



Hackschooling to Foster Creativity in Students in China

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Abstract: This paper proposes a method for refining the lack of creativity existent on middle schools in China. Actual teaching methods at schools do not focus on fostering student's imagination, setting efforts in other priorities when educating students from all ages. We examined and categorized the results of a quantitative examination applied to students and categorized feelings about their educational institution by mapping relations of pairs of data; students suggested several words and then selected two of which fitted on their accumulated emotions. Creativity theory and experts believe that kids have tremendous talents and schools squander them (Sir Ken Robinson, 2006). Schools are responsible for fostering student's ability to innovate but they are not improving significantly, and this is not particularly a country problem, oppositely it is a global situation. Due to this circumstance, we analyzed the educational cycle in a middle school case intending to find the mainstay relations between student's time consumption and student's creative output from the daily school routine. The essential role of parents in home teaching, and the possible effects that “hack-schooling” or “homeschooling” can have on student's life and education, are essential as expected explanation to the lack of creativity advocated by schools in the short and medium course. Finding better ways to accomplish the same goals outside of the educational establishment is fundamental. In a second procedure, we will examine the success of Finland in hackschooling as a comparison, and evaluate the chances of adapting and introducing Finland hackschooling principles in China as an innovation multiplier on child' lives.

Keywords: Hackschooling, Design thinking, Creativity fostering, Education, Chinese school

1. Introduction

Students in China are living the most intensive challenging period in the history. They are being besieged with information and coerced for attention from technology. Schools are anesthetizing kids through education, instead of waking them up. The internet is a new cultural phenomenon in Mainland China, and its penetration has risen from 45.8 percent by December 2013 (with 618 million users) to 49.3 percent by December 2014 (with 672.6 million users; world rank: 1st) with teenagers as mainly users who attend to schools every day to get information from the teacher's heads. Questions arise such as “is it worth for students to participate in classes full-time?” “What is the role of schools when there is an information surplus around students?” and “which are the next steps for schools to fit to today's needs?” “All kids have tremendous talents, and we squander them. Creativity now is much important in education as much as literacy, and we should treat it with the same status. Kids are not frightened of being wrong. Now, I do not mean to say that being wrong is the same thing as being creative. What we do know is, if you are not prepared to be wrong, you will never come up with anything original. They have become frightened of being wrong. Moreover, we run our companies like this, by the way. We stigmatize mistakes. Furthermore, the result is that we are educating people out of their creative capacities. We do not grow into creativity; we grow out of it. Alternatively, rather, we get educated out if it” —Sir Ken Robinson, 2006.

Creativity corresponds to the use of imagination or original ideas in the production of something original and worthwhile (Csikszentmihalyi, 1999, 2000). Theories of the creative process have been extensively studied in cognitive

sciences, empirically centering on how creativity ensues; increasing its value in the information era, and becoming a primary rationale for education at various levels. Mass Education including National Education Systems has gone beyond the fundamentals diversifying methods for promoting creative thinking, but the emphasis on students today is not enough to impulse their creativity onward. Teachers do not have a unified view of creativity, and their conceptions-in-action for creativity may differ dramatically (Lev-Zamir and Leikin, 2012). Teaching teachers “how to teach” for fostering student's creativity (Levav-Waynberg and Leikin, 2011) will be the next tendency, but home-teaching can act as a primarily responsible variable developing creativity when schools can not. Considering that students must comprehend how to respond to new problems instead of recurring to their knowledge for getting old solutions (Kline, 1991), creativity and innovation strictly relate terms and creative thinking acts as the variable in charge of motivating curiosity and interest on students. Creativity happens in discerning that students have something to explore.

On the other hand, innovation basis is about finding a better way of doing something (Wong, 2013). However, what Schools in China are doing today, effortlessly, correspond to a weak attempt of conceiving neither innovation nor replication principles on student minds. Emphasis prescribed to sciences, history and literature, among others, does not give an ample opportunity to creative thinking due to the closed possibilities of questioning the knowledge. Knowledge is trespassed from teachers to students in a unidirectional way, with no possibility of interaction, exploring, questioning or debating; then, when do students create? When do students change their patient observer status into creators? When do they step out of the frame? When do they get challenged? Do teachers encourage them enough to do things? Students in China are succeeding with the right answer or failing with the wrong one.

2. Literature summary

Hackschooling is a novel concept. There is no previous related research in hackschooling but in fostering student creativity and creativity theory; we considered these two fundamental concepts as starting points. While there has been no consensus on an exact definition of creativity in the literature, most definitions have usually included the elements of “novelty” and “appropriateness” (Hennessey & Amabile, 2010; Plucker & Beghetto, 2004). Recent theories emphasize an interaction among several elements that together represent the creative ability; examples include the systems approach (Csikszentmihalyi, 1996), the componential model (Amabile, 1996), and Sternberg's investment model of creativity (Sternberg & Lubart, 1993, 1995, 1999). Several factors influence creative behaviors and achievements, such as cognitive together with personality, motivation, and environmental factors (Cho, Chung, Choi, Suh, & Seo, 2011). Bramwell, Reilly, Lilly, Kronish, and Chennabathni (2011) also suggested that teachers' intelligence (with some particular characteristics such as hard-working, nonconforming, knowledgeable, intuitive, confident, flexible, and energetic) — intrapersonal and interpersonal — motivation, and values are crucial factors in their commitment to creativity (Bramwell et al., 2011). Fostering creativity and critical thinking should be part of the teaching of all school subjects.

3. Overview and objectives

We examined data from surveys conducted by three hundred students divided into equal parts of twelve, thirteen, and fourteen years old; in seventh, eighth, and ninth grade, respectively. The chief characteristic of our data corresponds to a list of thirteen "feelings about students' life in the school"; categorized in positive emotional reinforcements, negative emotional reinforcements, and substantial negative reinforcements. Our goal is to analyze feelings and their combination by age, understanding how the results suggest the current need for a creative thinking environment and a customized educational model. The key of the analysis lies in repeating the study in different schools and grades, with the intention of demonstrating the repeatability of the results. Our method consists of three stages: environment evaluation, student survey, and data blending into the hack schooling concept. Modeling the hack-schooling concept requires consideration of strict external and internal variables.

We seek to estimate the results we can achieve considering the substantial quantity of variables given a particular orientation. A disadvantage of this measured approach is that it is not invariant. It is preferable to have a measure that does not change as we amend the viewpoint since this enables much more efficient optimization of the concept. Environmental data was collected day after day during two thirty days' cycle periods and then interpreted and indirectly applied. Once data was adjusted, our next step meant to estimate the extrinsic parameters. In the first stage of our analysis, we evaluated external factors able to alter the propitious and consider them before examining the survey results. In our final phase we aim to create a novel concept and orientations as previously discussed. There are two

main positive implications. First, we do not need to change teachers' behaviors or personality. Second, we do not need a supportive educational environment. Institutional constraints on creativity enhancement are a reality, and they often outweigh the teachers' desire to foster creativity (Andiliou & Murphy, 2010; Sawyer, 2012). This study has shown that enhancing creativity in Chinese elementary students through hackschooling does not present significant difficulties; being achieved by combining the parent's attributes, a supportive school environment, and understanding teachers.

4. Data

For every part of the frame concept, our task is to determine handful inputs, which, when framed into the final concept and after improvements, outputs a standard frame. The data consists of qualitative variables where students were asked to categorize "feelings about their educational institution" by mapping relations of pairs of data; students suggested several words and then selected two, used on options that fitted on their accumulated emotions divided into three categories. Students were twelve, thirteen, and fourteen years old, all of them Chinese from a particular educational institution. They all live in the school during the week and their daily study time is approximately ten to fifteen hours. The feelings offered in the query were "beautiful," "pressure," "teacher," "ugly," "friendly," "boring," "interesting," "sad," "food," "busy," "good," "hard," and "tired."

Three groups categorized these feelings: positive emotional reinforcements, negative emotional reinforcements, and substantial negative reinforcements. We also subjectively categorized their feelings into "innovation supporting" and "innovation preventing." As innovation supporting feelings were considered "beautiful," "pressure," "teacher," "ugly," "friendly," "boring," and "interesting." As innovation preventing feelings were considered "sad," "food," "busy," "good," "hard," and "tired." We utilized the data to analyze the overall feelings students had for their educational institution and how these feelings progress during the last three years spent in the school before graduating. These findings are then used to analyze how new students consider their educational environment and how schools' influence and affects that feeling.

5. Findings

We present our results as a group of suggestions able to create a well-rounded educational experience to students from twelve to fourteen years old. Results from the data suggest plausible feelings students have during the years spent in their educational institution. Below we present preliminary results as a collection of figures and comments, respectively.

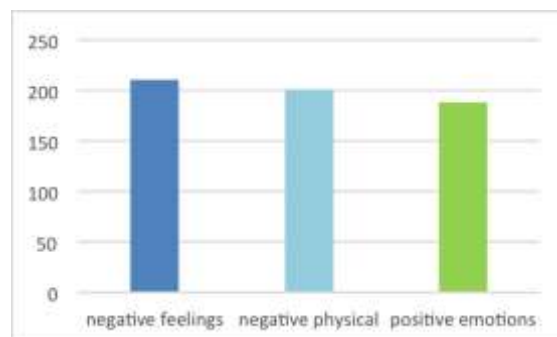


Figure 1: The overall results show equally divided opinions

Figure one shows some votes for different categories. The negative emotional reinforcements have the most votes, second being the negative solid supports type and last the particular psychological reinforcements category. Figure 2 has the number of votes for different words separately. The words "boring", "friendly" and "pressure" get the highest number of votes and the words "sad", "teacher" and "right" get the smallest number of votes. A large number of votes for words like "boring" and "pressure" suggest substantial differences between the abilities of the students.

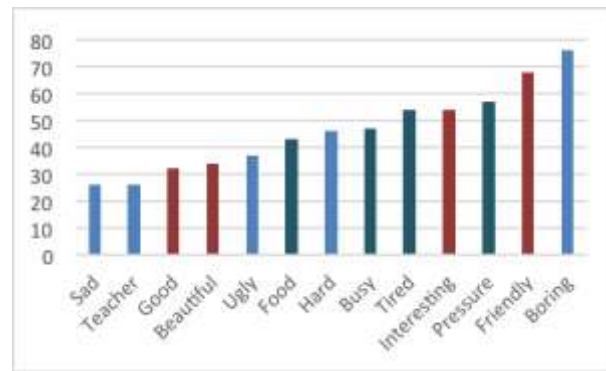


Figure 2: Diversity of opinions

Note: Opinions are evenly mixed. Negative emotional reinforcements would have smaller weight without the high number of votes for the “boring” idea. In many cases, the negative and positive views of the same thing have an equal amount of votes; suggesting significant differences between students in their abilities

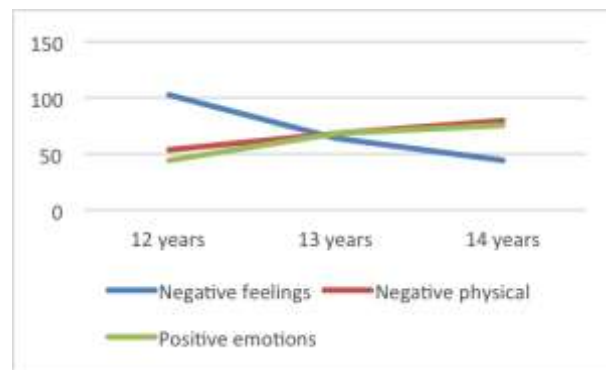


Figure 3: Description of emotions and physical feelings

Note: The positive emotions and negative physical feelings become stronger and negative feelings become weaker

Figure three analyses the trends for the three different categories during the years spent in the school. Negative feelings have a significant drop when we move from the first year students to the third year students. On the contrary, the positive emotions and the substantial negative reinforcements gradually increase over the years. This appears to signal a real innovative environment in the school that improves during the years, but we need a more detailed analysis of the trends by analysing the feelings separately.

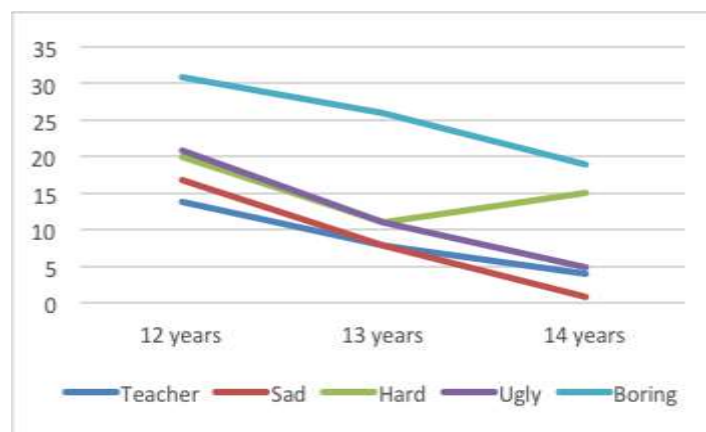


Figure 4: Trends for negative feelings

Note: Trends for negative feelings follow the results of the overall trend. The word “hard” is a minor exception; it strengthens from thirteen to fourteen years old students

Figure four analyses the trends of negative feelings during the years. As the overall trend for negative feelings, excepting the word "hard" all the feelings decrease during the years. Very consolidated results strengthen the conclusion of reducing negative emotional reinforcements over the years.

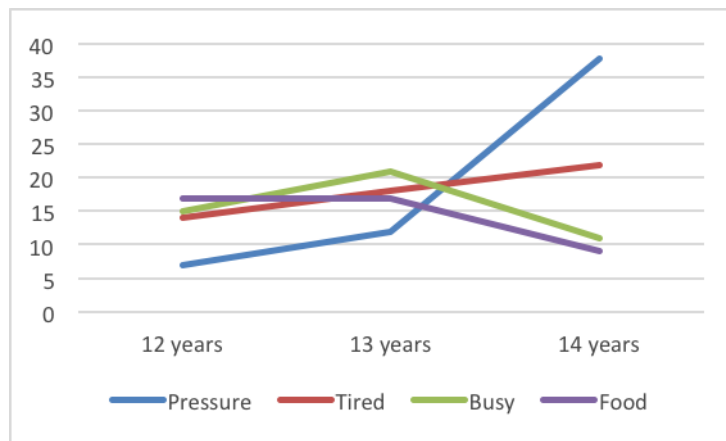


Figure 5: Trends for negative feelings

Note: The trend for negative physical reinforcement is further fascinating. When the analyses of different feelings occur separately, the rise of the substantial negative reinforcements solely is demonstrated as the sharp increase of the word "pressure". Otherwise, all the words stay approximately at the same level.

Figure five analyses the trends of the negative physical feelings. In this figure, we can see the importance of examining words separately. The growing tendency of the substantial negative reinforcements is solely due to the significant increase in the feeling "pressure". Otherwise, all the negative considerable reinforcements stay approximately at the same level over the years. The high increase of the feeling "pressure" accompanied by the decrease of the overall negative feelings is interesting. Although the pressure increases for students, their negative feelings are not increasing. So the students do not consider the pressure as a negative thing for their studies and life in the school.

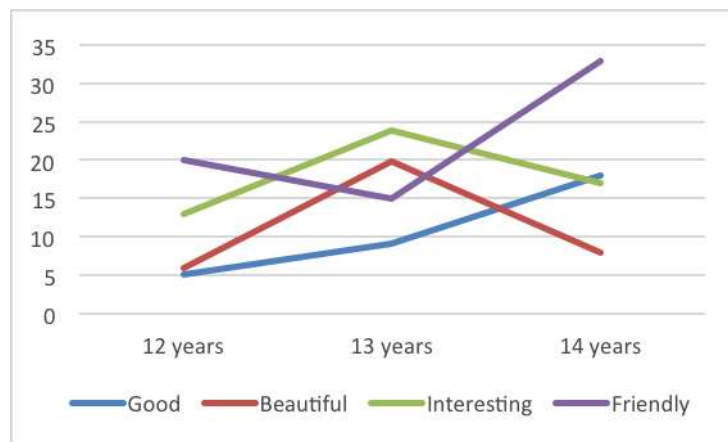


Figure 6: The rise of the positive feelings

Note: The rise of the positive feelings mainly happen because of the rise of the words "good" and "friendly." The other two variables, "beautiful" and "interesting", maximize their values in the middle year and significantly drop to both directions

Figure six analyses the trends for positive feelings. The increase of the positive feelings mainly happens due to the rise of the reinforcement "friendly". The feeling "good" is also somewhat increasing but the variables "beautiful" and "interesting" are strongest in the second year and significantly decrease during the last year. The increase of the feeling "friendly" probably happens because of the stronger friendship bonds between students among years.

The investigation makes a subjective division of the variables of "innovative feelings" and "uninnovative feelings". The examination bases the results of this section on the researcher's experience and literature regarding what factors enhances or could increase student's creativeness and what factors are a risk to that. In the innovative feelings we list

the feelings “beautiful,” “pressure,” “teacher,” “ugly,” “friendly,” “boring,” and “interesting.” In the uninnovative feelings we list the feelings “sad,” “food,” “busy,” “good,” “hard,” “tired.”

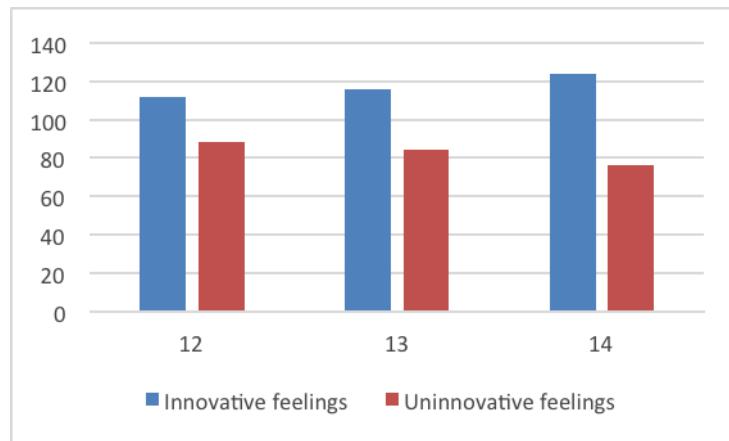


Figure 7: Innovative versus Un-innovative feelings

Note: When separating the words according to their indication of innovativeness, changes are further unaffected. There is a small decrease of uninnovative feelings and a slight increase in innovative feelings

Figure 7 analyses how the innovative feelings and the uninnovative feelings change over the years. The changes are much smaller than in the previous figures, but there is a gradual decrease of the uninnovative feelings during the years and a gradual increase of the innovative feelings during the years. Results are impressive when we remember the steady growth of the "pressure" feeling. So apparently the sense of pressure can enhance the innovativeness of the study environment.

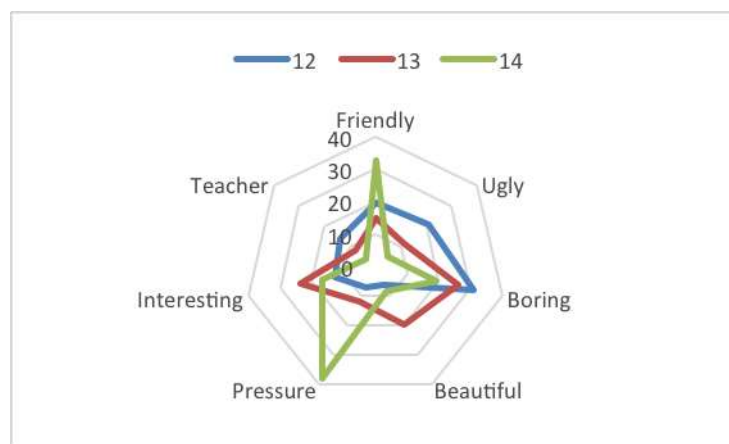


Figure 8: The progress of innovative feelings.

Note: We clearly see that the feelings have to be analysed separately to make the correct conclusions. “Pressure” and “friendly” rise significantly during the last year, while “boring” decreases gradually during the years

Figure eight analyses the innovative feelings separately. Here we see how the feelings “friendly” and “pressure” jump in the last year and these two feelings are the primary sources of innovative feelings during the last year. Feelings as “interesting” and “beautiful” are the most creative during the first year and the feelings “ugly” and “boring” are the most innovative feelings during the second year. So there are clear differences between the years and to make correct conclusions, we have to analyse the innovative feelings separately.



Figure 9: The progress of un-innovative feelings.

Note: The notion of “tired” gets gradually more votes during the years, while “busy” and especially “sad” significantly decrease during the years

Figure nine compares the uninnovative feelings during the study years. In the last year, the feelings “tired” and “good” are the main constituents. In the second year, the feelings build up from three words: “tired,” “busy” and “food.” In the first year, the strongest feelings are “sad,” “food,” and “hard.” Again we see that we cannot just compare the overall trend of the “innovative” and “uninnovative” feelings. We have to analyse the feelings separately to understand how students' feelings progress and how that might affect the innovativeness of the study environment.

6. Future research

Future research requires evaluating the relative success of the greater emphasis on creativity as a goal, prevailing, education in China. Future research should explore the short-term, mid-term, and longer-term consequence of increasing a focus on creativity fostering in all pre-service and in-service homeschooling programs; and on providing teachers with practical guidelines for incorporating creativity into specific school subjects and line it with it.

The small sample size limits the extent to which findings can generalize to other populations. Additionally, the study was based on surveys and depended in a major part on data coming from the students' self-answering; self-answering often tends to be subjective. Therefore, the picture would be complete if other perspectives can be included, for example, data from observations. Afterward, while the personal and environmental factors that emerged here are undoubtedly influential, they are not necessarily the only variables in the parents' abilities to foster and support students' creativity.

7. Conclusion

The need for creative individuals is high and growing in China, as competition becomes the new normal, economies around the world become increasingly connected, and firms search for new sources of value creation (e.g. Florida, 2004; Kotz, 2011). Shaping, foster, and cultivate creative capabilities in students is pivotal today. Parents identify several important factors that affect their ability to promote creativity in the learners. Some factors, such as their personality and the environment of the school are not modifiable; other aspects are liable to change. Creative parents can affect the situations in which they work, applying their talents to changing or modifying the circumstances and increasing the range of opportunities; creativity is an attribute that should be present in most parents. Essential qualities evident here and in the literature include intrinsic motivation and a clear sense of purpose. These factors are reminiscent of variables suggested within the componential framework of creativity (Amabile, 1996) where an appropriate level of task motivation, Creativity-relevant skills, and domain-specific skills can result in more creativity. The present study findings cannot suggest any relation between parent's education and their creativity fostering practices, oppositely, the literature suggests that grasp a strict correlation. Parents' personal characteristics and attitude towards creativity can directly shape their objectives when hackschooling.

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