

Exploring the Educational Significance of Competitions in Chinese Higher Education

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Abstract: *Competition is a widely welcomed and promoted means of ability cultivation and knowledge examination under the current education model. In order to better leverage the positive impact of competitions in education, this study conducted questionnaire surveys and face-to-face interviews with competition participants in higher education from the perspectives of gender differences, competition mentality, students' social skills and teamwork abilities to explore the advantages of competitions. The educational significance and impact on students provide effective experiences and suggestions for students, educators and educational managers. The conclusion is that in subject competitions, the psychological pressure of students, especially girls, needs to be appropriately relieved. Students have many ideas and purposes for participating in competitions, and the guidance and publicity of educators are the most important reasons. Students are willing to use their imagination and innovation ability in competitions, but they still need certain guidance and teaching in the process of transforming from theory to practice.*

Keywords: Higher education; Competitions; China; Mental state; Gender; Social skills; Teamwork.

1. INTRODUCTION

Higher education is a critical link in developing future social elites and professionals. With the rapid development of the knowledge society and the intensification of global competition, innovative methods are constantly being created to improve the quality of education and students' comprehensive literacy (Wang, 2021). The applied education form was found that has a good effect in stimulating students' innovation ability and improving students' application ability (Hamzeh et al., 2017). Competition, as a test of students' application ability, has become an important educational tool in higher education which not only provides students with an opportunity to practice practical skills and knowledge, but also develops key thinking skills such as problem solving, innovation and teamwork (Watson & McGowan, 2020). Therefore, it becomes crucial to understand the educational significance of competitions in higher education.

The competition covers a wide range of fields, including science, technology, engineering, investment, design, cultural creativity, business and social sciences, etc (Zhang, 2014). Students from all majors have the opportunity to participate in the competition. The scale of the competition is closely related to its influence, ranging from small group competitions designed in the classroom to large competitions at the national level and even the global level, giving countless students the opportunity to participate, show their strength and achieve their dreams. More and more students are encouraged to participate in competitions, which not only test knowledge learning results, but also enhance students' practical and application abilities (Gadola & Chindamo, 2019; Li et al., 2019).

There are various types of competitions which require students to complete some related tasks and create results within a specified time, aiming at certain complex problems or innovative projects (Lampel et.al., 2012). There are also knowledge-type question and answer competitions similar to on-site competitions. etc. The rich competition formats and results rewards stimulate students' interest in learning and enthusiasm for participating and cultivate their competitiveness and self-confidence. Excellent winners can also receive certain rewards.

This article will conduct an in-depth study of the importance of competition in Chinese higher education and its educational impact. In context, the rapid development of the competition and its importance are presented. This may reflect the significance and importance of this study.

Students' gender, psychological state, social ability and teamwork ability have a certain impact on students' participation in competitions and their ability to obtain competition effects. These issues are reflected in the literature review. To study this topic, a questionnaire will be randomly administered to a higher education institution. Use questionnaires to understand some of the students' situations and their feedback after participating in the competition. This feedback refers to changes in students' professional abilities and knowledge levels after

participating in the competition. Combined with the basic situation of students, researcher will analyze the impact of some factors on the educational effects that students receive after participating in the competition during the competition. Competition is an important means to cultivate students' practical abilities and promote students' learning results under the current education model (Sukiman et.al., 2016). Understanding these is of great significance for educators to better organize various types of competitions in the future, guide students to participate in competitions, and better gain knowledge and cultivate abilities from competitions. The conclusion will summarize the educational significance of the competition in Chinese higher education and emphasize the importance of research while proposing future research directions.

In this study, researcher will explore the educational significance of competitions in higher education and analyze the impact on individual students. Investigate the motivations, purposes and goals of students' participation in the competition, and understand the series of impacts and significance the competition has on students; understand the difficulties and adjustments students face during the competition, in order to help educators understand the pressure students face during the competition, and Some suggestions are made for maximizing the use of competitions as educational tools. By delving deeper into this area, we can better understand the role of competition in higher education, thereby providing valuable insights and guidance for educators to guide and educate students through competition optimization of competition mechanisms.

2. LITERATURE REVIEW:

Gender differences have been a frequently discussed topic in international academic research. Physiological disparities between males and females often lead to behavioral distinctions based on gender. Consequently, in competition environments without gender thresholds, the outcomes of gender differences receive more attention and research (Backus et al., 2023). In competitions, performance not only relies on the individual abilities of participants but also hinges on a positive mindset as a crucial factor in achieving superior results (Popovych et al., 2022). Considering the limitations of individual abilities and thinking, teamwork can maximize the capabilities and characteristics of players to a greater extent, with effective teamwork often leading to higher team performance. The greater the difficulty and intensity of the competition, the more teamwork is required (Hwang, 2018). The contest of skills and abilities is not the entirety of the competition; communication among participants is also vital. Social interaction among participants during competitions can indirectly alleviate stress, boost confidence, and foster competitiveness (Duncan & Kern, 2020). Gender differences, psychological states, teamwork, and social skills are crucial factors influencing the outcomes and significance of competitions. This study focuses on researching and analyzing these four dimensions.

2.1 Gender Disparities in Research

In higher education, subject competitions emphasize knowledge types and skills application, typically without gender thresholds. In such environments, the impact of gender differences on outcomes receives considerable attention. Some studies suggest significant disparities in gender performance in competitions, with males often exhibiting stronger competitiveness and performance desires. This may make them appear more outstanding, yet such a portrayal is often attributed to excessive self-confidence and competitive attitudes, without significant differences in outcomes. Simona et al. (2011) posit that male students tend to be more competitive but generally exhibit weaker willingness to cooperate. Consequently, while the proportion of male leaders is higher, the proportion of equally unproductive males is also elevated, whereas females tend to contribute more consistently to the team. Overall, female participants may demonstrate weaker resilience to pressure, slightly hampering their performance in highly competitive environments. Collectively, the majority of studies tend to indicate the existence of gender disparities in competition outcomes.

2.2 Research on Psychological Traits

The psychological issues of contemporary young people are continuously discussed in social development. In competitions, maintaining a positive mindset is a crucial factor in achieving outstanding results. With a good mindset, participants can better demonstrate their true abilities, innovate, and efficiently handle various types of problems (Kruisselbrink, 2013). In competition, students bear more cognitive load, and psychological changes under pressure may hinder them from fully demonstrating their true abilities (Nebel et al., 2016). However, similar changes in psychological states may also have positive effects. The threats and challenges faced in competitions are the evaluative results of participants' perception of the competition environment. Mindset is the result of psychological stress reactions, encompassing both positive and negative mindsets. Such reaction results play a

crucial bridging role, exerting significant regulatory effects on competition outcomes and participants' states (Zeng & Cui, 2022). Therefore, maintaining psychological health and a positive mindset can greatly assist students in performing well in competitions.

2.3 Research on Team Collaboration

Subject competitions often require teamwork, with some competitions mandating participation in team formats. This necessitates students to achieve a certain level of tacit understanding and harmony in team formation and collaboration. Effective teamwork can facilitate better task completion, guide mutual learning and growth among team members, ultimately achieving the goal of self-improvement and mutual assistance (Eliasa, 2014). During competitions, team members may come from different disciplines and backgrounds. Faced with complex problems, under effective teamwork, solutions that gather strengths from various sources may become more creative and engaging, leading to more competitive outcomes (Grover et al., 2014). A positive team collaboration can also enhance the team's learning effectiveness, as mutual encouragement and inspiration contribute to unleashing potential and innovation.

2.4 Research on Social Skills

In competitions, individual social skills hold significant value. Excellent social skills encompass five fundamental elements: positive interdependence, personal and team responsibility, interpersonal interaction skills, face-to-face facilitative interaction, and team communication. Internally, good social skills aid in establishing team relationships, facilitating effective communication, and managing emotions; externally, they facilitate resource acquisition, establish friendly relationships with opponents, mentors, and expert judges, all of which positively influence competition outcomes and personal development.

For students, educators, and efficient administrators, the establishment of subject competitions has become an indispensable part of higher education. The aforementioned four factors also exert influences in various aspects, garnering attention and discussion from numerous domestic and international scholars. To some extent, Chinese scholars seem to focus more on improving participants' performance and promoting talent development when researching the educational significance of competitions in the context of higher education, somewhat overlooking student-centered competition design and research on humane care. Nevertheless, in China, competitions in the field of higher education have a long history and have always been regarded as important means to enhance students' comprehensive qualities and cultivate innovative capabilities. Competitions stimulate students' interest in learning, enhance disciplinary knowledge and skills, improve problem-solving abilities, and foster innovative thinking. Through interviews and questionnaires, this study aims to understand students' experiences and attitudes, providing more perspectives and insights for relevant research in China's competition field, as well as offering experiences and opinions.

3. COMPETITION EDUCATION: QUESTIONNAIRE SURVEY AND INTERVIEWS

3.1 Questionnaire Survey

In this study, 332 students in higher education with competition experience participated in questionnaire completion, ultimately yielding 290 valid responses (149 females and 141 males). The questionnaire design consisted of 4 basic information items and a Likert scale comprising 21 items. As shown in Table 1 data feedback, 41.38% of students experienced a significant level of pressure during competitions, with females experiencing greater pressure compared to males.

Table 1: Gender and Competition Pressure Situation

	Male		Female		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
High Pressure	13	9.22	16	10.74	29	10.00
Moderate Pressure	48	34.04	72	51.06	120	41.38
Neutral	34	24.11	26	18.44	60	20.69
Relatively Relaxed	29	20.57	19	13.48	48	16.55
Very Relaxed	17	9.93	16	11.35	33	11.38
Total	141	100.00	149	100.00	290	100.00

Table 2 describes the situation regarding individual social willingness, which is quite similar between male and female students. More than 50% of students chose the options ‘I have the willingness to socialize’ and ‘I actively engage in socializing.’

Table 2: Gender and Social Interaction Willingness

	Male		Female		Total	
	n	%	n	%	n	%
I resist social interaction	5	3.55	5	3.36	10	3.45
I try to avoid social interaction	33	23.40	31	20.81	64	22.07
I hold a neutral attitude towards	34	24.11	33	22.18	67	23.10
I have the willingness to socialize	36	25.53	57	38.26	93	32.07
I actively engage in social interaction	33	23.40	23	15.44	56	19.31
Total	141	100.00	149	100.00	290	100.00

Table 3 presents how students assess their teamwork abilities. The data distribution is generally even, with no significant gender differences evident.

Table 3: Gender and Teamwork Ability

	Male		Female		Total	
	n	%	n	%	n	%
Very Poor	5	3.55	3	2.01	8	2.76
Quite Poor	31	21.99	29	19.46	60	20.69
Neutral	40	28.37	42	28.19	82	28.28
Quite Good	42	29.79	54	36.24	96	33.10
Very Good	23	16.31	14	9.40	37	12.76
Total	141	100.00	149	100.00	290	100.00

To verify the validity of the scale data, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were conducted. The KMO measure was found to be 0.944, with a significance value of 0.000, indicating high reliability of the data and suitability for factor analysis.

Table 4: Validation and Reliability Test of Scale Data

Kaiser-Meyer-Olkin (KMO) Sampling Adequacy Test	.944
Bartlett	Approx. Chi-Square
Sphericity Test	df
	p
	4016.681
	210
	0.000

Factor analysis was conducted on the data, where the 21 items were grouped into 4 factors (as shown in Table 5): Individual Performance in Competitions ($\alpha=0.906$), Impact of Competitions on Individual Abilities ($\alpha=0.919$), Impact of Competitions on Personality ($\alpha=0.895$), and Impact of Competitions on Life ($\alpha=0.862$). Overall and factor reliabilities were found to be at a high level. The mean and standard deviation for Factor 1 were 3.56 and 0.82, respectively. For Factor 2, they were 3.64 and 0.88, for Factor 3, 3.67 and 0.86, and for Factor 4, 3.64 and 0.95, respectively. The variance explained by all four factors was 70.527%, indicating satisfactory overall information extraction. Specifically, Factor 1 accounted for 46.310%, Factor 2 for 10.910%, Factor 3 for 7.464%, and Factor 4 for 5.843%.

An independent sample t test was conducted based on each factor and gender. The test found that the significance of factor 2 (Personal ability influence) for gender was 0.034 less than 0.05, which shows that under the 5% significance condition, there is a significant difference between genders. It indicates that there are differences in the impact of competition on the personal abilities of male and female. No significant effects were shown on other factors.

Table 5: Factor Analysis of Competition Impact Scale (n=290)

Questions	Factor 1 - Personal Competition Performance ($\alpha=0.91$)	Factor 2 - Personal Ability Influence ($\alpha=0.92$)	Factor 3- Individual planning influences. ($\alpha=0.90$)	Factor 4 - Impact of life, ($=0.86$)
4.I can distinguish between theoretical knowledge and	0.781			

practical application in competitions	
6.I can innovate in competitions.	0.748
7.I can propose unique viewpoints and ideas in competitions.	0.748
1.In competitions, I can recall the knowledge I have learned.	0.742
2.In competitions, I can explain the knowledge and concepts I have learned.	0.742
3.I can apply the knowledge I have learned in competitions.	0.737
5.I can express my opinions and decisions reasonably in competitions.	0.728
8.My innovation ability has improved in competitions.	0.799
11.My autonomy has improved in competitions.	0.791
9.My application skills have improved in competitions.	0.776
13.My team interaction skills have improved in competitions.	0.754
10.My practical skills have improved in competitions.	0.754
12.My team leadership skills have improved in competitions.	0.738
16.Participating in competitions helps me formulate career plans.	0.772
15.I can coordinate between my individual abilities and teamwork.	0.771
14.My teamwork skills have improved in competitions.	0.769
18.My confidence has increased during competitions.	0.768
17.Achieving good results in competitions is helpful for my future development.	0.709
19.My self-esteem is enhanced during competitions.	0.791
21.the rewards of competitions motivate me to study harder.	0.787
20.Participating in competitions expands my interpersonal relationships.	0.725

3.2 Interviews

To gain further insights into students' experiences with competition participation, interviews were conducted with 8 students who had competition experience. They mostly became aware of and participated in competitions through notifications from their teachers. When asked about their experiences and reasons for participating in competitions, several interviewees cited accumulating credits and enriching their resumes as primary motivations. One of them competed alongside senior classmates and achieved some results. Another participant stated that he participated mainly out of personal interest. Despite not achieving good results, he enjoyed the process of participation.

The interviewees mentioned that most of the competitions they participated in were team competitions. The first interviewee was initially excited about the competition. She said, "At first, I could brainstorm freely, which made me feel free and happy, but constant revisions made me very anxious." Due to time constraints and innovation challenges, she felt some pressure during the competition. Another interviewee stated, "I wasn't that nervous," "I don't talk much to others. I don't like talking to team members." He participated in the competition out of interest and enjoyed the entire process. During the competition, he completed his work independently, which made him feel free and relaxed. Additionally, the interviewees believed that there was no significant difference between participating in competitions and their daily lives.

Regarding teamwork, one interviewee believed that independent thinking is important when innovation is required during competitions. However, she enjoyed teamwork, stating, "If you let the person next to you take a look, he might suddenly give you a new idea, which can inspire her." Another interviewee expressed that he was not good at teamwork, saying, "I prefer working alone."

Most interviewees achieved above-average grades, and when asked about professional theoretical practice during the competition, most students believed that they had achieved good transformation and practice. One interviewee said, "There is a certain gap between knowledge and practical application. Some knowledge may not be very useful, and more operations and practices are needed to discover problems and pain points."

Regarding innovation issues, most of them believed they were good at innovation. One interviewee gave an example of her proposing optimized product designs for female needs during the competition, which she considered a good application of innovation. Another interviewee mentioned a time when he innovatively combined two different disciplines, proposing a novel way of thinking, which was recognized by several expert judges.

All interviewees had some experience participating in competitions, and they all agreed that participating in competitions is very effective in cultivating abilities. Different abilities are trained and improved in different stages of the competition. Regarding the inspiration of competitions for personal development, one interviewee believed that competitions helped her better understand the practical significance and value of her major, guiding her to form new career plans. Another interviewee stated that he participated in competitions to enjoy the process more, and the improvement of personal practice and application abilities led him to form employment plans in applied industries rather than research industries.

Finally, when considering the rewards of competitions, several interviewees emphasized the practicality of rewards. The honor and titles brought by competitions can enrich resumes, and monetary rewards are also a great motivator. Some interviewees also stated that the experience of participating in competitions is very important to them. They enjoy the success and sense of glory brought by competitions, while the rewards are relatively less important.

Overall, the interviewees expressed a sense of agreement with the educational significance of competitions. They showed both similarities and differences. They all recognized the value of competitive environments for developing their abilities and knowledge. However, at the individual level, they expressed different opinions on issues such as psychological states, teamwork, and social skills in competitions. This is strongly correlated with their personalities.

4. CONCLUSION

It can be seen from the survey results that men and women are relatively similar in self-assessment of ability and social willingness, and the assessment results of ability level are relatively balanced. Students will feel some pressure when participating in competitions, especially girls. This is a problem that deserves the attention and guidance of educators. In terms of personal social willingness, the situation of male and female students is similar. Most students show willingness and initiative to socialize. Students generally believe that teamwork ability is important. The characteristics of team competitions are that they require students to cooperate and divide work, use their personal abilities while composing more excellent competition works. It cannot be ignored that each student's attitude towards teamwork and their own ability level are different.

During the interview process, the information and suggestions provided by the educators will make the interviewees pay attention to the information about the competition and consider participating. The rewards for participating and help with personal resumes have become important driving factors for participating. Likewise, some participate out of personal interest and enjoyment of the process. In the competition, students felt that they could develop and exercise their personal innovation abilities, which was proven in practice. The interviewees introduced their innovative experiences that were recognized. The interviewees agreed that competitions are of great significance to the cultivation and improvement of personal abilities. It is of great significance to future career planning and personal ability improvement. Rewards are an important motivator for competing, but for some students, the educational and personal growth of the competition itself is more important.

In general, participating in competitions is crucial to students' educational significance and personal growth. It not only cultivates students' teamwork skills and innovation awareness, but also stimulates their interest in professional fields and thinking about career planning. Despite the pressure and challenges they face during the competition; students are able to develop their mental health and coping skills by participating in the competition. Therefore, educational institutions and society should provide students with more competition opportunities and support to promote their all-round development and growth.

5. DISCUSSIONS

Judging from the research conclusions, competitions are of great significance in promoting students' educational development and personal growth. Educators need to focus on encouraging and guiding students to pay attention to and participate in competitions. Educators' guidance and support are very important. Especially for female students, the pressure they feel needs to be channeled by educators.

The role of competition in cultivating students' teamwork skills and innovation awareness is worth maintaining and improving. Especially the team competition requires teamwork and individual abilities. To achieve excellent results, contestants need to continuously improve. The process of participating can improve students' practical skills and cultivate their sense of responsibility and adaptability.

Competitions provide students with a platform to showcase their innovative abilities and gain recognition. This recognition not only boosts their confidence but also confirms the importance of the game for personal and professional development. And the diversity of the student body must be acknowledged. Different students have different attitudes and ideas, but educators should provide suggestions and guidance. Competitions have different meanings for different students. Some students value the rewards of competitions, while others prioritize the educational and personal growth opportunities inherent in the competition experience itself. However, the motivational factors that students value are all worthy of recognition.

Overall, competitions have many benefits in promoting the all-round development of students. Educational institutions and society as a whole should recognize the value of competition and provide adequate support and opportunities to cultivate students' talents and skills, thereby promoting their overall growth and success.

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