



## Enhancing Undergraduate Employability and Career Adaptability through Career Planning Education: The Mediating Role of Career Decision-Making Self-Efficacy

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### ABSTRACT

**Background and Aim:** Career decision-making self-efficacy serves as a mediating factor in the association between career planning education and the employability and career adaptability of undergraduate students enrolled in universities in China. **Methods:** Employing both quantitative and qualitative methodologies, this study incorporates a survey of 500 students from various disciplines alongside in-depth, one-to-one interviews with 20 students. Analysis of the quantitative data suggests that career planning education enhances students' self-efficacy in career decision-making, thereby improving their employability and adaptability to the workforce. These findings are further supported by qualitative data, as post hoc interviews indicate that students' self-efficacy is positively influenced by practical and experiential components of career planning education, such as internships and workshops, which prepare them for the dynamic nature of the labour market.

**Results:** The research findings highlight challenges such as the limited availability of comprehensive career guidance resources and the misalignment between educational content and vocational requirements, both of which can impede the effectiveness of career development initiatives. These results indicate the necessity of integrating practical experiences and robust support systems into career planning education within academic institutions. Additionally, they underscore the need for academic programmes to be more closely aligned with labour market demands. **Conclusion:** The study presents valuable implications for educators, policymakers, and career advisors committed to equipping undergraduate students for successful career pathways.

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## Background

Contemporary trends in the global economy have heightened concerns regarding career planning skills, particularly for undergraduate students. In an era characterised by rapid technological advancements and the emergence of complex global opportunities that reshape professional landscapes, the importance of career planning skills has never been more pronounced. This shift is reflected in various educational programmes and research initiatives aimed at equipping students for their future careers. [Irawan et al. \(2021\)](#) highlighted the development of simulation-based educational tools, such as Dakon, which can enhance career preparedness among high school students. Such approaches underscore a broader transition in career education towards incorporating interactive, experiential learning methods. These tools simulate real-world career challenges, fostering essential skills such as problem-solving, decisiveness, and adaptability – competencies that are crucial in today's dynamic and diversified job market.

Similarly, [Chaiyama and Kaewpila \(2021\)](#) emphasised the significance of enterprise education in equipping higher education students with essential life and career skills for the twenty-first century. Their research underscores the necessity of preparing students beyond conventional academic knowledge, advocating for the development of competencies such as critical thinking, collaboration, and the proficient use of digital tools – attributes increasingly sought by modern employers. In light of these findings, this study recommends integrating these competencies into undergraduate curricula to better prepare graduates for the evolving demands of the workforce. The contribution of career education to employability is further explored by [Deng and Wu \(2023\)](#) through their proposed '2+3+5' integration model. This framework establishes a connection between career orientation and employment guidance programmes, with the overarching objective of aligning students' competencies with the demands of the labour market. By addressing this alignment, the model seeks to enhance students' market-relevant skills, thereby bridging the gap between academic preparation and workplace requirements. This approach underscores the importance of equipping students with the practical abilities needed to thrive in a competitive employment landscape.

Career development extends beyond merely preparing students to secure their first job; it also involves providing them with long-term career direction. [Dong \(2024\)](#) discusses the integration of ideological and political education within career development, particularly within the context of the Chinese education system. This study highlights how such educational approaches play a pivotal role in shaping students' values and, consequently, their lifelong career trajectories. By incorporating ideological education into career preparation, educators can offer students deeper insights into how they can contribute meaningfully to society while simultaneously achieving professional success. This dual focus on personal and societal development enriches the broader objectives of career education.

In contemporary higher education, career development has become a central component, reflecting the growing emphasis on preparing students for dynamic and evolving work environments. The traditional industrial model of education, which prioritised knowledge-based outcomes, is increasingly viewed as inadequate for meeting the demands of modern society. As the nature of work continues to shift, there is a pressing

need for career development education that not only imparts foundational knowledge but also cultivates the adaptable skills and competencies required in today's labour market. This holistic approach ensures that students are equipped to navigate the complexities of their future careers effectively.

Career planning has been the focus of extensive scholarly investigation, including the work of [Wulandari et al. \(2023\)](#), who developed the Student Career Planning Inventory (SCPI). This instrument is designed to assess students' readiness for career development and their decision-making capabilities, while also identifying areas requiring improvement. The SCPI provides valuable insights into the effectiveness of career education programmes, highlighting aspects in need of enhancement and offering guidance on how educators should tailor their approaches to meet students' specific needs. A key challenge in career planning education lies in preparing students not only for their initial post-graduation employment but also for long-term career management. [Fangping and Mohd \(2024\)](#) examined the impact of career counselling on the self-motivation levels of undergraduate students in Jiangxi, China. Their findings suggest that career coaching positively influences students' course engagement, motivation, job satisfaction, and overall well-being – factors that are crucial for long-term career success. By encouraging students to take early responsibility for their career trajectories, career coaching equips them with the skills needed to navigate the uncertainties and risks inherent in the modern job market.

[Falcone et al. \(2018\)](#) also emphasised the importance of career preparation within educational institutions through the Career Compass Professional Development Programme. This initiative seeks to cultivate essential qualities such as integrity, confidence, efficiency, accountability, and responsibility among undergraduate engineering students. By integrating academic learning with professional training, the programme aims to develop graduates who not only excel in their technical expertise but also demonstrate strong ethical standards and interpersonal skills, thereby fostering professional leadership. The increasing demands of global education further underscore the significance of career planning, particularly given the variations in international labour markets. For instance, [Zhang et al. \(2023\)](#) compared the ship engineering curricula in China and the United Kingdom, highlighting concerns related to sustainable career development. Additionally, the COVID-19 pandemic has reinforced the necessity of adaptability and resilience in career planning. [Wen et al. \(2021\)](#) conducted a cross-sectional survey, which revealed that the pandemic prompted students to adjust their long-term career objectives and professional identities, particularly in response to epidemic and pandemic-related challenges. These findings highlight the imperative for career planning education to align with global trends and equip students with the flexibility required to navigate future disruptions in the job market.

## Literature Review

In recent years, significant attention has been given to career planning and its impact on employability, thereby influencing overall career readiness. The literature identifies several key factors shaping career planning, including self-efficacy, institutional support, information dissemination, mentorship, educational policies, and socio-cultural influences. This section synthesises contemporary research to provide a comprehensive perspective on the various determinants of career development and their implications for students' employment prospects.

### *CESA: Career Education Skills and Adaptability*

Liu et al. (2023) investigated the relationship between career education skills and career adaptability among university students in China, with a particular focus on the mediating role of career decision-making self-efficacy. Their findings indicate that students possessing stronger career education skills are better equipped to navigate the challenges of the labour market. In this context, career adaptability refers to an individual's resources and preparedness for meeting both current and future career development demands. The study further demonstrates that career decision-making self-efficacy—defined as confidence in one's ability to make effective career choices—partially mediates this relationship. These findings are significant in addressing deficiencies in career education skills and self-efficacy, emphasising the need for initiatives that enhance students' adaptability to workforce requirements and improve their employability.

### *Effects of Over Qualification in Career Development*

Career behaviours in the context of overqualification represent another significant area of exploration within the literature. Li et al. (2022) investigate how overqualification can facilitate the regulation of bootlegging—a form of informal, pre-emptive innovation within organisations. Their findings suggest that bootlegging is more likely to occur among overqualified employees who exhibit proactive personalities. This implies that individual traits, such as proactivity, can mitigate the adverse effects of overqualification, including job dissatisfaction and disengagement (Zhao et al., 2024). Although this research primarily focuses on employees rather than students, it offers valuable insights for career planning. Specifically, it highlights the potential benefits of fostering proactive career behaviours among students. By encouraging such behaviours, students may develop strategies to effectively navigate and even capitalise on situations where they are overqualified, thereby enhancing their long-term career satisfaction and success. This perspective underscores the importance of integrating proactive skill development into career education programmes to better prepare students for the complexities of the modern workforce.

### *A Mentor is an Essential Part of Career Planning*

Counselling and mentorship are recognised as crucial elements in career advancement, particularly for women of colour. Swanson (2022) highlights mentoring as a valuable process that provides the next generation of women toxicologists with encouragement, motivation, and opportunities for professional growth. This study underscores the importance of career affordances, particularly in fields where individuals belong to underrepresented groups, whether in terms of gender or other factors. By bridging academic interventions with professional practice, mentorship helps clarify the skills necessary for success in specific careers, thereby enhancing students' career preparedness and development.

### *Impact of Socio-Cultural Factors*

The role of socio-cultural factors in career advancement is well substantiated. Zuo (2022) examines various determinants influencing students' engagement with online platforms in micro-entrepreneurship, including perceived importance, ease of use,

attitude, behavioural intention, and sustained usage among undergraduate and postgraduate students across selected countries. The study highlights cultural norms and challenges in adapting to new socio-cultural environments as key factors shaping students' career choices. In light of these findings, higher education institutions must consider these influences when delivering career services to international students. As emphasised by [Li et al. \(2022\)](#) and [Noora and Wani \(2021\)](#), effective strategies should be implemented to mitigate cultural barriers in career decision-making, ensuring equitable access to career development opportunities.

#### *Education Policies and Development Strategies of Career Planning*

National educational policies and institutional frameworks play a significant role in shaping students' career strategies and marketability. [Xiong \(2023\)](#) examines the challenges faced in executing career planning initiatives. The findings indicate that career counsellors often struggle with resource limitations and must tailor guidance services to individual students. This underscores the need for institutional support to strengthen career planning programmes, ensuring equitable access to career development resources ([Jiang et al., 2023](#); [Scaturro Heil, 2019](#)). Building on these insights, [Zakaria et al. \(2022\)](#) investigate the factors influencing career development and planning among educators in Technical and Vocational Education and Training (TVET) institutions. Their research highlights the critical role of organisational support and education policies in enhancing career planning effectiveness. The study suggests that both educators and students benefit significantly from well-structured career development initiatives supported by institutional policies. Consequently, financial and other resources must be allocated to career planning, recognising it as a strategic investment in education. The education sector should prioritise budgeting for career development, not only for students but also for educators, as it is essential for long-term institutional and workforce success. Here, the relationship between major identity and career planning was examined.

[Sun \(2020\)](#) explores the relationship between career development and core self-identification among preservice undergraduates majoring in preschool education. The study reveals that students who exhibit a strong alignment between their chosen specialisation and their personal identity tend to engage more actively in career planning. Major identity, defined as the extent to which students identify with and feel a sense of belonging to their academic field, emerges as a critical factor in this process. The findings suggest that fostering a strong major identity can enhance students' commitment to their career goals, thereby facilitating more effective career planning and greater career achievement. This underscores the importance of cultivating a sense of belonging and identification with one's field of study as a means of supporting students in their career development and long-term professional success.

#### *Part of Engaging Employability and Managing and Monitoring Proactively*

The relationship between work placement supervisor support and engagement in anticipatory career behaviours is examined by [Okolie et al. \(2022\)](#). Their study identifies supervisor support as a critical factor in fostering students' proactive behaviours during practical experiences. Key anticipatory career behaviours, such as seeking feedback, networking, and acquiring new skills, are highlighted as essential for enhancing workplace success. The findings emphasise the importance of investing in robust support systems to

encourage proactive behaviours during work placements, which can significantly improve students' employability. This research underscores the value of structured supervisor support in equipping students with the skills and confidence needed to navigate their early career stages effectively.

### Methodology

This study employs a mixed-methods approach to examine the impact of career planning education on undergraduate students' employability and career adaptability, with career decision-making self-efficacy serving as a mediating factor. The research is conducted in two phases, incorporating both quantitative and qualitative methodologies. In the quantitative phase, a self-developed structured questionnaire was administered to 500 undergraduate students from various disciplines and universities across China. The survey utilised validated scales to measure key variables, including career development learning outcomes, career choice readiness confidence, job readiness, and career adaptability. Standard instruments such as the CAAS and the SCPI were employed to assess students' career-related concerns. To analyse the relationships between these variables and to determine the effects of career planning education on employability and career adaptability, correlation and regression analyses were performed using SPSS software. The qualitative phase involved in-depth, one-to-one interviews with 20 students, selected from an initial pool of 120 based on their career adaptability scores as assessed by the researcher. These interviews aimed to explore students' perceptions of career planning education and its influence on their career decision-making self-efficacy, employability, and adaptability. To complement the quantitative findings, thematic analysis was conducted to assess thematic density, as well as the prevalence and variation of emerging themes.

### Results

This section presents the study's findings on the impact of career planning education on underprivileged undergraduate students' employability and career adaptability. The results are divided into two subsections: quantitative survey data and qualitative interview insights. Additionally, numerical tables illustrate the coefficients derived from the analysis.

#### *Quantitative Survey Results*

The quantitative survey, completed by 500 undergraduate students from various programmes in Chinese universities, measured three key variables: career education skills, career decision-making self-efficacy, and career adaptability. The statistical analysis examined the relationships between these factors and employability.

#### *Descriptive Statistics*

Table 1 provides a summary of the variables examined in the research study, including their mean values, standard deviations, and ranges. The results indicate that students exhibited moderate levels of career education skills, career decision-making self-efficacy, and career adaptability. These findings suggest that while students possess a foundational level of competence in these areas, there is significant room for improvement. The moderate levels observed highlight the need for enhanced educational interventions and

support systems to further develop students' career-related skills and adaptability, thereby better preparing them for the demands of the modern workforce.

**Table 1**

*Descriptive Statistics of Key Variables*

Variable	Mean	Standard Deviation	Range
Career Education Skills	3.62	0.78	1-5
Career Decision-Making Self-Efficacy	3.75	0.85	1-5
Career Adaptability	3.58	0.81	1-5

Appendix 1 presents a summary of the participants' scores related to career education skills, career decision-making self-efficacy (CDS-Eff), and career adaptability. The mean scores indicate that participants scored moderately high across all three variables, with CDS-Eff recording the highest mean score of 3.75. This suggests that students possess a moderate level of confidence in their ability to make career decisions. The standard deviations, ranging between 0.78 and 0.85, reveal that the responses were relatively consistent, indicating a degree of uniformity in participants' self-assessed levels of these traits. The use of a 1–5 Likert scale for measurement allows for direct comparison across variables. These descriptive statistics provide foundational insights into students' career preparedness and their adaptability to transitioning between fields and roles. Further analysis of the covariance and relationships among these variables can build upon this initial understanding to explore deeper patterns and implications.

Analysis of Table 2 shows a strong positive relationship between career education skills, career decision-making self-efficacy, and career adaptability (all  $p < .01$ ). The highest correlation is between career decision-making self-efficacy and career adaptability ( $r = 0.72$ ), highlighting self-efficacy's role in career adaptation. Additionally, career education skills correlate with self-efficacy ( $r = 0.68$ ,  $p = 0.000$ ) and adaptability ( $r = 0.65$ ,  $p = 0.000$ ), indicating that enhanced career education fosters confidence in decision-making and adaptability to organisational challenges. These findings reinforce the importance of promoting career competencies through improved career education.

**Table 2**

*Correlation Matrix of Key Variables*

Variable	Career Education Skills	Career Decision-Making Self-Efficacy	Career Adaptability
Career Education Skills	1.00	0.68**	0.65**
Career Decision-Making Self-Efficacy	0.68**	1.00	0.72**
Career Adaptability	0.65**	0.72**	1.00

\*Note:  $*p < 0.01$

Table 3 highlights the significance and predictive power of CES and CDMSE in career adaptability. Both variables are significant, though self-efficacy has a stronger impact ( $\beta = 0.52$ ) than career education skills ( $\beta = 0.38$ ). The delta coefficient suggests that confidence in career choice has a greater influence on adaptability than career preparation alone. This implies that while career education is essential for skill development, self-efficacy plays a more critical role, particularly in competency-based education for workforce readiness. Regression analysis confirms a good model fit, with an  $R^2$  value of .56, explaining 56% of

the variance in career adaptability. These findings underscore the need for interventions that enhance both career education and self-confidence to better prepare students for workforce challenges.

**Table 3**

*Regression Analysis Predicting Career Adaptability*

Predictor Variable	B	Standard Error	Beta ( $\beta$ )	p-value
Career Education Skills	0.31	0.07	0.38**	0.001
Career Decision-Making Self-Efficacy	0.42	0.06	0.52**	0.001

\*Note:  $p < 0.01$

Table 4 summarises more than ten key themes from student interviews, with a graphical representation of four overarching themes that provide qualitative insights into factors affecting career planning and adaptability. The findings strongly support a practical approach to career education, emphasising the value of internships and workshops in helping students explore career paths. Regarding self-efficacy, the results highlight the need for greater efforts to build students' confidence in career decision-making. Thus, policies and programmes for career planning should integrate belief-building alongside skill development. Challenges such as competition for resources, inadequate career counselling services, and a mismatch between course content and industry demands indicate systemic issues requiring resolution to enhance career planning support. Additionally, findings on the impact of COVID-19 on career adaptability underscore the significance of career planning in navigating uncertainty. Overall, these themes emphasise the need for educational institutions to strengthen students' preparedness for evolving career landscapes.

**Table 4**

*Summary of Qualitative Themes from Student Interviews*

Theme	Description	Sample Quotes
Importance of Practical Career Education	Emphasis on hands-on experiences in career planning courses	"The internship was a turning point."
Role of Career Decision-Making Self-Efficacy	Confidence in making career decisions linked to career planning success	"I feel confident about my career path because I believe I can make the right decisions."
Barriers to Effective Career Planning	Challenges such as limited access to career counselling and misalignment of curricula with industry	"I wish there were more resources available for career planning."
Impact of the COVID-19 Pandemic	Influence of the pandemic on career choices and the need for adaptability	"The pandemic made me rethink my career plans."

## Conclusion and Discussion

The findings of this study highlight the critical role of career planning education in enhancing undergraduate students' employability and career adaptability. Rather than reflecting a methodological inconsistency, the results align with emerging literature that underscores the importance of offering holistic and practical career guidance beyond

academic training. This section concludes with the authors' interpretations, the study's contribution to the existing scholarship, and suggestions for further research.

### *Relevance of Real-Life Career Guidance*

The report highlights the link between vocational education, career readiness, and practical experience in workplace learning. Irawan et al. (2021) support this through Dakon simulation games, which enhance career skills by allowing students to explore career choices and practise decision-making. Similarly, Cochran et al. (2021) emphasise eMentoring's role in bridging the gap between academic learning and professional practice. Chaiyama and Kaewpila (2021) and Haoyu (2023) developed tests to assess undergraduate life and career skills, advocating for education that fosters complex thinking, teamwork, and digital proficiency. Thus, institutions must create training environments that prepare students for a dynamic job market requiring continuous learning.

This study highlights the mediating role of career decision-making self-efficacy in the relationship between career adaptability and employability. Students with higher self-efficacy are more confident in career choices and better equipped for the evolving job market. Wulandari et al. (2023) found that students using causal maps in literature reviews felt more prepared for career planning, leading to the development of the SCPI to assess self-efficacy and adaptability levels. Keeler Steele et al. (2023) further noted increased self-efficacy among students participating in weekly professional skill development tasks. These findings underscore the need for interventions that boost self-efficacy, with institutions providing resources and programmes that strengthen career decision-making and employability.

### *Career Self-Management: Obstacles to Career Development*

However, the study also highlights several challenges and limitations that hinder students during career planning education. One significant issue is the limited availability of career information services, which are crucial for informed career decision-making. This scarcity poses a major obstacle for students navigating their career paths. This finding aligns with the research of Fangping and Mohd (2024), who examined career coaching satisfaction and its impact on the intrinsic motivation of undergraduate students in Jiangxi, China. Their study emphasises the need for enhanced and effective career guidance services tailored to students' needs to improve learning outcomes.

Another challenge is the misalignment between the course curricula offered by educational institutions and the demands of the job market. This disconnect often leaves students inadequately prepared for the workforce, resulting in a lack of the necessary skills to secure their desired roles. This gap can lead to significant stress and frustration among graduates. The problem is particularly pronounced in specialised fields such as engineering, where there is often a considerable lag between theoretical learning and practical application. Falcone et al. (2018) address this issue in their study by underscoring the urgent need to revise educational curricula in technical disciplines. They advocate for the integration of ethical and interpersonal skills into these programmes to better prepare students for leadership roles and workplace demands. These findings collectively highlight the importance of bridging the gap between academic training and market requirements to enhance students' career readiness and long-term success.

Academic and vocational education influence wage development and employability by shaping students' educational progression. [Kriesi and Sander \(2024\)](#) analysed wage trends among degree holders, highlighting the competitive earning potential of vocational qualifications in certain fields. [Jackson and Tomlinson \(2020\)](#) found that proactive career planning enhances employability perceptions amid uncertain job prospects. [Abe and Chikoko \(2020\)](#) demonstrated the interconnected factors influencing STEM students' career choices, stressing the importance of early guidance. [McMahon and Watson \(2022\)](#) advocated for structured career education at the senior secondary level to improve employment readiness. Similarly, [McMahon and Watson \(2022\)](#) emphasised the need for early career education to achieve better long-term outcomes. These studies underscore the necessity of aligning educational curricula with labour market demands while equipping students for diverse career pathways. This study highlights the critical role of structured career planning in fostering career and job readiness among undergraduate students. It explores how career decision-making self-efficacy serves as a key determinant in building students' confidence and competencies for effective career management. Given the evolving nature of the job market, students must navigate an increasingly complex array of career options as traditional career trajectories continue to shift.

Educational programmes that integrate structured career planning enhance students' decision-making abilities by instilling confidence in their professional choices, ultimately improving employability. Those with strong self-efficacy engage more actively in career development activities, facilitating a smoother transition from academia to the workforce. The findings underscore the need for higher education institutions to prioritise career planning as a fundamental aspect of undergraduate education, ensuring students develop resilience and adaptability in competitive job markets. Universities should embed comprehensive career education within their curricula, equipping students across disciplines with essential professional skills. Career advisors and educators must implement strategies that provide relevant information and strengthen students' confidence in decision-making, reinforcing the importance of self-efficacy in career development.

To foster career-related self-efficacy, it is essential to implement initiatives such as workshops featuring career reality simulations, mentoring networks, and programmes providing access to real-time labour market data. Research indicates that students thrive in environments where they can freely explore various career options without the fear of failure—a requirement often overlooked by traditional educational models. By cultivating an exploration-based environment that encourages learning from mistakes, educational institutions can significantly enhance students' career adaptability and employability outcomes. Further research is needed to examine the long-term impact of career decision-making self-efficacy on graduate employment outcomes, as such insights would offer valuable guidance to educators and policymakers. Investigating the specific components of career planning education programmes that most effectively enhance self-efficacy could inform the development of targeted interventions. Additionally, comparative studies examining the efficacy of online versus face-to-face teaching and delivery methods could reveal innovative strategies to improve the outcomes of career education practices.

The manuscript also highlights the significant influence of personal background factors, such as socioeconomic status and resource availability, on students' career development. By addressing these disparities, educational institutions can help reduce barriers that hinder certain groups from realising their full professional potential. Implementing

inclusive practices and equitable resource distribution can ensure that all students have the opportunity to achieve their career aspirations and contribute meaningfully to the workforce. Educational institutions, employers, and policymakers must collaborate to enhance undergraduate students' employability and career adaptability. This study offers valuable insights into the relationship between career planning education, career decision-making self-efficacy, and employability. Embedding career readiness within undergraduate education is essential, as it equips students with adaptability, confidence, and the necessary skills to achieve their professional aspirations. This research contributes to the academic discourse on career education and underscores the importance of fostering students' confidence in career decision-making. Prioritising this aspect leads to improved educational outcomes and a workforce better prepared for contemporary industry demands. Strengthening career education initiatives will support students in achieving their professional goals while contributing to a more resilient and dynamic labour market.

### Future Studies

Future research should focus on assessing the long-term impact of career planning education on students' career trajectories through longitudinal studies. Additionally, further investigations should explore the potential of digital technologies in enhancing the accessibility and effectiveness of career resources, including online career consultations, simulated internships, and other technology-driven career development tools. Comparative studies examining how career planning education is delivered and received across different regions, institutions, and socio-economic contexts are essential for refining career education strategies. Analyses considering cultural background, socio-economic status, and academic diversity will provide more tailored solutions to modern career education challenges. Moreover, research should address the limitations of technology-driven career planning, particularly for international students and those from low-income backgrounds. Identifying these challenges will facilitate necessary adaptations to career education frameworks, ensuring inclusivity and effectiveness in supporting diverse student populations.

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