



The Influence of Using Soft Skills Information Management Platform for Training Soft Skills of a College's Students in Chengdu, China

Jin Xu¹ and Lu Zhu²

¹Ph.D. Candidate, Graduate School of Teaching and Technology, Assumption University, Thailand

²Program Director of Ph.D. Art, Music, Sports and Entertainment Management, Graduate School of Business and Advanced Technology Management, Assumption University, Thailand

¹E-mail: 10625387@qq.com, ORCID ID: <https://orcid.org/0009-0002-1856-0869>

²E-mail: zhulu@au.edu, ORCID ID: <https://orcid.org/0000-0001-6736-4309>

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Abstract

Background and Aim: Innovations in information technology have led to the involvement of the Soft Skills Information Management Platform in teaching and learning, which provides a more diverse and flexible way of teaching and learning to improve the core soft skills of college students. This study compares the effectiveness of using traditional teaching methods and a Soft Skills Information Management Platform to improve students' core soft skills in a college in Chengdu.

Materials and Methods: Taking the first-year students of a college in Chengdu as a sample, 60 students were selected by purposive sampling method and randomly divided into 30 students in the control group and 30 students in the experimental group. A quasi-experimental method was used to experiment with traditional teaching methods and using the Soft Skills Information Management Platform as a teaching tool to collect and analyze the data from the pre-test and post-test of the two groups to assess the learning effect of the core soft skills (innovation, learning ability, leadership).

Results: The experimental results show that compared with the traditional teaching methods, the Soft Skills Information Management Platform participation in teaching has a more positive contribution to the enhancement of students' core soft skills (innovation, learning ability, leadership), which significantly improves students' learning effect.

Conclusion: Therefore, the use of the platform to engage in soft skills teaching and learning can be replicated and used by teachers who can use the Soft Skills Information Management Platform as a pedagogical tool in their programs to enhance the core soft skills of their students.

Keywords: Soft skills; Soft skills information management platform; Innovation; Learning ability; Leadership

Introduction

Soft skills, which are behaviors, abilities, and perceptions inherent to a discipline, are the potential of an individual to use their knowledge and skills in learning and work (Institute of Student Employers, 2019), this concept was first developed by the American management scientist Robert L. Katz in 1955 (Robert, 2009). The increasing globalization of the world economy (Altbach, 2016), coupled with scientific and technological innovations, has led to increased competition and pressure on employment (AbuJbara & Worley, 2018), as a result, there is a growing demand for young people with all-round qualities and abilities, This requires college's graduates to be adequately prepared in terms of knowledge and skills for a globally integrated economy and a competitive labor market, and soft skills need to be given high priority as an important factor affecting the employability of students (Heymann et al., 2022). Therefore, upgrading the soft skills of college students is a response to the process of globalization of the world economy and the needs of the labor market, as well as an intrinsic requirement for the reform of university education and the self-development of students.

Innovations in information technology have also made changes in the way soft skills are developed inevitably. Rapidly updated information technologies, such as the Internet, automation, and artificial intelligence, continue to innovate people's ways of interacting with each other, learning objectives, and modes of education, and the integration of education and information technology develops and expands educational opportunities, changes educational environments and teaching methods (Ali, 2020), and promotes digital changes in the education system (McFarlane, 2019). The more flexible way in which IT platforms are involved in teaching and learning allows for more skillful development of students' skills (Wisshak & Hochholdinger, 2020), and is an important modality for university teaching and learning activities in the future (Dhawan, 2020). The First World Conference on Digital Education convened by the Ministry of Education, PRC, and China UNESCO in 2023 showcased the results and experiences gained in





the past and emphasized that pedagogical reforms incorporating informatization technologies have become an intrinsic need for the developmental issues of higher education in China (Yao, 2023), and constructed an information-based education platform system to provide support for educators and students to meet personalized learning and break down time and space (Jingpeng, 2023).

In response to the above, this study aims to explore the role and effectiveness of using a soft skills information management platform as a teaching tool to develop students' soft skills. Through quasi-experimental research, comparative analyses demonstrate the effectiveness of the Soft Skills Information Management Platform's involvement in teaching and learning to enhance students' soft skills.

Objectives

1. To explore the impact on students' core soft skills (innovation, learning ability, and leadership) of using a Soft Skills Information Management Platform to engage in teaching and learning.
2. To explore the impact on students' core soft skills (innovation, learning ability, and leadership) of traditional teaching methods compared to the use of the Soft Skills Information Management Platform in teaching and learning.

Literature Review

Soft Skills

In 1955 American management scientist Robert.L. Katz proposed in his book *Skills of an Effective Administrator* that managers must have three types of skills such as technical, interpersonal, and conceptual, which can be seen as the origin of the concept of soft skills (Ye Chen, 2015). In China, it was first proposed by Yang Shaogang in his 1986 article 'Soft Skill Competence' (Shaogang, 1986).

The terminology of soft skills varies from country to country (Wats & Wats, 2009), and is referred to as soft skills, key competencies, or employability skills in Australia, basic skills in New Zealand, essential skills, generic skills, employability skills, or workplace knowledge in the United States, it is called core literacy and comprehensive quality in China (Teng et al., 2019). also known as transferable skills, competency (Tran, 2013), etc., and these terms can be substituted for each other, and soft skills are the most often used to refer to these similar concepts (Christina & Minerva, 2019). Definitions of the soft skills subset vary slightly across countries, governments, and institutions (Chamorro-Premuzic et al., 2010), but are broadly the same and the concept of soft skills is broad and evolving (Rui & Cinque, 2014). The American Academy of Engineering proposed that engineering talents at the undergraduate level should have nine core qualities, including innovation, good communication skills, leadership, professionalism, flexibility, and lifelong learning (NAE, 2004). Goldsmith's Soft Skills Inventory categorizes soft skills into self-management, communication, interpersonal, teamwork skills, stress resilience, innovation, critical thinking, learning ability, attention to detail, assuming responsibility, and emotional intelligence (Chamorro-Premuzic et al., 2010), and Tortorella (2020) argues that soft skills include leadership, teamwork, communication skills, problem-solving, innovation, systems thinking and organizational culture.

Soft Skills Measurement Methods

Accurate measurement is essential for research on how to improve soft skills, innovation, learning ability, and leadership can be tested using test questions (Xiaoming, 2015). American Educational Testing Service (2010) evaluated the achievement of soft skills training in universities with the standardized assessment tool EPP (ETS Proficiency Profile), and Forrest et. al. (2021) suggest that a common approach to soft skills research is to focus on one or several specific related skills in a given study.

Soft Skills Information Management Platform

Soft Skills Information Management Platform used by universities in different geographic regions have their unique content and models, different types of online tools and services are considered to have a positive impact on learning soft skills (Heymann et al., 2022), and universities should diversify their curricula through a variety of informational technologies and tools to develop students' soft skills such as innovation, learning ability, and leadership (Kamysbayeva et al., 2021). For soft skills training, British universities use a university IT system that combines VLE (Virtual Learning Environment Platform), E-Portfolios, and Padlet (Hayes & Graham, 2020), and design digital interactive teaching courses oriented to the needs of society and students themselves (Tsiotakis & Jimoyiannis, 2016). A university in Malaysia



uses the information management platform Schoology for students in a 12-week course, where students and teachers organize the process of posting tasks, testing, submitting assignments, evaluating feedback, and presentations, collecting and analyzing data on the platform, and carrying out various face-to-face team activities and online activities (Kadir et al., 2016), to improve students' soft skills (Sadia et al, 2019).

Constructivist Theory of Learning

Constructivist learning theory was developed in the 1970s and this view was largely derived from the doctrines of Bruner (1985), Piaget (1952), Vygotsky (1978), and Papert (1980) (Neo, 2005). Theurelle-Stein & Barth, (2017) then emphasized the importance of constructivist learning theory in the construction of personal soft skills, arguing that the development of soft skills enhances autonomy and improves perceptions of one's abilities (Thiberge, 2008).

Humanistic Learning Theory

The Humanistic Learning Theory aims to develop self-actualized or 'whole' human beings who advocate individual differences, meaningful learning, and student-centered concepts. Congress, U. S., and ACT, A. (1994) through the School-to-work Opportunities Act of 1994 act provides for enable students to acquire the knowledge, soft skills, and attitudes to achieve student skills, and integrating the curriculum that are needed for transferring from school to the workplace, Career guidance, soft skills, and other important provisions related to the integration of humanistic elements.

The Theory of Outcomes-based Education

OBE is an outcome-oriented and student-centered educational theory that includes students' acquisition of relevant knowledge and abilities, ideas and experiences, etc. It focuses on the questions of what learning outcomes education wants students to achieve, how to help students achieve the outcomes, and how to know what outcomes students have achieved (Zhang et al., 2022). It has been shown that OBE facilitates significant improvements in student performance (Prosser et al., 2006) and enhances student motivation (Spady, 1994) and soft skills such as innovation, learning ability, and leadership (Chan & Chan, 2009).

Conceptual Framework

This study examined the effects of two independent variables, Soft Skills Information Management Platform, and traditional teaching methods, on four dependent variables, namely, innovation, learning ability, leadership, and core soft skills. Figure 1 shows the relationship between the variables.

Independent Variable: Soft Skills Information Management Platform

Traditional teaching method

Dependent Variable: Innovation (IN) Learning ability (LA)
 Leadership (LS) Core soft skills (CSS)

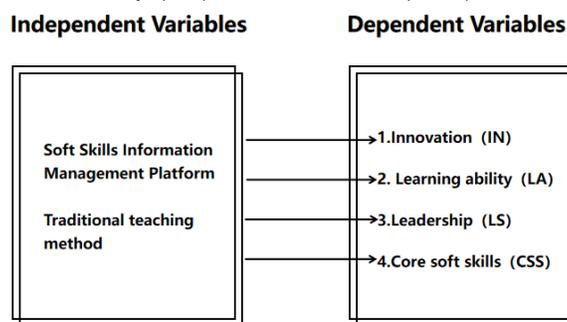


Figure 1 Conceptual Framework



Figure 2 Core Soft Skills Development Model of a college in Chengdu

Independent Variables

Soft Skills Information Management Platform: This platform, as a technical means to cultivate students's soft skills, can realize the information management of soft skills cultivation. Teachers release course activities online, students choose activities online, give feedback and evaluation to each other online, and record them online to form the transcripts of students' soft skills, to realize that students' participation in soft skills education can be recorded, measured, assessed, measured, and presented.

Traditional teaching methods: Traditional teaching is a classroom-based, teacher-centered mode of teaching using books, blackboards, multimedia equipment, and so on.

Dependent Variables

The researcher investigates the role of Soft Skills Information Management Platform participation in teaching and learning in improving students' core soft skills by taking the core soft skills (innovation, learning ability, and leadership), which are used as tests in the soft skills curriculum standards of a college in Chengdu, as an example.

Innovation (IN) is the search for new knowledge and the ability to transform ideas, knowledge, and technical skills into new products, outcomes, and systems that benefit stakeholders (Benn & Danny, 2001).

Learning ability (LA) is defined as the ability to acquire and apply new knowledge and skills using learning methods appropriate to oneself (Vlachogianni & Tselios, 2022).

Leadership (LS) is the ability of a team leader to work with a team, pay attention to team members, anticipate events, and solve problems (Tuononen et al., 2019).

Core Soft Skills (CSS) in this paper is based on the Soft Skills Programme Standards of a college in Chengdu, which includes three dimensions: innovation, learning ability, and leadership, as shown in Figure 2.

Hypotheses

H01. There is no difference in innovation improvement between the experimental group and the control group.

Ha1. There is a difference in innovation improvement between the experimental group and the control group.

H02. There is no difference in learning ability improvement between the experimental group and the control group.

Ha2. There is a difference in learning ability improvement between the experimental group and the control group.

H03. There is a difference in leadership improvement between the experimental group and the control group.

Ha3. There is a difference in leadership improvement between the experimental group and the control group.

H04. There is no difference in core soft skills improvement between the experimental group and the control group.

Ha4. There is a difference in core soft skills improvement between the experimental group and the control group.

Methodology

Research Design



This study used quasi-experimental research to answer research questions and prove or disprove research hypotheses. For this purpose, the experiment used a two-group design to collect and analyze data using quantitative research methods. In this teaching experiment, participants were randomly divided into two groups, one experimental and one control. The control group used the traditional classroom to improve students' core soft skills, and the experimental group participated in teaching to improve students' core soft skills using the Soft Skills Information Management Platform. By collecting the pre-test and post-test scores of the two groups, we analyze the effects of different teaching methods on students' core soft skills (innovation, learning ability, and leadership). The design of this study is as follows:

1. A pre-test was conducted to measure students' scores on core soft skills (innovation, learning ability, and leadership).
2. During the next 8 weeks, the experimental group participated in teaching using the Soft Skills Information Management Platform, and the control group used traditional teaching methods.
3. After 8 weeks, a post-test will be conducted for both groups to measure the students' scores on core soft skills (innovation, learning ability, and leadership).
4. Quantitatively analyze the core soft skills (innovation, learning ability, and leadership) and conclude a comparison to prove or disprove the hypothesis.

Population and Sample

The target population of this study consisted of first-year students with the same knowledge background participating in a soft skills training program at a college in Chengdu. Purposive sampling was used to select 60 students, and the experimental and control groups were randomly determined by drawing lots, with 30 students in the experimental group and 30 students in the control group.

Research Instruments

Both the pre-test and post-test were tested through test questions, which were taken from the soft skills test questions of a college in Chengdu, and were used to assess the core soft skills of the participants. Questions 1-10 measured innovation, questions 12-20 measured learning ability, questions 21-30 measured leadership, and questions 1-30 measured core soft skills in total. The test questions were used to quantify the level of students' participation in teaching and learning to improve their core soft skills through the Soft Skills Information Management Platform, and the criteria for identifying the scores of the core soft skills were developed, including the scoring items, the scoring criteria, and the identification criteria.

Data Collection

A pre-test was administered to the experimental and control groups before the experiment and a post-test was administered to the experimental and control groups after 8 weeks to assess the changes in the core soft skills of the students. The duration of the test was 30 minutes and the teacher scored the test and collected the scores of the test as data.

Data Analysis

Quantitative data of pre-test and post-test scores of the experimental and control groups were analyzed using SPSS software (version 27). Descriptive statistics were used to analyze the means of the two groups to compare the changes in the differences between the scores of the two groups, and an independent samples t-test was used to analyze the data of the experimental and control groups to compare the data of the two groups to see if there was any significant difference.

Results

Descriptive Statistics

The results were analyzed after quantitative assessment and statistical data to observe the differences between the two groups.

Table 1 shows that in terms of innovation, the control group had a mean score of 26.9000 before the experiment and 33.1167 after the experiment. The experimental group had a mean score of 27.6833 in the pre-test and 38.9167 in the post-test. The mean scores of both groups in the post-test increased compared to the pre-test, with the mean score of the control group increasing by 6.2167 points and the mean score of the experimental group increasing by 11.2334 points. This indicates that the mean score of the experimental group's innovation has increased more significantly than the control group.

In terms of learning ability, the control group had a mean score of 28.5667 before the experiment and 33.5833 after the experiment. The experimental group had a mean score of 31.0500 in the pre-test and 39.5500 in the post-test. The mean scores of both groups in the post-test increased compared to the pre-test,



the mean score of the control group increased by 5.0166 points and the mean score of the experimental group increased by 8.5 points. This indicates that the mean score of learning ability of the experimental group increased more significantly than the control group.

In terms of leadership, the control group had a mean score of 29.9333 before the experiment and 37.0333 after the experiment. The experimental group had a mean score of 32.5333 in the pre-test and 42.7667 in the post-test. The mean scores of both groups on the post-test increased from the pre-test, with the mean score of the control group increasing by 7.1 points and the mean score of the experimental group increasing by 10.2334 points. This indicates that the experimental group had a more significant increase in the mean score of leadership than the control group.

In terms of core soft skills, the control group had an average score of 85.4500 before the experiment and 102.7333 after the experiment. The experimental group had a mean score of 91.2333 in the pre-test and 121.4500 in the post-test. The mean scores of both groups in the post-test increased over the pre-test, with the mean score of the control group increasing by 17.2833 and the mean score of the experimental group increasing by 30.2167. This indicates that the mean score of core soft skills of the experimental group increased more significantly than the control group.

Table 1 Descriptive statistics for pre-test and post-test of control group and experimental group

	Group		Mean	N	Std. Deviation
IN	Control	Pre-test	26.9000	30	7.02385
		Post-test	33.1167	30	9.00831
	Experimental	Pre-test	27.6833	30	6.07210
		Post-test	38.9167	30	6.86456
LA	Control	Pre-test	28.5667	30	8.73334
		Post-test	33.5833	30	6.90463
	Experimental	Pre-test	31.0500	30	6.92241
		Post-test	39.5500	30	6.40090
LS	Control	Pre-test	29.9333	30	6.35953
		Post-test	37.0333	30	5.41380
	Experimental	Pre-test	32.5333	30	6.58097
		Post-test	42.7667	30	4.22785
CS	Control	Pre-test	85.4500	30	18.33752
		Post-test	102.7333	30	18.75373
	Experimental	Pre-test	91.2333	30	14.61030
		Post-test	121.4500	30	14.40627

Hypotheses Testing

The table shows that the observed value of the F-statistic for the test of innovation for the experimental and control groups is 4.298, which corresponds to a probability p-value of 0.043, which is less than α ($\alpha = 0.05$), and it can be assumed that there is a significant difference between the variance of the two totals. Since there is a significant difference in the variance of the two total groups with a t-value of 2.805, corresponding to a Sig. (2-tailed) $p = 0.007$, which is less than α , $p < \alpha$, which is inconsistent with the original hypothesis. Therefore, there is a significant difference between the innovation of the experimental group and the control group.

The observed value of the F-statistic for the test of the learning ability of the experimental and control groups is 0.158, which corresponds to a probability p-value of 0.692, which is greater than α ($\alpha = 0.05$), and it can be assumed that there is no significant difference between the variance of the two totals. Since there is no significant difference in the variance of the two overall groups, the t-value is 3.471, corresponding to Sig. (2-tailed) $p < 0.001$, which is less than α , and $p < \alpha$, which is inconsistent with the original hypothesis. Therefore, there is a significant difference between the learning ability of the experimental group and the control group.

The observed value of the F-statistic for the test of leadership between the experimental and control groups is 1.361, which corresponds to a probability p-value of 0.248, which is greater than α ($\alpha = 0.05$), and it can be assumed that there is no significant difference in the variance of the two total groups. Since there is no significant difference in the variance of the two overall groups, the t-value is 4.572, corresponding to Sig. (2-tailed) $p < 0.001$, which is less than α , and $p < \alpha$, which is inconsistent with the original hypothesis.



Therefore, there is a significant difference between the leadership of the experimental group and the control group.

The observed value of the F-statistic for the core soft skills test for the experimental and control groups is 2.313, corresponding to a probability p-value of 0.134, which is greater than α ($\alpha= 0.05$), and it can be assumed that there is no significant difference between the variance of the two totals. Since there is no significant difference between the two overall variances, the t-value is 4.335, corresponding to Sig. (2-tailed) $p < 0.001$, which is less than α , and $p < \alpha$, which is inconsistent with the original hypothesis. Therefore, there is a significant difference between the core soft skills of the experimental group and the control group.

The results showed that there was a significant difference between the experimental group and the control group in terms of innovation, learning ability, leadership, and core soft skills. Hypotheses H01, H02, H03, and H04 are rejected.

Table2 Results of T-test for Independent Samples

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	(2-Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
IN	Equal variances assumed	4.298	.043	2.805	58	.007	5.80000	2.06778	1.66088	9.93912
	Equal variances are not assumed.			2.805	54.187	.007	5.80000	2.06778	1.65467	9.94533
LA	Equal variances assumed	.158	.692	3.471	58	<.001	5.96667	1.71897	2.52578	9.40755
	Equal variances are not assumed.			3.471	57.670	<.001	5.96667	1.71897	2.52536	9.40797
LS	Equal variances assumed	1.361	.248	4.572	58	<.001	5.73333	1.25411	3.22296	8.24371
	Equal variances are not assumed.			4.572	54.783	<.001	5.73333	1.25411	3.21981	8.24685
CSS	Equal variances assumed	2.313	.134	4.335	58	<.001	18.71667	4.31757	10.07411	27.35923
	Equal variances are not assumed.			4.335	54.386	<.001	18.71667	4.31757	10.06186	27.37147

Table 3 Summary of Hypothesis Testing and Results





Hypotheses	Statement	Result after Analysis
H ₀₁	There is no improvement between the experimental group and the control group for innovation in the post-test.	Rejected.
H ₀₂	There is no improvement between the experimental group and the control group for learning ability in the post-test.	Rejected.
H ₀₃	There is no improvement between the experimental group and the control group for leadership in the post-test.	Rejected.
H ₀₄	There is no improvement between the experimental group and the control group for core soft skills in the post-test.	Rejected.

Conclusion

The results of the analysis after quantitative assessment and statistical data showed that compared with the control group using traditional teaching, the experimental group using the Soft Skills Information Management Platform as a means of teaching improved their scores in core soft skills (innovation, learning ability, and leadership), and the scores improved by a greater margin and the learning effect was better compared with that of the control group.

Discussion

In comparison, the Soft Skills Information Management Platform involved in teaching and learning has a large magnitude of improvement in learning ability, an intermediate magnitude of improvement in innovation, and a relatively small impact on the improvement of leadership.

The experimental study showed that students can improve soft skills-related competencies as long as they participate in the soft skills program, and the leadership of the participants also improved after 8 weeks of study, just not as much as the other competencies. For the reason of this difference, as Rhian (2016) said, leadership is something that needs to be strengthened and cultivated from early childhood, so it can be seen that the cultivation of leadership is a long-term process, so it may need a longer period of learning and exercising for this kind of competence that needs to be cultivated for a long period.

Suggestion

This study proves that using the Soft Skills Information Management Platform to participate in teaching has significant effects on improving students' core soft skills, based on which the following recommendations are made.

Firstly, this study can provide a reference for university teachers to develop soft skills-related courses or to reform soft skills-related courses. In this study, the use of the Soft Skills Information Management Platform to participate in teaching is useful for students to improve their innovation, learning ability, and leadership, which indicates that the use of the Soft Skills Information Management Platform to participate in soft skills teaching can be promoted and used and that teachers can choose the Soft Skills Information Management Platform as a teaching tool in their courses.

Secondly, the evaluation methods and other learning tools provided by this study for college students' soft skills learning enable students to understand their strengths and weaknesses, have a more comprehensive and realistic grasp of their situation, and promote college students' soft skills learning from passive learning to active learning. The record and evaluation system of the Soft Skills Information Management Platform also provides a basis for teachers and universities to achieve more accurate positioning of talent cultivation, to promote personalized cultivation of students according to their aptitude, and to promote a more complete knowledge system for college students.

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