Dimensionality Reduction and Regression Analysis Based on the Data of Educational Participation of Student Party Member

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Abstract. This study adopts the multi-stage random sampling method of grade, major and class. Data were obtained through questionnaires. Through the analysis of the questionnaire data, we find that the grade and identity distribution of the respondents are relatively uniform among the respondents. Taking the arithmetic mean value of each secondary index, we construct the dimension index based on the data of questionnaires. By least square and generalized linear regression model, we find that the influence of independent participation on the learning harvest is significantly positive, indicating that the daily party member education activities such as active participation and social practice can significantly improve the learning harvest.

1. Introduction
Relevant studies have found that after higher education enters into the popularization stage, "passive-compliant" students, who are indifferent to professional interests, vague learning objectives and passive-involved in teaching practice activities, have become the main body of Chinese college students. Based on the learning characteristics of college students, what are the learning characteristics of party members in colleges and universities? Studies by relevant scholars have shown that, on the whole, student party members are firm in their ideals and beliefs, and they can make progress in ideology and study after joining the party, and most party members are good at learning. At the same time, there are also the tendency of secularization of the motivation to join the party, the lack of initiative in the study of student party members, and the lack of strong organizational concept of party members. In the face of academic "passive adaptation" students, how to further enhance students' participation and involvement in party education and learning and promote the sense of acquisition of party education has become a practical problem.

2. Dimensional analysis of students' participation in party member education and learning behavior
The concept and behavior dimensions of student participation have different measurement standards and methods due to the different emphasis of researchers. For example, William Caponaro insists that
student participation is divided into three types: regular participation, procedural participation and intelligent participation. The research of domestic scholars also divides students' participation into three dimensions: regular participation, procedural participation and independent participation. This study adopts the above three-dimensional indicators in China and divides the learning participation of party members into three dimensions and ten first-level indicators according to the characteristics of party member education and teaching.

3. Data statistical results and analysis

3.1. Research statistical analysis
Taking the students in the school of culture and communication as an example, this paper adopts the multi-stage random sampling method of grade, major, and class. A total of 89 questionnaires were issued and 89 were returned. The collected valid questionnaires were sorted out, showing that among the respondents, the number of sophomores accounted for 26.97%, the number of juniors accounted for 20.22%, the number of seniors accounted for 26.97%, the number of first-year graduate students accounted for 15.73%, and the number of second-year graduate students accounted for 10.11%.

Statistical data show that the grade and identity distribution of the respondents are relatively uniform, covering a large area, and can reflect the learning situation of party member education in a more comprehensive way.

Table 1. reasons for respondents to participate in party member education

| Reason | Number of people | Proportion |
|--------|------------------|------------|
| Complete the course content as required and pass the examination | 69 | 77.53% |
| Understand the party's knowledge more comprehensively and interpret the relevant national policies by the courses' study | 88 | 98.88% |
| Hope to have some guidance and help for the future career | 67 | 75.28% |
| Parents and family members want them to participate in party members' education activities | 32 | 35.96% |

According to the data, among the motivation of students to participate in party member education activities, the opinion that "through party member education courses, students can have a more comprehensive understanding of party knowledge and interpret relevant national policies" occupies the largest proportion, followed by the opinion that "students should complete the course content as required and pass the examination, and strive to join the party as soon as possible".

Summarize the study motivation of party members can be found:

(1) Students have fully realized that a series of education activities for party members, such as the party course, are required courses for party member development, training and education, through which students can further understand party knowledge and improve political literacy.

(2) Students' learning vision of participating in party member education includes not only improving their theoretical level and political literacy, but also providing guidance and help for their career development. The author hopes to further clarify the political literacy and professional spirit related to the occupation through party member education activities. The student party class study desire transforms into the actual study activity.

(3) Rule-based participation plays a good role in restricting and guiding students' participation in
learning and educational activities.

3.2. Participation methods and learning harvest
The degree of students' participation and involvement in learning in different educational activities and learning environments of party members has a direct impact on learning harvest. This part through the econometric statistical analysis, studies the participation way and the study harvest influence path and the way.

3.2.1. Descriptive statistics of participation patterns and learning harvest
The dimension and index of party member's learning participation and the dimension and index of party member's learning gain were constructed by taking the arithmetic mean value of each secondary index. The construction is as follows:

\[
X_i = \frac{1}{nm} \sum_{j=1}^{n} \sum_{k=1}^{m} X_{ijk}
\]

\[
X_{ij} = \frac{1}{m} \sum_{k=1}^{m} X_{ijk}
\]

\[(n = 1, 2, \cdots; m = 1, 2, \cdots)\]

Where \(X_i\) is dimensional construction index and \(X_{ij}\) is first-level construction index

![Figure 1. party members' status of learning and participation](image)

Figure 1 shows that there are many regular learning activities for party members, such as party lessons, lectures and party members' practical activities. Due to the rules and regulations for party members' learning, there is no phenomenon of non-participation. However, process participation, such as activity reporting, after-class study and independent participation, varies greatly from person to person.

The reasons are as follows:

Firstly, regular participation requires students to abide by the basic rules of study or relevant course requirements, which is closely related to the classroom. As this participation method is mandatory under the external constraints of school rules and disciplines, the participation rate is relatively high.

Secondly, process participation and autonomous participation refer to students' active participation
in party lessons. External constraints are greatly weakened, so the participation rate is relatively low.

3.2.2. The relationship between methods of participation and learning harvest

The correlation between methods of learning participation and learning gain of party members is obtained through quantitative regression as shown in the following table:

| Variables          | Knowledge harvest | Accomplishment harvest | Self-cognitive harvest | Behavior representation |
|--------------------|-------------------|------------------------|------------------------|-------------------------|
|                    | OLS (1)           | Probit (2)             | OLS (3)                | Probit (4)              |
| Regular participation | 0.111 (0.125)    | 0.329 (0.369)          | 0.173 (0.127)          | 0.430 (0.381)          |
| Procedural         | -0.236** (0.117) | -0.540 (0.337)         | -0.312** (0.119)       | -0.565 (0.350)         |
| Autonomous         | 0.655* (0.108)   | 1.759* (0.334)         | 0.557** (0.110)        | 1.385*** (0.339)       |
|                    |                   |                        |                        |                        |
|                    | OLS (5)           | Probit (6)             | OLS (7)                | Probit (8)              |
| Regular participation | 0.128 (0.134)    | 0.425 (0.374)          | 0.0396 (0.146)         | 0.188 (0.374)          |
| Procedural         | -0.234* (0.126)  | -0.367 (0.341)         | -0.264* (0.137)        | -0.557 (0.342)         |
| Autonomous         | 0.569** (0.116)  | 1.433*** (0.328)       | 0.769** (0.126)        | 1.753** (0.340)        |
|                    |                   |                        |                        |                        |
| Observed Values    | 89                | 89                     | 89                     | 89                      |

Whether it is the least square regression or the generalized linear model regression, the influence of autonomous participation on learning harvest is significantly positive, indicating that the learning harvest can be significantly improved through active participation, social practice and other daily party member education activities. It also reflects from the side that party members' learning education should let party members develop actively in innovative practice and change the learning mode of passive acceptance into the learning mode of active inquiry. Compared with regular compulsory education and learning, autonomous learning plays an important role in improving party members' interest in learning, and its implementation effect on party members' learning harvest is particularly obvious.

4. Summary and Suggestions

In conclusion, according to the theory of student participation, the specific dimensions of student party members' behavioral participation in educational learning activities are further clarified, and the output process of party members' learning activities is studied through their participation behaviors in different dimensions. At the same time, according to the multi-dimensional structure of the learning and educational harvest of party members, the fit between the educational results and educational goals of party members is discussed. At the same time, it must be pointed out that, on the one hand, the degree of students' learning participation and involvement in different educational activities and learning environments of party members directly affects the learning harvest. On the other hand, different educational learning modes and the learning support system for party members in schools and even colleges also have a certain impact on the learning harvest of student party members.

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