a number of researchers and scholars came into the field to do extensive research on creativity (Simonton, 2000), which resulted in a great deal of disparity regarding the various definitions of creativity(Alsahou, 2015; Chan, 2015;Craft, 2001); therefore it seems a tricky topic to researchers (Sharp, 2001) because of the variety of definitions (Alsahou, 2015;Chan, 2015; Craft, 2001).Since the past studies (e.g., Alsahou, 2015; Chan, 2015; Chan & Yuen, 2015; Gralewski, 2016; Barbot, Besançon, &Lubart, 2015) in the field of creativity revealed the fact that there is a variation upon the definitions of creativity (Alsahou, 2015; Chan, 2015), therefore,the topic definition of creativity is more dominant (Runco& Jaeger, 2012) among the researchers,although it is more problematic (Sharp, 2001).So, a need was felt that researchers should deeply explore the topic definition of creativity to reach the unanimous definition of creativity.

To this day, creativity has been considered as one of thesignificant targets of institutions (Alsahou, 2015; Chan, 2015) because the well-being of society is connected to creativity (Gralewski, 2016)due to extrinsic and intrinsic reasons (Kamran, Shah and Rao, 2017). Teachers play a central role in students' creativity (Alsahou, 2015; Barbot, Besançon, &Lubart, 2015; Chan, 2015). Therefore, to examine teachers'perception about the definitions of creativity is of paramount importance (Barbot, Besançon, &Lubart, 2015; Gralewski, 2016). Thusthis paperwas designed to throw light on the definitions of creativity from Pakistani secondary science teachers'perspective.

1.1.The rationale of the study

Most of the research in education that has been undertaken in creativity comes from the West, small-scale research from the East as well (Craft, 2001), but in Pakistan, only limited research has been undertaken. Although creativity is context related topic because some elements of creativity are unique in specific cultural contexts but still the voice of Pakistan is silent (AlKhars, 2013; Craft, 2001; Grigorenko& Tan, 2008) in this matter. Regarding creativity, Pakistani teachers' beliefs, perception, and, understanding of creativity is very limited. Thus, to get a reasonable understanding of Pakistani teachers, this paper has been designed, which throws light on secondary science teachers' knowledge about creativity from the Pakistani perspective.

2. Literature Review

What creativity means? Debate on this question is yet far to conclude. This question is still on the floor of creativity literature (Kaufman &Beghetto, 2009) because the definition of creativity is problematic to researchers (Sharp, 2001). One of the problems regarding creativity is that there is no unified definition of creativity in education (Craft, 2003).So, to demand the definition of creativity is logically an essential question because, in that case, its development can bemore plausible (Ivcevic, 2009). How creativity was defined in past literature, a lot of criticism regarding this matter is found (Shaheen, 2010). A definition of creativity that is agreeable to researchers is quite necessary (Shaheen, 2010). To relate and support this study's rationale, this paper lays down the previous researchers' studies in the following.

Kamran (2018) conducted a study regarding a checklist in which six definitions of creativity, i.e., originality, usefulness, innovation, invention/discovery, novelty, and solving problems, were given to the respondents and were asked to chose the definition that best represents the creativity. As a result, originality was on top of the list among the six definitions by getting the highest mean score among all other creativity definitions.

Ndeke, Okere, and Keraro (2016) studied biology secondary school teachers' perceptions in Kenya and defined creativity in terms of newness (new product, new process, new ideas), recognition of the relationship, problem-solving knowledge, and improvisation. Among these definitions of creativity, improvisation was on top of the list because most of the teachers (23.9 %) favored improvisation when they were involved in practical activities.

Akkanat and Gökdere (2015) studied the Chemistry teachers' views about creativity from Turkey's perspective and defined creativity in terms of novelty and problem solving, of which the problem-solving category got the preference because of higher frequency.

From the Kuwaiti teachers' perspective, Alsahou (2015) concluded that creativity was defined in three categories, i.e., originality, usefulness, and imagination. Among the three categories, originality was on top of the list because all teachers mentioned it.

Alhusaini, Maker and Deil-Amen (2014) concluded the US teachers' conceptions of creativity. The US teachers defined creativity in terms of eight themes, i.e., fluency, voice, originality, imagination, elaboration, complexity, making connections, and writing clarity. Among these categories, fluency was on top of the list, i.e., most of the teachers (70% of all the participants) linked creativity with fluency.

Turner (2013) studied creativity from teachers and trainee teachers' perspectives and defined creativity by three main categories: innovative teaching, pupils' activities, and teaching learning process. These three main categories were further subdivided. The first category, innovative teaching, gives rise to engaging pupils, imagination, different teaching approaches, thought-provoking processes, thinking outside the box, originality, and pupils' inspiration. The second categorypupils' activities gives rise to various thinking processes like debates and making things etc. In contrast, the third category teaching-learning process, gives rise to variety in teaching methods.

Wolf (2014) did study on how to define the concept of creativity. The study used the psycholinguistic method instead of using the analytic approach to analyze the concept of creativity. The participants were asked to sort out the words that can fully be associated with creativity, resulting in 42 words. In the next stage, from these 42 associated words, eight categories/ definitions of creativity, i.e., originality, emotion, inventiveness, process, intellectuality, hobby, performance, from thought to practice, were drawn through the card sorting experiment method.

Hong and Kang (2010) studied US and South Korean teachers' conceptions of creativity. The teachers defined creativity in terms of six categories, i.e.,novelty, problem-solving, appropriateness, ethicality, divergent thinking, and other aspects (imagination, curiosity, artistic, endurance). Among these definitions, the novelty was on top of the list because most teachers (86% of all participants) from both countries associated creativity with the novelty.

Aljughaiman and Mowrer-Reynolds (2005)did a Study in Idaho, US, and defined creativity in terms of twelve categories, i.e., original ideas, aesthetic product, intelligence, linguistic product, imagination, self-expression, problem-solving, enjoyment, divergent thinking, inventiveness, creative writing, and other aspects. Among these categories, original ideas/originality was on top of the list because most of the teachers (88% of teachers) stated that creativity means original ideas.

So, a research question was constructed from the broad view of past creativity literature, which is given below:

1. By definition, what are the Pakistani secondary science teachers' understanding of creativity?
2. What is the contribution of this study?
3.

3. Research Methodology

3.1.Research Design

Regarding design, some of the past creativity researchers used the qualitative design (Sak, 2004; Fleith, 2000; Lilly &Bramwell-Rejskind, 2004) to describe the teachers' perceptions about creativity. But for this study, grounded theory method (a type of qualitative research design) was usedsince the current researchers wanted to arrive on a theory that can be used for the definitions of crteativity.

3.2.Data Collection Tool and Sampling Procedure

Data were collected through the interview tool as it holds the open-ended questions (Chan & Yuen, 2015; Patton, 2002) and further, it gives in-depth, extra but relative information (Gay, Mills &Airasian, 2012). For this study, interview tool was adopted from past creativity researchers (e.g., Alsahou, 2015; Chan, 2015; Chan & Yuen, 2015; Shaheen, 2010; Shen, 2014). During the interview, additional questions were also asked if the respondents had to share more information. Interview questions were placed in front of the respondents so that they can answer it quickly. All the interviews were recorded on the researcher's mobile phone with the consent of the participants. These interviews were transferredto the researcher's laptop to keep the backup. The questions asked in interviews are shown in table 1.

Table 1. Semi-structured interview questions

S.No	Interview Questions
01	When you hear the word "creativity," what comes into your mind? Please elaborate.
02	In belief, what is creativity? Please give your short definition.

Areawise all teachers belonged to district Dera Ismail Khan located in Pakistan. The recruited teachers were science teachers that taught at a secondary level. The purposive sampling technique (Patton, 2002) was used for this study. Since the current researchers' main idea was to reach on a novel theory about the definitions of creativity, therefore,a total of 20 (8 males & 12 females) teachers were selected for this study. The whole process provided breadth to the creativity research and depth to the understanding of creativity.Table 2 has illustrated the demographics of the teachers.

Table 2. Teachers' Demographics

SN	Teachers' Pseudo Name	Sex	Experience of teaching	Teaching Subject
1	Alfama	F	3	Science
2	Abhaama	F	4	Science
3	Ajaada	F	5	General Science
4	Azjaana	F	3	Science
5	Bushra	F	3	Chemistry
6	Thayaba	F	3	Science
7	Aiman	F	4	Science
8	Siama	F	4	Chemistry
9	Zahra	F	3	Math
10	Amara	F	4	Math
11	Amber	F	3	Science
12	Nasreen	F	4	Chemistry
13	Aiqaan	M	8	Science
14	Alqaan	M	6	Science
15	Albaan	M	7	Science
16	Adnanaaz	M	5	Science
17	Sami	M	4	Physics / Chemistry
18	Hafeez	M	7	Science
19	Sohail	M	4	Physics

20	Junaid	M	3	Science

3.3.Data Analysis

All the interviews were analyzed according to the coding method of Miles and Huberman (1994). For the analysis, each interview was written word by word. All the teachers' interviews were analyzed and noted down the themes that were raised. These were the initial themesdrawn from the scripts of the interviews. A total of 41 initial themes was raised from the whole data from which codes were generated. Initial themes that were same in concept clustered together (e.g., Chan & Yuen, 2015; Saldaña, 2009), which gave the four final themes upon which the theory was shaped exclusively in the Pakistani context. The four final themes is illustrated in table 3 below.

Table 3 Codes and themes of teachers' definitions with respect to creativity

The total number of initial themes which were created from data were 41		
Clustered Themes	**Codes**	**Final Themes**
Newness (27 themes)	Crt-New	Newness
New tutoring methods (5 themes)	Crt-N-T-Method	New Tutoring Methods
Practicality (6 themes)	Crt-Prac	Practicality
Natural / God-gifted Phenomenon (3 themes)	Crt-Nat-Phen	Natural / God-Gifted Phenomenon

4. Findings

The finding of this study were very consistent with the previous literature. The most astonishing result from this study was that creativity could not be singly defined; instead, it is a multifaceted concept that takes a variety of definitions. Finally, from this paper, four final themes were drawn: newness, new tutoring methods, practicality, and natural/God-gifted phenomenon that shaped the theory regarding definitions of creativity exclusively in Pakistani context. This theory is only contextualized in Pakistan and limited to Pakistani sample only which is grounded in the data and defined creativity as:

Creativity is a multifaceted natural/God-gifted concept that entails newness, new tutoring methods, and practicality in its core.Salient excerpts of the interviews are shown in table 4.

Table 4. Excerpts of Pakistani Secondary Science Teachers' Interviews

Themes	**Frequency**	**Example of Excerpt from Interview**
Newness	27	Creativity means (new) creation. It is important in every field. It means to create something new (Aiqaan, M).
New tutoring methods	05	In my opinion, creativity is an exploration of the mind, new teaching methods, and new ideas (Amara, F).
Practicality	06	Creativity means that students [……]should be able to apply chemistry in practical life. Students must use the knowledge of chemistry in the practical field (Alqaan, M).
Natural / God-gifted Phenomenon	03	Creativity is a natural phenomenon. For example, when a child is born, he initially starts playing with mud; he makes

	things and shapes from that mud, which is called creativity. It is a GOD gifted phenomenon by making new things from the old stuff (Amber, F).

4.1.Discussion

In this study, Pakistani secondary science teachers definedcreativity very explicitly. They defined creativity in terms of four final themes: newness, new tutoring methods, practicality, and natural/God-gifted phenomenon. The theory about the definitions of creativity was evolved exclusively in Pakistani context. Regarding the theme of newness, the current study's findings are consistent with the past literature from various perspectives(AlKhars, 2013; Cheng and Yeh, 2006; Forrester & Hui, 2007). The present study and past creativity studies are agreed upon the newness thatexplicity say that newness is the part of creativity. It means that Pakistani sample is well aware of this aspect of creativity (Cheng and Yeh, 2006; Forrester & Hui, 2007).

Undeniably, the crucial requirement of creativity is originality (Runco& Jaeger, 2012) as well. If something is not new or original, it is not creative (Runco& Jaeger, 2012). The past literature stated that originality is one of the core characteristics of creativity (Straus & Straus, 1968; Cropley, 2004; Mayer, 1999; Runco& Jaeger, 2012; Rubenson, 1991; Rubenson&Runco, 1992, 1995;Sternberg &Lubart, 1991) but originality is mostly labeled with novelty, new, novel, unusual, and unique ideas (Straus & Straus, 1968; Cropley, 2004; Mayer, 1999; Runco& Jaeger, 2012), which is shown by Pakistani teachers in this study as well.It means in this aspect of creativity as well, this study was congruent with past literature.So, it is stated that the Pakistani secondary science teachers were fully conscious of this aspect of creativity as they associated creativity with the newness, i.e., originality.

Mayer (1999) stated that another powerful characterization of creativity is usefulness. Several synonymous terms like practical, utility, valuable, adaptive, significant, appropriate, value, fitting, aptness, etc. (Mayer, 1999; Pope, 2005; Lumsden, 1999) comes under the category of practicality. In past literature, usefulness was also signified by other scholars (e.g., Dickhut, 2003). To represent the same connotation, practicality is also reported by the current study participants, which indicate the usefulness. So, it is stated that the Pakistani secondary science teachers were fully conscious of this aspect of creativity as well because they associated creativity with the practicality, i.e., usefulness.

Thus, this study contributes to the knowledge in three ways. In one way, it contributes in the area of research that this study is conducted in science which is the voice of secondary school science teachers and in second way, it is conducted in the context of Pakistan. Before it as mentioned in the rational part of this paper a limited amount of research studies were conducted solely on creativity in Pakistani context. Thirdly, since this study used the grounded theory method so a theory is shaped for the future researchers which can help them in various areas when they discuss and/ or write about creativity.

4.2.Conclusion

The most astonishing finding that came from this study was that creativity is a multifaceted concept rather than singly defined because Pakistani secondary science teachers defined creativity in terms of four themes rather than single theme. These four themes were newness,

new tutoring methods, practicality, and natural/God-gifted phenomenon. The Pakistani teachers in this study provided the two main attributes of creativity, which were newness and practicality, these two attributes, i.e., newness and practicality were used as originality and usefulness, respectively, in past creativity literature. This showed that Pakistani teachers were able to define creativity as both the definitionsoffered by participants were consistent with the past creativity literature. This kind of conceptualization of Pakistani secondary science teachers towards creativity is referred to as informed views towards creativitybecause it is supported in studies of past researchers (e.g., Chan & Yuen, 2015; Seo, Lee& Kim, 2005; Lee &Seo, 2006).

4.3.Limitations of Current Study and Suggestions for Future Researchers

This study is only limited to the Pakistani context in which the teachers were from the secondary science section only and furhertaught the science subjects only. Besides, this study was limited to 20 participants only, so the authors did not try to generalize the results (Chan & Yuen, 2015) on the whole population because this study is a small scale study which unfolds only one aspect of creativity i.e., the definition of creativity from the Pakistani perspective only. Next, a thoery about the definition of creativity which is grounded in this study is only limited to Pakistani context.

It is suggested that future researchers should explore the phenomenon of creativity on-a broader sample so that their results could be generalized to the population. Another limitation of the current study is that the current researchers only worked on the definitions of creativity, while the future researchers should explore the phenomenon of creativity as a whole in other perspectives as well. The current researchers used the qualitative method only while it is suggested that future researchers use more methods to explain the said phenomenon through various methods to cover the said limitations.

For this study,a large population was not possible due to various reasons like financial resources and limited time, but it is suggested to futre researchers that they should take these limitations in mind before embarking on this kind of research. Besides, the interview method can give detailed but subjective results because through interviews; the participants can provide their self-made definitions (Alsahou, 2015; Chan, 2015; Chan & Yuen 2015), so future researchers should use the other methods like questionnaires, classroom observations, group discussion and focus group interviews as well. The review studies and content analysis methods should also be used to gather the rigor results.

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