# A Model for Enhancing Leadership Competencies for Students in Communication Engineering Majors at Universities in Xiamen City, Fujian Province, China

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Abstract

**Background and Aims:** The subject of leadership competencies is well-documented in the broader educational literature. Numerous studies underscore the importance of leadership competencies for university graduates, elucidating the significant impact these competencies have on career progression, personal growth, and the ability to contribute effectively to the organizational and societal context. This research aims to explore this underrepresented territory. This research endeavors to develop a comprehensive and robust model designed explicitly for building student leadership competencies in communication engineering.

**Methodology:** In the evolving landscape of higher education, leadership competencies are increasingly recognized as vital for the professional success of graduates. This study sought to develop and validate a model specifically designed to enhance the leadership competencies of communication engineering students in universities located in Xiamen City, Fujian Province, China.

**Methodology:** Employing a mixed-methods approach, the study encompassed a survey of 2003 students across five universities, with a substantial response rate yielding 831 questionnaires. The instruments used for data collection were a structured questionnaire and a Model Validation form. Data were analyzed using descriptive statistical methods, such as mean, frequency, percentage, and the PNIModified analytical tool.

**Results:** Results indicated a moderate Mean PNIModified value of 0.363 across the leadership competencies evaluated. Competencies requiring immediate attention due to their higher-than-average PNIModified values included adaptability (0.541), conflict resolution (0.478), self-awareness and emotional intelligence (0.442), and communication (0.367). These areas were identified as the primary weaknesses in the student body's leadership profiles. In contrast, competencies such as teamwork and collaboration (0.116), social responsibility (0.293), and commitment (0.307) were recognized as strengths, with PNIModified values below the mean. The study considered many factors impacting leadership development, including the learning environment, experiential and practical opportunities, self-reflective practices, educational support, and the cultivation of teamwork and interpersonal skills. The research also considered elements influencing leadership competencies, such as engagement in activities, pedagogical methods, learning settings, critical thinking exercises, professional mentorship, and assessment strategies. Following expert consultation and iterative refinement, the study proposes a model comprising four extracurricular initiatives to bolster the underdeveloped leadership competencies. This model aspires to serve as a strategic blueprint for nurturing leadership capacities within the communication engineering student demographic in Xiamen City, thereby equipping them with the skills essential for their future roles in the workforce.

**Conclusion:** The study reveals a varied profile of leadership skills among Xiamen City communication engineering students, emphasizing the need to address immediate deficiencies in communication, self-awareness, conflict resolution, and adaptability. It seeks to improve these competencies by putting forth a customized model, guaranteeing that students are prepared for jobs in the workforce in the future.

**Keywords:** Student Leadership Competencies; Student Development; Higher Education

## Introduction

Cultivating leadership competencies within higher education is an increasing concern and an area of interest for educators, researchers, and employers alike. In the contemporary job market, characterized by rapid technological advancements, globalization, and a shift towards an increasingly knowledge-based economy, the demand for graduates encompasses more than mere technical expertise in their respective fields (Mumford et al., 2000). Today, there is a growing need for graduates who can demonstrate a nuanced blend of technical proficiency, soft competencies, and leadership competence. This is particularly salient in fields such as communication engineering, where technological evolution

necessitates a thorough understanding of intricate engineering principles and the ability to lead, communicate effectively, and make informed, strategic decisions (Judson, 2023).

The subject of leadership competencies is well-documented in the broader educational literature. Numerous studies underscore the importance of leadership competencies for university graduates, elucidating the significant impact these competencies have on career progression, personal growth, and the ability to contribute effectively to the organizational and societal context (Jokinen, 2005). However, the research landscape needs to be more comprehensive regarding the more specialized field of communication engineering, particularly within the unique context of universities in Xiamen City, China. The existing body of knowledge provides an understanding of the importance of leadership competencies for engineering graduates. Still, it does not delve into the specifics of cultivating these competencies among communication engineering students in this region.

With the communication engineering sector in China witnessing remarkable growth and expansion, there is an emerging and pressing need for graduates who can rise to the challenges of demonstrating technical prowess, leading teams, managing projects, and making strategic decisions (Chi & Liu, 2019). By exploring and proposing a targeted model for building these competencies, this research can contribute significantly to improving the quality of communication engineering graduates, thereby bolstering the competitiveness and dynamism of the sector.

Secondly, while numerous universities have initiatives to nurture leadership competencies, there is often an absence of a systematic, integrated approach, especially within specialized disciplines such as communication engineering. This study seeks to bridge this gap by developing a model that can be seamlessly incorporated into the curriculum and pedagogical practices, thereby creating a structured and systematic approach to cultivating leadership competencies.

Last, the potential implications of this study extend beyond the immediate context of Xiamen City. By probing deeply into leadership competencies within the context of communication engineering, the findings and model developed through this research could be adapted and applied in other regions and contexts, thereby contributing significantly to the broader field of leadership development in engineering education.

In sum, this research aims to explore this underrepresented territory. This research endeavors to develop a comprehensive and robust model designed explicitly for building student leadership competencies in communication engineering. This model was firmly rooted in the universities' unique cultural, educational, and industrial context in Xiamen City, China. To accomplish this, the research explored existing models, successful case studies, and current practices in these universities, with a keen eye for understanding their strengths, weaknesses, and areas of opportunity. This research aspires to navigate the underexplored terrain of student leadership competencies within communication engineering education. It seeks to get a pulse of the current landscape, identify existing gaps and challenges, and propose a comprehensive model for fostering these competencies.

**Research Objectives**

1. To explore the leadership competencies of students in higher education institutions.

2. To analyze the need for enhancing leadership competencies for students in communication engineering majors at universities in Xiamen City, Fujian Province, China.

3. To develop the model for enhancing leadership competencies for students in communication engineering majors at universities in Xiamen City, Fujian Province, China.

4. To validate the model for enhancing leadership competencies for students in communication engineering majors at universities in Xiamen City, Fujian Province, China.

**Literature Review**

This study aims to develop a model for enhancing leadership competencies for students in communication engineering majors at universities in Xiamen City, Fujian Province, China. This study is grounded in three main theoretical frameworks: Student Leadership Competencies (SLCs) (Seemiller, 2014), Social Change Theory (Komives & Wagner, 2017), and Theory of Student Involvement (Astin, 1984).

Student Leadership Competencies (SLCs) (Seemiller, 2014): According to Seemiller (2014), Student Leadership Competencies (SLCs) serve as a theoretical framework designed to explore and comprehend the range of competencies and competencies students need to exhibit for leadership roles. This theory focuses on fostering and developing these competencies within groups, organizations, and society.

In this theory, student leadership competencies are divided into three key areas: individual leadership, team leadership, and societal leadership. Individual leadership emphasizes the behaviors and decision-making processes of the individual student in a leadership role. This includes a profound understanding of self-values, beliefs, and identity and how to act according to these values and beliefs. Team leadership, on the other hand, concentrates on collaboration and shared objectives within a team. It highlights how effectively members can work together and strive towards achieving the team's goals. Societal leadership focuses on how students exhibit leadership in a broader societal context. This includes active participation and contribution to the community and impacting the overall development of society.

Seemiller's Student Leadership Competencies theory underscores the crucial role of individual, team, and societal leadership competencies in student leadership development. By understanding and developing these competencies, students can perform better in leadership roles, promoting progress within their teams and society.

The Student Leadership Competencies theory provides a practical framework for understanding and developing student leadership competencies. By grasping this theory, researchers and practitioners can develop and implement more effective strategies to enhance students' leadership competencies and contribute to societal advancement.

Social Change Theory (Komives & Wagner, 2017): According to Komives (2009), social change theory is a theoretical framework that examines the process, dynamics, and outcomes of social change. It focuses on understanding social change within groups, organizations, and society. Komives identified three fundamental values for promoting social change: group, individual, and societal.

Group values encompass collaboration, shared purpose, and controversy with civility. Collaboration highlights the ability of individuals within a group to work together towards a shared goal. Common purpose refers to the collective vision or mission that provides direction and motivation to group members. Controversy with civility emphasizes the importance of engaging in constructive dialogue and respectful disagreement to generate new ideas and perspectives.

Individual values include self-awareness, congruence, and commitment. Self-awareness involves deeply understanding one's values, beliefs, and identity. Congruence refers to aligning one's actions with one's values. Commitment entails a willingness to take action for social change, even in the face of obstacles.

Societal values encompass citizenship, which emphasizes the responsibility of individuals to actively participate in and contribute to their communities and society as a whole. Promoting these values at the group, individual, and societal levels can lead to social change through collective action and a shared commitment to creating a better world.

Komives' social change theory highlights the crucial role of individuals and teams in driving social change. They promote social change through values, awareness, commitment, action, and reflection. This theory provides a valuable framework for researching and understanding social change and guiding activities that have positive social impacts.

In summary, social change theory posits that social change is a complex process influenced by various factors, such as individual behavior, social norms, cultural values, and institutional structures. Practitioners and researchers can develop more effective interventions and strategies to promote positive social change by comprehending these variables and their interactions. These include Communication: Leaders can communicate effectively with others and build relationships. Collaboration: Leaders can work collaboratively with others to achieve their goals. Consciousness of self is the ability to understand one's values, beliefs, and identity. Commitment is the willingness to take action toward social change, even in the face of obstacles. Common purpose: The group's shared vision or mission provides direction and motivation for its members. Controversy with civility: This emphasizes the importance of engaging in constructive dialogue and respectful disagreement to generate new ideas and perspectives. Citizenship: This refers to the responsibility of individuals to actively participate in and contribute to their communities and society as a whole.

Theory of Student Involvement (Astin, 1984): In 1984, Alexander Astin introduced his influential Theory of Involvement, the Input-Environment-Outcome (I-E-O) model. This well-recognized framework seeks to interpret the effects of student engagement and participation on their college results. Astin's theory proposes a relationship between the student's background characteristics (inputs), their college experiences and interactions (environment), and their progress and accomplishments (outcomes).

The theory underlines that active engagement in academic, social, and non-academic activities at their university or college leads to students' personal growth and positive educational results. The

extent and quality of this involvement are crucial, with higher engagement levels correlating with more favorable educational results.

Astin identifies two primary categories: learning and development outcomes (relating to academic success, critical thinking abilities, personal development, and self-assurance) and attainment and retention outcomes (connected with achieving a college degree and retaining students within the institution).

The Theory of Involvement is extensively applied in higher education research, emphasizing the significance of establishing engaging and inclusive environments to facilitate students' success. In this research context, this theory provides a framework for the activities offered to students to foster their leadership competencies.

Astin's Student Involvement Theory posits that the amount and quality of student learning and personal development are directly proportional to the quality and quantity of student involvement. Astin defines involvement as the investment of physical and psychological energy in various 'objects,' which may be highly generalized (like the student experience) or highly specific (like preparing for a chemistry exam).

Astin is a prominent American scholar who was proposed in 1984. Astin's research focuses on the influence of college on students, and his involvement theory is a crucial framework for understanding and enhancing student success.

In the communication engineering sector, there is a rising demand for technically proficient graduates with strong leadership competencies (Smith, 2019). However, universities in Xiamen City, China, need help developing these leadership competencies in their students. Data from a recent survey by Xiamen University indicates a discrepancy: while 90% of communication engineering graduates demonstrate solid technical competencies, only 50% exhibit adequate leadership competencies (Xiamen University, 2023).

This competency gap has two significant implications. First, it contributes to the high rate of unemployment and underemployment among communication engineering graduates in Xiamen City, leading to a pool of underutilized talent (Wang, 2022). Secondly, it could compromise the competitiveness of Chinese communication engineering graduates globally, potentially hindering the growth and development of the communication engineering sector in China (Li & Zhang, 2023).

This research addresses these issues by developing a model to cultivate leadership competencies among communication engineering students in universities in Xiamen City, China. This model intends to align educational outcomes with industry needs, thereby reducing graduate unemployment, increasing the competitiveness of graduates, and contributing to the sustained growth of the communication engineering sector.

**Conceptual Framework**
This research aims to develop a leadership ability model for Communication Engineering students in universities in Xiamen City. Figure 1 primarily illustrates the conceptual framework of this research, detailing the three major theories supporting this study.
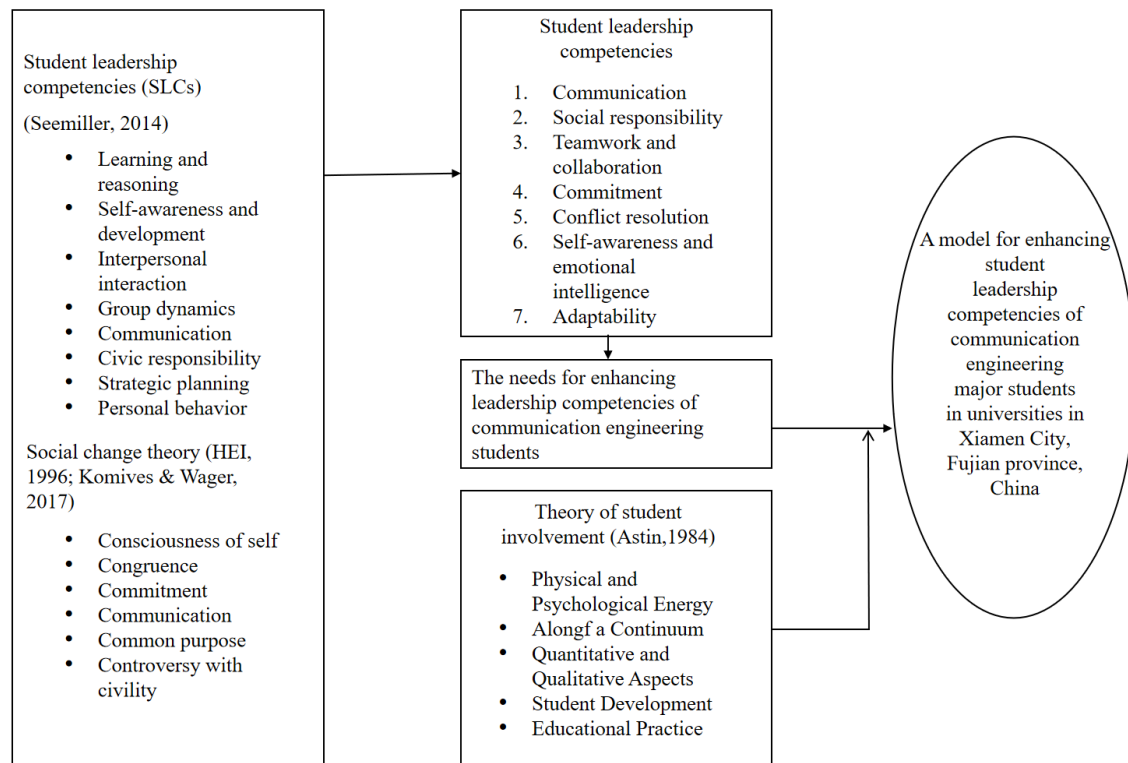
Figure 1. Conceptual framework of the study

**Research Methods**

The researcher utilizes exploratory mixed methods. This approach integrated qualitative and quantitative. As Creswell described in 2021, a mixed research approach was a strategy that involves the collection, analysis, and integration of both qualitative and quantitative data within a single study or a series of studies. This approach combined the numerical precision of quantitative research with the depth and context of qualitative research. A systematic literature review was used for Research Objective One to explore student leadership competencies in universities in China. A questionnaire was used for Research Objective Two to identify the current leadership competencies of communication engineering major students in universities in Xiamen City, China, and analyze the difference between the difference between the desirable and current leadership competencies of communication engineering major students in universities in Xiamen City, China. Research objective three developed the model of leadership competencies of communication engineering major students in universities in Xiamen City, China. Research objective four validated the model of leadership competencies of communication engineering major students in universities in Xiamen City, China.

**Results**

*Findings for Research Objective One:* seven leadership competencies were derived from the literature, which included sources from both Western and Chinese academic literature related to students' leadership competencies. They are summarized in Table 1 below:

Table 1 Summary of the Leadership Competencies for Students

| No. | Student Leadership Competence | Definition |
|---|---|---|
| 1 | Communication competencies | This includes clearly expressing ideas, listening empathetically, providing and receiving feedback constructively, and facilitating effective discussions. |
| 2 | Social Responsibility | Social responsibility refers to the obligation of individuals, organizations, or entities to act in a manner that benefits society. |
| 3 | Teamwork and Collaboration | Teamwork and collaboration refer to a group's cooperative effort towards a common goal. |
| 4 | Commitment | This is the willingness to take action toward social change, even in the face of obstacles. It is essential for social change because it allows individuals to persist in their efforts even when things get tough. |
| 5 | Conflict Resolution | Conflict resolution is finding a peaceful solution to a disagreement or conflict. |
| 6 | Self-awareness and Emotional Intelligence | This is the conscious knowledge of one's character, feelings, motives, and desires. This is the ability to understand, use, and manage your emotions positively to relieve stress, communicate effectively, empathize with others, overcome challenges, and defuse conflict. |
| 7 | Adaptability | Adaptability is adjusting one's thoughts, behaviors, and attitudes to changing situations and conditions. |

*Findings for Research Objective Two:* According to the analysis results, the most desired leadership competency of students is conflict resolution ($\bar{x}$ = 4.49), and the least desired leadership competency of students is communication competencies ($\bar{x}$ = 4.23 ). Therefore, the mean score of desired leadership competencies of students ($\bar{x}$ = 4.39) is at a high level the most current leadership competencies of students are teamwork and collaboration ($\bar{x}$ = 3.98), and the least current leadership competencies of students are adaptability ($\bar{x}$ = 2.29 ). Therefore, the mean score of current leadership competencies of students ($\bar{x}$ = 3.32) is at the Moderate level as shown in Table 2.

Table 2 Summary of Desired and Current Leadership Competencies of Students

| Leadership Competencies | Desired | | | Current | | |
|---|---|---|---|---|---|---|
| | Mean | SD | Interpretatio | Mean | SD | Interpretatio |
| Communication Competencies | 4.23 | .56 | High | 3.21 | .82 | Moderate |
| Social Responsibility | 4.36 | .62 | High | 3.42 | .87 | Moderate |
| Teamwork and Collaboration | 4.44 | .61 | High | 3.98 | .75 | High |
| Commitment | 4.37 | .70 | High | 3.34 | .75 | Moderate |
| Conflict Resolution | 4.49 | .76 | High | 3.10 | .86 | Moderate |
| Self-awareness and Emotional Intelligence | 4.43 | .79 | High | 3.18 | .85 | Moderate |
| Adaptability | 4.45 | .75 | High | 2.99 | .80 | Moderate |
| **Overall** | **4.39** | **.67** | **High** | **3.32** | **.81** | **Moderat** |

To find out the student leadership competencies that need to be developed in priority, objective two analyzed the research results of Table 2 through the $PNI_{modified}$ Formula, the results as shown in Table 3.

Table 3 The Needs for enhancing leadership competencies for students in communication engineering majors at universities in Xiamen City, Fujian Province, China (n = 831)

| Students Leadership Competencies | $PNI_{modified}$ | Rank | Strength (<mean) | Weakness (>mean) |
|---|---|---|---|---|
| Communication Competencies | 0.367 | 4 | | 4 |
| Social Responsibility | 0.293 | 6 | 2 | |
| Teamwork and Collaboration | 0.116 | 7 | 1 | |
| Commitment | 0.307 | 5 | 3 | |
| Conflict Resolution | 0.478 | 2 | | 2 |
| Self-awareness and Emotional Intelligence | 0.442 | 3 | | 3 |
| Adaptability | 0.541 | 1 | | 1 |

Mean of $PNI_{modified}$ = 0.363

Table 3 shows the Mean of the $PNI_{modified}$ value at 0.363 of students' leadership competencies. According to the ranking, adaptability has a $PNI_{modified}$ value of 0.541, conflict resolution has a $PNI_{modified}$ value of 0.478, self-awareness and emotional intelligence have a $PNI_{modified}$ value of 0.442, and communication competencies have a $PNI_{modified}$ value of 0.367. These four students' leadership competencies have an average higher than the mean of $PNI_{modified}$ value (0.363), which indicates that there is a big difference between the desired level and the current level of these students' leadership competencies, and the improvement and development of these students' leadership competencies should be prioritized, thus these four students' leadership competencies are weaknesses.

Also, teamwork and collaboration have a $PNI_{modified}$ value of 0.116, social responsibility has a $PNI_{modified}$ value of 0.293, and commitment has a $PN_{Imodified}$ value of 0.307. These three students' leadership competencies have an average lower than the mean of the $PNI_{modified}$ value (0.363), which indicates that these three students' leadership competencies are strong.

Hence, according to Table 3, there are four students' leadership competencies that need to be developed in priority, that is*, Communication Competencies, Conflict Resolution, Self-awareness Emotional Intelligence, and Adaptability.*

*Findings for Research Objectives Three and Four:* from all the previous findings, a model was developed and validated using a focus group comprised of 15 experts with advanced degrees and/or more than ten years of experience related to students' leadership competencies. The final validated model is shown in Figure 2 below.
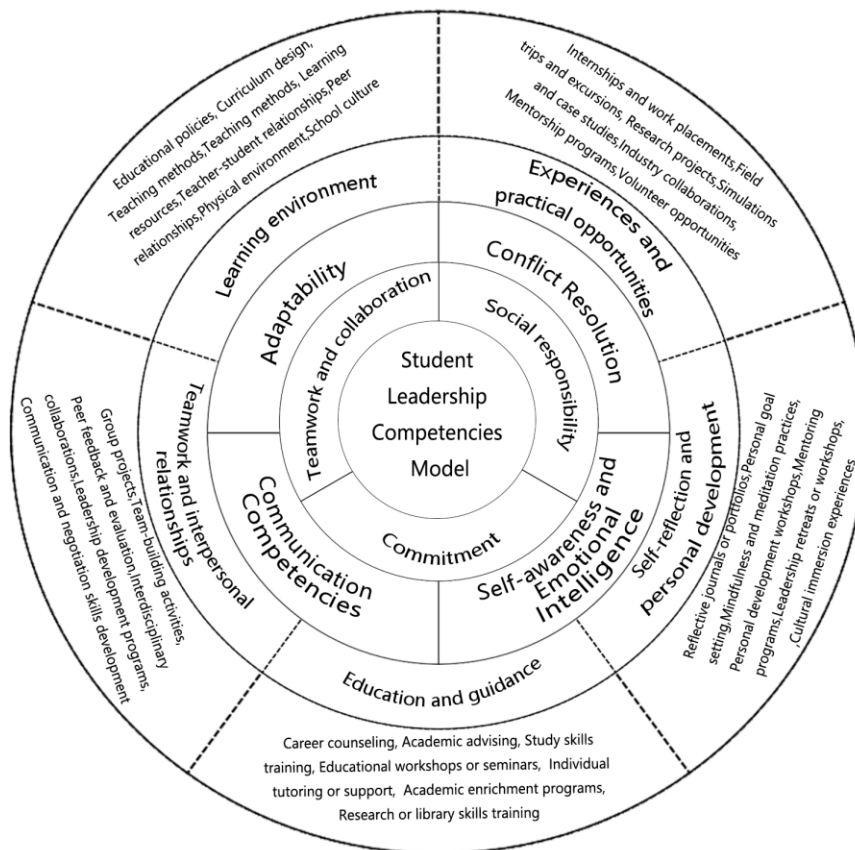
Figure 2 Validated a model for enhancing leadership competencies for students in communication engineering majors at universities in Xiamen City, Fujian Province, China.

**Explanation of the Model：**

The draft of the model has five circles, which can be divided into four parts to explain. The first part is the purpose of the model, that is, the innermost circle of the model, to develop student leadership competencies.

The second part contains the second circle. The second circle shows the student's strengths in leadership competencies, which are *Teamwork and collaboration, Social responsibility, and Commitment.*

The third part contains the second circle. The third circle shows the leadership competencies that need to be developed as a priority, which are *Adaptability, Conflict Resolution, Self-awareness, Emotional Intelligence, and Communication Competencies.*

The fourth part, composed of the fourth and fifth circles, introduces the components of each student's leadership competencies and proposes four activities

**Discussion**

The investigation posits that student leadership competencies play a salient role in fostering student advancement. Empirical evidence elucidated both the extant and the ideal leadership competencies among students, thereby delineating specific leadership competencies necessitating targeted enhancement. Within the constructed model, the study advocates for the augmentation of student leadership competencies via structured extracurricular engagements. It articulates five essential competencies that warrant cultivation within the cohort of communication engineering undergraduates at tertiary institutions in Xiamen, Fujian Province, China.

The scholarly discourse acknowledges that the fostering of college student leadership development has been historically neglected. Nonetheless, the significance of such development and its positive outcomes have been substantiated in more recent literature (Johnson & Lee, 2020). Leadership skills in students are deemed crucial for meeting societal expectations and demonstrating competency in navigating the evolving social milieu of the 21st century (Zheng et al., 2020).

Within the Chinese context, cultural variances substantially influence student leadership development. Wu et al. (2014) analyzed differences in leadership development between Chinese and international college students, particularly through the prism of extracurricular activities. Their study highlighted a lack of alignment between the training methodologies employed by Chinese universities and students' academic disciplines. It was noted that Chinese institutions often emulate foreign leadership programs without tailoring them to China's unique cultural attributes. This reflects an overarching deficiency in the design of programs that incorporate Chinese cultural and societal characteristics.

Li & Shi (2008) corroborated this view, advocating for leadership development programs that are congruent with the specificities of Chinese society and the higher education system. The imperative then is for leadership programs to be culturally contextualized, while also broadening the scope of developmental strategies. This could include integrating diverse pedagogical approaches such as scenario simulations, case studies, volunteer work, and other extracurricular engagements into the academic curriculum to enhance student learning and motivation (Weng, 2017; Zhang et al., 2018).

Murage et al. (2018) asserted that the cultivation of leadership skills not only enriches the framework of student leadership development but also offers a plethora of learning modalities. Further, such skills development has been shown to bolster students' motivation for learning and engagement. The model where extracurricular activities, when combined with academic knowledge, serve as an efficacious means to enhance both learning and leadership competencies. Studies such as those by Marinescu et al. (2019) have validated that profession-centric activities fortify students' mastery of leadership skills.

Collectively, these studies illuminate the influence of student leadership skills and extracurricular activities on the overarching development of student leadership. The consensus posits that these skills are integral to effectively enhancing student leadership development and the efficacy of extracurricular activities in fostering leadership skills has been corroborated. However, Carter et al. (2016) contended that while extracurricular activities play a pivotal role in flexibly nurturing students' leadership skill sets, they should be regarded as supplementary to the curriculum, which is the primary influence on leadership development. Consequently, further empirical inquiries are warranted to elucidate the constructive impact of extracurricular activities on student leadership skills.

The exploration into the impact of gender on student leadership development has yielded nuanced findings. Skendall et al. (2017) observed that male students generally exhibit greater ambition and higher self-assessment upon university entry, indicating a gender disparity in the perception of leadership skills. However, the study also identified that this perceived difference does not translate into a significant gap in employability upon graduation, thereby suggesting that the influence of gender on internship and job prospects is minimal.

Echoing this finding, Ngayo Fotso (2021) discerned only marginal differences in the entrepreneurial outcomes of male and female graduates. They posited that external perceptions of gender might influence students' development, but these do not ultimately affect the level of achievement of graduates, regardless of gender.

The role of leadership programs in skill development is also underscored by Giles 2016), who found that participation in such programs enhances leadership skills in students. Pickering's model also acknowledges demographic factors, implying that leadership development programs should account for diverse backgrounds for inclusion and effectiveness.

Although demographic factors, including gender, may not be primary determinants of student leadership development, the literature suggests they are worth considering. The emphasis on innovation and creativity in the context of Chinese higher education, as noted by Jin et al. (2016), is particularly pertinent given the demand for these skills in the rapidly advancing technological landscape of the 21st century (Komives et al., 2009).

The process of internationalization in higher education, as studied by Smith et al. (2019), further accentuates the importance of creativity, advocating for experiential learning through international exchanges and collaborative projects. Similarly, Pradubthong et al. (2019) argue for the integration of innovation in learning, proposing structured, student-centered approaches to imbue these skills.

In the Chinese educational milieu, the encouragement of innovation and creativity often involves brainstorming sessions, where teacher support is viewed as a catalyst for stimulating student ideation (Li & Shi, 2008; Weng & Yan, 2018). This support is seen as a pivotal element in fostering an environment conducive to the development of these key competencies.

In summary, while gender may influence the perceived readiness and confidence in leadership abilities among students, its effect on tangible outcomes like employability and entrepreneurial success is not pronounced. The focus on innovation and creativity is aligned with the needs of contemporary society and is being actively promoted within the Chinese educational system. Leadership development

programs that consider demographic variables and promote creativity through both curricular and extracurricular activities are therefore critical for comprehensive student leadership development.

**Conclusion**

The findings from the first research objective identified seven key leadership competencies essential for students, which include *Communication competencies; Social Responsibility; Teamwork and Collaboration; Commitment; Conflict Resolution; Self-awareness and Emotional Intelligence; and Adaptability.* These specific competencies were drawn from existing scholarly work on the subject of student leadership qualities.

Findings from the second research objective, according to the analysis results show the Mean of PNImodified value at 0.363 of students' leadership competencies. According to the ranking, adaptability has a PNImodified value of 0.541, conflict resolution has a PNImodified value of 0.478, self-awareness and emotional intelligence have a PNImodified value of 0.442, and communication competencies have a PNImodified value of 0.367. These four students' leadership competencies have an average higher than the mean of PNImodified value (0.363), which indicates that there is a big difference between the desired level and the current level of these students' leadership competencies, and the improvement and development of these students' leadership competencies should be prioritized, thus these four students' leadership competencies are weaknesses.

Also, teamwork and collaboration have a PNImodified value of 0.116, social responsibility has a PNImodified value of 0.293, and commitment has a PNImodified value of 0.307. These three students' leadership competencies have an average lower than the mean of the PNImodified value (0.363), which indicates that these three students' leadership competencies are strong.

Hence, there are four students' leadership competencies that need to be developed in priority, that is, Communication Competencies, Conflict Resolution, Self-awareness, and Emotional Intelligence and Adaptability.

For the third and fourth aims of the study, insights gathered from all previous research goals were integrated to construct a conceptual framework. This model incorporated key leadership skills relevant to students, ordered according to their importance. Expert validation was sought to confirm the soundness of this theoretical model.

**Recommendation**

The field of Communication Engineering is undergoing rapid transformation, driven by technological advancements and evolving industry demands. As such, the education of communication engineers must not only keep pace with technical knowledge but also with the development of leadership and interpersonal skills. To ensure that educational programs are effectively preparing students for these challenges, targeted research is needed to understand and improve the various dimensions of Communication Engineering education.

**Recommendations for Universities:**

Integration of Leadership Competencies: Universities should consider integrating leadership competencies, including communication competencies, conflict resolution, self-awareness and emotional intelligence, and adaptability, into their curriculum and educational programs. These competencies should be explicitly addressed and reinforced across various academic disciplines and co-curricular activities.

Experiential Learning Opportunities: Provide students with ample opportunities for experiential learning to foster the development of their leadership competencies. Encourage their active participation in team-based projects, community service initiatives, and leadership roles within student organizations. These experiences will allow students to apply their skills in real-world situations and enhance their leadership abilities.

Faculty Training and Professional Development: Offer comprehensive faculty training and professional development programs to enhance educators' understanding and capacity to nurture and develop students' leadership competencies. Faculty members should be equipped with the knowledge and skills to create a supportive and inclusive learning environment that promotes the growth of leadership skills in students.

Cultivate a Supportive Campus Culture: Foster a campus culture that values and promotes leadership development. Recognize and celebrate student leadership achievements through awards, leadership development programs, and opportunities for student input and decision-making. Establish mentorship programs where older students or faculty members can support the development of leadership competencies in younger students.

**Recommendations for Students:**

Self-reflection and Goal Setting: Encourage students to engage in self-reflection to identify their strengths and areas for improvement in terms of leadership competencies. Support them in setting specific goals to develop and enhance their identified competencies. This process can be facilitated through individualized guidance and counseling sessions.

Actively Seek Leadership Opportunities: Encourage students to actively seek leadership roles and engage in activities that require the application of leadership competencies. This can include participating in student government, organizing events, leading group projects, or volunteering in community service initiatives. By taking on leadership responsibilities, students can further develop and refine their skills.

Embrace Continuous Learning and Growth: Foster a mindset of continuous learning and encourage students to seek out opportunities to develop their leadership competencies. This can involve reading relevant literature, attending leadership workshops or seminars, and seeking feedback from mentors or faculty members. Encourage students to reflect on their experiences and identify areas for improvement.

**Recommendations for Future Researchers:**

Longitudinal Studies: Conduct longitudinal studies to examine the long-term impact of leadership development programs on students' personal and academic growth. Investigate how the development of leadership competencies in students relates to their future success in higher education and professional careers.

Cross-Cultural Studies: Conduct cross-cultural studies to explore how leadership competencies manifest and are valued in different cultural contexts. Investigate the cultural factors that may influence the development and expression of leadership competencies in students.

Intervention Studies: Design and implement intervention studies to evaluate the effectiveness of specific strategies and interventions aimed at developing students' leadership competencies. Compare different approaches and identify the most effective methods for fostering leadership development in students.

Mixed-Methods Research: Employ mixed-methods research designs to gain a comprehensive understanding of students' leadership competencies. Combine quantitative measures with qualitative data collection methods, such as interviews or focus groups, to explore students' experiences, perceptions, and attitudes toward leadership.

By implementing these recommendations, universities can create an environment that facilitates the development of students' leadership competencies, enabling them to become effective leaders in their personal and professional lives.

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