



Student-Centered Pedagogical Practices and Perceived Graduate Employment Readiness in Selected Chinese Public Universities: The Mediating Role of Career Decision Self-Efficacy

Liya Ma¹ and Izazol Binti Idris^{1*}

¹Faculty of Human Development, Universiti Pendidikan Sultan Idris (UPSI), Tanjung Malim, Perak, Malaysia

Article Information

Article Type: Research Article

Dates:

Received: June 15, 2026

Revised: August 20, 2026

Accepted: September 01, 2026

Available online: September 02, 2026

Copyright Statement:

Copyright: ©2026 authors

Open access publication under the terms and condition of [Creative Commons, license](#) 

Corresponding Author:

Izazol Binti Idris

Email: izazol@fpm.upsi.edu.my



ABSTRACT

Guided by a selective application of Social Cognitive Career Theory (SCCT), this study examined the relationships among student-centered pedagogical practices (SCPP), career decision self-efficacy (CDSE), and perceived graduate employment readiness (GER) among final-year undergraduate students at five selected public universities in China. A quantitative cross-sectional design was employed, and data from 589 students were analyzed using partial least squares structural equation modeling (PLS-SEM) with SmartPLS 4.0. The results showed that SCPP was positively associated with CDSE ($\beta = 0.45, p < 0.001$) and GER ($\beta = 0.22, p < 0.001$), while CDSE was positively associated with GER ($\beta = 0.41, p < 0.001$). The indirect association between SCPP and GER through CDSE was also significant ($\beta = 0.18, p < 0.001$). The model explained 39.8% of the variance in perceived GER. The study applies, rather than extends, a focused SCCT-consistent pathway linking perceived educational experiences, CDSE, and perceived GER. The results suggest that universities may align student-centered learning with career-development activities intended to support students' career-related confidence and perceived readiness for the university-to-work transition.

Keywords: Student-centered pedagogical practices, Career decision self-efficacy, Graduate employment readiness, Social Cognitive Career Theory, PLS-SEM, Higher education.

1. INTRODUCTION

Today's global labor market is shaped by fast-changing technology, economic ups and downs, and shifting skill requirements. These factors change how university graduates enter the workforce (Succi & Canovi, 2020). Higher education institutions consequently face increasing pressure to prepare graduates who possess not only disciplinary knowledge but also adaptability, critical-thinking abilities, and career-management competencies required to navigate complex professional environments (Cai et al., 2025).

Graduate employment readiness has become an important concern for universities, policymakers, and students as higher education institutions seek to support the transition from study to work (Succi & Canovi, 2020; Tomlinson, 2016). In this study, employment readiness refers to students' perceived preparedness for that transition rather than verified competence or subsequent employment. Student-centered pedagogical practices shift emphasis from teacher-led delivery toward active participation, collaboration, reflection, authentic tasks, and learner autonomy. Such practices have been associated with competence development,

career decision self-efficacy, and employability-related perceptions in particular educational settings (Cai et al., 2025; Gregory & Penela, 2023; Li, 2023).

SCCT provides a useful but deliberately limited framework for examining how educational experiences may relate to career-related self-beliefs and transition-related perceptions (Lent et al., 1994, 2000). Previous research has examined adjacent parts of this pathway separately. Student-centered or design-oriented learning has been linked with competence development, employability perceptions, and CDSE (Cai et al., 2025; Li, 2023), while career education and career exploration have been associated with CDSE and career adaptability (Liu et al., 2023; Zhao et al., 2022). Other SCCT-informed studies have connected educational or interpersonal experiences with employability-related outcomes (Chhetri & Baniya, 2022; Wang et al., 2020). However, these strands do not establish whether students' perceived exposure to a broad set of student-centered pedagogical practices is indirectly associated with their perceived employment readiness through CDSE within one model of final-year undergraduates at selected Chinese public universities.

The unresolved relationship is therefore specific: whether CDSE statistically accounts for part of the association between perceived SCPP and perceived GER. The present study selectively applies this SCCT-consistent pathway; it does not test the full SCCT system and does not examine outcome expectations, interests, goals, or contextual supports and barriers. This delimitation is important when interpreting both the theoretical contribution and the cross-sectional indirect association.

This study examines the relationships among perceived student-centered pedagogical practices, CDSE, and perceived GER among final-year undergraduate students at five selected Chinese public universities and assesses whether CDSE mediates the association between SCPP and perceived GER. Its contribution is a focused application of one SCCT-consistent pathway to the intersection of higher education pedagogy and the university-to-work transition, rather than a comprehensive test or extension of SCCT.

2. LITERATURE REVIEW

2.1 Graduate Employment Readiness

Graduate employability has evolved from a focus on employment outcomes to a multidimensional concept encompassing the knowledge, skills, attributes, and resources required to obtain and sustain employment (Behle, 2020; Tomlinson, 2012). In the present study, the focus is specifically on graduate employment readiness, reflecting students' perceived preparedness for the transition from higher education to professional work. Several established frameworks help explain the competencies underlying employment readiness. The understanding, skills, efficacy beliefs, and metacognition (USEM) model emphasizes four interconnected dimensions of graduate employability: disciplinary understanding, subject-specific and transferable skills, confidence in one's abilities, and metacognitive awareness (Knight & Yorke, 2002). The decision learning, opportunity awareness, transition learning, and self-awareness (DOTS) framework highlights four key career-development competencies: making effective career decisions, understanding available opportunities, managing transitions into employment, and developing self-awareness (Law & Watts, 1977).

Tomlinson's (2017) graduate capital model further identifies human, social, cultural, psychological, and identity resources that support graduates' transition into employment. Subsequent research has provided empirical support for the relevance of these forms of graduate capital to career preparedness and employability (Tomlinson et al., 2022).

2.2 Student-Centered Pedagogical Practices

Student-centered pedagogy represents a shift from teacher-centered instruction toward learning environments in which students participate actively in knowledge construction and skill development. Grounded in constructivist approaches, it emphasizes prior knowledge, active participation, social interaction, and learner autonomy (Sørensen et al., 2023). Practices such as problem- or design-based learning, collaborative projects, authentic assessment, and structured reflection can engage students in applying disciplinary knowledge to realistic tasks (Cai et al., 2025; Gregory & Penela, 2023; Li, 2023). Collaborative learning can support communication, teamwork, and peer learning (Johnson et al., 2014), while authentic and reflective activities can help students connect academic tasks with their developing capabilities. In the present study, SCPP refers to students' perceived exposure to these educational practices rather than an externally observed measure of teaching quality.

2.3 Career Decision Self-Efficacy

Career Decision Self-Efficacy (CDSE) is grounded in Bandura's self-efficacy theory and refers to individuals' confidence in their ability to perform career decision-making tasks (Bandura, 1997; Taylor & Betz, 1983). These tasks include self-appraisal, gathering occupational information, goal selection, career planning, and career-related problem-solving (Betz et al., 1996). Empirical research associates higher CDSE with greater career exploration, decision-making ability, career adaptability, and career planning (Pignault et al., 2023). CDSE is also associated with lower career indecision and anxiety and greater confidence in job-search and career-transition activities (Ahmad & Nasir, 2023). These findings support CDSE as an important psychological resource in students' preparation for the transition from higher education to employment.

2.4 The Mediating Role of Career Decision Self-Efficacy

The proposed indirect pathway is informed by SCCT, which holds that learning experiences contribute to the formation of self-efficacy beliefs and that these beliefs are related to subsequent career interests, goals, choices, and actions within enabling or constraining contexts (Lent et al., 1994, 2000). SCPP is conceptualized here as a perceived educational learning context: active and authentic tasks may provide mastery experiences; observing and working with peers may provide social modeling; and feedback and reflection may contribute to social persuasion and the interpretation of one's capabilities (Bandura, 1997). CDSE maps onto SCCT as confidence in career decision-making tasks. Perceived GER is positioned as a proximal, transition-related self-assessment, not as an objective employment outcome. This mapping supports a selective application of SCCT but leaves outcome expectations, interests, goals, and contextual supports and barriers outside the tested model.

Empirical studies have linked educational or career-development experiences with CDSE and employability-related perceptions (Cai et al., 2025; Liu et al., 2023). Higher CDSE has also been associated with career exploration, planning, adaptability, and engagement in career-related activities (Ahmad & Nasir, 2023; Sofyan et al., 2022; Zhao et al., 2022). These findings provide support for the component relationships, but they do not directly resolve whether CDSE accounts for part of the association between perceived SCPP and perceived GER among final-year students in selected Chinese universities. That indirect relationship is the specific focus of the present study.

2.5 Higher Education in China

China provides a relevant context for examining these relationships because the expansion of higher education and continuing curriculum reform have increased attention to graduate transitions and the alignment of university learning with changing social and labor-market needs (Ministry of Education of the People's Republic of China, 2020). Research comparing student-centered courses in China and Italy indicates that activities, delivery, assessment, and institutional support shape how student-centered approaches are implemented and experienced (Li, 2023). Institutional support for faculty development may likewise influence the adoption of student-centered pedagogy (Kong & Wang, 2024).

2.6 Hypothesis Development and Research Framework

The study tested the following hypotheses:

H1: Student-centered pedagogical practices are positively associated with career decision self-efficacy.

H2: Student-centered pedagogical practices are positively associated with graduate employment readiness.

H3: Career decision self-efficacy is positively associated with graduate employment readiness.

H4: Career decision self-efficacy mediates the relationship between student-centered pedagogical practices and graduate employment readiness.

Figure 1 shows the hypothesized relationships among Student-Centered Pedagogical Practices (SCPP), Career Decision Self-Efficacy (CDSE), and Graduate Employment Readiness (GER).

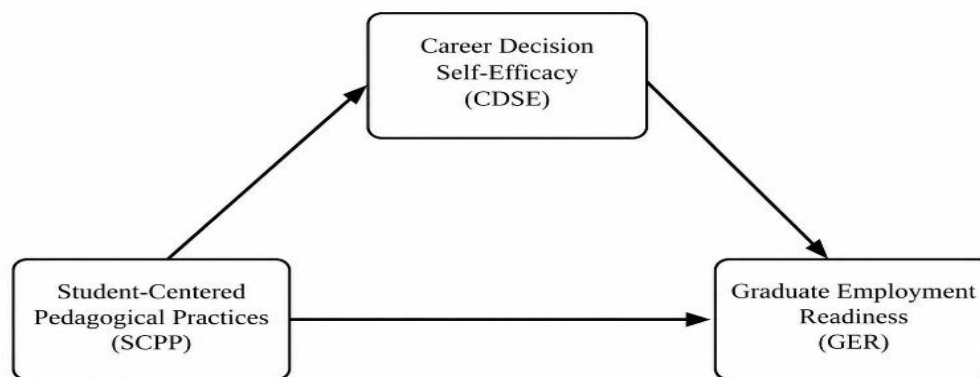


Figure 1. Conceptual Framework

3. METHODOLOGY

3.1 Research Design

This study employed a quantitative, cross-sectional design to examine the relationships among student-centered pedagogical practices, career decision self-efficacy (CDSE), and graduate employment readiness among final-year undergraduate students. The quantitative approach enabled systematic

measurement and testing of the proposed direct and mediating relationships using structural equation modeling (Hair et al., 2019). Given its cross-sectional nature, the study examines associations among constructs rather than causal relationships.

3.2 Participants and Sampling Procedure

The study population comprised final-year undergraduate students at five purposively selected public universities in Eastern, Central, and Western China. The institutions included comprehensive, science and technology, and normal universities and were selected to provide variation in institutional type and regional setting. This institutional selection was purposive and should not be interpreted as a nationally representative sample.

Data were collected between February and March 2026, during the spring semester of the 2025–2026 academic year. Eligible participants were students who were actively enrolled as final-year undergraduates at one of the five participating public universities, had completed most of their degree coursework, and voluntarily provided informed consent. Students who were not final-year undergraduates, were no longer actively enrolled, or did not consent to participate were excluded. Students who had participated in the pilot testing of the questionnaire were excluded from the main survey to avoid prior exposure to the instrument.

Within the participating institutions, students were recruited through scheduled final-year classroom sessions. All eligible students present in those sessions were invited to participate; students who were absent were not subsequently recruited. Class-level refusals or unavailable sessions were not separately recorded.

To comply with the confidentiality commitments made during ethical approval and informed consent, the names and specific locations of the universities, departments, courses, institutional contacts, and participating classes are not reported. Institution-specific recruitment figures are also presented only in aggregated form to minimize the possibility of identifying participating institutions, classrooms, or individual students. The five institutions are therefore described only as selected public universities situated across broad geographical regions of China.

3.3 Instrument Design

Three constructs were assessed using instruments adapted from established scales and relevant literature. Student-Centered Pedagogical Practices (SCPP) included 20 items distributed across four dimensions: active learning, collaborative learning, authentic assessment, and reflective practices. Career Decision Self-Efficacy (CDSE) was evaluated using 25 items spanning five dimensions: self-appraisal, occupational information, goal selection, career planning, and problem-solving. Graduate Employment Readiness (GER) was measured with an 18-item instrument adapted from validated graduate employability measures, specifically the Graduate Capital Scale (Tomlinson et al., 2022) and the Self-Perceived Employability Scale (Rothwell et al., 2008). The GER instrument comprised four dimensions pertinent to students' transition to employment: career awareness (4 items), job-search skills (5 items), professional competencies (5 items), and work readiness (4 items). This adaptation aimed to capture students' perceived

preparedness, competencies, awareness of employment opportunities, and readiness to transition from university to the graduate labor market.

All items were translated into Chinese using a forward and backward translation procedure (Brislin, 1970). Expert review evaluated content validity, yielding content validity index (CVI) values of 0.92 for SCPP summarizesE and GER. Table 1 provides a summary orement instruments and their respective dimensions as adopted and adapted from the literature.

Table 1. Summary of Measurement Instruments

Construct	Adapted Source Instrument	Items	Dimensions
Graduate Employment Readiness (GER)	Adapted from validated graduate employability measures: Graduate Capital Scale (Tomlinson et al., 2022) and Self-Perceived Employability Scale (Rothwell et al., 2008).	18	Career Awareness (4); Job-Search Skills (5); Professional Competencies (5); Work Readiness (4)

3.4 Data Collection

Data collection followed a standardized classroom-based protocol across approximately 15 scheduled final-year classroom sessions at the five participating institutions. Trained research assistants administered the paper-based questionnaire during the designated sessions. After providing access to the classroom, course instructors left the room and were not involved in recruiting participants, obtaining consent, distributing questionnaires, or collecting completed questionnaires.

Before questionnaire distribution, a research assistant explained the study verbally and provided participants with written information about its purpose, voluntary nature, confidentiality protections, and their right to decline or discontinue participation without penalty. Students were explicitly informed that participation or refusal would have no effect on their grades, academic standing, relationships with instructors, or access to university services. No personally identifiable information was requested. Students who agreed to participate provided informed consent and completed the questionnaire independently. Completed questionnaires were placed in unmarked sealed envelopes and returned directly to the research assistants. Course instructors were not permitted to inspect or handle the completed questionnaires. Questionnaire completion took approximately 25–30 minutes.

Across the participating classroom sessions, 650 questionnaires were distributed and 618 were returned, producing an initial response rate of 95.1%. Following data screening, 29 returned questionnaires were excluded because of incomplete responses, substantial missing data, or the prespecified outlier-screening criteria. The final analytical sample therefore comprised 589 questionnaires, representing a usable response rate of 90.6% relative to the number distributed. Missing responses were not replaced through multiple imputation.

3.5 Data Analysis

Data were analyzed using SPSS 26.0 for preliminary and descriptive analyses and SmartPLS 4.0 for PLS-SEM. The measurement model was assessed using indicator loadings, composite reliability ($CR \geq 0.70$), average variance extracted ($AVE \geq 0.50$), and the heterotrait-monotrait ratio ($HTMT < 0.85$) to

establish indicator reliability, internal consistency, convergent validity, and discriminant validity (Hair & Alamer, 2022). The structural model was subsequently evaluated using path coefficients and the coefficient of determination (R^2), while a 5,000-resample bootstrapping procedure was employed to assess the significance of direct and indirect effects (Hair & Alamer, 2022). Mediation was considered significant when the 95% confidence interval excluded zero (MacKinnon & Luecken, 2008). Potential common method bias was assessed using Harman's single-factor test (Podsakoff et al., 2003), while VIF values were examined to assess potential multicollinearity among the predictor constructs (Hair & Alamer, 2022).

4. RESULTS

4.1 Demographic Analysis

Table 2 summarizes the demographic characteristics of the 589 participants. Gender was balanced (50.3% male; 49.7% female), while most participants were aged 23–24 years (47.2%) or 21–22 years (41.3%). Participants represented diverse academic disciplines and were distributed across Eastern (34.1%), Central (33.6%), and Western China (32.3%).

Table 2. Demographic Characteristics of Participants (N = 589)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	296	50.3
	Female	293	49.7
Age (Years)	21-22	243	41.3
	23-24	278	47.2
	25 and above	68	11.5
Academic Discipline	Humanities	112	19
	Social Sciences	148	25.1
	Natural Sciences	142	24.1
	Engineering	157	26.7
	Others	30	5.1
University Location	Eastern China	201	34.1
	Central China	198	33.6
	Western China	190	32.3

4.2 Descriptive Analysis

Table 3 presents the descriptive statistics and reliability coefficients. Mean scores were 3.72 for SCPP, 3.58 for CDSE, and 3.65 for GER, indicating generally above-midpoint responses. Cronbach's α values ranged from 0.88 to 0.91, indicating good internal consistency. Skewness and kurtosis values were within ± 2 , indicating no substantial departures from normality.

Table 3. Descriptive Statistics of Study Variables (N = 589)

Variable	Items	Mean	Standard Deviation	Skewness	Kurtosis	Cronbach's Alpha
Student-Centered Pedagogical Practices	20	3.72	0.68	-0.31	0.42	0.88
Career Decision Self-Efficacy	25	3.58	0.72	-0.18	0.35	0.91
Graduate Employment Readiness	18	3.65	0.7	-0.24	0.38	0.89

4.3 Measurement Model Assessment

The measurement model was assessed for internal consistency reliability and convergent validity before evaluating the structural relationships. Cronbach's alpha and composite reliability (CR) were used to assess reliability, while average variance extracted (AVE) was used to assess convergent validity. As shown in Table 4, Cronbach's α (0.80–0.91) and CR (0.84–0.93) exceeded the recommended threshold of 0.70. AVE values ranged from 0.55 to 0.66, exceeding the 0.50 threshold.

Table 4. Measurement Model Assessment - Reliability and Convergent Validity

Construct	Dimension	Items	Cronbach's α	CR	AVE
SCPP	Active Learning Strategies	6	0.85	0.88	0.55
	Collaborative Learning	4	0.82	0.86	0.60
	Authentic Assessment	5	0.84	0.87	0.58
	Reflective Practices	5	0.83	0.87	0.57
	Overall Construct	20	0.88	0.91	0.56
CDSE	Accurate Self-Appraisal	5	0.87	0.90	0.64
	Gathering Occupational Information	5	0.86	0.89	0.62
	Goal Selection	5	0.88	0.91	0.66
	Making Plans for the Future	5	0.85	0.88	0.60
	Problem-Solving	5	0.87	0.90	0.63
GER	Overall Construct	25	0.91	0.93	0.63
	Career Awareness	4	0.81	0.85	0.58
	Job Search Skills	5	0.84	0.87	0.60
	Professional Competencies	5	0.83	0.87	0.59
	Work Readiness	4	0.80	0.84	0.57
	Overall Construct	18	0.89	0.92	0.59

Note. SCPP = Student-Centered Pedagogical Practices; CDSE = Career Decision Self-Efficacy; GER = Graduate Employment Readiness; CR = Composite Reliability; AVE = Average Variance Extracted.

Figure 2. Measurement Model Assessment

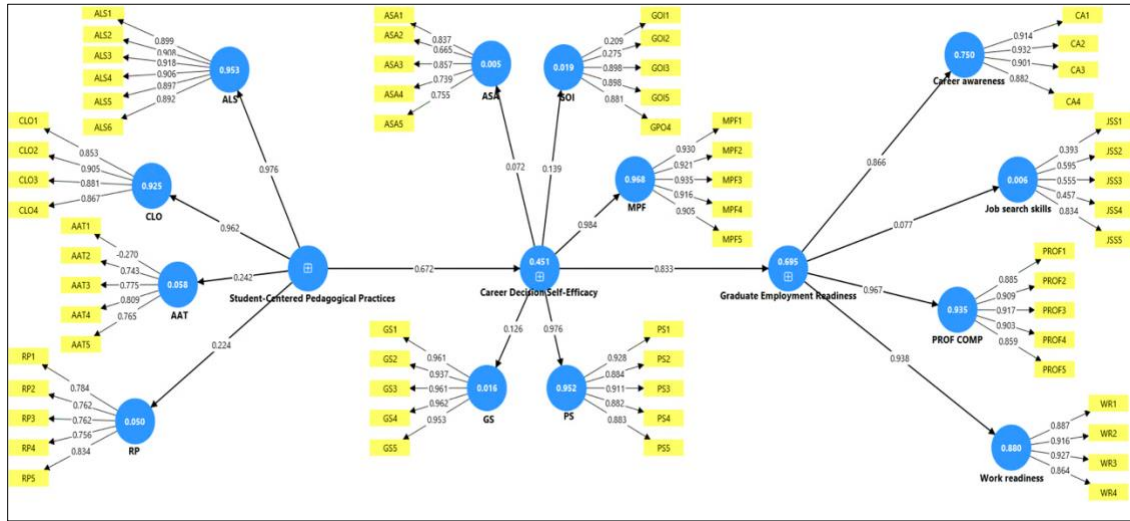


Figure 2 shows the estimated measurement and structural relationships among SCPP, CDSE, and GER

4.4 Discriminant Validity Assessment - HTMT Ratio

As shown in Table 5, all HTMT values were below the recommended threshold of 0.85, supporting discriminant validity among SCPP, CDSE, and GER (Henseler et al., 2015).

Table 5. Discriminant Validity Assessment - HTMT Ratio

Construct	1	2	3
1. Student-Centered Pedagogical Practices	—		
2. Career Decision Self-Efficacy	0.52	—	
3. Graduate Employment Readiness	0.48	0.56	—

4.5 Structural Model Assessment

After the adequate measurement model properties were confirmed, the structural model was evaluated for the hypothesized relationships between student centered pedagogical practices, career decision self-efficacy and graduate employment readiness. The structural model assessment focuses on the relationships among constructs in terms of the significance and size of path coefficients, the ability of the model to explain variance (R^2 values), and the predictive ability of the model (Stone-Geisser's Q^2).

Table 6 shows that all three direct hypotheses were supported. SCPP was positively associated with CDSE ($\beta = 0.45$, $p < 0.001$) and GER ($\beta = 0.22$, $p < 0.001$). CDSE was also positively associated with GER ($\beta = 0.41$, $p < 0.001$). These findings support H1, H2, and H3.

Table 6. Structural Model - Hypothesis Testing and Path Coefficients

Hypothesis	Path	(β)	SE	T	p	95% CI	Decision
H1	SCPP → CDSE	0.45	0.04	11.25	< 0.001	[0.37, 0.53]	Supported
H2	SCPP → GER	0.22	0.05	4.4	< 0.001	[0.12, 0.32]	Supported
H3	CDSE → GER	0.41	0.04	10.25	< 0.001	[0.33, 0.49]	Supported

Table 7 shows a significant indirect association between SCPP and GER through CDSE, supporting H4 and indicating partial mediation.

Table 7. Mediation Analysis

Hypothesis	Indirect Path	β	SE	t	p	95% CI	Decision
H4	SCPP → CDSE → GER	0.18	0.03	6.00	< 0.001	[0.12, 0.24]	Supported

As shown in Table 8, the model explained more variance in GER than in CDSE, and both Q^2 values were positive, indicating predictive relevance.

Table 8. Model Explanatory Power and Predictive Relevance

Endogenous Construct	R^2	Adjusted R^2	Q^2
Career Decision Self-Efficacy	0.202	0.199	0.12
Graduate Employment Readiness	0.398	0.396	0.15

5. DISCUSSION

5.1 Student-Centered Pedagogical Practices and CDSE (H1)

The positive association between SCPP and CDSE supports H1 and is consistent with the SCCT proposition that educational learning experiences are related to self-efficacy beliefs (Lent et al., 1994, 2000). Active and authentic tasks may offer mastery experiences, collaborative work may expose students to peer modeling, and feedback and reflection may help students interpret their capabilities (Bandura, 1997). The finding also accords with the pilot intervention reported by Cai et al. (2025), which linked design-thinking pedagogy with career decision-making self-efficacy and employability, and with Li's (2023) analysis of how student-centered courses can support competence development in Chinese and Italian higher education. The present study broadens this line of inquiry by examining students' perceptions of several pedagogical practices together. However, it cannot identify which particular practice contributed most strongly to CDSE or establish that the pedagogical experience preceded the self-efficacy belief.

5.2 SCPP, CDSE, and Perceived Graduate Employment Readiness (H2-H4)

The positive association between SCPP and perceived GER supports H2 and is consistent with research linking active educational experiences, student-faculty interaction, and educational leadership with employability-related outcomes (Chhetri & Baniya, 2022; Gregory & Penela, 2023; Wang et al., 2020). Student-centered tasks may allow students to practice communication, collaboration, problem-solving, and reflection in contexts they regard as relevant to work. Nevertheless, GER was measured through student self-reports. The result therefore concerns perceived readiness and should not be interpreted as evidence that the participating students developed objectively verified professional competencies or achieved better employment outcomes.

The positive association between CDSE and perceived GER supports H3 and is compatible with studies connecting CDSE with career exploration, planning, adaptability, and optimism (Ahmad & Nasir, 2023; Liu et al., 2023; Sofyan et al., 2022; Zhao et al., 2022). Students who feel capable of appraising themselves, gathering occupational information, selecting goals, planning, and solving career problems may also evaluate themselves as better prepared for the transition to work. The indirect association from SCPP to perceived GER through CDSE supports H4 and is consistent with evidence that CDSE can operate as an intervening career-related resource in other student populations (Bi et al., 2023; Liu et al., 2023). It should, however, be interpreted as a cross-sectional indirect association rather than proof of a temporal psychological mechanism.

5.3 Theoretical Implications

The findings support a focused application of SCCT rather than an extension or comprehensive test of the theory. In the proposed mapping, students' perceived exposure to SCPP represents an educational learning context, CDSE represents domain-specific self-efficacy, and perceived GER represents a proximal self-assessment relevant to the university-to-work transition. The results are compatible with this pathway, but the study did not measure outcome expectations, interests, goals, choice actions, or contextual supports and barriers. Consequently, the findings cannot determine how the omitted SCCT components interact with SCPP or CDSE, nor can they establish the temporal sequence assumed by the theory. Future longitudinal research should assess these constructs at multiple points and distinguish perceived readiness from subsequent employment behavior and outcomes.

5.4 Chinese Context, Alternative Explanations, and Practical Implications

The associations were observed among students from five selected public universities spanning Eastern, Central, and Western China. This offers evidence from varied institutional settings at a time when Chinese higher education policy has emphasized curriculum development and graduate preparation (Ministry of Education of the People's Republic of China, 2020). At the same time, the purposive selection of universities and convenience recruitment from available classes mean that the results should not be presented as a national pattern. Differences in institutional resources and implementation may shape students' exposure to student-centered practices (Kong & Wang, 2024; Li, 2023). Social support and psychological capital have also been related to career decision-making difficulties (Zhou et al., 2024), highlighting contextual resources outside the present model. Other unmeasured influences—including internships, university career services, academic discipline, socioeconomic background, prior employment

experience, and regional labor-market conditions—may contribute to both CDSE and perceived GER. These factors provide plausible alternative explanations and should be examined directly in future studies.

Practically, the findings suggest that universities may connect active, collaborative, authentic, and reflective learning with career-development activities such as guided career reflection, occupational-information tasks, mentoring, and career planning. These recommendations should be implemented and evaluated cautiously: the present evidence does not show that a particular pedagogical intervention causes improvement in professional competence or employment. Future evaluations should combine student perceptions with longitudinal follow-up, observed performance, employer feedback, and actual transition outcomes.

6. CONCLUSION AND LIMITATIONS OF THE STUDY

This study identified positive associations among perceived student-centered pedagogical practices, career decision self-efficacy (CDSE), and perceived graduate employment readiness among final-year students at five selected Chinese public universities. The findings are consistent with—but do not comprehensively test or extend—the selected SCCT pathway and do not establish that student-centered pedagogy improves objective professional competence or employment outcomes. The findings suggest that universities may align student-centered learning with career-development opportunities intended to support students' career confidence and perceived preparation for employment. The study has several limitations. Its cross-sectional design prevents temporal or causal inference, and reliance on self-reported data may introduce response bias. The purposive selection of five public universities and convenience recruitment through available classes also limit generalization beyond the participating institutions. Future research should employ longitudinal or experimental designs, include more diverse institutions and regions, measure omitted SCCT components and alternative influences, and incorporate objective or employer-based indicators of employment readiness and subsequent employment outcomes.

Ethical Statement:

The ethical committee of the Faculty of Human Development, Universiti Pendidikan Sultan Idris (UPSI), Tanjung Malim, Perak, Malaysia, approved the study.

Competing Interests:

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this manuscript.

Grant/Funding information: No funding

Data Availability Statement: The associated data is available upon request from the corresponding author.

Declaration Statement of Generative AI: We, the authors, used generative Artificial Intelligence (AI) tools to refine language and improve grammar. The authors independently conducted and verified all literature screening, data extraction, analysis, interpretation of results, and scientific conclusions. We take full responsibility for the accuracy, originality, and integrity of this manuscript.

REFERENCES

- Ahmad, B., & Nasir, N. (2023). Positive career shocks and career optimism: Testing the mediating role of career decision-making self-efficacy. *Journal of Asian Business and Economic Studies*, 30(2), 105–125. <https://doi.org/10.1108/JABES-07-2021-0110>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.

- Behle, H. (2020). Students' and graduates' employability. A framework to classify and measure employability gain. *Policy Reviews in Higher Education*, 4(1), 105–130.
<https://doi.org/10.1080/23322969.2020.1712662>
- Betz, N. E., Klein, K. L., & Taylor, K. M. (1996). Evaluation of a short form of the career decision-making self-efficacy scale. *Journal of Career Assessment*, 4(1), 47–57.
<https://doi.org/10.1177/106907279600400103>
- Bi, Y., Mou, S., Wang, G., & Liao, M. (2023). The relationship between professional self-concept and career decision-making difficulties among postgraduate nursing students in China: The mediating role of career decision-making self-efficacy. *Frontiers in Psychology*, 14, 1198974.
<https://doi.org/10.3389/fpsyg.2023.1198974>
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3), 185–216. <https://doi.org/10.1177/135910457000100301>
- Cai, Y., Arumugam, N., & Chen, Y. (2025). Design thinking pedagogy effects on undergraduates' career decision-making self-efficacy and employability: A pilot intervention study. *Journal of Psychology in Africa*, 35(3), 327–333. <https://doi.org/10.32604/jpa.2025.068042>
- Chhetri, S. B., & Baniya, R. (2022). Influence of student-faculty interaction on graduate outcomes of undergraduate management students: The mediating role of behavioral, emotional and cognitive engagement. *The International Journal of Management Education*, 20(2), 100640.
<https://doi.org/10.1016/j.ijme.2022.100640>
- Gregory, A. M., & Penela, D. (2023). Context-specific elective coursework and student's employability development: Application of social cognitive career theory in hospitality education. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 33, 100465.
<https://doi.org/10.1016/j.jhlste.2023.100465>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hair, J., & Alamer, A. (2022). Partial least squares structural equation modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Johnson, D. W., Johnson, R. T., & Smith, K. A. (2014). Cooperative learning: Improving university instruction by basing practice on validated theory. *Journal on Excellence in College Teaching*, 25(3–4), 85–118. <https://celt.miamioh.edu/index.php/JECT/article/view/454>
- Knight, P. T., & Yorke, M. (2002). Employability through the curriculum. *Tertiary Education and Management*, 8(4), 261–276. <https://doi.org/10.1023/A:1021222629067>
- Kong, S. C., & Wang, Y. Q. (2024). The impact of school support for professional development on teachers' adoption of student-centered pedagogy, students' cognitive learning and abilities: A three-level analysis. *Computers & Education*, 215, 105016.
<https://doi.org/10.1016/j.compedu.2024.105016>
- Law, B., & Watts, A. G. (1977). *Schools, careers and community: A study of some approaches to careers education in schools*. Church Information Office.

- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45(1), 79–122. <https://doi.org/10.1006/jvbe.1994.1027>
- Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology*, 47(1), 36–49. <https://doi.org/10.1037/0022-0167.47.1.36>
- Li, J. (2023). *A research on relationship between student-centered approach and student competence development in higher education: Case studies in China and Italy* [Doctoral dissertation, University of Padua]. University of Padua Research Archive. <https://hdl.handle.net/11577/3484866>
- Liu, X., Zhang, X., Dang, Y., & Gao, W. (2023). Career education skills and career adaptability among college students in China: The mediating role of career decision-making self-efficacy. *Behavioral Sciences*, 13(9), 780. <https://doi.org/10.3390/bs13090780>
- MacKinnon, D. P., & Luecken, L. J. (2008). How and for whom? Mediation and moderation in health psychology. *Health Psychology*, 27(2S), S99–S100. [https://doi.org/10.1037/0278-6133.27.2\(Suppl.\).S99](https://doi.org/10.1037/0278-6133.27.2(Suppl.).S99)
- Ministry of Education of the People's Republic of China. (2020, December 5). *MOE press conference to highlight breakthroughs in higher education during the 13th Five-year Plan period*. The Government of the People's Republic of China. http://en.moe.gov.cn/news/press_releases/202012/t20201230_508196.html
- Pignault, A., Rastoder, M., & Houssemand, C. (2023). The relationship between self-esteem, self-efficacy, and career decision-making difficulties: Psychological flourishing as a mediator. *European Journal of Investigation in Health, Psychology and Education*, 13(9), 1553–1568. <https://doi.org/10.3390/ejihpe13090113>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Rothwell, A., Herbert, I., & Rothwell, F. (2008). Self-perceived employability: Construction and initial validation of a scale for university students. *Journal of Vocational Behavior*, 73(1), 1–12. <https://doi.org/10.1016/j.jvb.2007.12.001>
- Sofyan, H., Mutohahari, F., & Nurtanto, M. (2022). Students' career decision-making during online learning: The mediating roles of self-efficacy in vocational education. *European Journal of Educational Research*, 11(3), 1669–1682. <https://doi.org/10.12973/eu-jer.11.3.1669>
- Sørensen, A., Ligestad, P., & Mikalsen, H. K. (2023). Student teacher experiences of learning and pedagogical involvement using a student-centered learning approach. *Education Sciences*, 13(9), 965. <https://doi.org/10.3390/educsci13090965>
- Succi, C., & Canovi, M. (2020). Soft skills to enhance graduate employability: Comparing students and employers' perceptions. *Studies in Higher Education*, 45(9), 1834–1847. <https://doi.org/10.1080/03075079.2019.1585420>
- Taylor, K. M., & Betz, N. E. (1983). Applications of self-efficacy theory to the understanding and treatment of career indecision. *Journal of Vocational Behavior*, 22(1), 63–81. [https://doi.org/10.1016/0001-8791\(83\)90006-4](https://doi.org/10.1016/0001-8791(83)90006-4)
- Tomlinson, M. (2012). Graduate employability: A review of conceptual and empirical themes. *Higher Education Policy*, 25(4), 407–431. <https://doi.org/10.1057/hep.2011.26>

- Tomlinson, M. (2016). The impact of market-driven higher education on student-university relations: Investing, consuming and competing. *Higher Education Policy*, 29(2), 149–166. <https://doi.org/10.1057/hep.2015.17>
- Tomlinson, M. (2017). Forms of graduate capital and their relationship to graduate employability. *Education + Training*, 59(4), 338–352. <https://doi.org/10.1108/ET-05-2016-0090>
- Tomlinson, M., McCafferty, H., Port, A., Maguire, N., Zabelski, A. E., Butnaru, A., Charles, M., & Kirby, S. (2022). Developing graduate employability for a challenging labour market: The validation of the graduate capital scale. *Journal of Applied Research in Higher Education*, 14(3), 1193–1209. <https://doi.org/10.1108/JARHE-04-2021-0151>
- Wang, S., Peng, M. Y. P., Xu, Y., Simbi, V. T., Lin, K. H., & Teng, T. C. (2020). Teachers' transformational leadership and students' employability development: A social cognitive career perspective. *Social Behavior and Personality: An International Journal*, 48(5), 1–15. <https://doi.org/10.2224/sbp.8594>
- Zhao, F., Li, P., Chen, S., Hao, Y., & Qin, J. (2022). Career exploration and career decision self-efficacy in northwest Chinese pre-service kindergarten teachers: The mediating role of work volition and career adaptability. *Frontiers in Psychology*, 12, 729504. <https://doi.org/10.3389/fpsyg.2021.729504>
- Zhou, A., Liu, J., Xu, C., & Jobe, M. C. (2024). Effect of social support on career decision-making difficulties: The chain mediating roles of psychological capital and career decision-making self-efficacy. *Behavioral Sciences*, 14(4), 318. <https://doi.org/10.3390/bs14040318>

Publisher's Note: All articles are subject to a rigorous peer-review process conducted by the journal's editors and reviewers. Nevertheless, the claims, findings, and data presented are solely those of the authors and do not necessarily represent the views of their affiliated organizations or the publisher. The publisher does not guarantee or endorse any product or manufacturer mentioned in this article.