Relationship between Divergent Creative thinking, Interpersonal Intelligence and Academic Performance of Students in Federal Polytechnic Nasarawa, Nasarawa State

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Abstract
This research work investigated the relationship between divergent creative thinking, interpersonal intelligence and academic performance of students in Federal Polytechnic Nasarawa, Nasarawa State. Specific objectives were to; examine the relationship between divergent creative thinking and academic performance of students, find out the relationship between interpersonal intelligence and academic performance of students, ascertain relationship between divergent creative thinking, interpersonal intelligence and academic performance of students. These were translated into research questions and hypotheses. The study adopted descriptive survey research design. The population of this study comprised of 10,500 students in Federal polytechnic Nasarawa. The sample for the study was made up of 380 students. Simple random sampling technique was used. The instruments used were constructed by the researcher with indices of 0.82 and 0.79 for divergent creative thinking and interpersonal intelligence. Mean and standard deviation was used in answering research questions framed for the study. Pearson’s Product Moment Correlation was used to test formulated null hypotheses using Statistical Package for Social Sciences (SPSS). The results showed that divergent creative thinking and interpersonal intelligence has a significant relationship on students’ academic performance. The study concluded that divergent creative thinking has a high relationship on students’ academic performance. The study equally recommended that Teachers should engage the students in divergent creative thinking to enable the students inter relate in order to achieve higher results.

Keywords: Divergent Creative thinking, Interpersonal Intelligence, Academic Achievement

Introduction
Nowadays, education plays an important role in the success of students. According to Fathei (2006), each student has his own educational needs which are essential to be completed to achieve academic excellence. The academic performance distinguishes between students and determines their accomplishment in their future work. Of all human existence and daily activities, creativity seems contiguous to provide the accomplishment one hope to get in lives. People face new changes in all aspects of life and creativity is not only a means for adapting with changes but also a stimulus for producing knowledge in different fields of study. Every individual is a unique creation; thereby individuals differ in their creative abilities. Some individual possess high creative talents and diverges always to move the world ahead by their discoveries and invention in the fields of Art, Literature, Science, Business, teaching and other fields of human endeavor. They are responsible for coming up with new ideas and bringing about social and cultural change (Mihaly, 2010). Good education should aim at nurturing, stimulation and promoting creative skills that would provide quality opportunity for creative thinking and expression, proper care stimulation and sharpen individual’s creative mind. Creativity as one of the key factor in academic performance required especial attention and nurturing. Creativity is the fountainhead of civilizations and a defining characteristic of students performance as well as what makes us human. But for all its prominence at the apex of human mental faculties, one knows next to nothing about the cognitive and neural mechanisms that generate creative ideas (Dietrich, 2015). Creativity is a phenomenon whereby something new and somehow valuable is formed. The item formed may be intangible such as an idea, a scientific theory, a musical composition,
or a joke, or a physical object (such as an invention, a literary work or a painting). However, the consensus in the definition of creativity is anchored on different perspectives as to what constitute creative performance or as to who the creative are. However, Guilford (1967) categorized creativity into two namely; convergent and divergent creativity. This paper would have its weight on divergent thinking. Divergent thinking appears to be the most influential construct. Guilford, defined divergent thinking as the ability to generate multiple solutions to an open-ended problem (Guilford, 1967). The obvious question arises of what, exactly, is creative about divergent thinking? The answer maybe divergent thinking is capable of identifying the processes that turn normal thinking into creative thinking. Divergent thinking is still a compound construct consisting of many different and separate mental processes (Ward et al., 1999).

Divergent thinking received widespread practice of overselling the findings paradigm as discoveries about the whole of creativity, in the scientific literature and in the media (Dietrich, 2015). What is needed, however, is to understand the concept of divergent thinking itself in terms of these individual processes so that the experimental methodology producing the discoveries in the first place is conceptually grounded. The whole rationale of neuroimaging studies rests on the assumption that creativity, or divergent thinking, is a discrete thing in the brain and that that thing is detectable by neuroimaging tools. The tacit assumption here is that there is such a thing as ‘normal’ thinking to which an extra something – the creative bit – is specifically added to make the sparkling difference. Divergent thinking could be compared to what Guilford called lateral thinking, a process that involves thinking around a central problem, giving more than one possible solution.

When students diverge in thinking they generate creative ideas by exploring many possible solutions to a giving problem. Divergent thinking typically occurs in a spontaneous, free-flowing, "non-linear" manner, such that many ideas are generated in an emergent cognitive fashion. Many possible solutions are explored in a short amount of time, and unexpected connections are drawn. After the process of divergent thinking has been completed, ideas and information are organized and structured using convergent thinking (Stanley, 2017).

According to Akinboye (2003), without creativity, a person is notable to access the fullness of information and resources available but is locked up in old habits, structures, patterns, concepts and perceptions. This is why creativity, generative perception, constructive and design thinking plus innovation should form the basis of any education for sustainable development. Is creative intelligence influence to academic achievement? Intelligence is the general cognitive problem-solving skills. Intelligence is the chatters of recombining ones behavior pattern so as to act better in a novel situation. Intelligence is the ability to think, to learn from experience, to solve problems, and to adapt to new situations. Psychologists believe that there is a construct, known as general intelligence (g) that accounts for the overall differences in intelligence among people.

According to Shuaibu, (2018), intelligence is the capacity to acquire and to apply knowledge conventionally. Individuals are required to meet the requisite level intelligence in order to gain a certain level of education/work, which then in turn offers the opportunity to be creative. The main emphasis in a definition of intelligence, then, is that it is not a cognitive or mental process per se but rather a selective combination of these processes that is purposively directed toward effective adaptation. Many theories have been developed to explain what intelligence is and how it works. There’s Sternberg’s triarchic theory of intelligence that focuses on analytical, creative, interpersonal, intra-personal and practical intelligence.

Interpersonal intelligence is the ability to understand and interact effectively with others. It involves effective verbal and nonverbal communication, the ability to note distinctions among others, sensitivity to the moods and temperaments of others, and the ability to entertain multiple perspectives. Teachers, social workers, actors, and politicians all exhibits interpersonal intelligence to reach their set goals. Students with this kind of intelligence seem to be leaders among their peers, are good at communicating, and seem to understand others’ feelings and motives. Does student have a natural ability to get on well with one another? Are student good at reading themselves and social situations? If this is the case, chances are that they have a high level of interpersonal intelligence. Student with this type of intelligence tends to be good at reading verbal and non-verbal cues as well as determining temperament and mood one another. They feel
empathy easily. Often this type of intelligence can be found in leaders, politicians, social workers, life coaches and psychologists.

The performance of Federal polytechnic students in overall semester results 2018 - 2019 was discovered to be generally below average. Academic performance, which is referred to by some scholars (Ganai, & Mir, 2013) as excellence in all academic disciplines, behavior, confidence, communication skills, culture, arts, etc. In line with this definition, Mehta (2016) posited that academic performance which includes both curricular and co-curricular performance of the students. The disappearance of academic excellence in Federal polytechnic in the last two decades, as evident in the yearly results is quiet below average performance of thousands of students in their final year examinations conducted by the Polytechnic.

The rate of poor academic performance among students in Federal polytechnic is alarming and has been an issue of great concern to all stakeholders. Certain factors appear to be responsible for student’s poor performance. Some have their traces to parents, through the background of the students, to the school environment and students creative skills. By school environment, it is implied the whole academic system which is established for the purpose of teaching and learning. This comprises mainly, but not limited to, classrooms, libraries, technical workshops, laboratories, teachers’ quality, school management, teaching methods, teaching aids, peers, etc (Omotere 2013).

The observable decline in the academic performance of students in Federal Polytechnic may be said to be a reflection of the institutional, instructional and structural qualities of Nigerian schools in terms of ineffectiveness of teachers in the classroom with regard to interaction with students, infrastructural faults and inadequacies as well as the nature and state of facilities. Researchers such as Yoloye (2004) and Adeyemo (2005) who have interrogated the issue of poor academic performance in Nigeria opined that academic performance among Federal polytechnic students may be adducible to several pedagogical and socio-psychological factors. Relevant to this study are the pedagogical factors which have been identified as the use of outdated teaching practices and instructional methods/teaching strategies and material/facilities which may be less learner-friendly considering the technological realities of the day. The degree to which learning could be enhanced is largely dependent on availability and proper utilization of up-to-date infrastructure and accessories. Thus, it is believed that a well-planned school system would enhance expected educational outcomes towards the facilitation of social, political and economic emancipation, as well as effective teaching/learning process and academic performance of students. That is to say something has to be added to arouse the interest and encourage the learner. In education teachers tends to appreciate the fact that intelligence is one major and probably the single variable with its resultant effects on schooling the quality of behavior called intelligence. For instance, an intelligent student is a student who has the ability or capacity to retain knowledge and strictly adhered to teacher’s “facts”. Intelligent students appear to be smart because they don’t diverge from what is being taught. They converge and perform within an existing knowledge.

Students’ varied in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought. Intelligence in male and female appears to be unequal. The differences might be related to specific abilities or specific traits. Males on the average show superiority over females in the ability to reason and to detect similarities in certain aspect of general information. Females on the average tend to show some superiority in memory, language and aesthetic comparisons. Although these individual variations can be substantial, they are never entirely consistent: a given person's intellectual performance will vary on different occasions, in different domains, as judged by different criteria Shuaibu (2000).

Chandrasekhar and Kappagoda (2019) conducted a study on the impact of creativity towards the performance of the undergraduates in Rajarata University of Sri Lanka. The purpose of this study was to investigate the impact of Creativity on the Performance of the Undergraduates in Rajarata University of Sri Lanka. Creativity was considered as the independent variable and the performance of the undergraduates was considered as the dependent variable. Researcher used eight creative talents which includes in the model developed by Lynn e C. Levesque as the independent variables. The sample was 100 which selected from two faculties in the university including 4th year undergraduates. A questionnaire was used to collect the data from the undergraduates. Respondents were asked to
The results indicated that the Creativity and the performance of the Rajarata University undergraduates were in moderate level. The Creativity and the performance of the Rajarata University undergraduates have not been changed according to the gender, faculties, and District. The results of correlation analysis illustrated that the undergraduate students Creativity was positively and significantly correlated with the performance of the undergraduates. A weak positive and significant relationship was found between Navigator, Visionary creative talents and the performance of the undergraduates. A Strong positive and significant relationship was found between Adventure, Pilot, Inventor, Poet creative talents and the performance of the undergraduates. The Explorer and Harmonizer creative talents were not significantly correlated with the performance of the undergraduates. Kpolovie (2016) study investigated the relationships between intelligence and academic achievement in Mathematics and English Language over a period of four years in Nigeria. With longitudinal survey design of survey research method. A random sample of 637 Junior Secondary III students, aged 14 years, was drawn and followed till the end of their Senior Secondary III at the age of 17. Their Mathematics and English Language academic achievement were validly measured with Junior Secondary Certificate Examination (JSCE) scores and Senior Secondary Certificate Examination (SSCE) scores. Their IQ was validly and reliably measured with Culture Fair Intelligence Test that has been validated and standardized for use in Nigeria. Data were collected during the students’ 2011/2012 JSCE and 2014/2015 SSCE. The IQ and JSCE as well as SSCE scores were subjected to partial correlation analysis at 0.05 alpha, using SPSS Version 22. Results showed statistically significant relationship between IQ and Mathematics achievement (0.499 and 0.495) when English Language is partially out; and between IQ and English Language achievement (0.411 and 0.346) when Mathematics is partialled out; respectively across the junior and senior secondary levels of schooling. Results, among others, further indicated overwhelming evidence of stability of intelligence (0.702) with the four-year time interval in super

corroboration of fluid and crystallized theory of intelligence. Coefficient of partial determination unveiled that IQ accounts for 24.90% to 24.50% of the variance in Mathematics achievement, and 16.89% to 11.97% of the variance in English Language achievement. Marita (1991) investigated the Influence of Creativity and Intelligence on academic performance. Descriptive survey research design was adopted for the study. A sample of 210 female adolescents was used. Mean and standard deviation was used to answer the research questions framed while Pearson’s product moment correlation was used to test the hypothesis. Findings of this study showed that subjects who achieved in English were more likely to score high on tests of creative thinking and obtain high intelligence quotient (IQ) scores. Achievement in mathematics and art were not as highly correlated with creative thinking but were related to high IQ scores. It is against this background that the present study is design to examine the influence of Divergent creative thinking and interpersonal intelligence on academic performance of students in Federal Polytechnic Nasarawa, Nasarawa state.

**Objective of the Study**
1. To ascertain the relationship between divergent creative thinking and academic performance of students in Federal Polytechnic Nasarawa
2. To find out the relationship between interpersonal intelligence and academic performance of students in Federal Polytechnic, Nasarawa
3. To investigate the relationship between divergent creative thinking, interpersonal intelligence and academic performance of students in Federal Polytechnic, Nasarawa

**Research Questions**
1. What is the extent of the relationship between divergent creative thinking and academic performance of students in Federal Polytechnic Nasarawa
2. What is the extent of the relationship between interpersonal intelligence and academic performance of students in Federal Polytechnic, Nasarawa
3. What is the extent of the relationship between divergent creative thinking, interpersonal intelligence and academic performance of students in Federal Polytechnic, Nasarawa

**Hypotheses**
1. There is no significant relationship between divergent creative thinking and academic performance of students in Federal Polytechnic Nasarawa
2. There is no significant relationship between interpersonal intelligence and academic performance of students in Federal Polytechnic, Nasarawa

3. There is no significant relationship between divergent creative thinking, interpersonal intelligence and academic performance of students in Federal Polytechnic, Nasarawa

**Methodology**

The study adopted descriptive survey research design. The method permits researchers to sample opinions from a large population which will serve as the representative of the entire group. Descriptive Survey research is a data collection technique in which information is gathered from respondents (Otuka, & Bamidele, 2004). The design was considered suitable because it assisted in collecting data to investigating influence of creativity and intelligence on students’ academic performance in Federal Polytechnic Nasarawa, Nasarawa State. The population of this study comprised of all students in Federal polytechnic Nasarawa with a population of about 10,500 students according to Registry Unit of the Polytechnic (2021). The sample for the study was made up of 380 students. Simple random sampling techniques were used to select respondents for the study. The instruments used for data collection were developed by the researcher and titled Creativity, Intelligence and Academic Performance Scale (CIAPS) adapted from an intelligence assessment model after Gardner’s multiple intelligences (Multiple Intelligences) and chiu’s performance scale. The instruments have validity indices of 0.83 and 0.75 respectively. Cronbach Alpha was used to determine the coefficient reliability. This was considered suitable because Cronbach coefficient Alpha is a popular general method of estimating internal consistencies for instrument. The analysis yielded an Alpha coefficient of 0.95 for CIAPS. Mean and standard deviation was used in answering research questions framed for the study. Pearson’s Product Moment Correlation was used to test formulated null hypotheses using Statistical Package for Social Sciences (SPSS).

**Results**

**Research Question 1**

What is the extent of Relationship between Divergent Creative Thinking and Students’ Academic Performance in Federal Polytechnic, Nasarawa?

**Table 1: Mean and Standard Deviation Scores Showing Respondents Views on the Extent of Relationship between Divergent Creative Thinking and Students’ Academic Performance in Federal Polytechnic Nasarawa**

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am an original person who comes up with new ideas that can improve my academic achievement in school</td>
<td>100</td>
<td>142</td>
<td>80</td>
<td>58</td>
<td>2.75</td>
<td>0.70</td>
<td>Agree</td>
</tr>
<tr>
<td>2</td>
<td>I am curious about many different things and this helps me to learn better</td>
<td>186</td>
<td>72</td>
<td>84</td>
<td>38</td>
<td>3.07</td>
<td>0.89</td>
<td>Agree</td>
</tr>
<tr>
<td>3</td>
<td>I am an ingenious, a deep thinker and this enhances my academic achievement</td>
<td>102</td>
<td>155</td>
<td>90</td>
<td>33</td>
<td>2.86</td>
<td>0.87</td>
<td>Agree</td>
</tr>
<tr>
<td>4</td>
<td>I have an active imagination and this has improved my academic achievement</td>
<td>111</td>
<td>162</td>
<td>63</td>
<td>44</td>
<td>2.90</td>
<td>0.76</td>
<td>Agree</td>
</tr>
<tr>
<td>5</td>
<td>I am an inventive person and this helps me in attaining high academic achievement</td>
<td>184</td>
<td>66</td>
<td>91</td>
<td>39</td>
<td>3.04</td>
<td>0.85</td>
<td>Agree</td>
</tr>
</tbody>
</table>

**Average Mean**: 2.92 0.81 Agree

Table 1 shows the views of respondents on the relationship between divergent creative thinking and students’ academic performance in Federal Polytechnic Nasarawa. Responses from the questionnaire which were scored using mean and standard deviation showed that Items 1 to 5 yielded mean values of 2.75, 3.07, 2.86, 2.90 and 3.04 while standard deviation values of 0.70, 0.89, 0.87, 0.76 and 0.85 were obtained respectively. The average mean obtained was 2.92. This value is far above the scale mean value of 2.50 which is the acceptable value for a 4-point likert scaled instrument. Hence, there is a high relationship between divergent creative thinking and students’ academic performance in Federal Polytechnic, Nasarawa.
**Research Question 2**
What is the extent of relationship between interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa?

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>I am a talkative who has the drive to learn and perform better</td>
<td>177</td>
<td>80</td>
<td>70</td>
<td>53</td>
<td>3.00</td>
<td>0.84</td>
<td>Agree</td>
</tr>
<tr>
<td>7</td>
<td>I am a reserved person who prefer to read alone and concentrate to perform better academically</td>
<td>182</td>
<td>90</td>
<td>62</td>
<td>46</td>
<td>3.07</td>
<td>0.90</td>
<td>Agree</td>
</tr>
<tr>
<td>8</td>
<td>I am full of energy and willing to learn in order to enhance my academic achievement</td>
<td>175</td>
<td>82</td>
<td>85</td>
<td>38</td>
<td>3.04</td>
<td>0.86</td>
<td>Agree</td>
</tr>
<tr>
<td>9</td>
<td>I Generates a lot of enthusiasm towards learning and this improves my achievement in school.</td>
<td>102</td>
<td>150</td>
<td>72</td>
<td>56</td>
<td>2.78</td>
<td>0.71</td>
<td>Agree</td>
</tr>
<tr>
<td>10</td>
<td>I Tends to be quiet and this helps me to focus and attain high achievement in school.</td>
<td>165</td>
<td>90</td>
<td>75</td>
<td>50</td>
<td>2.97</td>
<td>0.82</td>
<td>Agree</td>
</tr>
</tbody>
</table>

Average Mean 2.97 0.83 Agree

Table 2 shows the views of respondents on the relationship between interpersonal intelligence and students' academic performance in Federal Polytechnic, Nasarawa. Responses from the questionnaire which were scored using mean and standard deviation showed that Items 6 to 10 yielded mean values of 3.00, 3.07, 3.04, 2.78 and 2.97 while standard deviation values of 0.70, 0.89, 0.87, 0.76 and 0.85 were obtained respectively. The average mean obtained was 2.97. This value is far above the scale mean value of 2.50 which is the acceptable value for a 4-point likert-scaled instrument. Hence, there is a high relationship between interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa.

**Research Question 3**
What is the extent of relationship between divergent creative thinking, interpersonal intelligence and students’ academic performance in Federal Polytechnic Nasarawa?

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>I am a talkative who has the drive to learn and perform better</td>
<td>111</td>
<td>162</td>
<td>63</td>
<td>44</td>
<td>2.90</td>
<td>0.76</td>
<td>Agree</td>
</tr>
<tr>
<td>12</td>
<td>I am a reserved person who prefer to read alone and concentrate to perform better academically</td>
<td>184</td>
<td>66</td>
<td>91</td>
<td>39</td>
<td>3.04</td>
<td>0.85</td>
<td>Agree</td>
</tr>
<tr>
<td>13</td>
<td>I am full of energy and willing to learn in order to enhance my academic achievement</td>
<td>102</td>
<td>155</td>
<td>90</td>
<td>33</td>
<td>2.86</td>
<td>0.87</td>
<td>Agree</td>
</tr>
<tr>
<td>14</td>
<td>I Generates a lot of enthusiasm towards learning and this improves my achievement in school.</td>
<td>175</td>
<td>82</td>
<td>85</td>
<td>38</td>
<td>3.04</td>
<td>0.86</td>
<td>Agree</td>
</tr>
<tr>
<td>15</td>
<td>I Tends to be quiet and this helps me to focus and attain high achievement in school.</td>
<td>165</td>
<td>90</td>
<td>45</td>
<td>50</td>
<td>3.06</td>
<td>0.82</td>
<td>Agree</td>
</tr>
</tbody>
</table>

Average Mean 2.98 0.83 Agree

Table 3 shows the views of respondents the relationship between divergent creative thinking, interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa. Responses from the questionnaire which were scored using mean and standard deviation showed that Items
11 to 15 yielded mean values of 2.90, 3.04, 2.86, 3.04 and 3.06 while standard deviation values of 0.70, 0.89, 0.87, 0.76 and 0.85 were obtained respectively. The average mean obtained was 2.98. This value is far above the scale mean value of 2.50 which is the acceptable value for a 4-point likert scaled instrument. Hence, there is a high relationship between divergent creative thinking, interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa.

**Hypothesis 1**
There is no significant relationship between divergent creative thinking and students’ academic performance in Federal Polytechnic, Nasarawa.

Table 4: Summary of Pearson’s Product Moment Correlation Test on the Relationship between Divergent Creative Thinking and Academic Performance of Students in Federal Polytechnic Nasarawa.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>r-cal</th>
<th>p-value</th>
<th>sig</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Divergent Creative Thinking</td>
<td>380</td>
<td>2.92</td>
<td>0.81</td>
<td>0.743</td>
<td>0.002</td>
<td>0.05</td>
<td>Significant</td>
</tr>
<tr>
<td>2</td>
<td>Academic Performance</td>
<td>380</td>
<td>76.50</td>
<td>17.59</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at α = 0.05**

Table 4 shows the Pearson’s product moment correlation statistic for determining the relationship between divergent creative thinking and students’ academic performance in Federal Polytechnic, Nasarawa. Results show that at the sample size of 380 students, the mean values are 2.92 and 76.50 for variables of divergent creative thinking and academic performance respectively. The calculated value of r is given as 0.743. The p-value of Pearson’s Product Moment Correlation at 0.002 was found to be less than 0.05 level of significance. Since the p-value value less than the 0.05 level of significance, hypothesis one is rejected implying there is a significant relationship between divergent creative thinking and students’ academic performance in Federal Polytechnic, Nasarawa.

**Hypothesis 2**
There is no significant relationship between interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa.

Table 5: Summary of Pearson’s Product Moment Correlation Test on the relationship between Interpersonal Intelligence and Academic Performance of Students in Federal Polytechnic Nasarawa.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>r-cal</th>
<th>p-value</th>
<th>sig</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interpersonal Intelligence</td>
<td>380</td>
<td>2.97</td>
<td>0.81</td>
<td>0.657</td>
<td>0.004</td>
<td>0.05</td>
<td>Significant</td>
</tr>
<tr>
<td>2</td>
<td>Academic Performance</td>
<td>380</td>
<td>76.50</td>
<td>17.59</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at α = 0.05**

Table 5 shows the Pearson’s product moment correlation statistic for determining the relationship between interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa. Results show that at the sample size of 380 students, the mean values are 2.97 and 76.50 for variables of interpersonal intelligence and academic performance respectively. The calculated value of r is given as 0.657. The p-value of chi-square-test at 0.002 was found to be less than 0.05 level of significance. Since the p-value value less than the 0.05 level of significance, hypothesis one is rejected implying there is a significant relationship between interpersonal intelligence and students’ academic performance in Federal Polytechnic Nasarawa.
Hypothesis 3
There is no significant relationship between divergent creative thinking, interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa.

To test this hypothesis, the researcher used Regression analysis. The result is included in Table 6

Table 6: Multiple Regression Analysis showing Significance of Relationship between Divergent Creative Thinking, Interpersonal Intelligence and Students’ Academic Performance in Federal Polytechnic, Nasarawa.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>R</th>
<th>p-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divergent Creative Thinking</td>
<td>380</td>
<td>2.92</td>
<td>0.81</td>
<td>0.13</td>
<td>0.037</td>
<td>Significant</td>
</tr>
<tr>
<td>Interpersonal Intelligence</td>
<td>380</td>
<td>2.97</td>
<td>0.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students’ Academic Performance</td>
<td>380</td>
<td>2.98</td>
<td>0.83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 6, hypothesis 3 was tested at 0.05 level of significance by comparing the p-value of with the 0.05 significance level using SPSS application. From the table, it is observed that the p-value is 0.037. Since the p-value is less than 0.05 significance level, the hypothesis 6 is rejected implying that there is a significant relationship between divergent creative thinking, interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa.

Discussion of Findings
Findings on hypothesis 1 indicated there is a significant relationship between divergent creative thinking and students’ academic performance in Federal Polytechnic Nasarawa. In other words, the level of learners’ divergent creative thinking is significantly related to their academic achievement. Findings from the study are in agreement with those of Chandrasekhar and Kappagoda (2019) which indicated that creativity is significantly related to the performance of the undergraduates in Rajarata University of Sri Lanka.

Findings on hypothesis 2 showed there is a significant relationship between interpersonal intelligence and students’ academic performance in Federal Polytechnic Nasarawa. In other words, the level of learners’ interpersonal intelligence is significantly influences their academic achievement. This finding is in agreement with the findings of Kpolovie (2016) which showed there was a significant relationship between creative thinking, intelligence and academic achievement in Mathematics and English Language over a period of four years in Nigeria.

Conclusion
Based on the findings of this study, the following conclusions were made:

There is a significant relationship between divergent creative thinking and students’ academic performance in Federal Polytechnic, Nasarawa.

There is a significant relationship between Interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa.

There is a significant relationship between divergent creative thinking, interpersonal intelligence and students’ academic performance in Federal Polytechnic, Nasarawa.

Recommendations
1. Divergent creative thinking among learners should be further enhanced through the provision conducive learning environment and learning resources that can boost the creativity of learners for them to attain better academic performance.
2. Students who exhibit high level of Interpersonal intelligence should be subjected to high levels of intelligence tests that will further boost their intelligence level and improve their academic achievement.
3. Divergent creative thinking learners as well as learners with interpersonal intelligence should be further exposed to practical and active learning
activities that can enhance their creativity and intelligence towards attaining high academic achievement.

References
Shuaibu, F, B, (2018); beyond intelligence and convergence: rethinking the management of the potentially creative