5-2012

Elementary Teachers' Perceptions of Their Teaching Practices to Foster Creative Thinking in Their Students

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Abstract

Divergent thinking is a 21st century skill that allows individuals to create innovative ways to alleviate some of the burdens on society by finding new solutions to old problems. However, creativity is often overlooked or ignored in the classroom environment because the rigid atmosphere of authority does not allow for the simultaneous use of multiple cognitive abilities. What can teachers do, or are they doing, to ensure that divergent thinking is fostered in their classrooms? Three surveys were administered to 32 elementary school teachers to determine if there is a disconnect between what teachers believe fosters creativity in relation to actual practices within the classroom. The first survey was paper based and the last two surveys were sent electronically to the respondents email address. The responses from the surveys indicate that teachers' personal beliefs, their knowledge of creativity, and their practices do not necessarily indicate that teachers are fostering creativity in their classes. While teacher's would like to do more lessons that promote divergent thinking and fostering creativity, standardized testing seems to limit their ability to implement this type of learning.

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Introduction

Creativity is a twenty-first century skill that needs to be taught and cultivated in public schools (Zarillo, 2012). The United States is continuously re-evaluating the educational standards that are expected of schools across the country (Fletcher, 2011). Trying to keep up in the world market will require highly intelligent individuals with enhanced divergent thinking skills (Zarillo, 2012). Divergent thinking must start in elementary school. All children are born with a yearning for knowledge through exploration and evaluation of the world around them. Infants are constantly using their senses to discover information about the objects in their surroundings (Woolfolk, 2009). This continues in elementary children as they gain information about their expanding environment. They are using divergent thinking skills to make sense of the things in their community that do not have straightforward simple explanations (Newton & Newton, 2010). One way this behavior can be seen is when children create stories to explain phenomena that do not make sense to them. But, the enhancement of the creative process can be halted if teachers do not foster this kind of exploration (Newton & Newton, 2010). Teachers who foster an appreciation for creativity and innovation can provide students the cutting edge in their future endeavors.

Definition of Terms

1. **Creativity-** Creativity is often defined as anything that goes beyond what is already known. It is the exploration and development of new ideas or ways of thinking. It is small or large successful steps into a new thought process or area of knowledge

(Torrance, 1977). Creativity is not equivalent to academic giftedness. It requires multiple cognitive abilities and personal characteristics, as well as, the appropriate motivation and an enriching environment (Fletcher, 2011). Creativity leads to new ideas that solve problems in innovative ways to ease the demands of society and help people take steps forward in a given knowledge area. A creative contribution is a decision that one makes when they have an idea that they believe will make a difference and be accepted by others (Newton & Newton, 2010).

2. **Teacher Perceptions-** Teacher perceptions are the individuals' views of an issue. Perceptions are the difference between teachers' beliefs about a topic and their actions in response to those beliefs. This difference will demonstrate their perception, or understanding, of what is happening within their classroom (Newton & Newton, 2010).
3. **M.A.T. Liaison-** Professors that work specifically within a certain school to accompany and assist the interns within that school are M.A.T. Liaisons. They work directly with the interns and teachers and connect what is happening in the individual elementary schools with what is happening at the University. They observe lessons being taught and are familiar with all of the various classrooms. M.A.T. Liaisons were used in this study as a direct connection to respondents as a way to distribute surveys to a convenience sample of participants.
4. **21st Century Skills-** The 21st century is a time of great technological growth and the skills needed to succeed in this time period are different than those needed in previous centuries. Students need a specific set of skills, including creativity, to be successful in the future career market (Fletcher, 2011). The world is rapidly changing and the educational system needs to be able to keep up with the change to ensure success for

students and for the nation. These skills need to be taught in education to enable students to have a successful future in a competitive global market (Fletcher, 2011). Twenty-first century skills include divergent thinking and problem solving, collaboration, adaptability, initiative, effective communication, accessing and analyzing information, and curiosity and imagination. The focus of these skills shifts from a testing emphasis to an emphasis on how students are learning, thinking, and working (Zarillo, 2012). All of these skills are important in today's world and will continue to grow in importance as the century progresses.

5. **Divergent Thinking-** Divergent thinking is not a synonym to creativity but it is a thought process that lends itself to creative thought. This process allows people to think outside the norm and create new solutions (Robinson, 2005). Divergent thinking is the process through which students arrive at unique and innovative ideas that do not necessarily correlate with the taught process within the classroom. Divergent thinking is an independent process within each individual student to arrive at the correct answer or a new answer using an approach nonconforming to his or her peers (Robinson, 2005).
6. **Google Docs-** The surveys in this study were administered through Google Docs. Google provides a complimentary service to their customer that allows them to create forms and documents online and share them with anyone who has access to the Internet. By creating a form the surveys were sent out to each of the respondents to be completed one time. The respondents cannot see one another's responses because the program automatically inputs the results into a spreadsheet for further data analysis.

Purpose of the Study

Teachers do not always define creativity in the same manner as researchers. Creativity in the classroom often has its own meaning (Newton & Newton, 2010). Often, teachers only look at creativity in writing and art and not as its own line of thinking and processing information (Bolden, Harries, & Newton, 2010). Educators often overlook the importance of creative thinking skills in everyday life, which can lead to diminishing its importance in the classroom. Divergent thinking skills can be fostered in all content areas and in various ways throughout the school day, especially during the elementary years (Newton & Newton, 2010). Today's world requires more divergent thinking skills than have been needed in the past. Many educators are not altering their teaching to match this need (Newton & Newton, 2010). Teachers often believe they are fostering creativity by allowing students to draw pictures and create projects on their own, but in reality, creativity is a line of thinking that requires a great deal of attention to develop to its full potential (Newton & Newton, 2010). The purpose of this research project was to examine the relationship between teachers' beliefs about the importance of creativity and how activities and the classroom environment promote divergent thinking skills. What do teachers believe creativity is? Do teachers value creativity in their classrooms? What can teachers do, or are they doing, to ensure that divergent thinking is fostered in their classrooms? The analysis of a teacher's beliefs about the topic and their ideas on how they are fostering creative skills in their classrooms should lead to an understanding of what needs to be done to incorporate these skills into classroom routines, and how those changes can be accomplished. Creative thinking skills are important for success. Not establishing innovative skills at the elementary level can damage a child's creative potential and hinder their success in future endeavors (Robinson, 2006). Learning tends to happen best in situational contexts, memorization of rote facts will bring about

minimal achievement in a constantly advancing world (Woolfolk, 2009). It is important for educators to ensure that divergent thinking skills are not lost in the curriculum. Often, it is creative people who will make large advances toward the betterment of society (Newton & Newton, 2010).

Review of Literature

The topic of creativity made its first appearance in the world of research in the 1960's. It was then that intelligence and creativity were linked and creative thinking began to make a broader impact on the classroom environment. Taylor's research created a multiple talents model of giftedness that emphasized creative thinking skills (as cited in Torrance, 1977). His model attempted to define the intellectual needs of someone within the "world-of-work". The groupings he identified included creative and productive talent, evaluative or decision-making ability, planning, forecasting, and communication skills (Torrance, 1977). He found that approximately 90% of people would score above average in at least one of these talent areas, enlarging the "gifted" group immensely. He also argued that all of these talents needed to be taught in schools and attention given to each category so that all students would have the opportunity for advancement.

Creativity is most commonly referred to in language and in the arts. However, research suggests that creative thinking is actually a combination of many skill sets, and therefore, people can be creative in different ways (Sternberg, 2006). Creative thinking involves sensitivity to problems, fluency, flexibility, originality, elaboration, and redefinition abilities. All of these abilities work together and create the creative thinking process in which a person finds a problem, produces a method to solve the problem, tests the possible solutions and redefines the situation with the new solution to the problem (Torrance, 1977). This process follows a very

natural pattern of tension reduction. The anxiety we feel when something is wrong drives a motivation to find a solution. People with higher-level divergent thinking skills are more capable of finding solutions that will produce the desired outcomes. While content knowledge is important in education and in life it is not the only element required for success. People need critical thinking and problem solving skills to reduce tension and find success (Ghysels, 2009).

Student Characteristics

Children have the ability to use creative thinking skills long before they enter the traditional school system. They mature over time just as other physical and intellectual abilities develop throughout childhood. All children are born with a creative capacity. They are constantly finding new ways to accomplish tasks in their everyday life, as well as creating stories and play environments to entertain themselves and others. Research has shown that the creative, imaginative abilities seen in childhood tend to reach their peak when a child reaches approximately four years of age (Torrance, 1977). This is shortly before children enter the traditional school system when a drastic drop in creativity is typically observed (Lau & Cheung, 2010). It was originally thought that the drop when a child enters school had biological roots, but research now suggests that it is a cultural cause that creates this decrease, such as pressure to conform (Torrance, 1977; Lau & Cheung, 2010). The school system seems to teach children to hide their creative abilities because these skills are often indirectly punished within or outside the classroom environment (Robinson, 2006). Educators often emphasize learning by authority and acceptance of information simply because it is taught. Children's ideas are often degraded by a teacher's criticisms or avoidance (Westby, 1995). This is why it is so important for teachers to show students that their ideas are valuable and to respect their thinking and questioning process.

Learning preferences also favor creative thinking abilities. The majority of people would much rather learn in creative ways, rather than learn through rote memorization. These methods would include experimenting, questioning, testing, manipulating, and exploring (Torrance, 1977). Research has shown that people tend to learn and retain more when learning through these methods that involve creative abilities (Torrance, 1977). Educational progress can be hindered when students are forced to learn by authoritarian methods, rather than using creative methods that promote choice (Fletcher 2011). Creative learning activities can also help educators diversify instruction and meet the needs of all students. Allowing students to learn through exploration can lead to a much more meaningful educational experience.

Teacher Perceptions

A series of studies completed by Westby and Dawson (1995) examined the correlations between teacher's opinions of students and the personality traits associated with creativity. Two studies were conducted in the series. In the first stage it was found there was a statistically significant positive correlation between the teachers' least favorite student and the creative prototype. However, previous research by Feldhusen and Treffinger (1977) stated that 95% of teachers agreed that class time should be spent on encouraging creative thinking. This paradox prompted the second stage in which teachers were asked to identify creative personality traits. The list compiled by the teachers, as those being characteristics considered creative, drastically differed from previous scientific research done on creative traits. When the ratings of the favorite and least favorite students completed by the teachers were tested against the teacher's own prototype, no correlation was found with either student's creativity prototype (Westby & Dawson, 1995).

There is a separation between what researchers have found regarding creativity and what teachers believe they do to promote creative thinking. Teachers could in fact be discouraging creativity because they find creative characteristics in children to be distracting and hard to manage (Fletcher, 2011). Teachers may be limiting creativity by the rigid environment they construct in the classroom (Westby & Dawson, 1995). The issue of diminishing creativity in the classroom could be from a lack of knowledge on the subject among educators.

Methods

Participants and Setting

A convenience sample of 32 elementary school teachers in Northwest Arkansas was surveyed for this study. To acquire a sample of 32 at least 60 teachers were asked to participate and participation was voluntary. The teachers surveyed were from various grade levels, including teachers in the gifted, special education, and ESL programs. The purpose of this study was to determine whether or not teachers' perceptions of creativity match their practices within the classroom.

Confidentiality

Written permission was obtained from the gifted and talented coordinator for the public school system before beginning this project. To maintain confidentiality with the individual participants in the study the actual letter of approval has not been included in this document. However, Appendix A shows a sample of the letter that was signed to grant permission for the start of the research process. The University of Arkansas Institutional Review Board granted permission to conduct the research necessary to complete this project and approved this study based on a proposal submitted in April 2011 (See Appendix B).

Participation in this survey series was voluntary, and informed consent (see Appendix C) was gained through the completion of the first survey. Respondents were informed that their answers would be used anonymously in this paper and throughout the research process. The results do not specifically identify any individual. The surveys were administered on the teachers' own time through the use of an online program, Google Docs, and sent through their email. Each individual response was gathered and recorded into a set of aggregated data. The information gained from these surveys has been used to analyze teachers' perceptions of their teaching practices to foster creativity in their students.

Demographics

All respondents were female, and the teachers were evenly distributed among the various grade levels kindergarten through 5th grade. However, the distribution of participants from each of the five schools was not evenly distributed, with the majority of the respondents being from only two of the five schools. Figures 1 and 2 display demographic data on the sample of respondents. The five schools were chosen based on convenience and the availability of a M.A.T. liaison to deliver the first round of surveys to the specific schools.

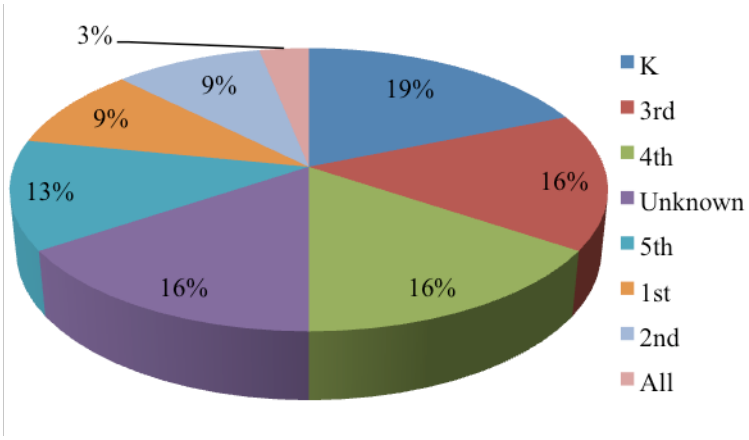

Figure 1. The percentage of respondents from each participating grade level.

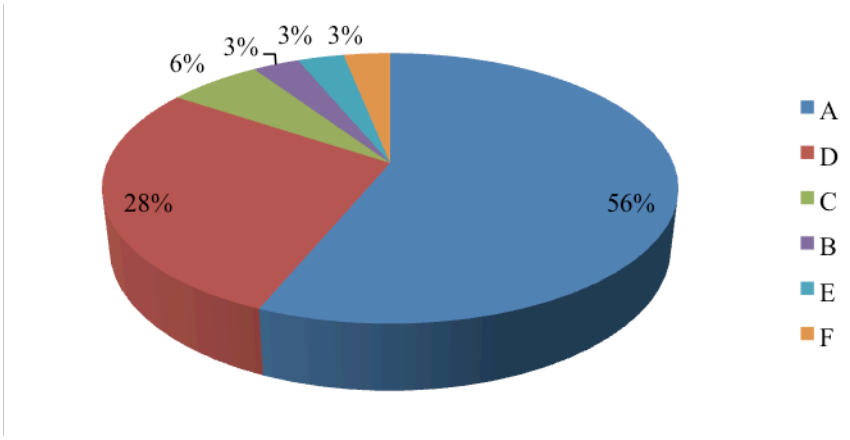

Figure 2. The percentage of respondents from each participating school.

Instrument

The research instrument used in this study was a series of three surveys created through extensive research on the activities and qualities that promote creative thinking (See Appendix D, E, and F). The first two surveys consisted of the same 22 activities/ideas. Each question was rated on a Likert-scale from zero to ten. The respondents were asked to mark their degree of agreement with each statement by selecting a number between 0-Never and 10- Always.

The first survey was designed to measure how often various activities occur within the classroom. There were an approximately even number of activities that helped and hindered creative thought included in the survey. The second survey was designed to measure, which activities teachers perceived as fostering creativity. The final survey was designed to measure individual teacher's beliefs about creativity in general, as well as, with children present in the classroom. It used a combination of Likert-scale questions and short answer spaces to leave comments and notes.

Procedure

The first survey provided a list of classroom activities that promote and hinder creativity and asked the teachers to rate the activities on a scale of 1-10 based on how often they perform

the activities in their classroom. To gather participant email addresses for future surveys the M.A.T. Liaisons distributed the first paper-based survey directly to the classroom teachers. The first survey was analyzed and results drawn based on the ratings given to the creativity promoting activities.

Surveys two and three were then delivered electronically through Google Docs to the email addresses provided by the respondents. The second survey used the same activities as the first survey however this time it asked teachers to rate the activities based on their belief of its potential to foster creativity. The results from survey two were compared to part one to examine the relationship between the teacher's beliefs about creative thinking and the amount of class time spent promoting novel thought.

Survey three incorporated a short survey asking teachers to give their opinions and their beliefs on creativity in their own classroom environments. This final survey provided a definition of creativity for each respondent's classroom based on the teacher's beliefs and classroom practices.

Based on the results a website was created, in the form of a wiki, as a resource to provide teachers with simple ways to promote divergent thinking within the school day and within lessons in various content areas. It also described small changes in attitudes and procedures that can make an impact on a child's creative thought process and promote learning for all students within the classroom. The teachers within the study were given access to the website and asked to implement one of the ideas within their own classroom on a volunteer basis and give their opinion or reflections on the success of the activity.

Results

Participation

Survey one was paper based and delivered to the respondents by the M.A.T. liaisons. Thirty-two teachers responded to the first survey regarding how often various activities occur in their classroom as seen in figure 3. The second and third surveys were delivered electronically through Google Docs. There was a 50% decrease in respondents between survey one and two, with 16 responses. An additional 25% decrease was seen from survey two to three, with 12 responses.

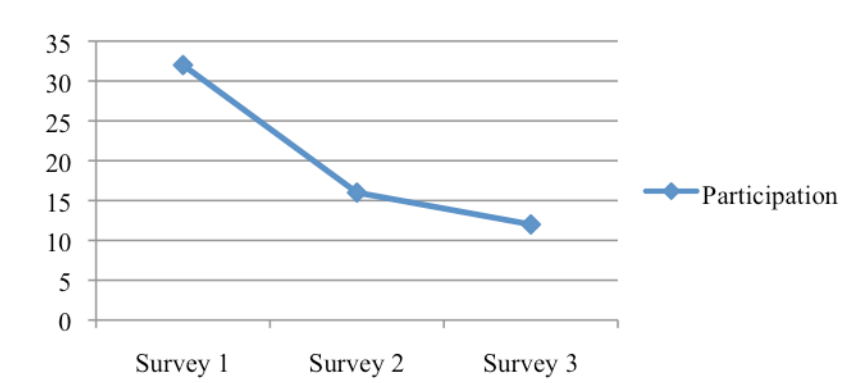

Figure 3. The frequency of respondents for each survey administered.

Data Analysis

For analysis the questions presented in surveys one and two were divided into two categories; those that foster creativity and those that do not. The participants did not know which questions fell into each category and the questions were in a random order on the survey to minimize bias. The responses from all three surveys were also separated into five categories strongly disagree (0-1), disagree (2-3), neutral (4-6), agree (7-8), and strongly agree (9-10).

The results from the first survey are displayed in tables 1 and 2. The frequency and percentage of responses that fell into each category are recorded as well as the mean response for

each question. Table 1 examines the questions that do foster creativity and table 2 addresses the questions that do not foster creativity. This survey examines whether or not each of the stated activities is occurring in the teachers' classrooms on a regular basis.

Table 1. Frequency and mean of responses for the occurrence of activities that do foster creativity in the classroom.

Question	SA	A	N	D	SD	Mean
Q1	1	20	9	2	0	6.71875
Percentage	3%	63%	28%	6%	0%	
Q2	16	13	3	0	0	8.21875
Percentage	50%	41%	9%	0%	0%	
Q3	3	4	12	5	8	4.0625
Percentage	9%	13%	38%	16%	25%	
Q5	1	8	18	5	0	5.46875
Percentage	3%	25%	56%	16%	0%	
Q7	1	11	17	2	1	5.84375
Percentage	3%	34%	53%	6%	3%	
Q10	19	12	1	0	0	8.71875
Percentage	59%	38%	3%	0%	0%	
Q12	4	19	8	1	0	6.96875
Percentage	13%	59%	25%	3%	0%	
Q14	29	3	0	0	0	9.71875
Percentage	91%	9%	0%	0%	0%	
Q16	11	9	7	4	1	6.8125
Percentage	34%	28%	22%	13%	3%	
Q17	11	15	6	0	0	7.9375
Percentage	34%	47%	19%	0%	0%	
Q18	14	14	4	0	0	8.21875
Percentage	44%	44%	13%	0%	0%	
Q20	6	15	11	0	0	6.90625
Percentage	19%	47%	34%	0%	0%	
Q21	5	17	8	2	0	6.875
Percentage	16%	53%	25%	6%	0%	

Note: SA= Strongly Agree, A= Agree, N= Neutral, D= Disagree, SD= Strongly Disagree

1. I involve multiple senses in my lessons.
2. I relate the content material in my class to real-world experiences.
3. Grades in my class are mostly based on the student having the correct answer not the correct process.
5. Friendly competition takes place in my classroom.
7. I allow children to choose their own projects for demonstrating their knowledge.
10. My students are comfortable asking questions and making mistakes.
12. I use activities that require my students to create a solution or idea.
14. I respect the ideas of all the children present in my classroom.
16. I use ungraded assignments to allow my students to practice new material.
17. I use visualization as a technique in my classroom.
18. I encourage independent learning.
20. I provide activities that allow my students to think backwards to solve a problem.
21. I use brainteasers, word problems, and puzzles in my classroom.

Table 2. Frequency and mean of responses for the occurrence of activities that do not foster creativity in the classroom.

Question	SA	A	N	D	SD	Mean
Q4	0	1	1	5	25	0.84375
Percentage	0%	3%	3%	16%	78%	
Q6	10	12	7	2	1	7.21875
Percentage	31%	38%	22%	6%	3%	
Q8	0	1	20	9	2	4.15625
Percentage	0%	3%	63%	28%	6%	
Q9	6	17	8	0	1	7.125
Percentage	19%	53%	25%	0%	3%	
Q11	0	2	15	10	5	3.6875
Percentage	0%	6%	47%	31%	16%	
Q13	1	5	24	2	0	5.4375
Percentage	3%	16%	75%	6%	0%	
Q15	3	8	15	4	2	5.375
Percentage	9%	25%	47%	13%	6%	
Q19	12	19	1	0	0	8.4375
Percentage	38%	59%	3%	0%	0%	
Q22	8	11	11	2	0	7.03125
Percentage	25%	34%	34%	6%	0%	

Note: SA= Strongly Agree, A= Agree, N= Neutral, D= Disagree, SD= Strongly Disagree

4. I keep my art materials (markers, glue, crayons, scissors, etc.) locked up and not available to the children.
6. I involve my students in a brainstorming process before starting a new project or concept.
8. I focus on topics in my classroom that the children already understand.
9. When grading student work I provide ample feedback along with the grade.
11. My students spend the majority of the day seated at their desks.
13. When I ask questions I am looking for the correct answer.
15. I show examples of someone else's work before beginning a new project.
19. I teach multiple ways of finding a solution to a problem.
22. I praise neatness and consistency.

Of the thirteen questions that posed activities that foster creativity only 5 (38%) of those were frequently occurring in the classrooms of the respondents. Questions 2, 10, 14, 17, and 18 had a mean of 7 or higher (see figure 4) demonstrating that the majority of teachers ranked this activity as agree or strongly agree. These five questions all involved instruction and teachers' views of the student and their ideas.

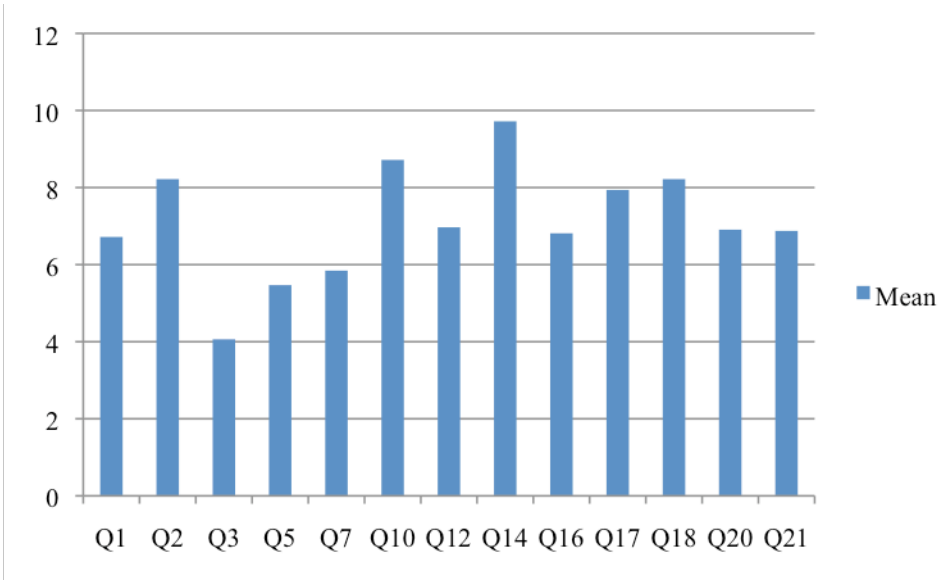

Figure 4. Mean response for the occurrence of activities that do foster creativity.

Nine questions suggested activities that do not foster creative thinking of those questions four (44%) of them were occurring often within the classrooms of the respondents. Questions 6, 9, 19, and 22 all received an average rating of 7 or higher as shown in figure 5. A greater percentage of the questions that provided examples of ways to not foster creativity received an average rating of 7 or higher indicating that these activities are just as prevalent, if not more prevalent, in the classrooms of the respondents.

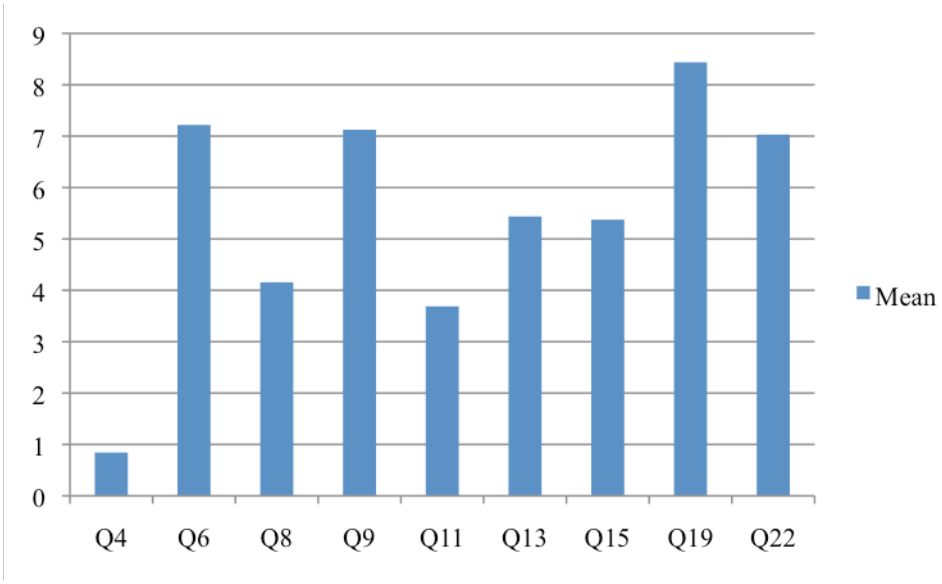

Figure 5. Mean response for the occurrence of activities that do not foster creativity.

The results from survey 2 are displayed in tables 3 and 4. The frequency and percentage of responses that fell into each category are recorded as well as the mean response for each question. Table 3 examines the questions that do foster creativity and table 4 addresses the questions that do not foster creativity. This survey asked teachers to rate the same statements as survey 1 based on if they believe the activities foster creativity in the classroom. The same categories for analyzing responses were used for this survey as were used in survey 1.

Table 3. Frequency and mean of responses for respondents' perceptions toward activities that do foster creativity.

Question	SA	A	N	D	SD	Mean
Q1	3	9	4	0	0	7.4375
Percentage	19%	56%	25%	0%	0%	
Q2	4	10	2	0	0	7.75
Percentage	25%	63%	13%	0%	0%	
Q3	2	3	7	2	2	5
Percentage	13%	19%	44%	13%	13%	
Q4	10	3	3	0	0	8.5
Percentage	63%	19%	19%	0%	0%	
Q5	0	11	5	0	0	6.75
Percentage	0%	69%	31%	0%	0%	
Q7	6	7	3	0	0	7.9375
Percentage	38%	44%	19%	0%	0%	
Q10	5	10	1	0	0	8
Percentage	31%	63%	6%	0%	0%	
Q12	5	5	6	0	0	7.5625
Percentage	31%	31%	38%	0%	0%	
Q14	9	7	0	0	0	8.9375
Percentage	56%	44%	0%	0%	0%	
Q16	3	8	3	1	1	7.125
Percentage	19%	50%	19%	6%	6%	
Q17	5	7	4	0	0	7.5
Percentage	31%	44%	25%	0%	0%	
Q18	4	9	3	0	0	7.5625
Percentage	25%	56%	19%	0%	0%	
Q20	3	7	4	2	0	6.8125
Percentage	19%	44%	25%	13%	0%	
Q21	4	5	6	1	0	7
Percentage	25%	31%	38%	6%	0%	

Note: SA= Strongly Agree, A= Agree, N= Neutral, D= Disagree, SD= Strongly Disagree

1. Use of multiple senses in a lesson
2. Relating content material to real-world experiences
3. Basing grades on the correct answer not the correct process
4. Keeping art materials available at the student's level throughout the day
5. Friendly competition
7. Providing multiple options for students to demonstrate their understanding of the material
10. Asking questions and making mistakes.
12. Creating new ideas and solutions to problems
14. Respecting and rewarding the ideas of others, including children
16. Providing ungraded practice problems
17. Using a visualization technique
18. Encouraging independent learning
20. Using activities that make children think backwards to find the solution
21. Using brainteasers, word problems, and puzzles

Table 4. Frequency and mean of responses for respondents' perceptions toward activities that do not foster creativity.

Question	SA	A	N	D	SD	Mean
Q6	5	8	3	0	0	7.6875
Percentage	31%	50%	19%	0%	0%	
Q8	2	5	7	2	0	6
Percentage	13%	31%	44%	13%	0%	
Q9	1	12	3	0	0	7.5
Percentage	6%	75%	19%	0%	0%	
Q11	0	0	10	5	1	3.8125
Percentage	0%	0%	63%	31%	6%	
Q13	0	1	7	5	3	3.6875
Percentage	0%	6%	44%	31%	19%	
Q15	0	8	4	4	0	5.6875
Percentage	0%	50%	25%	25%	0%	
Q19	6	7	3	0	0	7.9375
Percentage	38%	44%	19%	0%	0%	
Q22	1	2	10	3	0	5.1875
Percentage	6%	13%	63%	19%	0%	

Note: SA= Strongly Agree, A= Agree, N= Neutral, D= Disagree, SD= Strongly Disagree

6. Brainstorming before beginning a new project
8. Focusing on topics the children have previously learned or understand
9. Providing ample feedback along with a grade
11. Spending time doing seatwork
13. Asking questions with one specific answer in mind
15. Showing examples of previous work before starting a project
19. Teaching multiple ways to solve a problem
22. Praising neatness and consistency

Of the 14 questions that do foster creativity respondents believed that 11 of them (79%) did in fact foster creativity. Only questions 3, 5, and 20 had a mean of less than 7 (see figure 6) demonstrating that the majority of teachers have correct perceptions of creative activities. The three questions that did not have a high mean all involved the instructional process and activities within the classroom such as friendly competition and thinking backwards.

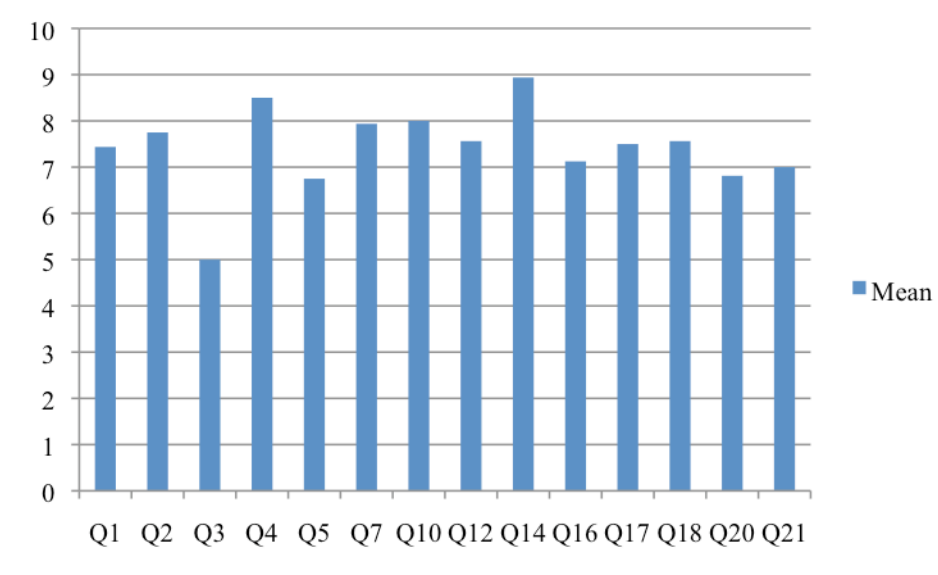

Figure 6. Mean response for respondents' perceptions toward activities that do foster creativity.

Eight questions suggested activities that do not foster creative thinking respondents rated three (38%) of them as fostering creativity with a mean score of 7 or higher. This included questions 6, 9, and 19 as shown in figure 7. Teachers believed that these three questions actually fostered creativity instead of hindering it.

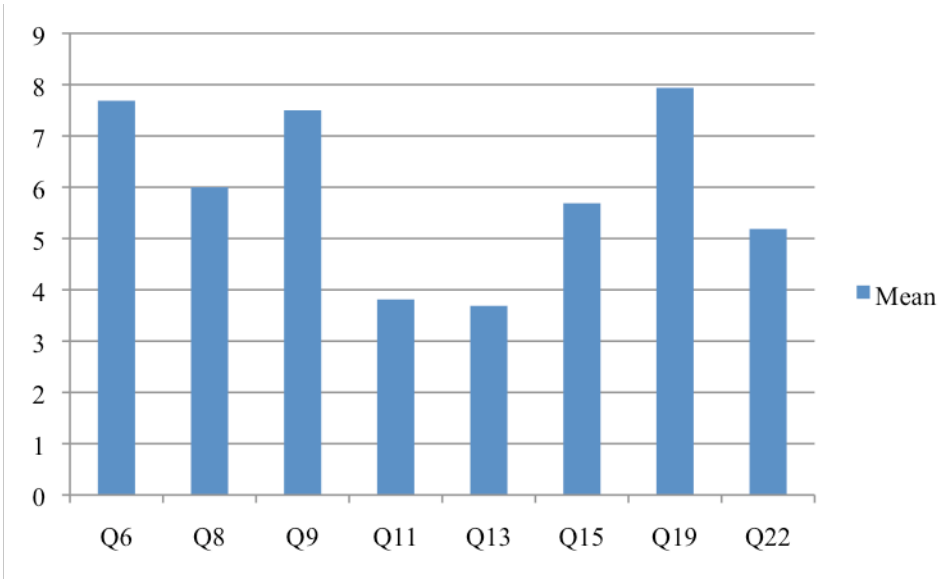

Figure 7. Mean response for respondents' perceptions toward activities that do not foster creativity.

Survey 3 examined teachers' perceptions of their own classrooms and their own practices. The frequency and percentage of responses are shown in table 5. The mean response is presented in the table as well as in figure 8. Questions 1 and 2 had a mean response of 7.167 and Questions 5 and 6 had a mean response above 8. A total of four out of the 6 questions (67%) received average ratings of 7 or higher demonstrating that teachers agree that they are fostering creativity in their own classrooms.

Table 5. Frequency and mean of responses for teachers' perceptions of their own classroom.

Question	SA	A	N	D	SD	Mean
Q1	2	6	4	0	0	7.166666667
Percentage	17%	50%	33%	0%	0%	
Q2	2	6	4	0	0	7.166666667
Percentage	17%	50%	33%	0%	0%	
Q3	3	2	6	1	0	6.416666667
Percentage	25%	17%	50%	8%	0%	
Q4	2	2	5	3	0	5.916666667
Percentage	17%	17%	42%	25%	0%	
Q5	6	6	0	0	0	8.833333333
Percentage	50%	50%	0%	0%	0%	
Q6	6	5	1	0	0	8.416666667
Percentage	50%	42%	8%	0%	0%	

Note: SA= Strongly Agree, A= Agree, N= Neutral, D= Disagree, SD= Strongly Disagree

1. My classroom environment is one that fosters creativity
2. I provide opportunities for creative behavior
3. I *plan* activities for the purpose of fostering creativity
4. I consider myself creative
5. I reward ideas as well as answers
6. I believe that every one of my students is creative

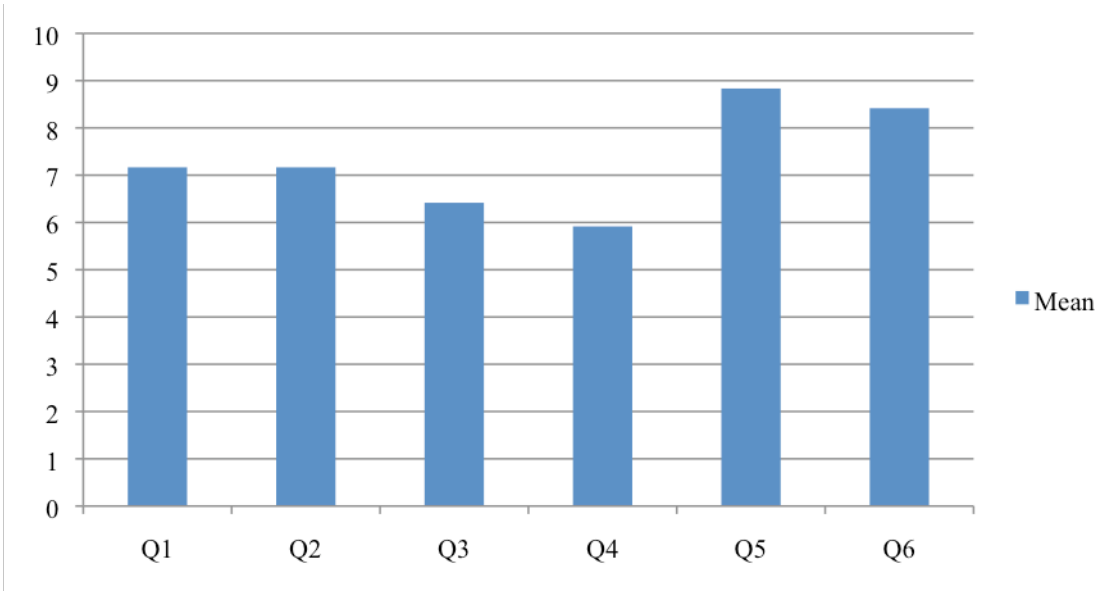

Figure 8. Mean response for teachers' perceptions of their own classroom.

Each question on survey 3 provided space for teacher comments to enhance the researcher's understanding of the participants' beliefs. Question 1 focused on the classroom environment being one that fosters creativity. As shown in figure 9 half of the responses fell into the agree category on question 1. The comments for question 1 frequently mentioned creativity in writing and providing opportunities for choice.

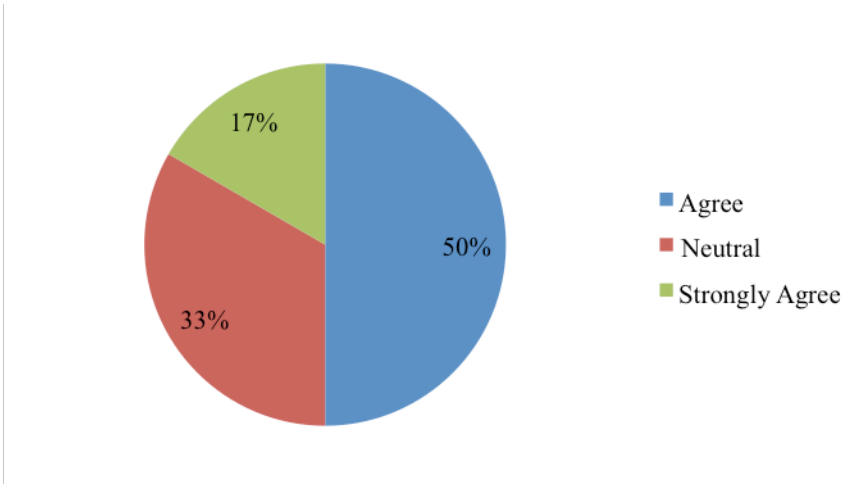

Figure 9. Percentage of respondents who believe their classroom environment fosters creativity.

Question 2 displayed a very similar distribution to question 1. Fifty percent of respondents agreed that they provided opportunities for creative behavior within their classroom activities as seen in figure 10. Respondents also indicated through their comments that writing was the easiest content area to integrate creative activities. Science and Social studies tend to have fewer opportunities due to the required curriculum.

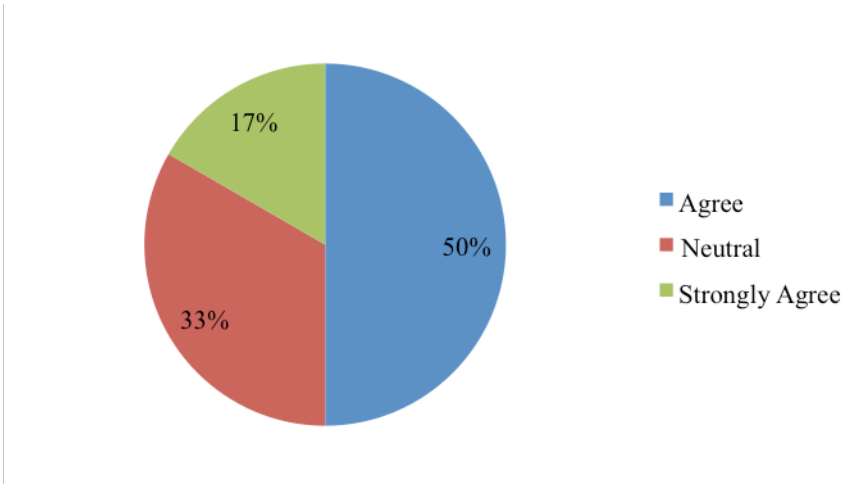

Figure 10. Percentage of respondents who believe they provide opportunities for creativity.

Question 3 received significantly more negative responses. The ratings given were neutral or below in 58% of the responses as shown in figure 11. This question asked teachers to reflect on whether or not they plan activities for the purpose of fostering creativity. The comments revealed that activities were planned for the purpose of content and assessing knowledge. It was also mentioned that many activities are required and there is no choice in the planning process.

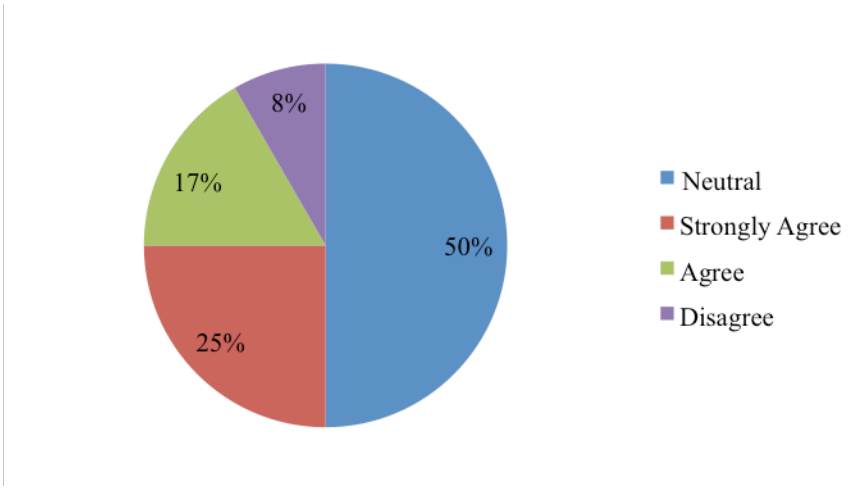

Figure 11. Percentage of respondents who believe they plan for the purpose of fostering creativity.

Two-thirds of respondents rated question 4 neutral or below as shown in Figure 12. Thirty-four percent of respondents agreed that they were creative. One of the respondent's comments referred to hobbies that foster creativity and another comment referred to spontaneity and flexibility as a creative trait.

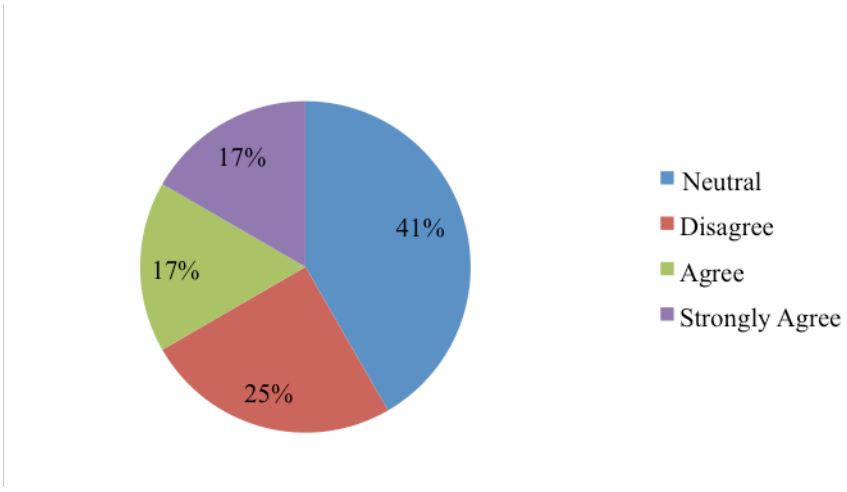

Figure 12. Percentage of respondents who believe they are creative.

One-hundred percent of respondents agreed or strongly agreed with question 5 as seen in figure 13. Participants believe they value all ideas as well as the answer itself. Comments on this question suggested that sometimes all they are looking for is ideas or that ideas can often be considered answers, even if it is not the correct one.

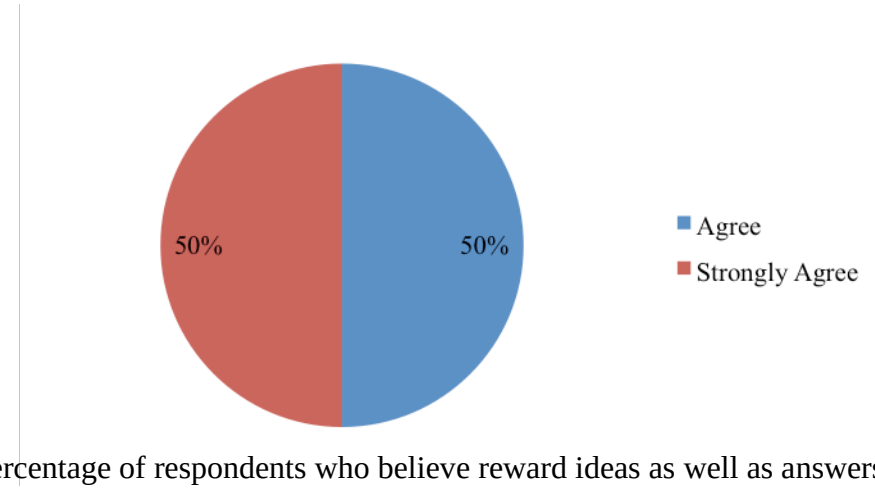

Figure 13. Percentage of respondents who believe reward ideas as well as answers.

Question 6 also received very high ratings as shown in figure 14 displaying that 92% of the respondents believe that every one of their students are creative. The comments revealed that teachers believe students are all creative but that they each student displays their creativity in different ways.

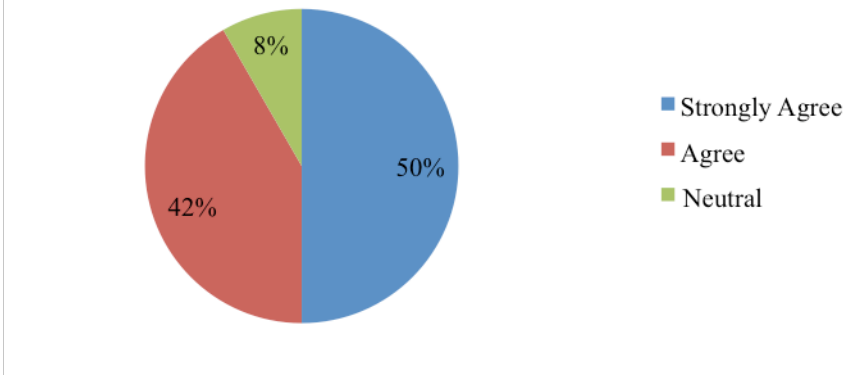

Figure 14. Percentage of respondents who believe all of their students are creative**.**

In summary the results show that teachers are able to recognize creative activities 79% of the time but they are only putting 38% of these activities into practice within their classrooms. Despite the low occurrence of creative activities in the classroom 67% of respondents felt as if their classroom was one that fosters creativity.

Discussion

Based on this research the perception of teachers in Northwest Arkansas is that creativity is important in the classroom however; their actions and their perceptions do not always align. In survey one the responses showed that creative practices are not happening frequently in the classroom. In fact, activities that hinder creativity are happening more often than those that foster divergent thinking. Many elements influence the amount of time that can be spent on creative thinking. Standardized testing, statewide curriculums, and school administrators all play a role in how teachers can spend their instructional time. Teachers need to be able to integrate lessons involving divergent thinking into the content learning goals to be able to spend adequate time providing children with the 21st century skills they will need for future success.

Survey 2 shows that teachers have a strong understanding of what activities do foster creativity. The respondents were able to correctly identify the creative activities on the survey 79% of the time. On the questions that addressed activities that do not foster creativity the respondents were in agreement 62% of the time. This research aimed to uncover a disconnect between knowledge and practice. It was found that teachers do have knowledge about creativity and its importance in the classroom it is just not being applied in their classroom practices. There seems to be little instructional time spent intentionally pursuing divergent thinking in daily classroom lessons and routines.

Question 14 displayed the highest mean in both surveys one and two showing that teachers are respecting the ideas of children and that they believe this helps foster their creativity. Teachers are aware that their attitude towards children's thinking and answers has an impact on the way that child will think in the future. Fostering a positive relationship with students and keeping the level of respect high will make students more comfortable exploring their thoughts and ideas within the classroom. Question 3 received the lowest mean rating in both surveys one and two displaying a misconception that teachers may hold. This question addresses grading only the correct answer and not the process. The emphasis on correct answers could be from pressure from administrators, due to standardized testing. No matter the reason teachers feel the need to grade only the correct answer. Creativity however, is found in the process and the way students arrive at those correct or incorrect answers. Question 22 also displayed interesting results. This question addressed praising neatness and consistency, which does not foster creative thinking. The mean score regarding this question was a 7 on survey one and a 5.2 on survey two. This indicates that teachers are neutral toward its ability to foster creativity but are often praising neatness and consistency in the classroom. Neatness and consistency do not always lend themselves to creativity. Thinking creatively involves taking risks and experimenting with new tasks without being aware of the outcomes or consistency in the results. Teachers tend to praise students who are neat because it makes grading and classroom management much easier. This can hinder the actions of the divergent thinker because their work often is more disorganized and chaotic as their thinking develops.

The responses to survey 3 demonstrate that the majority (67%) of teachers believe they are fostering creativity in their classrooms however, they indicated that there was room for improvement. Question 4 asked teachers to report on their own level of creativity and the

majority of teachers did not consider themselves to be creative. This question had a mean response of 5.9 which is much lower than the other questions on this survey. This data was unexpected. If teachers do not think that they are creative it will be increasingly more difficult for them to create lessons to foster creative thinking and teach the skills necessary for innovative thought. There were multiple comments regarding required activities and only being able to explore creativity in writing and math. Because of the curriculum standards and the set activities for each grade level to teach to these standards teachers are not able to plan activities that will foster divergent thinking in their students. One teacher made the comment that creativity never happens in her science and social studies curriculum. These two subject areas offer a wide variety of inquiry activities that require students to think innovatively and use their resources to arrive at an answer. Children are missing out on opportunities to develop their divergent thinking skills if we are not allowing them to explore their beliefs about social issues, scientific findings, and current events.

Conclusions

The strong focus on standardized testing and ensuring that all students have mastered the grade level content is taking the focus off their thinking processes and the ability for students to create innovative solutions to problems within their own lives and within the classroom. In general, teachers understood that creativity was an important skill in today's society and wanted to foster its growth in the classroom however; they did not feel that they were doing everything they could in the classroom to foster these skills. Teachers generally foster creativity through respecting ideas but not through the activities planned in their classrooms.

Limitations of this Research

Many factors need to be considered as the data from this research is interpreted. The first limitation is the sample size for this study. A larger sample size would need to be used to create a more even distribution of demographics and responses. This would also lead to more confidence in the results. There was difficulty getting in contact with the administration at various schools to be able to contact their instructors and conduct the research as planned. Changes were made to include an initial paper based survey to collect teacher emails. This caused the convenience sample to be smaller than originally expected, and led to the majority of respondents being from particular schools, due to the M.A.T. liaison's active involvement in the research process.

Another limitation is the drop rate in between surveys. When switching to electronic surveys half of all respondents dropped out of the research project. It was decided that Google Docs would be used for the convenience of both the respondent and the researcher as technology plays an integral role in both positions. The surveys were sent in a timely manner and reminders were included a few days after the delivery of the surveys. Participation was a large challenge throughout the process from both administrators and teachers.

There have been no tests to ensure that the surveys used to administer this research are valid and reliable if used with a different sample or population. Participation in the survey series was voluntary and based on self-refection from each individual teacher within the school system. Generalizations cannot be drawn to make conclusions about any one school or school district. Since no other data was collected outside of the survey measures we must consider possible bias when interpreting the results due to self-report.

Implications

These results suggest that teachers have a strong understanding of creativity and its importance within the classroom however; it appears that some of the participants may hold misconceptions on the practices that foster creativity. Teachers seem to need more information on how to practically involve creative lessons within the school's chosen curriculum. This research suggests that the emphasis on standardized testing and high scores has taken the focus off thinking skills and onto the content standards. Teachers need practice and instruction on how to integrate both the content standards and creative thinking skills to ensure the most potential for the future success of their students. This research demonstrates that respondents believe that creativity it is an important skill for the future, but they are unsure how to incorporate creativity into their classrooms, especially while maintaining success toward the content standards and required activities provided by the curriculum.

Recommendations for Future Research

In future research on this topic, a larger more representative sample should be collected. Data should come from multiple schools, grade levels, and districts in a geographical area that might be used to generalize the data to a larger population This sample only considers teachers in Northwest Arkansas, however a larger sample including multiple regions could show a difference in beliefs by region or a more general consensus of creativity in the classroom.

There is no significant positive connection between what teachers believe is creative and what actions are happening in their classrooms based on this data. It would be interesting to involve the use of case studies within particular classrooms or other observational data to supplement the findings of the survey results. The responses to the surveys were based on self-reflection, therefore adding an observational element would provide an outside perspective of

what is truly happening in the classroom. Data could also be collected before and after teaching a lesson that fostered divergent thinking to examine how practicing this process increases student success.

If this same study were repeated, fewer questions could be used in the individual surveys. The large amount of items on the survey may have caused the respondents to cease participation in the subsequent surveys due to completion time. It is important to include activities under the categories, 'fostering' and 'hindering' creativity. However, fewer items could be listed under each category. Many of the teachers on survey three did not provide any comments. Perhaps fewer questions may have allowed teachers to take the time to include more detailed comments.

It would be interesting to gather data from administrators to examine their perceptions on creativity and how they are encouraging their teachers to foster such an important 21st century skill. These surveys might also examine the amount of in service hours that address creative practices and unique ways to approach content instruction. The educational background of both the teachers and the administrators could also have a large impact on the data collected based on whether or not they have had any specific training for fostering creativity in the classroom.

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Appendix A: Letter of Approval

October 21, 2011

To Whom It May Concern:

I am aware that Jessica Roy is conducting a study entitled " Elementary Teachers' Perceptions of Their Teaching Practice to Foster Creative Thinking in Their Students" through the gifted and talented program. Dr. Marcia Imbeau, the University of Arkansas professor, has approved this study. Jessica Roy has my permission to conduct this study pending approval of the University of Arkansas Institutional Review Board Committee.

Sincerely,

Director Gifted and Talented

Appendix B: IRB Consent

UNIVERSITY OF ARKANSAS

Office of Research Compliance
Institutional Review Board

November 28, 2011

MEMORANDUM

TO:	Jessica Roy Vinson Carter
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	11-11-220
Protocol Title:	*Elementary Teachers' Perceptions of Their Teaching Practice to Foster Creative Thinking in Their Students*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 11/28/2011 Expiration Date: 11/27/2012

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 60 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.

Appendix C: Informed Consent

Title: Elementary Teachers' Perceptions of Their Teaching Practice to Foster Creative Thinking in Their Students

Researcher:
Jessica Roy, Undergraduate Student
Vinson Carter, Faculty Advisor
University of Arkansas
College of Education and Health Professions
Department of Curriculum and Instruction
Stone House, F 08
Fayetteville, AR 72701
(479) 575- 3076

Administrator:
Ro Windwalker, Compliance Officer
Research and Sponsored Programs
Research Compliance
University of Arkansas
210 Administration Building
Fayetteville, AR 72701
(479) 575-2208
irb@uark.edu

Description: The purpose of this research is to examine the relationship between teachers' beliefs about the importance of creativity and how activities and the classroom environment promote divergent thinking skills. You will be sent a series of 3 surveys. The first survey will be paper based followed by two electronic surveys that will be sent to you through your email. Survey 1 will ask you to rate on a scale of 0-10 how often the statements occur within your classroom. Survey 2 will ask you to rate on a scale of 0-10 on how well you believe the statements foster creativity. The third survey will be sent upon completion of the first two and will ask about your beliefs on creativity in your classroom. After the surveys have been completed you will be given access to a website that will give examples and information of best practices and activities involving divergent thinking skills.

Risks and Benefits: The benefits of this research include contributing to the knowledge base of creativity in the classroom environment as well as providing a resource for teachers to implement creativity into their everyday classroom environment. Minimal risk is associated with participation in this study.

Voluntary Participation: This study will rely on your voluntary participation with no penalty for opting not to participate.

Confidentiality: The data will be collected through a secure website with the use of surveys. Personal information, including the name of the participant, as well as specific survey answers will not be used in any publications resulting from the research. All information will be kept confidential to the extent allowed by law and University policy.

Right to Withdraw: You are free to withdraw or decide not to participate at any time during the research process with absolutely no penalty to you.

Informed Consent: **To be completed by the teacher:**

I, _____, have read the description, including the purpose of the study,
(please print)
the procedures, risks and benefits, confidentiality statement, and the option to withdraw at any time, and I believe I understand what is involved. My signature indicates that I voluntarily agree to participate in this research and that I have received a copy of this agreement from the researcher.

_____ _____
Signature Date

Appendix D: Survey 1

Survey 1: Please rate the following activities on a scale from 0 to 10 as to how often they occur within your classroom, with 0 meaning never and 10 being always.

I involve multiple senses in my lessons.
0 1 2 3 4 5 6 7 8 9 10

I relate the content material in my class to real world experiences.
0 1 2 3 4 5 6 7 8 9 10

I give points based on the student having the correct answer to a problem.
0 1 2 3 4 5 6 7 8 9 10

I keep my art materials (markers, glue, crayons, ect) locked up not available to the children.
0 1 2 3 4 5 6 7 8 9 10

Friendly competition takes place in my classroom.
0 1 2 3 4 5 6 7 8 9 10

I involve my students in a brainstorming process before starting a new project or concept.
0 1 2 3 4 5 6 7 8 9 10

I allow children to choose their own projects for demonstrating their knowledge.
0 1 2 3 4 5 6 7 8 9 10

I focus on topics in my classroom that the children already understand.
0 1 2 3 4 5 6 7 8 9 10

When grading student work I provide ample feedback along with the grade.
0 1 2 3 4 5 6 7 8 9 10

My student's are comfortable asking questions and making mistakes.
0 1 2 3 4 5 6 7 8 9 10

My student's spend the majority of the day seated at their desks.
0 1 2 3 4 5 6 7 8 9 10

I use activities that require my students to create a solution or idea.
0 1 2 3 4 5 6 7 8 9 10

When I ask questions I am looking for the correct answer.
0 1 2 3 4 5 6 7 8 9 10

I respect the ideas of all the children present in my classroom.
0 1 2 3 4 5 6 7 8 9 10

I show examples of someone else's work before beginning a new project.
0 1 2 3 4 5 6 7 8 9 10

I use ungraded assignments to allow my student's to practice new material.
0 1 2 3 4 5 6 7 8 9 10

I use visualization as a technique in my classroom.
0 1 2 3 4 5 6 7 8 9 10

I encourage independent learning.
0 1 2 3 4 5 6 7 8 9 10

I teach multiple ways of finding a problem.
0 1 2 3 4 5 6 7 8 9 10

I provide activities that allow my students to think backwards to solve a problem.
0 1 2 3 4 5 6 7 8 9 10

I use brainteasers, word problems, and puzzles in my classroom.
0 1 2 3 4 5 6 7 8 9 10

I praise neatness and consistency
0 1 2 3 4 5 6 7 8 9 10

Appendix E: Survey 2

Survey 2: Please rate the following activities on a scale from 0 to 10 as to how well you believe they foster creativity, with 0 meaning the activity never fosters creativity and 10 meaning always.

Use of multiple senses in a lesson
0 1 2 3 4 5 6 7 8 9 10

Relating content material to real-world experiences
0 1 2 3 4 5 6 7 8 9 10

Basing grades on the answer not the process
0 1 2 3 4 5 6 7 8 9 10

Keeping art materials available at the student's level throughout the day
0 1 2 3 4 5 6 7 8 9 10

Friendly competition
0 1 2 3 4 5 6 7 8 9 10

Brainstorming before beginning a project
0 1 2 3 4 5 6 7 8 9 10

Providing multiple options for students to demonstrate understanding of the material
0 1 2 3 4 5 6 7 8 9 10

Focusing on topics the children have previously learned or understand
0 1 2 3 4 5 6 7 8 9 10

Providing ample feedback along with a grade
0 1 2 3 4 5 6 7 8 9 10

Asking questions and making mistakes
0 1 2 3 4 5 6 7 8 9 10

Spending time doing seatwork
0 1 2 3 4 5 6 7 8 9 10

Creating new ideas and solutions to problems
0 1 2 3 4 5 6 7 8 9 10

Asking questions with one specific answer in mind
0 1 2 3 4 5 6 7 8 9 10

Respecting and rewarding the ideas of others, including children
0 1 2 3 4 5 6 7 8 9 10

Showing examples of previous work before starting a project
0 1 2 3 4 5 6 7 8 9 10

Providing ungraded practice problems
0 1 2 3 4 5 6 7 8 9 10

Using a visualization technique
0 1 2 3 4 5 6 7 8 9 10

Encouraging independent learning
0 1 2 3 4 5 6 7 8 9 10

Teaching multiple ways to solve a problem
0 1 2 3 4 5 6 7 8 9 10

Using activities that make children think backwards to find the solution
0 1 2 3 4 5 6 7 8 9 10

Using brainteasers, word problems, and puzzles
0 1 2 3 4 5 6 7 8 9 10

Praising neatness and consistency
0 1 2 3 4 5 6 7 8 9 10

Appendix F: Survey 3

Survey 3: Please rate the following activities on a scale from 0 to 10 as your beliefs of the topic, with 0 meaning strongly disagree and 10 meaning strongly agree. In the comments area please explain your answer and give examples when possible.

My classroom environment is one that fosters creativity.

0 1 2 3 4 5 6 7 8 9 10

Comments:

I provide opportunities for creative behavior.

0 1 2 3 4 5 6 7 8 9 10

Comments:

I *plan* activities for the purpose of fostering creativity.

0 1 2 3 4 5 6 7 8 9 10

Comments:

I consider myself creative.

0 1 2 3 4 5 6 7 8 9 10

Comments:

I reward ideas as well as answers.

0 1 2 3 4 5 6 7 8 9 10

Comments.

I believe that every one of my students is creative.

0 1 2 3 4 5 6 7 8 9 10

Comments:

Additional comments about creativity in your classroom: