Comparison of University Students’ Creativity by Grade: 
Focusing on Korea and China

Fang Xu Zhou¹, Chae-Bog Kim²

Abstract

The 21st century is an era of knowledge innovation. Under the era background of knowledge explosion and information explosion, the competition among countries is ultimately talent competition. High-end talents are the core element of national competitiveness. Today, with the rapid development of science and technology and knowledge changing with each passing day, the cultivation of students’ creativity is the requirement of social development and national progress. This paper makes a comparison between the creativity of business school students in China and Korea with questionnaire survey. Empirical study and comparative study with university students by grade in China and Korea are performed. The test results indicates that there are differences between Korean and Chinese students. Also, university students’ creativity are different by grade. This study finds internal reasons for creativity differences and puts forward counter measures and methods for improving students’ creativity.

Keywords : Business School, Creativity, Grade, Korea, China

1. Introduction

Under the conditions of industrialization, innovation is just a means to achieve industrialization[1]. However with the arrival of the information age, innovation has a more far-reaching significance and reflects the evolution of human society at the same time. Chinese and Korean economy has combined with each other closely. Economic integration will certainly bring more exchanges[2]. Analysis of the differences between students’ creativity in China and Korea can help two countries to understand each other, and has positive implications for the development of enterprises in both countries and facilitate the friendship of China and Korea.

This paper attempts to compare college students' creativity by grade in China and Korea through survey. By using t-test, ANOVA and SNK test, we find the difference of creativity between female and male students.
2 Theoretical Background

2.1 Importance of Creativity

For managers, problems always arise as different or new situations. Usually, it is difficult to solve those problems by using logical thinking. Because logical thinking progresses in a series of steps, each one dependent on the last, so actually the products of logical thinking are extensions of what we already know, rather than being truly new. That is why creative problem solving is very important in management. Many management problems require creativity in to find suitable solutions. And for human beings, creativity is fundamental to growth, especially in the era of lifelong learning. Creativity is essential for individuals to adapt to the rapidly developing society[3][4].

Creativity from a Western perspective can be defined as the ability to produce work that is novel and appropriate[5][6]. The findings of foreign scholars on creativity mainly include connective theory, capacity theory and so on. Connective theory asserts that creativity is a kind of ability to connect various factors at different aspects and build new connections on the base of acquired knowledge and experience. As the represented of capacity theory, regards creativity as the ability of discovering new things, coming up with unusual ideas and jumping out of the traditional ways of thinking[7].

2.2 Overview of Creativity in Korea and China

The levels of economic development and education development are mutually reinforcing. Since the 1970s, developed countries launched a series of educational innovation as the core of education reform[1][8] and the creativity education actively promote the economic development worldwide. In traditional Asian education, too much emphases on the standardization and only certainty of knowledge, leads to the imbalance between students' polymeric and divergent thinking and students tend to use inherent approach to solve problems, while ignoring the formation of independent thinking ability and creative thinking[7].

A study released in 2011(Creativity and Prosperity: The Global Creativity Index) by the Martin Prosperity Institute ranks 82 countries (Korea ranks 27, Japan ranks the 30, China 58) on their creativity. Each country is given a Global Creativity Index(GCI) and it indicated that creativity is a core driving force in the economy: the study found great positive correlations
between creativity and economic progress and global competitiveness. Korea has a higher rank than China. However besides Singapore, Asian countries have lower CGI than western countries generally[9][10].

3. Research Methodology

3.1 Research Sample

This study focuses on business major students, because senior management personnel and their creativity is one of the key factors for a country to enhance the comprehensive national strength, accelerate the speed of economic and social development, and higher education is the main channel to train creative management personnel. Meanwhile, the survey mainly carried out in the universities in Gyeongsang area in South Korea and Anhui, Jiangsu area in China since these regions are similar in terms of education and culture in both countries. Both regions have a similar economic development level. Both regions have a highly similar economic status in their own countries.

Meanwhile, both regions have many institutions of higher education and are typical in education and culture etc. Moreover, there are institutions of higher education ranking from the top lever to the low level in Kyungpook region, Korea and Anhui and Jiangsu, China. The different factors such as regional, cultural and historical background, economic and social development level are excluded as much as possible in the process. Therefore, the data we obtained are more comparable.

Since the survey needs to be issued in both countries, it took longer than expected. In two-month period, then got 411 students participated in the questionnaire survey and 400 effective questionnaires were obtained. The effective recovery rate reached 97.3% and observation data of 400 samples were obtained. Reasons for ineffective questionnaires are same options in the questionnaire and incomplete questionnaire filling. Sample composition is shown in Table 1.

[Table 1] Survey Respondents

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Students</td>
<td>52</td>
<td>48</td>
<td>49</td>
<td>51</td>
<td>200</td>
</tr>
<tr>
<td>Korean Students</td>
<td>31</td>
<td>32</td>
<td>61</td>
<td>76</td>
<td>200</td>
</tr>
</tbody>
</table>
3.2 Hypotheses Development

H1: The mean of creativity of Chinese students is equal to the mean of Korean students. 
($μ_1 = μ_2$)

H2a: The creativity level of students in each grade is equal in China. (All $μ_1, μ_2, μ_3, μ_4$ are equal.)

H2b: The creativity level of students in each grade is equal in Korea. (All $μ_1, μ_2, μ_3, μ_4$ are equal.)

3.3 Hypotheses Test

3.3.1. Creativity Difference Caused by Nationality

In order to check H1, firstly we employ a Levene's test between Chinese and Korean students, since the $p$ value of Levene's test statistical data $F$ is 0.125 which is larger than significance Level $α=0.1$. Variances are not significantly different and parametric tests can be used. So, we apply t-test to data and the result of the test is shown in Table 2.

We can see that the $t=6.595$, $p=0.000$, according to significance Level $α=0.05$. Therefore, $H1$ is rejected and there is a difference of creativity between Chinese students and Korean students in business school. Because the average creativity point of Chinese and Korean students are 48.17 and 51.41, so statistically the overall creativity of Korean students is better than that of Chinese students in business school.

However, we need to conclude carefully because there are several limitations of this study. For example, sample size is too small to represent overall Chinese and Korean students and we selected respondents only in the specific area of both countries.

[Table 2] t-test of creativity by nationality

<table>
<thead>
<tr>
<th>Nationality</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Students</td>
<td>200</td>
<td>48.17</td>
<td>6.77</td>
<td>6.595</td>
<td>0.000</td>
</tr>
<tr>
<td>Korean Students</td>
<td>200</td>
<td>51.41</td>
<td>6.07</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3.3.2. Creativity Difference Caused by Grade

At last we need to analysis the data that divided by grade in both country. Since there are too many elements if we analysis all the data in two countries, we decided to analysis it separately. First we ran an ANOVA test among Chinese students and the result is shown in Table 3.

<table>
<thead>
<tr>
<th>Grade</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>52</td>
<td>48.42</td>
<td>6.03</td>
<td>8120.44</td>
<td>79.13</td>
<td>1.913</td>
<td>0.129</td>
</tr>
<tr>
<td>Sophomore</td>
<td>48</td>
<td>47.16</td>
<td>6.48</td>
<td>237.40</td>
<td>41.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior</td>
<td>49</td>
<td>47.18</td>
<td>7.58</td>
<td>8357.85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>51</td>
<td>49.81</td>
<td>5.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Because the p value is 0.129, larger than the significant level α=0.05, so H2a is supported. In other words, the creativity of students has no significant difference among different grades in China.

Table 4 is the result we got using the same method in testing Korean samples. We can see that the p value is 0.000, smaller than the significant level α=0.05, so H2b is rejected. The creativity of students has significant difference among different grades in Korea.

<table>
<thead>
<tr>
<th>Grade</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>31</td>
<td>52.99</td>
<td>6.07</td>
<td>1121.72</td>
<td>373.91</td>
<td>9.564</td>
<td>0.000</td>
</tr>
<tr>
<td>Sophomore</td>
<td>32</td>
<td>48.98</td>
<td>6.05</td>
<td>7668.86</td>
<td>39.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior</td>
<td>61</td>
<td>48.84</td>
<td>6.19</td>
<td>8790.58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>76</td>
<td>53.85</td>
<td>6.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In order to clarify the difference we ran a SNK test and the result is listed in Table 5. The test results in the Table show that freshmen and seniors are more creative than sophomores and juniors in Korea. We conjecture that it is concerned with army duty of male Korean students. Generally, creativity is not needed to perform some tasks when serving in the army because keeping the order is principal rule in the army.
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[Table 5] SNK test of creativity by Grade in Korea

<table>
<thead>
<tr>
<th>Grade</th>
<th>N</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior</td>
<td>61</td>
<td>48.84</td>
<td></td>
</tr>
<tr>
<td>Sophomore</td>
<td>32</td>
<td>48.98</td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>76</td>
<td>53.85</td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>31</td>
<td>52.99</td>
<td></td>
</tr>
<tr>
<td>Sig.</td>
<td></td>
<td>0.917</td>
<td>0.635</td>
</tr>
</tbody>
</table>

Subset for alpha=0.05

Based on the test results, we can infer that the education in Chinese business schools has not foster students' creativity since the mean creativity point has no significant difference among the four grades. So, they should put more attention and focus on training students' creativity. Meanwhile Korean business schools have succeed in students' creativity training. But since there is a slide of creativity in grade 2 and 3, so business schools should strengthen creativity training in those grades such as open more creativity class will be helpful.

4 Conclusion

Students are the future of a country. Especially those who in business school have a large probability to be manage position in different places and will play important roles in the world economy. In this paper, We find out that in general, the creativity of Korean students is better than that of Chinese students. Which is not surprised because of those research had down before. The result that on one hand implicate Korea did a good job in fostering the nation's creativity in the past years, on the other hand it shows that China still has a long way to go in that area.

Also, freshman and senior students are more creative than sophomore and junior students in Korea. The reason is probably that Korean Conscription Law specifies that male citizens in twenties must serve in the army; with different arms of the services. The service times are different but the minimum service time is 24 months. Most male students in universities choose to receive unit training during sophomore and junior periods and then go back to universities for study after completing the service. Therefore, most people just receiving training are accustomed to the thinking mode in army, causing reduction of creativity in a short time.

Although statistically no typical difference was found among the four grades in Chinese business school but we can still see that the average creativity points of freshman and senior are also higher than those of sophomore and junior. We could not find out the reason so that
we can only leave this question to future researchers.

5. Limitations and Future Research

There are several limitations in this research. First, there are various elements can affect the creativity like family background, age and so on. But for the convenience of the study, we only chose four of them. So we would glad to see future researchers to cover and analyze more elements that affect creativity.

Second, since some of the friends who helped us issue the survey in Korea are Chinese and there are also a lot of Chinese students in Korean universities. So we could not make sure that the questionnaires were all did by Korean students but also could by Chinese students who are studying in Korea.

Third, the scale of the data that we collected is not large enough, if a larger amount of samples could be collected or if we can randomly choose samples in the whole country the result may be become different. That is a way that later researchers could take into consideration.

Fourth, although statistically no typical difference was found among the four grades in Chinese business school but we can still see that the average creativity points of freshman and senior are also higher than those of sophomore and junior. We could not find out the reason so that we can only leave this question to future researchers. In order to overcome these kinds limitations, more precise and delicate experimental design is considered.

References


