AN INVESTIGATION TO DETERMINE THE EFFECT OF EXTRACURRICULAR ACTIVITIES ON THE PERSONAL AND PROFESSIONAL DEVELOPMENT OF COLLEGE-LEVEL ENGINEERS: AN EXAMINATION OF ENGINEERING STUDENTS AT CHINESE PRIVATE COLLEGES

Liang Mingdong[1], Wan Mazlini Othman[1]

[1]Lincoln University College, Petaling Jaya, Malaysia.

ABSTRACT

The intention of this investigation was to examine the main features of engineering college students' participation in OA at one private institution in China using the Postsecondary Student Engagement Survey (PosSES 2.1), which had been translated and culturally adjusted for use in China. This article presents the findings from a survey that asked 283 senior engineering students about their personal engagement in the project and their opinions on its positive and negative aspects. The evidence suggests that participation at all levels may have a substantial influence on positive results. As a result of substantial differences in degree, hours, and kind of active involvement, engineering students' affective engagement varies widely. While students' emotional investment was unaffected by the number of OA they engaged in, the number of negative repercussions was considerably impacted. Furthermore, a strong correlation was found between emotional involvement and positive outcomes. These findings highlighted the benefits of involvement in OA and suggested that students of engineering, faculty members, and lawmakers should focus on the quality of OA interaction rather than the quantity. Furthermore, descriptive statistics are offered by the study based on the information participants shared on the elements that promote or discourage engagement outside of class. The existing Chinese literature mostly focuses on learning outcomes and student engagement. But this study proves that emotional involvement is a big element of engineering education's student engagement metrics, and it shows that open access participation is a practical way for engineering college students in China to progress.

Keywords: Extracurricular Activities, Personal Growth, Career Advancement, Collegiate Engineering.

INTRODUCTION

Universities are under pressure to enhance students' employability due to rising enrollment and a greater focus on the monetary worth of a degree. Educators have a responsibility to provide their pupils with abilities that will allow them to adapt to

the ever-accelerating changes brought about by globalization and digitization. Improving students' employability is also a topic that continues to get attention. Higher education policy and practice are significantly influenced by graduates' employability, which is a key factor in the seeming expansion of employability-oriented programs. The activities that are carried out may be shaped by the strategy emphasis on employability, which includes meeting immediate job objectives, improving professional readiness, and encouraging lifelong learning. The conventional wisdom about college graduates' capacity to find and maintain gainful employment centers on the role that extracurricular activities (ECA) play in preparing students for the workforce. Participation in university-sponsored clubs and organizations increased graduates' marketability to potential employers (Marachly et al., 2020). In contrast, ECA provides students with invaluable opportunities to hone marketable talents. Prior to 2012, there was no generally agreed-upon definition of ECA. On top of that, ECA is totally voluntary and students are under no obligation to take part. College life provides students with a perfect environment to experiment with social innovation and entrepreneurship thanks to the many on-campus extracurricular activities. Furthermore, on rare occasions, some universities do provide ECA possibilities; however, these initiatives are often dishonest since the participants do not consistently demonstrate sufficient commitment and honesty. The children seldom have a voice in the preparation or running of these events since they are so focused on the teacher. One of the main goals of the ECA is to encourage students to enroll in the foundation program. This program provides a solid groundwork for future success thanks to its structured approach, active student participation, and unwavering emphasis on self-directed, comprehensive learning. It is simple to see why many students believe that their involvement in extracurricular activities helps them in many ways. Among the many factors influencing graduates' social standing in the job market, colleges stand out. A large number of recent college graduates have crystal-clear visions of the careers they desire to have. All parties involved in social entrepreneurship education now acknowledge the importance of students, professional organizations, and educational institutions (Kumar & Choudhury, 2021).

BACKGROUND OF THE STUDY

More and more, people are starting to see college students' engagement in extracurricular activities as a component in their personal and professional progress. Engineering and other academically demanding fields are prime examples of this. While academic success is important, research shows that students' involvement in extracurricular activities significantly shapes their development as individuals. The soft skills necessary for a successful career in engineering, such as leadership, communication, teamwork, problem-solving, and time management, are greatly enhanced by these activities. Outside of the classroom, students are actively involved in a wide variety of activities, including volunteering, internships, sports, cultural events, and professional clubs. Students may use what they've learned in class, make connections with faculty and industry professionals, and build their

resumes by taking part in these activities. Despite the clear benefits, few studies have looked at how these events influence the personal and professional development of engineering students, particularly in the context of private Chinese colleges. It is critical to understand how extracurricular activities affect students' personal and intellectual progress at China's private colleges, as these institutions are rapidly growing. Engineering students at private universities may face unique challenges compared to their public university counterparts, such as less funding, more intense competition, and a more congested employment market. Students in this kind of environment may find that extracurricular activities help them develop their skills, get work experience, and stand out to prospective employers (Leung et al., 2022). The major purpose of this study is to investigate how engineering students' participation in extracurricular activities affects their development as individuals and as future engineers at private Chinese universities. This study aims to provide insight into engineering students' educational experiences by looking at the most common extracurricular activities, the skills they teach, and how these activities affect students' development as individuals and as prepared for their future careers. By proving that extracurriculars are a crucial component of engineering education, the findings may influence institutional policies and student involvement programs at private Chinese institutions. Despite widespread agreement that extracurricular activities may have positive effects on students' development as individuals and as workers, research on engineering majors at private Chinese colleges has been scant. There is a dearth of data on the impact of extracurricular activities on academic achievement over the long term since many Chinese private schools cater to younger students. These private colleges strive to provide affordable, career-oriented education, thus it is vital that they improve their academic programs and student support services by studying the influence of extracurricular activities on students' overall development. Because they cannot afford to attend the more renowned public universities, many Chinese students attend private colleges. Participating in extracurricular activities is a fantastic opportunity for engineering students at these institutions to meet new people, get experience, and grow as individuals—all of which are invaluable in today's competitive employment market. Given the rapid pace of technological innovation in China and the increasing influence of globalization, it is crucial to have a workforce that is not just skilled in technology but also adaptable, communicative, and collaborative. Participation in extracurricular activities may also benefit children's social and emotional health by fostering a sense of belonging, lowering stress levels, and building resilience. These activities encourage students to push themselves intellectually, which helps them develop transferable abilities that employers value. Volunteering, internships, clubs, and organizations all provide students real-world experience and educate them how to collaborate in many types of teams. The ability to empathize and comprehend other cultures is becoming more valuable in increasingly globalized world. This exposure to many ideas and experiences might help students develop these qualities (Kim & Smith, 2021).

PURPOSE OF THE RESEARCH

The main purpose of the research is to find out what effect extracurricular activities have on the professional and personal development of engineering students in private Chinese universities. Engineering, like any other field, requires a unique set of technical and soft abilities from its practitioners. The purpose of this study is to identify the factors that influence students' capacity to develop these skills via their participation in extracurricular activities. The researchers behind this study want to find out how different kinds of extracurricular activities (including sports, clubs, internships, and professional organizations) affect students' development as people and as workers. The research is also going to evaluate many personal development aspects, including leadership, teamwork, communication, time management, and problem-solving abilities. In addition, the study will assess how students' involvement in extracurricular activities relates to their career preparedness, employability, and readiness to enter the working world. The study's overarching goal is to discover how, in addition to a solid engineering education, students might stand out from the crowd by participating in a variety of extracurricular activities. A more diverse and skilled workforce is in high demand in today's more competitive global labor market, therefore this is crucial. Additionally, this research aspires to fill a vacuum in the existing literature by investigating an understudied topic—engineering students at private colleges in China. In order to effectively integrate extracurricular activities into engineering students' academic experiences, inform institutional policies, and illuminate the specific possibilities and risks that engineering students encounter, this research attempts to shed light on these topics. In order to help future engineers in China have a well-rounded education, this research will focus on the importance of extracurricular activities in fostering both personal and professional development.

LITERATURE REVIEW

Although many studies have examined the effects of extracurriculars on students' overall academic and professional development, very few have focused on engineering students, particularly in the context of private Chinese colleges. This literature review synthesises recent studies on the effects of extracurricular activities on student development, focusing on important aspects such as leadership development, skill improvement, job readiness, and the overall influence on students' academic and professional prospects. Numerous studies have shown the positive effects of extracurricular activities on students' personal development. Kids may hone vital life skills like emotional intelligence, leadership, and interpersonal communication by taking part in these activities. The mental health, self-esteem, and confidence of students are positively correlated with their level of participation in extracurricular activities. Academic achievement is paramount for engineering students, but they also value extracurricular activities for developing "soft skills," such as the ability to work together effectively, overcome obstacles, and cope with stress. Participation in extracurricular activities forces students to balance academic and other commitments, which improves their time management skills (Xiuyun, 2020). These activities not only help the kids unwind, but they also provide them a

sense of community, which boosts their social health. Providing emotional support and reducing feelings of loneliness, these elements might be particularly beneficial for Chinese private college students amidst strong competition. Private college students in China can make their resumes stand out from the crowd by participating in internships, student-run engineering projects, and professional engineering societies. This is particularly true in the competitive job market, where students may lack the professional networks and resources enjoyed by their public university counterparts. Skills like problem-solving, adaptability, and understanding the challenges faced by others in one's chosen profession are honed by involvement in extracurricular activities. The extracurricular leadership opportunities that engineering students at private Chinese universities have may provide them an edge in the fiercely competitive job market. Engineering organizations are always on the lookout for candidates that thrive both technically and as leaders. Participating in extracurricular activities, like student groups or community service initiatives, that enable students to take the lead may provide them with the skills that companies want in applicants. The existing literature emphasizes the value of extracurricular activities in fostering students' personal and professional development, particularly in the engineering profession. Students who are active in their extracurricular activities are more likely to develop leadership and teamwork abilities, as well as the critical thinking and interpersonal skills that employers value. To determine the exact impact on engineering students at private Chinese colleges, further research is needed. To fill this informational void, this study will look at how these students' involvement in extracurricular activities helps them grow as people and as workers, therefore preparing them for the modern workplace (Ma et al., 2022).

RESEARCH QUESTIONS

What is the impact of Cultural and Regional Influences on the personal and professional growth of college-level engineers?

METHODS

Quantitative research refers to studies that examine numerical readings of variables using one or more statistical models. The social environment may be better understood via quantitative research. Quantitative approaches are often used by academics to study problems that impact particular individuals. Objective data presented in a graphical format is a byproduct of quantitative research. Numbers are crucial to quantitative research and must be collected and analyzed in a systematic way. Averages, predictions, correlations, and extrapolating findings to larger groups are all possible with their help.

RESEARCH DESIGN

In order to analyse quantitative data, SPSS version 25 was used. When analysing the statistical association, the odds ratio and 95% confidence interval were used to determine its direction and size. A statistically significant threshold was suggested by the researchers at $p < 0.05$. The primary features of the data were identified by a descriptive analysis. Mathematical, numerical, or statistical evaluations using quantitative methodologies are often used for data gathered from surveys, polls, and questionnaires, or by modifying existing statistical data using computing tools.

SAMPLING

Research participants filled out questionnaires to provide information for the research. Using the Rao-soft program, researchers determined that there were 1574 people in the research population, so researchers sent out 1650 questionnaires. The researchers got 1628 back, and researcher excluded 16 due to incompleteness, so researchers ended up with a sample size of 1612.

DATA & MEASUREMENT

A questionnaire survey functioned as the primary data collection instrument for the investigation. The survey had two sections: (A) General demographic information and (B) Responses on online and non-online channel factors on a 5-point Likert scale. Secondary data was obtained from many sources, mostly on internet databases.

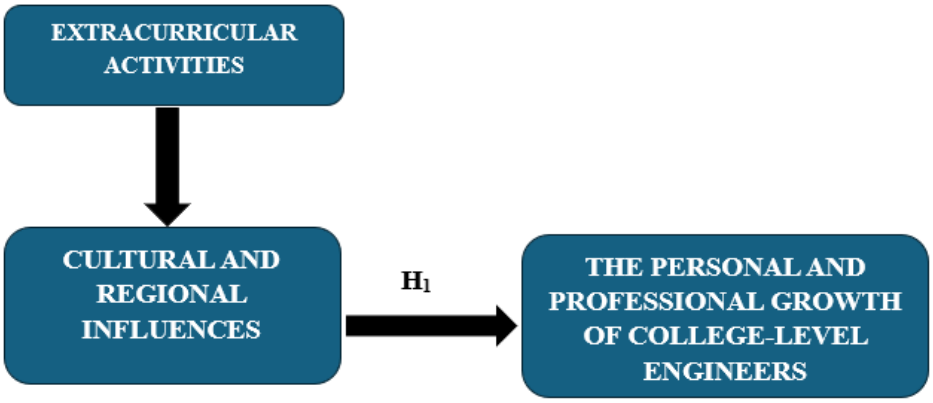
STATISTICAL SOFTWARE

The statistical analysis was conducted using SPSS 25 and MS-Excel.

STATISTICAL TOOLS

To grasp the fundamental character of the data, descriptive analysis was used. The researcher is required to analyse the data using ANOVA.

CONCEPTUAL FRAMEWORK



RESULTS

FACTOR ANALYSIS

One typical use of Factor Analysis (FA) is to verify the existence of latent components in observable data. When there are not easily observable visual or diagnostic markers, it is common practice to utilize regression coefficients to produce ratings. In FA, models are essential for success. Finding mistakes, intrusions, and obvious connections are the aims of modelling. One way to assess datasets produced by multiple regression studies is with the use of the Kaiser-Meyer-Olkin (KMO) Test. They verify that the model and sample variables are representative. According to the numbers, there is data duplication. When the proportions are less, the data is easier to understand. For KMO, the output is a number between zero and one. If the KMO value is between 0.8 and 1, then the sample size should be enough. These are the permissible boundaries, according to Kaiser: The following are the acceptance criteria set by Kaiser:

A dismal 0.050 to 0.059, subpar 0.60 to 0.69

Middle grades often range from 0.70 to 0.79.

Exhibiting a quality point score between 0.80 and 0.89.

They are astonished by the range of 0.90 to 1.00.

Table 1: KMO and Bartlett's Test for Sampling Adequacy Kaiser-Meyer-Olkin measurement: .895

The outcomes of Bartlett's test of sphericity are as follows: Approximately chi-square degrees of freedom = 190 significance = 0.000

This confirms the legitimacy of claims made just for sampling purposes. Researchers used Bartlett's Test of Sphericity to ascertain the significance of the correlation matrices. A Kaiser-Meyer-Olkin value of 0.895 indicates that the sample is sufficient. The p-value is 0.00 according to Bartlett's sphericity test. A positive outcome from

Bartlett's sphericity test indicates that the correlation matrix is not an identity matrix..

Table: KMO and Bartlett's

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.895
Bartlett's Test of Sphericity	Approx. Chi-Square	3252.968
	df	190
	Sig.	.000

The overall importance of the correlation matrices was also validated by Bartlett's Test of Sphericity. The Kaiser-Meyer-Olkin sampling adequacy is 0.895. Utilizing Bartlett's sphericity test, researchers obtained a p-value of 0.00. A notable result from Bartlett's sphericity test indicated that the correlation matrix is not valid.

INDEPENDENT VARIABLE

Extracurricular Activities: Participation in extracurricular activities by students does not impact their academic performance since they take place outside of school time. In addition to fostering their professional, social, and personal development, participants will also have the opportunity to network with fascinating new individuals, refine their current skills, and get insight into fascinating new fields. Leadership programs, clubs, sports, the arts, music, theater, debate, and the performing arts are all examples of such endeavors. Engaging in extracurricular activities is essential for kids to get a well-rounded education and acquire valuable life skills such as creativity, teamwork, and time management (Liu et al., 2023).

FACTOR

Cultural and Regional Influences: When the researcher talks about how a society's common ideas, traditions, values, and practices—as well as its geographical features—influence people's actions, perspectives, and reactions, we're talking about cultural and regional influences. The cultural norms, language, religion, art, and social behaviors of a community have an impact on the way its members think, speak, and interact with one another. Ways of living, ethical principles, and societal expectations are all shaped by these factors. Geographical, environmental, and

economic variables unique to a certain region shape regional impacts. Community goals, work habits, and way of life are impacted by factors such as local climate, resources, industry, and history of the area. The ways in which people adapt to and engage with their environments, as well as their identities, decisions, and actions, are profoundly impacted by cultural and regional factors (Dik et al., 2019).

DEPENDENT VARIABLE

The Personal and Professional Growth of College-Level Engineers: "Personal and Professional Growth of College-Level Engineers" gives engineering students a solid grounding in both theoretical and practical aspects of their chosen profession. A self-improvement toolkit includes the following abilities: critical thinking, effective communication, teamwork, leadership, and adaptation. Qualities like self-awareness, emotional intelligence, and a strong work ethic are essential for individual and team success. Technical proficiency, industry knowledge, and practical experience are the three cornerstones of a successful career. This emphasizes the value of learning the fundamentals of engineering, doing relevant research during an internship, and staying abreast of technological advancements. Some examples of professional development include learning the ins and outs of the organization, developing a career strategy that is specific to your role, and connecting with other professionals in your field. Undergraduate engineers who dedicate themselves to their education and career growth have a fantastic chance of becoming trailblazers in their field and creating meaningful change in the world (Park et al., 2022).

Relationship between Cultural and Regional Influences and The Personal and Professional Growth of College-Level Engineers: The attitudes, viewpoints, learning styles, and problem-solving methodologies of college-level engineers are profoundly impacted by cultural and geographical factors, which in turn impact their professional and personal development. Students' skill development and academic/professional navigation are shaped in part by these forces. Cultural values and traditions impact engineering students' thinking, conduct, and interpersonal skills on an individual level. Cohesive teams flourish in cultures that place a premium on cooperation, and original ideas flourish in cultures that place a premium on invention. Students' interests and goals are shaped in part by regional variables, such local companies or societal requirements, which direct them into engineering or research fields that solve problems in their neighborhood. Engineers need to be able to adapt to new situations and communicate well with people from different cultural backgrounds in today's international workplace. Students may get practical experience that is relevant to their local environment via internships, projects, or employment prospects that are dictated by regional industry and economic situations. Engineers may create solutions that are both technically excellent and socially and culturally acceptable if they take the time to learn about local customs and traditions (Simmons et al., 2019).

Based on the above discussion, the researcher formulated the following hypothesis, which was to analyse the relationship between Cultural and Regional Influences and The Personal and Professional Growth of College-Level Engineers .

H01: “There is no significant relationship between Cultural and Regional Influences and The Personal and Professional Growth of College-Level Engineers”

H1: “There is a significant relationship between Cultural and Regional Influences and The Personal and Professional Growth of College-Level Engineers”.

Table 2: H_1 ANOVA Test

ANOVA					
Sum					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	39588.620	800	5655.517	693.487	.000
Within Groups	492.770	811	5.356		
Total	40081.390	1611			

The outcome of this research is noteworthy. A p-value of.000 (below the alpha threshold) indicates that the value of F, which is 693.487, is statistically significant. This means the “There is a significant relationship between Cultural and Regional Influences and The Personal and Professional Growth of College-Level Engineers” is accepted and the null hypothesis is rejected.

CONCLUSION

The research that looked at how extracurricular activities affected the emotional and professional growth of engineering students at private Chinese institutions found that these kinds of involvement may have a profound impact. The results show that students' technical competence, soft skills, and self-confidence are all much improved by participating in extracurricular activities. Engineering students develop important skills for their future careers in leadership roles, problem solving, critical thinking, and hands-on experience via participation in groups, projects, and competitions. Interpersonal skills, such as cooperation and good communication, are essential in collaborative engineering settings, and these exercises help students develop these abilities. Participation in extracurricular activities helps kids develop skills in self-awareness, time management, and resilience, which are important for success in school and the workforce.

The report does, however, point out several institutional and cultural hurdles that are unique to private universities in China. These include, for example, the

widespread pressure on students to excel academically and the relative neglect of extracurricular activities within university curriculum. The advantages of extracurricular involvement may be maximized by addressing these issues via awareness campaigns, individualized programs, and institutional assistance. Ultimately, participation in extracurricular activities is an important supplement to academic study because it helps engineering students become well-rounded individuals and closes the gap between classroom theory and practical experience. Institutions should make it a top priority to foster an atmosphere that promotes and facilitates students' active engagement in a variety of extracurricular activities if they want to make the most of this potential (Guan et al., 2018).

REFERENCES

1. Guan X, Ma M, Li Z. The enlightenment of the current situation of college students' extracurricular activities on the development of the second classroom in colleges and universities. Cult Educ Inf. 2018;13:215–6.
2. Simmons DR, Hunsu NJ, Adesope OO. Enabling multidimensional measurement of student engagement in engineering learning environments. [Unpublished manuscript]. Department of Civil and Coastal Engineering, Herbert Wertheim College of Engineering; 2019.
3. Park SY, Cha SB, Joo MH, Na H. A multivariate discriminant analysis of university students' career decisions based on career adaptability, social support, academic major relevance, and university life satisfaction. Int J Educ Vocat Guid. 2022;22:191–206.
4. Dik BJ, O'Connor WF, Shimizu AB, Duffy RD. Personal growth and well-being at work: Contributions of vocational psychology. J Career Dev. 2019;46:31–47.
5. Liu X, Ji X, Zhang Y. Trajectories of college students' general self-efficacy, the related predictors, and depression: A piecewise growth mixture modeling approach. Heliyon. 2023;9:e15750
6. Ma Y, Bennett D, Chen SC. Perceived organisational support and university students' career exploration: The mediation role of career adaptability. High Educ Res Dev. 2022;42:903–19.
7. Kim J, Smith CK. Traumatic experiences and female university students' career adaptability. Career Dev Q. 2021;69:263–77
8. Leung SA, Mo J, Yuen M, Cheung R. Testing the career adaptability model with senior high school students in Hong Kong. J Vocat Behav. 2022;139:103808
9. Kumar D, Choudhury PK. Do private schools really produce more learning than public schools in India? Accounting for student's school absenteeism and the time spent on homework. Int J Educ Dev. 2021;83:102395.
10. Xiuyun G. An empirical study on the professional identity and career decision-making difficulties of business administration college students. City. 2020;178:42–66.