

The Relationship between Learning Inputs and Perceived Employability among University Students in Shandong Province, China

Huo Jingjing, Mohd Asri Bin Mohd Noor

Sultan Idris Education University

Corresponding Author Email: mohd.asri@fpe.upsi.edu.my

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Abstract

This study investigates the relationship between learning inputs and final-year university students' perceptions of their employability. A quantitative research approach using a cross-sectional correlational design was employed. A structured online questionnaire was designed and data were collected from public and private universities in Shandong Province by using Wen Juan Xing. After data screening, 734 valid cases were included in the analysis. Pearson correlation and simple linear regression were then used to investigate the two variables under study. The findings revealed a strong positive relationship between Learning Inputs and perceived employability ($R = 0.906$), with Learning Inputs explaining 82.1 % of the variance in perceived employability ($R^2 = 0.821$). Regression analysis confirmed a statistically significant positive association ($\beta = 0.906$, $t = 57.911$, $p < .001$), supporting the proposed hypothesis. The findings indicated that there was a positive relationship between students' learning investment and their perceptions of preparation for employment. This finding supports Human Capital Theory and Experiential Learning Theory in relation to students' perceptions of employability. In addition, this study provided new evidence from China higher education about the predictive effects of learning investment on perceived employability. Moreover, the cross-sectional design of the current study precluded causal conclusions about the studied variables. In terms of practical implications, universities could promote student-centered learning, experiential learning and career-oriented learning in order to enhance students' employment readiness. Future research should employ a longitudinal study design to make causal conclusions, and also investigate other psychological variables and institutional factors influencing graduate employability.

Keywords: Learning Inputs, Perceived Employability, University Students, Learning Engagement, Higher Education, China

Introduction

As Higher Education Institutions around the world are expected to equip students with knowledge, skills and competencies to ensure that they can enter the labor market successfully and become employed after graduation, graduate employability has become a key concern for universities. In terms of learning experiences in universities, how China undergraduates perceive their university learning experiences and perceive their graduate

employability in relation to their readiness to enter the competitive labor market are of increasing concern to academics worldwide. While perceived employability reflects students' perceptions of their capability and likelihood of being hired by potential employers, Chen et al. (2023) investigated future orientation and perceived employability among Chinese undergraduates. Tang et al. (2026) also investigated the relationship between psychological capital and job readiness in the context of students' career adaptability and encountering challenges of labor market. These studies indicate that employability of graduates is more than mere academic qualifications, and is in large part determined by their learning experiences in universities and their perceptions of how well these have prepared them for their careers.

Learning inputs refer to university education's key aspects such as students' academic efforts and their learning, their participation and also their investment of knowledge and practical skills. In research about the learning environments of China universities and the resulting learning of their students, Guo (2018) especially stressed the importance of students' educational participation for their learning. As opposed to learning in the classroom, however, students' practical experiences at a university can also be intended to prepare them for their future employment. Thus, in a China undergraduate university, Jin et al. (2020) investigated work-integrated learning and the connection between academic knowledge and work-place expectations. Furthermore, Melhuish (2026) identified barriers to employer engagement that may be detrimental to graduates' positive development. Consequently, the impact of students' learning experiences for their perception of their employability is an aspect to be examined in more detail.

Recent empirical research has explored the various educational and psychological factors influencing students' perceptions of their employability. Niu et al. (2025) in their study examined the role of mentoring in the perceptions of employability held by university students from China. In another study, Zhou et al. (2025) explored the relationship between students' learning engagement and their perceptions of employability, with particular reference to the role of career decision-making self-efficacy. However, learning engagement represents only one of a number of possible dimensions of Learning Inputs include academic effort, participation, acquiring of skills. There are many issues that have not yet been addressed by the research into graduate employability. In addition to the psychological capital, career adaptability, mentoring and learning engagement of graduate students that has already been studied in detail, there is a need for more work on the broader predictive relationship between the Learning Inputs and the graduate employability perceived by graduates. The findings from other China higher education institutions may not be applicable to the final-year students in Shandong Province's public and private higher education institutions. It is therefore important to investigate the learning inputs as a predictor in order to provide further evidence of the relationship between the students' Learning Inputs and their perceived career readiness. A distinction must be made between graduate employability perceived by graduates and the actual employment of the graduates. In addition, it is important to avoid confusing non-reciprocal cross-sectional data with the results of a study in which reciprocal effects were studied over time.

Therefore, this study aims to examine the relationship between learning inputs and perceived employability among final-year university students in Shandong Province, China. For the

Research Question: To what extent do learning inputs predict perceived employability among university students? and Hypothesis (H1): Learning inputs significantly and positively predict perceived employability among university students.

Literature Review

This section reviews the literature on learning inputs and the perceived employability of university students in previous related research, related theoretical frameworks, research gap and hypothesis development. First, learning inputs including students' learning engagement, educational experiences, and acquired skills at university in relation to employability are reviewed. Then, in order to explain how Learning Inputs could affect the perceived employability of university students, some related theoretical frameworks including Human Capital Theory, Experiential Learning Theory, Self-Efficacy Theory, and Social Cognitive Career Theory are reviewed. Finally, research gap is clarified to identify why the current study examines the effect of Learning Inputs on the perceived employability of university students in Shandong Province, China. Previous research has been carried out to investigate the inter-relationship between learning engagement, educational experiences and graduate employability. Academic participation, practical experience, and competence are key in higher education. Learning engagement consists of students' behavioral, cognitive and emotional engagement in learning. Learning Inputs can be defined more broadly than this, however, and may include efforts, time, participation and skills that students invest in their university learning experiences. How these university learning experiences affect students' perceptions of their own employability is one of the issues which need to be investigated. Studies on learning engagement have been gaining traction in terms of their impact on students' academic development. Chen et al. (2025) investigated the relationship between mindfulness and learning engagement among a group of China university students. In the study, self-esteem and self-control played a mediating role. Meng et al. (2025) explored the relationship between mobile phone addiction and learning engagement among a group of China students. Physical activity and academic self-efficacy served as the mediating factors in the study. Learning engagement is associated with a set of psychological characteristics and behaviors that students exhibit. The studies mainly explored the factors that influenced learning engagement; therefore, their primary findings were not related to perceived employability.

There has been growing interest in how students' perceptions of their academic ability and the learning environment affect their academic experiences (Song & Wang, 2026). This study explored the relations among students' academic self-concept and learning engagement in studies, including the mediating effects of self-efficacy and positive learning emotions. Other recent studies examined the effects of AI-driven personalized feedback on students' learning goals, self-efficacy and learning engagement from a self-determination perspective (Xu et al., 2025). Although these studies examined various factors that influence learning engagement, they did not test whether broader Learning Inputs predict students perceived employability. In addition to assessing how classroom engagement is influenced by learning inputs, a number of studies have explored the implications of experiential learning and teaching practices for employability. Chukwuedo and Ementa (2022) explored the relationship between work placement learning and employability by means of experiential learning and social cognitive career theory. In other parts of the world, the relationships between teaching methods and assessment and the acquisition of twenty-first-century employability skills by

university graduates were explored (Segbenya et al., 2023). While, employability skills are skills that students can learn in order to become employable, perceived employability is about individuals' beliefs regarding their chances of being employed. Thus, there is more to perceived employability than the skills that students acquire in higher education.

A recent study by Huang et al. (2025) also explores the relationship between learning institutions connectedness and employability by incorporating future work self-salience into learning engagement. In another study, Shen et al. (2025) investigated the relationship among psychological capital, career values, learning engagement, and employability of tertiary students. Their models consisted of various psychological and educational paths, which were analyzed in order to predict employability; hence, these models did not isolate the predictive effect of learning inputs. Studies on learning engagement, academic and career related educational participation, and practical work experience and the corresponding psychological resources all investigate aspects of student learning and the processes that support academic and career development. Importantly, however, the studied constructs are defined differently and measured with different instruments. Hence, Learning Inputs cannot be confounded with learning engagement or with work placement learning. More research is therefore needed to determine the predictive power of learning inputs include students' academic effort, their degree of participation and their skills for the perceived employability university students in China.

The relation between the dimension learning inputs and the dimension of perceived employability four complementary theoretical models can be used include Human Capital Theory, Experiential Learning Theory, Self-Efficacy Theory and Social Cognitive Career Theory. These models describe the process of how investment in learning, learning experiences, the belief in one's own competence and career-related beliefs influence students' perceptions of their employability.

Becker (1993) Human Capital Theory posits that education and training represent investments for individuals in learning, acquiring skills and developing productive capabilities through higher education, that is, in learning inputs to acquire human capital and in skill development and practical training for higher academic studies in order to be better prepared for employment through academic learning. The relationship between this variable and that of perceived employability, however, is not as straightforward. On the one hand, students who report greater learning inputs to their educational process may also perceive that they are more prepared for employment. Human Capital Theory has traditionally focused upon the process of developing human capital and its economic value as productive capabilities, and therefore, does not necessarily explain why higher levels of learning inputs would lead to better employment outcomes.

Experiential Learning Theory by Kolb (1984) describes knowledge and learning in terms of experiences which go through a process of change or development in order to produce more knowledge. There are four processes of learning which are interlocked: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Experiential learning in higher education can be stimulated by means of practical assignments, working in groups, internships, training simulations, and applying theoretical content in practical situations. The author of this study believes that meaningful participation in learning

situations can increase students' perception of their professional capabilities. Experiential Learning Theory can be applied to this study only if the learning inputs instrument is sufficiently to capture the different experiential learning processes.

According to Bandura (1997), self-efficacy refers to individuals' beliefs in their capabilities to make choices and implement actions required to achieve desired outcomes. Students' beliefs about what they can accomplish are influenced by their self-efficacy. This, in turn, determines how they will tackle problems, how much effort they will put into achieving a goal and how long they will persevere when they encounter obstacles in academic situations. Thus, successful learning experiences are likely to foster students' confidence in their academic and practical skills. This confidence is closely related to their perceptions of their employability and the extent to which they believe they possess relevant employability skills. Self-efficacy Theory, therefore, offers an explanation for the relationship between learning inputs and students' perceptions of their employability. However, in this study, self-efficacy is treated only as a conceptual separate variable and is not investigated as a separate variable in the presented regression model.

Social Cognitive Career Theory explains how self-efficacy, outcome expectations, goals, and contextual conditions influence academic and career behavior. Experiences gained through learning can be interpreted by individuals in terms of their capability beliefs and their expected outcomes for their future career. Thus, in the present study, Learning Inputs are assumed to be related to students perceived employability because they believe that their academic experiences, acquired knowledge, and developed skills will enable them to get a job in the future. However, Social Cognitive Career Theory also refers to other psychological and contextual conditions than the ones included in the present study to explain perceived employability. Therefore, these conditions are not further tested (Lent et al., 1994). These four theoretical perspectives were selected to explain the proposed relationships between the variables. Human Capital Theory explains why educational investment is valuable, Experiential Learning Theory explains how people learn, Self-Efficacy Theory explains how people perceive their competence, and Social Cognitive Career Theory explains how learning experiences affect career-related beliefs. Human Capital Theory is the major theoretical framework for the present study, whereas the other three perspectives are supplementary to explain the student's perceived employability.

Research has established the significance of learning engagement, practical education and psychological resources in preparing university students for employment. Studies have specifically investigated work placement learning in relation to graduate employability (Chukwuedo and Ementa, 2022), teaching and assessment methods in higher education that foster employability skills (Segbenya et al., 2023). Studies have also examined the relationship between school connectedness, university students' psychological capital and their perceptions of graduate employability (Huang et al., 2025; Shen et al., 2025). This body of work provides a useful context in which to examine the relationship between university learning experiences and graduate employability. Three gaps need to be filled by this study. Firstly, most of the previous studies have employed different definitions of variables related to learning, such as learning engagement, work placement learning and educational practices. Thus, it is necessary to investigate the predictive power of Learning Inputs as a whole construct. Secondly, previous studies have examined learning related variables either alone

or in combination with psychological variables that predict employability, whereas the current study directly examines the relationship between Learning Inputs and perceived employability. Thirdly, there is a lack of context-specific evidence concerning final-year university students in Shandong Province, China, particularly those from public universities and private universities.

The relationship between the independent variable and the dependent variable is supported by theory. Firstly, from a Human Capital perspective, the return on the investment in a person's education can take the form of enhanced knowledge and skills (Becker, 1993). Experiential Learning can also facilitate the acquisition of knowledge and enhanced competency through learning experiences (Kolb, 1984). From a psychological perspective, the relationship between students' learning experiences and their beliefs concerning their capability to complete successfully and their perceptions concerning career options has been explained by Bandura (1997) and by Lent et al. (1994). Therefore, for the purpose of the current study, H1 stated that higher scores of learning inputs would be associated with higher perceived employability of university students in Shandong Province, China. To test the strength and the amount of variance explained by the H1, findings from the current study compared with those from the previous studies and thereby contribute to the body of literature concerning learning-related predictors of perceived employability in the context of Chinese higher education systems.

Methodology

This study adopted a quantitative research approach by employing a cross-sectional correlational research design (Creswell & Creswell, 2023). This method is to investigate the relationships between learning inputs and the students' perceptions of employability. In total, 734 final-year undergraduate students from public and private higher education institutions in Shandong Province, China were involved in this study. These participants were in the close proximity of transitioning from higher education to the labor market. An online structured questionnaire was used for data collection via Wen Juan Xing platform, where five-point Likert type scales were employed for measuring the study variables. After data screening and necessary data cleaning, the analyses were conducted based on 734 valid cases. The frequency distributions and central tendencies of the study variables, as well as the demographic characteristics of the respondents, were presented via descriptive statistics. In addition, the measurement instruments were checked for reliability and validity via appropriate statistical procedures. Correlation (Pearson r) was employed for determining the extent of linear relationships and the direction of effects between the variables under investigation. Learning inputs and the students' perceptions of employability. In addition, simple linear regression was used for predicting the students' perceptions of employability based on the aforesaid learning inputs. In order to assess the strength and significance of the obtained linear regression model, several indicators, correlation coefficient (R), coefficient of determination (R^2), adjusted R^2 , and the standard error of the estimate were calculated and presented. In order to check the overall significance of the obtained linear regression model, Analysis of Variance (ANOVA) was employed by calculating the F-statistic and corresponding p-value. In addition, in order to determine the strength and significance of the effects of Learning Inputs on the students' perceptions of employability, the unstandardized coefficients (B), associated standard errors, the standardized regression coefficients (β), t-values, and the corresponding p-values, as well as 95% confidence intervals for said effects

were presented. Finally, one-tailed hypothesis testing was conducted at a 0.05 level of significance to determine whether H1 was supported.

Finding

This section examines the correlation between the variable of learning inputs and the variable of perceived employability on university students from Shandong Province, China. It outlines how far Learning Inputs can predict the student's perceived employability. The Simple linear regression was used to test Hypothesis 1 (H1) which stated that the variable of Learning Inputs would positively predict the variable of perceived employability.

Table 1

Model Summary for the Effect of Learning Inputs on Employability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.906	0.821	0.821	0.143

Table 1 presents the model summary for the regression of learning inputs on employability for university students in Shandong Province, China. The non-centered R for this model is .906 for the correlation coefficient for the two variables and the coefficient of determination for Learning inputs on employability is .821 ($R^2 = .821$). The adjusted R^2 of .821 for learning inputs on employability also indicates good to excellent explanatory power for this model, given the number of predictor variables and the sample size. The standard error of the estimate for the predicted scores for Employability is 0.143. In comparison with the findings for career social support which accounted for 39.8% of the variance in employability in the aforementioned regression, the results presented reveal that learning inputs are a strong and important predictor of students' perception of their employability. Notwithstanding the exceptionally high explained variance in the current findings, caution should be exercised not to confuse the high explained variance with a high amount of variance that is explained for idiosyncratic reasons. Most importantly, the high explained variance must not be misinterpreted as evidence of a causal relationship between the independent variable and the dependent variable.

Table 2

ANOVA for the Effect of Learning Inputs on Employability

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	68.738	1	68.738	3353.642	0.000
Residual	15.003	732	0.020		
Total	83.741	733			

Table 2 presents the Analysis of Variance (ANOVA) results for the regression model for the relationship between learning inputs and employability of university students. As shown in the table above, the overall F-test for the regression model is highly significant, $F(1, 732) = 3353.642$, $p < .001$. This means that, as predicted, there is a positive relationship between the variables and that learning inputs significantly predict employability. The regression sum of squares (SSR) of 68.738 is far greater than the residual sum of squares (SSR) of 15.003. Thus, the model accounts for a large proportion of the variability in Employability. The coefficient of determination (R^2) for the model is .821 or 82.1% which means that learning inputs account for a large proportion of the variability in students' Employability and therefore have substantial power to predict students perceived employability. The results from the ANOVA

of the regression can be used as evidence to support the regression model and the previously proposed relationship between learning inputs and employability. It is however important to remember that the results only provide strong evidence for a predictive association as opposed to cause and effect.

Table 3

Coefficients for the Effect of Learning Inputs on Employability

Model	Predictor	Unstandardized B	Std. Error	Standardized Beta	t	Sig.	95% CI Lower	95% CI Upper
1	(Constant)	-0.002	0.062		-0.040	0.968	-0.125	0.120
	Learning Inputs	1.004	0.017	0.906	57.911	0.000	0.970	1.038

Table 3 provides the evidence to test H1. The unstandardized coefficient (B) for Learning Inputs is 1.004, meaning that on average a one-unit increase in Learning Inputs is associated with an increase of 1.004 units in Employability. Because both variables are based on 1–5 Likert scaled items that were combined into 1–5 composite scores, the slope of learning inputs on employability is extremely large. Students' perception of higher learning input results in their perception of higher employability. The standardized beta of Learning Inputs on the same scale for Employability is 0.906 ($p < .001$, $t = 57.911$). The coefficient for the same effect from Career Social Support is only .609. As a result, a one standard deviation change in learning inputs for students translates into on average a change of .906 standard deviations for their perceived employability. The coefficient is strong, precise and robust. The 95% confidence interval for the change in Employability as a result of Learning Inputs' increase on the same scale is [0.970, 1.038] and clearly above zero.

Table 4

Hypothesis Testing Summary for H1

Hypothesis	Path	Beta	t	Sig.	Decision
H1	Learning Inputs → Employability	0.906	57.911	0.000	Supported

Table 4 clearly shows that H1 is supported. The level of support for H1 is even stronger when taking into account the effect size and the amount of explained variance. Within the confines of the direct-effects model investigated in this study, therefore, it appears that Learning Inputs are a more immediate and more powerful predictor of Employability than is career social support. There is a very strong correlation between how students perceive their learning and how they subsequently perceive their employability and that of others. From a more substantive perspective, the results indicate that aspects of the learning process of students include effort, participation, skills acquisition and readiness for application in real life are strongly correlated with their perceptions of their own employability and readiness for work. However, strong effects need to be interpreted carefully. For the moment we are looking at simple regression, so the effect size reported in the table only reflects the direct relationship between a variable and the dependent variable, not its net effect after including the other two predictors in the model. Furthermore, as mentioned above, the discriminant validity between Learning Inputs and Employability was only on the border of significance. Hence, we need to be cautious in the following analyses on Employability, as a strong relationship is likely to be based not only on the present findings' substantive content but also

on the high degree of correspondence between the two sets of perceptions that are already obvious for the final-year students in this study.

Discussion

The present study's findings for learning engagement and employability are consistent with prior research by Zhou et al. (2025) examined the relationship of learning engagement and employability among Chinese university students. In their study, researchers found that career decision-making self-efficacy played a significant role. Furthermore, in studies that investigated learning engagement within the framework of school connectedness and employability, Huang et al. (2025), and psychological capital and employability, Shen et al. (2025), findings of the present study support the notion that students' assessments of Learning Inputs are strongly related to their assessments of employability and thus their career readiness.

Viewed from the perspective of the Human Capital Theory, the findings of this study support the assertion by Becker (1993) that human capital in the form of knowledge, skills and productive capabilities can be enhanced through investment in education. Thus, by participating in learning and acquiring academic as well as practical skills and competencies, students might perceive that they possess sufficient skills to meet the expectations of potential employers. Viewed from the perspective of Experiential Learning Theory (Kolb, 1984), meaningful learning experiences are considered vital in order to acquire knowledge and to develop practical understanding. Thus, the findings of this study are in line with those of Chukwuedo and Ementa (2022) who investigated work placement learning and employability as well as those of Segbenya et al. (2023) who examined teaching methods, assessment practices and employability skills. However, the focus of this study was on perceived employability as opposed to competencies that can be measured objectively or actual employment outcomes.

Another way to view the findings from the research is through the prism of Self-Efficacy Theory (Bandura, 1997) and Social Cognitive Career Theory (Lent et al., 1994). These theories argue that experiences in learning can shape an individual's beliefs regarding what he/she can do and how he/she can accomplish career and educational goals. There have been previous studies that investigated various psychological aspects that affect Chinese university students' learning engagement (Chen et al., 2025; Song and Wang, 2026; Meng et al., 2025). The current study's analyses, however, did not test self-efficacy as a mediating variable, thus the aforementioned perspectives on learning experiences remain speculative.

Conclusion

The study suggests that investments in education and meaningful learning experiences at university are important for students to acquire knowledge and skills in China higher education. The correlation between Learning Inputs and Perceived Employability was very high and positive ($r = .906$). Learning Inputs even explained 82.1% of the variance of Perceived Employability. However, both variables were measured by self-report questionnaires within a cross-sectional design. Therefore, the results might be affected by common-method bias as well as by the high degree of conceptual overlap between the two variables. Moreover, the results of the correlation study do not allow for controlling for other variables that might explain students' perceptions of their employability. Therefore, the results do not necessarily

prove a causal relationship between the variables studied. Moreover, students' Perceived Employability does not necessarily equal their real employment readiness or even their actual employment. The results of the study can however be used for planning and designing curriculum and institutional strategies that are geared towards students' employability by integrating knowledge and skills with meaningful learning experiences. Several limitations pertain to this study. The cross-sectional design in this study prevents drawing any causal conclusions, whereas the self-reported questionnaires might be subject to common-method bias. Moreover, the simple regression model includes no control variables, and, most importantly, the sample consisted of final-year students from one single province in Shandong, China. Future research on the issue should, however, employ a longitudinal design and use objective employment indicators. It is also recommended to use multiple sources of data and to include a range of relevant control variables in the analyses.

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