How to Improve the Chinese First-Generation College Students’ Learning Outcomes

–Current situation, influencing factors and intervention strategies

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Introduction
Background

- First-generation college students (FGCS)
  - Parents both have not received higher education

- Sample survey of first-year students of Tsinghua University from 2012 to 2015
  - About 30% belonging to this group
Background

- Higher education is significantly different from basic education in many aspects.
  - Teaching methods, evaluation criteria, and various extracurricular activities.

- FGCS are facing more challenges.

- Parents cannot provide sufficient support.

How to help FGCS to better adapt to college life and get the ability and motivation for sustainable development in the college?
Government has designed various policies targeting on FGCS.

Most of the efforts have been concentrated on admission policies and financial support afterwards.

Few studies have been conducted concerning the learning outcomes of FGCS.

This study focuses on the learning outcomes of Chinese FGCS, exploring their current learning situation, influencing factors and effective intervention strategies.
What is the current situation of the learning outcomes of first-generation college students?

What are the differences between the learning process and educational patterns of first-generation college students and that of non-first-generation ones?

What factors may influence the learning outcomes of first-generation college students?

Strategies have been designed to help first-generation college students in learning. Are these strategies effective?
Researchers discovered that apart from economic situation, FGCS also differ from non-first-generation college students in that they less frequently ask questions when studying and less frequently seek help from staff members on their own initiative (Jenkins et al, 2009).

FGCS encounter more difficulties and obstacles than others students do in obtaining advanced degrees (Hudley, 2014).

Lu Genshu and other researchers (2015) found that a significant difference exists between FGCS and non-FGCS in teacher-student interaction, peer interaction and ability development.

FGCS from rural areas and non-first-generation college students have differences in study experience on multiple dimensions (Xiong Jing, 2016).

More and more researchers have paid attention on the learning outcomes and development of FGCS.
Limitations of previous researches

Previous studies only adopted the objective academic achievement as an indicator of learning outcomes and lacked criteria which can more comprehensively evaluate students’ learning outcomes, such as knowledge development and ability, development reported subjectively by students themselves.

Little studies have focused on the possible factors influencing learning outcomes and lacked a systematic analysis of the whole education process.

Our aim is to

Make a comparatively comprehensive analysis of the subjective learning outcomes of first-generation college students by studying the data of undergraduates from Tsinghua University

Analyze different factors influencing learning outcomes and provided theoretical and empirical support to help improve the learning outcomes of first-generation college students

Design professional and individualized tutoring program to help the students in learning, and examined the program’s effectiveness by a comparative study
Study 1

Current situation of the learning outcomes of FGCS
Differences between FGCS non-FGCS
10% of more than 13000 undergraduates are selected randomly each year, covering all departments and all four grades.
Method-Variable

01 Academic Achievement
Rankings, 5 points for the top 5%, 4 for the next 15%, 3 for students from 20% to 50%, 2 for those from 50% to 80% and 1 for the last 20%

02 Knowledge Development
Reported by the participants themselves, including development in both the scope of knowledge and the professional knowledge

03 Ability Development
Reported by the participants themselves, including development of individual’s creative ability, problem-solving ability, social ability, writing ability, communication and public speaking ability, leadership, time management, teamwork and other abilities
11 factors which may possibly affect the learning outcomes

- External motivation
- Internal motivation
- Family communication
- Peer communication
- Teacher-student communication
- Learning method
- Learning hours
- Extracurricular learning activity
- Reading habit
- Self-esteem
- Sense of happiness
- Self-experience
- Learning behavior
- Interpersonal communication
- Learning motivation
- Self-experience
<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal motivation</td>
<td>Motivations out of their own interest and self-challenge</td>
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<tr>
<td>External motivation</td>
<td>Motivations out of the need of employment, the need of further studies, out of parents’ expectation, school and peer pressure</td>
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<tr>
<td>Self-esteem</td>
<td>Measured by a self-esteem ranking scale</td>
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<tr>
<td>Sense of happiness</td>
<td>Measured by a happiness ranking scale</td>
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<tr>
<td>Family communication</td>
<td>Average frequency of communication between the students and their family members</td>
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<tr>
<td>Peer communication</td>
<td>Average frequency of communication with their roommates, classmates, and research group, and discussion of academic problems and difficulties with their classmates</td>
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<tr>
<td>Teacher-student communication</td>
<td>Average frequency of communication with teachers about the difficulties they have encountered in the study</td>
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<tr>
<td>Learning method</td>
<td>1 point means that there exist situations where they feel difficult to study due to inappropriate learning method, and 0 means none</td>
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<tr>
<td>Learning hours</td>
<td>Hours students spend both in the class and on the assignment, namely hours spent in their first classroom</td>
</tr>
<tr>
<td>Extracurricular learning activity</td>
<td>Frequency of students’ participation in extracurricular academic competitions, ability development competitions and other similar activities</td>
</tr>
<tr>
<td>Reading habit</td>
<td>Numbers of major textbooks, books of general education and books for leisure read</td>
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</tbody>
</table>
Result

- Data analysis: one-way ANOVA
- In terms of learning outcomes, whether objective academic achievement or subjective knowledge and ability development, there is a significant difference between these two groups of students.
- FGCS perform significantly poorer in all three aspects than non-first-generation ones.
Study 2

Influencing factors of the learning outcomes of FGCS
Hypothesis

Learning outcome

- Academic achievement
- Knowledge development
- Ability development

Latent influencing factors

- Internal motivation
- External motivation
- Self-esteem
- Sense of happiness
- Family communication
- Peer communication
- Teacher-student communication
- Learning method
- Learning hours
- Extracurricular learning activity
- Reading habit
Data analysis

- Pooled regression model
  - When the dependent variable was the objective academic achievement, we used the ordered-logistic regression model.
  - When the dependent variable was the subjective knowledge development or ability development, we used multiple linear regression model.
Eight factors are significantly correlated with the academic achievement of FGCS.
Eight factors are significantly correlated with the knowledge development of FGCS.

- Internal motivation
- Self-esteem
- Sense of happiness
- Peer communication
- Teacher-student communication
- Learning method
- Extracurricular learning activity
- Reading habit
Six factors are significantly correlated with the ability development of FGCS.

- Internal motivation
- Self-esteem
- Sense of happiness
- Peer communication
- Teacher-student communication
- Extracurricular learning activity
Discussion

- In summary, although first-generation college students spend more time on their study, their academic achievement, knowledge development and ability development are still poorer.

- Nine factors in total are correlated with students’ objective academic achievement and subjective knowledge and ability development.

- These nine factors are internal learning motivation, sense of self-esteem, sense of happiness, peer communication, teacher-student communication, learning method, learning hours, extracurricular learning activity participation and reading habit.
Case Discussion

Exploring the effective academic advising strategies
Academic advising strategies

- Teachers from the Center for Student Learning and Development and teachers in charge of student affairs from the department together designed a complete academic advising program.

- Undergraduates of higher grades were selected from the department as tutors. These tutors then received professional training from the Center for Student Learning and Development.

- Every tutor was in charge of 5-6 students. They met regularly each week, either one-to-one or one-to many, to help the students deal with the specific problems they encountered in their study and daily life.

- Between the fourth week and the eighth week of the semester, three workshops were organized with class as a unit.

- The program also provided the intervened classes with tutorials and Q&A (question-and-answer) activities on two basic courses. They are ‘Calculus’ and ‘Linear Algebra’.
Among the impoverished students from the three intervened classes, the passing rate of the tests of basic courses was 96.7%, higher than the average passing rate of these tests among all freshmen of the class of 2015, which was 95.5%.

The average GPA of the students from class five-one was higher than that of the students from class five-two. More students were at the top, and less were at the bottom.
As a whole, we can conclude that our academic tutoring program had significant effect both on common students and on impoverished students.

The academic tutoring program designed by the centre and the department together can effectively improve first-generation college students’ learning outcomes (with academic achievement as the indicator).

In particular, the tutoring program increased the frequency of peer communication and teacher-student communication, improved the learning method, increased the learning hours and also enhanced the frequency of extracurricular learning activity participation.
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Q & A
THANK YOU!