

Study on the Influence of Academic Scientific Communities in the Capacity for Sustainable Development of College Students

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Abstract. The rapid social development and speedy growth of the total information amount put forward ever higher demands on the sustainable capacity of college students. As a brand-new way to train college talents, academic scientific communities play a vital role in enhancing the capacity for their sustainable development. This paper is developed on the basis of the samples from three universities affiliated to the Ministry of Education in Wuhan and exploratory empirical case studies, in which the motive and performance of college students involved in academic scientific communities as well as the management of those communities are analyzed. Effects of participation are used to research the influence. As a result of the study, this paper suggests a steady reinforced construction of academic scientific Communities to improve the sustainability of college students.

Keywords. college students; Academic Scientific Communities; Capacity for Sustainable Development

1 Background and design of the study

The capacity for sustainable development of college students refers to the ability of constant learning, trying, discovery and innovation so that students can have sustainable development during their college period and their later career life. It consists mainly of three parts which are the ability of relearning, creating and organizing and coordinating. As an important platform to cultivate creative talents, academic scientific community is a significant part of quality education and a new way to cultivate talents. It plays a unique role in the cultivation of students' sustainability.

It is of great significance to study the influence of academic scientific communities upon the sustainability of college students borned after 1990s, for the study casts a new light on the law of talent cultivation, and the way to strengthen ideological political education and to improve the quality of talent cultivation. In order to understand the influence of academic scientific communities upon the sustainability of college students thoroughly, this paper, developed on the basis of samples from three universities affiliated to the Ministry of Education in Wuhan and choosing 383 undergraduates as respondents, conducts its survey from the perspective of students' motive and performance as well as the effect of community activities. The questionnaire is designed according to five-grade system and the original data of the questionnaire is analyzed under the statistical analysis software SPSS19.0.

Analyzed from the perspective of demography, the sample takes on the following characteristics: as regard to the gender construction, females take up 58.3%, and males 41.7%; from the point of grade construction, freshmen account for 36.8%, sophomores 24.7%, juniors 26.3%, and seniors 12.2%; from the point of specialties, the questionnaire is well representative with a balanced proportion of specialties, which cover Science, Engineering, Agriculture, Medicine, Humanity and Law, and Economics and Management.

2 The current situation of college student' s involvement in academic scientific communities

2.1 The Motive of College students' Involvement in Academic Scientific Communities

In respect of the motive, 53.2% of the college students have or once joined the academic scientific communities, which are the mainstream among all the communities participated in by students. The fact that 91.2% of the students join these academic scientific communities of their own accord indicates that quite a number of college students are interested in them. 91.8% of the students join those communities out of interest, 87.4% of them participate in clubs with the intention to improve their academic study, and 92.7% of them want to expand their social circles and strengthen their comprehensive quality through community activities. This shows that the motive of the college students involved in academic scientific communities is relatively pure and they have certain expectations before taking part in those communities, which are mainly to accelerate self-development, improve their academic study and strengthen their comprehensive quality.

In order to have an overall understanding of the motives of the college students involved in academic scientific communities, this paper assigns the value to each variable according to the following rule: 1= strongly disagree; 2= disagree; 3= neutral; 4= agree; 5= strongly agree. The total score of the motive, ranging from 5 to 20, is the sum value of the four variables. The motive is stronger as the total score is higher. Taking gender and grade as the independent variables and motive as the dependent variable, this paper discovers the following facts with single factor analysis of variance: the total score of female college students (16.28) is higher than that of male college students; the score of community members' motive is decreasing from freshmen to seniors (Their scores are 16.38, 15.74, 15.56, 14.92 respectively.). It is indicated that compared with male and high-grade students, female and low-grade students are keener on participating in academic scientific communities as the P value of different gender and grade is less than 0.05 in both cases. The details are shown in table 1 below.

Table 1. The Single Factor Analysis of Variance in Gender, Grade and Motive of Participation

	Motive of Participation	
	Average	Standard Deviation
Male	15.36	3.509
Female	16.28	2.922
F Value	7.759	
P	0.006	

	Motive of Participation	
	Average	Standard Deviation
Freshman	16.38	2.631
Sophomore	15.74	3.345
Junior	15.56	3.552
Senior	14.92	4.219
F Value	2.755	
P	0.042	

2.2 Performance of College Students Involved in Academic Scientific Communitis

In terms of college students’ performance in communities, 63.9% of the college students “have taken part in most of the community activities, 60.6% of the students “enjoy community activities”, 53.9% of the them believe that “most community members take an active part in club activities”, and 74.3% of them participate in community activities out of interest and of their own accord. It suggests that most of the college students frequently take part in the activities of academic scientific communities of their free will and they can get pleasure from community activities. However, at the same time, there are still about 40% of the students who engage in fewer activities and have weaker emotional experience. Among them, 15.9% of the college students seldom participate in community activities and 21.3% of them do not like communities’ activities. It means that a lot of things need to be done so that we can arouse more students’ enthusiasm for community activities and enhance the attraction of some community activities.

Similarly, this paper assigns the value to each variable according to the follow rule: 1= strongly disagree; 2= disagree; 3= neutral; 4=agree; 5= strongly agree. The total score of the “performance”, which ranges from 5 to 20, is the sum value of the four variables. The motive of participation is stronger when the score is higher. Taking gender, grade and specialty as independent variables and performance as the dependent variable, this paper discovers the following facts with single factor analysis of variance: there is no significant difference in the performance of students of different gender and specialty (P value is higher than 0.05 in both cases). Nevertheless, there is a huge difference in the performance of students from different grades. The higher grade the student is in, the lower score of performance s/he gets (The score is 15.39, 15.05, 13.79, and 13.30 respectively from freshman to senior with the P value approaches 0). It indicates that community members take part in fewer academic scientific community activities as they become high-grade students. The details are shown in table 2 below.

Table 2. The Single Factor Analysis of Variance in Gender, Grade and Performance in Communities Activities

	Performance	
	Average	Standard Deviation
Male	14.54	2.897
Female	15.06	2.737
F Value	3.195	
Sig	0.075	

	Performance	
	Average	Standard Deviation
Freshman	15.39	2.438
Sophomore	15.05	2.953
Junior	13.79	2.984
Senior	13.30	2.696
F Value	9.492	
Sig	0.000	

2.3 Evaluation of the Management of Communities

As regard to the management of the communities, 59.7% of the college students said that their communities have pretty good student management teams; 59.3% of the students think that the management system of their communities is complete and standard; 66.7% of the students believe that the university and department have attached great importance to academic scientific communities; 62.3% of them hold that the superior guidance agent is able to offer effective guidance to communities. It indicates that the majority of the students speak highly of the management of their communities and they think especially highly of the support and guidance from the superior guidance agent to academic scientific communities. Meanwhile, the fact that 10.2% of the college students disagree with the saying that their communities have good student management teams and 11.6% of them do not believe that the superior guidance agent is able to offer effective guidance to communities shows that the quality of communities is various and the management of some communities needs improving.

Through the correlation analysis of students' performance and management of the community, it is discovered that there is a positive medium correlation between the management of the community and the students' performance. As the management of the community is better, students' performance gets better too, for the simple correlation coefficient of management and performance is 0.579 and the P value of the correlation coefficient tests all approaches 0, which is lower than the significance level 0.01. The details are shown in table 3 below.

Table 3. Correlation Coefficient of Community Management and Students' Performance

		Management	Performance
Management	Pearson Correlation	1	.579**
	Significance (Bilateral)		.000
	N	385	380
Performance	Pearson Correlation	.579**	1
	Significance (Bilateral)	.000	
	N	380	383

Note: **. is correlated significantly at the level of .01 (bilateral).

3 Analysis of the Influence of Academic Scientific Communities upon College Students' Capacity for Sustainable Development

After describing the current situation of the motive and performance of college students involved in academic scientific communities as well as the evaluation of the management of these communities and analyzing the effect of them, this paper has found that 68.2% of the college

students praise that communities are in hold of “a large number” of events and 63.9% of the students think that they are of “high quality”; 65.3% of the students believe that activities organized by communities are effective; 66.3% of them are glad to join the community. It reflects that most students are satisfied with the effect of communities and they have gained a lot through community activities.

Specifically, speaking of the influence of academic scientific communities on their capacity for sustainable development, 67.7%, 72.9% and 54.1% of the college students believe that academic scientific communities can help them improve their academic study and know about scientific and technological development as well as plan for research object respectively. In terms of the ability of practice and innovation, 62.5% and 70.4% of the students think that academic scientific communities can help them enhance the ability of practice and cultivate creative spirit, which shows that academic scientific communities have played an important role in cultivating students' ability of relearning, practice and innovation. Academic scientific communities even have a more significant effect on students' ability of organization and coordination. There are respectively 72.1%, 75.8% and 69.1% of the students who believe that it can enhance their professionalism, social adaptability and ability of organization and expression. It proves that college students believe that the ability of relearning, practice and innovation, and organization and coordination can be improved in various degrees through academic scientific communities.

It is discovered by correlation analysis that students with various motive and performance have different improvements in their capacity for sustainable development after they have joined academic scientific communities with various degrees of management. The simple correlation coefficient between motive and effect is 0.472, and the p value of correlation coefficient tests all approaches 0, lower than the significance level 0.01, which indicates that there is a positive medium correlation between the two; the simple correlation coefficient between performance and effect is 0.682, and the p value of correlation coefficient tests is near to 0, which shows that there is a positive medium correlation between the two; the simple correlation coefficient between management of the community and the effect is 0.601, and the p value of correlation coefficient tests all approaches 0, which suggests there is a positive medium correlation between the two. All these indicate that the motive and performance of the college students involved in academic scientific communities as well as the management of the community have a positive correlation with the increase in students' sustainability.

4 Advice on Strengthening the Construction of Academic Scientific Communities so as to Improve College Students' Sustainability

Since the academic scientific communities can efficiently improve college students' sustainability. Also, students' different motives and performance as well as the management of the community have a significant effect on the improvement of students' capacity for sustainable development. I believe that we should strengthen the construction of academic scientific communities in the following ways so as to enhance students' sustainability.

4.1 Improve the attraction of academic scientific communities in order to improve students' sustainability in orderly participation

It is a prerequisite for the improvement of students' sustainability that academic scientific communities should attract more students with stronger motive and clearer preference. Different academic scientific communities should highlight their special attraction and draw the attention of their key targets so that students can take part in communities orderly under the proper guidance and benefit more from their participation.

First, communities should be guided towards individualized development so as to attract members who share common interests. Administrative departments at different levels of the university should make clear and standardize its functional relationship with student clubs in order

to accelerate the transformation of academic scientific communities from “university-run” to “student-run” and support the self-management, self-education and self-service of these communities. For communities, they ought to find their own positions and develop their characteristics so as to attract and cultivate a group of community members with common interests and emotional appeal during the process of individualization.

Second, orient the characteristics of communities in order to balance different students’ enthusiasm for clubs. As is shown in the survey, compared with male and high-grade college students, female and low-grade students are keener on taking part in communities. Therefore, communities should arouse the enthusiasm of corresponding students, and strike a balance among students’ gender, specialty and grade so that students can participate in the communities in order demographically.

4.2 Improve students’ participation in academic scientific communities so as to enhance college students’ sustainability

The key to improve college students’ sustainability through academic scientific communities is the frequency and deep involvement of students’ participation in these clubs. As is discovered in the survey, a large number of college students do not attend community activities frequently and there is no deep involvement, strong emotional appeal or adequate efficiency in their participation. Thus the planning of community activities should be improved further and a new interaction mechanism between community and members needs to be developed in order to improve students’ sustainability through deep involvement.

First, improve the planning of community activities so as to strengthen its cultivation function with excellent events. The best part of academic scientific communities is their scientific and technological innovation activities and social practice activities. The stress of academic scientific communities should be put on innovative activities and practice in order to foster a benign interaction with classroom teaching, demonstrating their innovative, practical and cooperative characteristics and inspiring students to devote themselves to innovation and scientific research. At the same time, it is necessary to build multi-disciplinary academic scientific communities of high quality so as to provide a platform for high-grade students to take part in high-level scientific and technological innovation activities and for students in different majors to participate in interdisciplinary scientific and technological innovation activities.

Second, build a new membership and strengthen the function of cultivation with deep involvement based on academic interests. It is the key to the smooth operation of academic communities that the membership should be healthy, steady and based on academic interests. Currently, most of the communities build their management system after the model of student council. If an academic community operates with a hierarchy, its academic activities would eventually be done under pure executive orders, instead of academic and intellectual creativity, and the community would sooner or later get into hot water. Therefore, we should build an equal membership among group members based on their academic interests and free willing. Community activities should also be organized in accordance with academic rules in order to keep the smooth operation of community, increase the depth of students’ involvement and strengthen its function of cultivation.

4.3 Improve the management of academic scientific communities in order to enhance students’ sustainability with good service

The key to improve students’ sustainability with academic scientific communities is the management of communities. As part of the students do not speak highly of the management of their communities and they point out that a lot more should be done by the management teams and guidance agent, communities need to take further steps to build themselves and improve their

management so that college students can improve their sustainability while enjoying better management and service.

First, enhance the cohesion of the community. The managers of the community should be selected through democratic election under the support and recognition of the majority; Teachers with enthusiasm for work, background for academic study and experience of management should be engaged as counselors; members should be united by community culture and cultivated by its idea; the content and culture of the community should be enriched and passed on through some cultural carriers, such as the logo, purpose, motto, T-shirt, files of the community and etc.

Second, strengthen the management of community activities. An assessment system should be built in order to evaluate community members and activity results. Besides, the assessment of community members should be regarded as the standard to judge whether the activity is successful or not and whether it should be continued or not. According to it, activities with good evaluation ought to be supported with more physical, financial and faculty resources so as to improve their ability of planning and organization.

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