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Acceptance Letter

Dear: **Xu Qingsong, Angkana Karanyathikul, Sombat Kotchasit**

Paper Title: **Effect of Mastery Learning Combined with Mind Mapping Technique on the Students' Sculpture Performance Ability for Junior University Students**

This is to enlighten you that the above manuscript was reviewed and appraised by the reviewer committee members of the **International Journal of Sociologies and Anthropologies Science Reviews (online)** [IJSASR], Old ISSN 2774-0366 (Online): New ISSN 2985-2730 (Online), indexed by **Thai Journal Citation Index Centre (TCI) Tier 2, DOI Crossref Member, and ResearchGate**. It is acceptable for publication in the IJSASR, which will be available in Volume 4 Issue 5 (September-October 2024) at https://so07.tci-thaijo.org/index.php/IJSASR/about

Sincerely

Asst. Prof. Dr. Sanya Kenaphoom
Editor-In-Chief

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Effect of Mastery Learning Combined with Mind Mapping Technique on the Students' Sculpture Performance Ability for Junior University Students

Xu Qingsong[1], Angkana Karanyathikul[2], Sombat Kotchasit[3]
[1]Master student, Curriculum and Instruction Program, Valaya Alongkron Rajabhat University under the Royal Patronage Pathum Thani Province, Thailand
[2,3]Lecturer· Curriculum and Instruction Program, Valaya Alongkron Rajabhat University under the Royal Patronage Pathum Thani Province, Thailand

E mail: qingsongxu4@gmail.com, ORCID ID: https://orcid.org/0009-0005-0110-3209
E-mail: angkana@vru.ac.th, ORCID ID: https://orcid.org/0009-0008-6288-6923
E-mail: sombat@vru.ac.th, ORCID ID: https://orcid.org/0000-0002-8057-7656

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Abstract

Background and Aims: The Chinese government has issued a series of policy documents to support the development of the cultural industry, providing policy guarantees and guidance for the development of sculpture education. Traditional teaching methods usually use unified teaching content and teaching methods, which cannot meet the individual needs of students. The comprehensive application of "Mastery Learning with Mind Mapping" theory and methods can provide solid technical support and rich teaching methods for the reform of sculpture education. Through the application of personalized learning plans and mind mapping, students' learning content and space can be expanded, and their learning efficiency and learning quality can be improved. This comprehensive approach can not only meet students' learning needs but also stimulate their learning interest and creativity and promote their all-round development. Therefore, the promotion and application of this method in sculpture education are of great significance and value. This study aims to explore and evaluate the impact of mastery learning combined with mind mapping technique on college students' sculpture learning achievements and performance ability through mastery learning combined with mind mapping technique.

Materials and Methods: The instruments for the experiment were four lesson plans. To evaluate the quality of a curriculum plan, it can be assessed using a Likert five-point scale. The quality of the scale can be measured using the Item-Objective Congruence (IOC) The assessment process involves analyzing each component of the lesson plan, attributing scores on the Likert scale, and then calculating the average score and the standard deviation (SD) for each component. The instruments for collecting data were two instruments needed to collect the sampling data, as the detailed list showed: sculpture score assessment and sculpture performance competency assessment. The sample was 30 students (one class) among the 120 junior students in the 2023 academic year. The procedures for data collection are as follows, the sample learning achievement before and after learning through Mastery Learning with Mind mapping and sculpture performance ability after learning through Mastery Learning with Mind mapping with the established 70 percent

Results: The study evaluated the effectiveness of employing mastery learning combined with mind mapping techniques to enhance students' learning achievement and sculpture performance ability. Significant improvement was observed, with posttest scores surpassing pretest scores ($t = 13.06^*$, $p = 0.05$). Furthermore, students' sculpture performance ability scores after mastering learning with mind mapping (81.1%) exceeded the 70% criterion, with statistical significance ($t = 11.05^*$, $p = 0.001$).

Conclusion: Compared with previous related studies, the results of this study showed that using mastery learning combined with mind mapping technique teaching had a significant positive effect on the sophomore research on sculpture performance ability. This is consistent with the findings of Chen Linsheng (2022), who found that the use of mind-mapping techniques in art education can improve students' learning achievement. Combining the findings of previous studies and the results of this study, we can conclude that mastery learning combined with mind mapping technique teaching has positive effects on the ability of sculpture performance in sophomore students. However, further research still needs to explore the impact of different teaching methods on students of different grades and specialties to get a more comprehensive understanding of the effects of mastery learning combined with mind-mapping technique teaching.

Keywords: Mastery Learning; Mind Mapping; Learning Achievement; Sculpture Performance Ability

สำเนาถูกต้อง

Introduction

The provided text discusses the evolution of sculpture education in Chinese colleges and universities, particularly focusing on the reforms and challenges faced in recent years. Since 2009, there has been a concerted effort by national and local governments to promote cultural industries, including

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the development of experimental art courses. This has led to an increased emphasis on the design and development of teaching courses by college teachers, necessitating adaptation to new educational trends and teaching models.

The text highlights the need for humanizing college art courseware systems and breaking away from traditional teaching methods. It stresses the importance of embracing new forms, experiences, and learning approaches to facilitate leapfrog development in sculpture teaching. (Olufunke & Blessing, 2014)However, it acknowledges challenges such as the lack of perception of 3D space among students, varying levels of art foundation and aesthetics, and the inadequacy of traditional teaching methods to meet the diversified needs of sculpture education.

An important policy in China is to focus on art learning and the background of sculpture education, addressing the challenges faced in teaching practice, meeting the new requirements for sculpture art development, and enhancing the integration of sculpture education with societal needs. The research aims to deepen the reform of sculpture education by exploring new teaching methods, improving student learning achievement and sculpture performance ability, fostering innovation in sculpture, and promoting sustainable development in teaching practices. (Wang, 2015) The comprehensive application of "Mastery Learning with Mind Mapping" theory and methods can provide solid technical support and rich teaching methods for the reform of sculpture education. Through the application of personalized learning plans and mind mapping, students' learning content and space can be expanded, and their learning efficiency and learning quality can be improved. This comprehensive approach can not only meet students' learning needs but also stimulate their learning interest and creativity and promote their all-round development. Therefore, the promotion and application of this method in sculpture education is of great significance and value.

Research Objectives

1. To compare learning achievement before and after learning through mastery learning combined with the mind mapping technique.
2. To compare sculpture performance ability after learning through mastery learning combined with mind mapping technique with the established 70 percent.

Literature Review

The mastery learning theory is a teaching method that aims to ensure that each student thoroughly masters the learning content, rather than simply moving forward according to a fixed timetable. The core concept of this theory is that each student must achieve a certain level of mastery or "mastery" before learning the material. Only when students fully understand the current concept or skill can they move on to new content. The main characteristics of mastery learning include five: Step 1. Set clear goals: teachers need to identify learning goals and ensure that students know what they are trying to achieve. Clear goals help students focus their attention, clarify their direction, and allow them to measure learning progress. Step2. Independent learning: to encourage students to learn independently, and they are encouraged to think and explore independently even under the guidance of teachers. This independent learning method can cultivate students' independent learning ability and improve their ability to solve problems and apply knowledge. Step3. Personalized learning plan: the students have different learning needs and learning styles. Personalized learning plans can be developed according to the characteristics and needs of each student to ensure that they get the most effective learning experience.

Step4. Periodic evaluation: In Mastery Learning, students are not only evaluated during the learning process but also have regular evaluations to measure their mastery of knowledge and skills. These assessments help students understand their learning progress and identify and solve learning problems. Step5. Feedback and improvements: Mastery Learning emphasizes timely feedback and improvement mechanisms. Students understand their learning through feedback, discover their mistakes and deficiencies, and take steps to improve. Teachers can also provide personalized feedback and guidance to help students overcome difficulties and improve learning outcomes. Mastery Learning theory aims to

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improve the quality of education and ensure that every student can achieve learning success without being missed or left behind due to different learning speeds

Current course situation

The population of this study is 120 sophomore students (4 classrooms) in the 2023 academic year sculpture course of the Department of Public Art, Department of Environmental Art, Suzhou Institute of Art and Design Technology. The sample of this study was 30 students (1 classroom) in the Sculpture Course of the Public Art Department of the Department of Environmental Art, Suzhou Institute of Art and Design Technology. which was selected by using the cluster random sampling method. This chapter covers the following topics;

Independent variable: mastery learning combined with mind mapping technique.

American psychologist Benjamin Bloom (1968) proposed the mastery learning theory. This theory emphasizes a personalized learning approach, advocating that each student should achieve success in mastering basic concepts and skills before moving on, rather than adhering to a fixed timetable. Bloom argued that students should be provided with adequate time and resources to understand and master learning objectives, ensuring that every student can achieve learning success. The core concept of mastery learning theory is to allow students to learn at their own pace and attain mastery levels in acquiring knowledge and skills.

The mind mapping technique is a theoretical and practical method proposed by Tony Buzan (1974) Presents mind mapping technique, its concepts, functions, and advantages. Explain the core principles of mind mapping technique, including focusing on a central idea, using visual elements such as graphics, colors, and keywords, free association, and creative thinking. The author explains the working principle of the brain, including the functional division of labor between the left and right brains, the brain's learning and memory processes, etc. By understanding how the brain works, readers can better understand why the mind-mapping technique is so effective at improving thinking and memory. It introduces how to make a mind-mapping technique, starting from selecting a topic, constructing a central idea, adding branches, using keywords and graphics, and using colors. Through examples and cases, the author shows how to create clear, orderly, and creative mind-mapping techniques. Mind mapping techniques are used in various fields, including learning, memory, creativity, decision-making, planning, etc. Through practical cases, the author demonstrates the application scenarios of mind-mapping techniques in improving learning efficiency, solving problems, and improving work efficiency. Including how to overcome thinking obstacles, improve thinking efficiency, continuously improve and develop mind mapping techniques, etc. The author provides some practical suggestions and techniques to help readers better use mind mapping techniques to improve personal and work efficiency and achievements.

Mastery learning with mind mapping

Olufunke & Blessing (2014). Students when taught use the mastery learning approach and mind mapping technique. It established the influence of mastery learning and mind mapping in enhancing students' attitudes towards Physics. These were to develop positive attitudes of students towards Physics and thereby improve their performance in the subject.

Mastery learning combined with mind mapping technique is a comprehensive learning method that combines the theory and practice of mastery learning and mind mapping technique. This approach aims to promote students' in-depth understanding, knowledge mastery, and creative thinking through personalized learning processes and visual thinking tools.

There are 5 specific steps:

Step1. Set clear goals:

The first step is to set clear learning goals. Teachers need to identify the learning goals and standards that students should achieve and communicate these clearly to students. These goals should be specific, measurable, and consistent with course content and student needs.

Step2. Independent learning:

This approach encourages students to learn independently, that is, to acquire knowledge and skills through personal effort and independent thinking. Students should be motivated to become

สำเนาถูกต้อง

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autonomous learners, able to actively explore, ask questions, and actively seek answers during the learning process. In this process, students can use mind-mapping techniques to organize and express their thinking, helping them better understand and remember the learning content.

Step3. Personalized learning plan:

Personalized learning plans are one of the cores of this approach. Teachers should develop personalized learning plans based on each student's learning needs, interests, and learning style. This includes determining learning content, teaching methods, and learning pace, and ensuring that students complete learning objectives within an appropriate time. When formulating study plans, teachers can encourage students to use mind-mapping techniques to organize and plan the learning process.

Step4. Periodic evaluation:

Regular assessment is an important way to ensure student learning progress. Teachers should regularly assess students' learning outcomes to ensure they meet expected learning goals. Assessment can take a variety of forms including exams, assignments, projects, and oral performances. During the assessment process, students can use mind-mapping techniques to organize and display their knowledge structures and ways of thinking, helping teachers better understand their learning situations.

Step5. Feedback and improvements:

Feedback and improvement are critical aspects of the student learning process. Teachers should provide timely feedback to students, point out their strengths and weaknesses, and provide suggestions and guidance to help them improve their learning methods and improve learning effects. Students should actively accept feedback and adjust learning strategies based on feedback to continuously improve and improve their learning level. In this process, the mind mapping technique can help students organize and analyze feedback information for better understanding and application. It is concluded that in this method, students adopt the principle of mastery learning, that is, they constantly repeat learning and practice before fully mastering a knowledge point to ensure a deep understanding and mastery of the knowledge point. At the same time, mind mapping techniques are used to present learning content in a graphical form, helping students better organize and understand the knowledge structure, and improve learning efficiency and memory. This comprehensive learning approach is designed to promote deep learning and creative thinking in students, improving academic performance and learning experience.

learning achievement

learning achievement is an important indicator of teaching quality and development in higher education. learning achievement has become one of the most important issues for Chinese scholars, and it is also a yardstick to measure the quality of teaching. learning achievement refers to the synthesis of students' academic achievements, comprehensive ability, and ideological quality. learning achievement is the result and comprehensive quality of college students in school learning activities, which can directly reflect the quality of college education. The learning results mainly focus on the ability to acquire knowledge, problems, and problem-solving problems. In this study, the learning achievement and sculpture performance ability of college students are composed of class attendance, class performance, sculpture completion, sculpture beauty, etc.

Sculpture performance ability

Sculpture performance ability refers to the skills, techniques, and proficiency that students possess in sculptural creation. It encompasses various aspects such as understanding of materials, proficiency in sculpting techniques, creativity in design and composition, and the ability to convey intended concepts or emotions through sculptural work. Sculpture performance ability indicates students' mastery and level of competence in sculpture, which can be assessed through the quality, complexity, and originality of their sculptural creations.

สำเนาถูกต้อง

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Volume 4 Issue 5□ September□October 2024□ ISSN 2985□2730
Website□ https□□□so07.tci□thaijo.org□index.php□IJSASR□index

Conceptual Framework

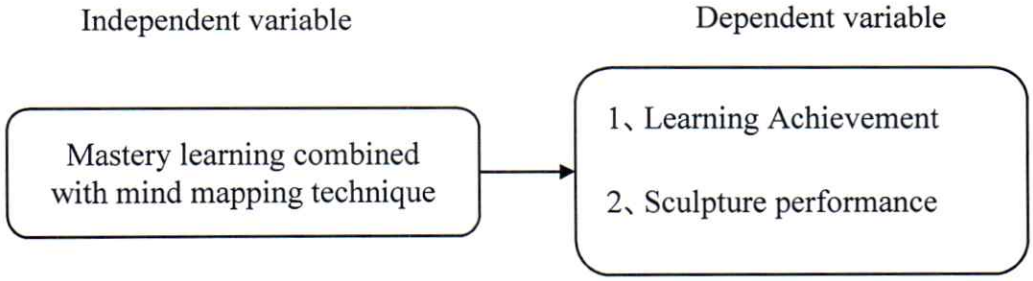

Figure1. Independent variable and dependent variable

Methodology

Population: The population of this study is 120 sophomore students (4 classrooms) in the 2023 academic year sculpture course of the Department of Public Art, Department of Environmental Art, Suzhou Institute of Art and Design Technology.

Sample: The sample of this study was 30 students (1 classroom) in the Sculpture Course of the Public Art Department of the Department of Environmental Art, Suzhou Institute of Art and Design Technology, which was selected by using the cluster random sampling method.

Time duration October-November 2023

Research instruments

Research instruments were the tools for collecting data. The research instruments which were used in this study were: 1. Instruments for experiment. 2. Instruments for collecting data.

Instruments for the experiment:

a. Four lesson plans based on the mastery learning combined with the mind mapping technique learning method (1 Lesson Plan per 2 hours)

b. Instruments for collecting data: Check the exam paper for Learning achievement and Sculpture performance ability evaluation form;

The research instruments were evaluated by a total of five experts from Suzhou Art and Design Technology Institute in China and Valaya Alongkorn Rajabhat University in Thailand, including three Chinese experts and two Thai experts.

After experts evaluated the research tools, the researchers followed the four teaching plans and implemented the teaching strategy of mastery learning combined with the mind mapping technique. After implementation, the researcher used two tools, test papers, and evaluation forms, to collect data and evaluate learning results. Data collection.

The procedures of data collection were as follows:

1. Provide students with guidance on mastery learning combined with the mind mapping technique learning method,

2. Pre-test the sample using the constructed instrument to measure learning performance,

3. Use mastery learning combined with mind mapping technique learning method to conduct sample teaching.

4. After the study, a post-test will be conducted, using the same instrument as the pre-test, to detect the students' learning achievement and provide an observation sheet to evaluate the students' sculpture performance ability.

Data analysis: In this study, data were analyzed by using the statistical program according to the research objectives, (1) To compare learning achievement before and after learning through mastery learning combined with the mind mapping technique. (2) To compare sculpture performance ability after learning through mastery learning combined with mind mapping technique with the established 70 percent.

สำเนาถูกต้อง

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Results

This paragraph summarizes the findings based on these two objectives.

Through the mastery learning combined with the mind mapping technique, the comparison results of learning achievements and sculpture performance abilities before and after the sculpture course are as follows:

Table 1: The mastery learning combined with the mind mapping technique learning method to compare the average scores of students' academic performance before and after learning through the learning method.

Group	n	Pretest scores		Posttest scores		t	*p*
		M	*SD*	M	*SD*		
Experimental group	30	42.7	9.21	86.5	11.22	13.06*	0.05

**P<0.05*

As presented in the table the paired samples t-test results indicate, that the mean scores of the pretest of students' achievement of sculpture was 42.7 (SD = 9.21) and the post-test of students' achievement of sculpture 86.5 (SD = 11.22). Specifically, the posttest scores were significantly higher than the pretest scores at level 0.05 of statistically significant (t = 13.06*, p =0.05). The average scores of the study developed increasingly higher than pretest

Table **2**: To present the average scores of students' sculpture performance ability after learning achievement and sculpture performance ability. A one-sample t-test was conducted to establish the **70** percent criterion.

Group	n	Full score	Criterion score	M	*SD*	*t*	*p*
Experimental group	30	60	42	81.1	7.48	11.05*	0.001

**P*<0.05

As presented in Table the results of the t-test indicate, that the mean scores of t students' sculpture performance ability after learning through mastery learning with mind mapping was 81.1% from a possible full mark of 100 and the standard deviation was 7.48% which was statistically higher than the criterion of 70 percent at 0.05 level of statistical significance (t= 11.05*, p =0.001).

Discussion

The mastery learning combined with the mind mapping technique method can better improve students' learning achievement and sculpture performance ability. The reasons may be related to the following aspects:

1. Through mastery learning combined with the mind mapping technique approach, students' learning achievement has seen a significant boost. Following the learning process, the average post-test score soared to 86.5, a considerable leap from the pre-test average of 42.7. This remarkable improvement can be attributed to the method's ability to ignite students' interest in learning, thereby enhancing their enthusiasm and proactive approach to studies. The method encompasses five key steps: Step 1: Setting clear objectives, Step 2: Encouraging independent learning, Step 3: Developing personalized learning plans, Step 4: Regular assessments, and Step 5: Providing feedback and avenues for improvement. Students acquire theoretical knowledge during their studies and actively engage in class discussions to synthesize important concepts based on their comprehension. These findings align with the research of Olufunke & Blessing (2014), who observed that mastery learning combined with mind mapping techniques enables students to actively participate in the learning process, thereby fostering a heightened interest in learning and enhancing classroom engagement. Additionally, it cultivates students' ability to sustain focus during extended study periods.

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2. Through mastery learning combined with the mind mapping technique learning method, students' sculpture ability has been significantly improved. The average score of students' sculpture performance ability is 81.1 percent, with a full score of 100 points, a standard deviation of 7.48, and a statistical significance level higher than 70 percent. standard ($t = 11.05^*$, $p = 0.05$). This achievement was achieved thanks to the learning methods implemented by the researchers, including learning to use the mastery learning combined with the mind mapping technique and apply it to the features of the sculpture course. This method not only improves students' practical ability but also strengthens their understanding and trains them to quickly memorize complex sculpture production processes. Ultimately, the students were able to design and produce high-quality sculptures quickly and effectively and achieved the expected goals of the course.

However, after learning through mastery learning with mind mapping, students' sculpture performance ability improved statistically significantly, according to the t-test results. The criterion of 70 percent was significantly exceeded by the mean score of 81.1%, indicating that the instructional approach was effective in improving students' mastery of sculpting techniques (Cohen, 2013). The robustness of the observed improvement is further supported by the standard deviation of 7.48%, which indicates relatively consistent performance among students (Gravetter & Wallnau, 2014). This research highlights the potential of mind mapping in conjunction with mastery learning as an instructional strategy to support deep learning and skill acquisition in the sculpture domain.

Furthermore, the t-value of 11.05 and the p-value of 0.001 show a statistically significant difference, which strongly suggests that the alternative hypothesis should be accepted and the null hypothesis should be rejected. This suggests that students who learned through mastery learning with mind mapping and those who did not have a significant difference in their ability to perform sculpture (Pallant, 2016). The effectiveness of the instructional intervention is supported by the high level of statistical significance, which also supports the validity and reliability of the observed improvement in students' performance (Field, 2013). These findings suggest that mastery learning in conjunction with mind mapping can be an effective pedagogical approach for improving student learning outcomes in sculpture education. These findings have significant implications for instructional practice.

Overall, the t-test results offer empirical evidence in favor of the efficacy of mastery learning combined with mind mapping in raising students' performance levels in sculpture. Together with the low p-value, the statistically significant increase in mean scores points to a significant and consistent improvement in students' mastery of sculpting techniques (Cohen, 2013). These results add to the expanding corpus of research on cutting-edge teaching techniques in the field of art education and demonstrate how mastery learning in conjunction with mind mapping can be an effective pedagogical strategy for improving student learning outcomes in the visual arts.

Recommendation

1. Student interests and needs are considered vital. This course not only meets students' learning needs but also significantly improves students' learning achievement and sculpture performance ability This teaching method pays more attention to the concept of students as learning subjects and has achieved remarkable results in actual teaching.

2. As the leader of teaching, teachers can successfully apply this teaching method to other courses such as painting and design, which will help cultivate students' multi- faceted abilities and comprehensive qualities.

3. For other schools, applying this research method and results to their courses will not only improve efficiency but also try the mastery learning combined with the mind mapping technique learning method in other subjects to achieve better teaching results.

Conclusion

The selection of teaching strategies should be based on course principles and instructional objectives. Mastery learning combined with the mind mapping technique, grounded in student-centered learning theory, has the potential to spark students' interests, enhance their learning motivation, and

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cultivate active reflection and synthesis. Experimental results demonstrate that integrating combined significantly improves students' learning achievement and sculpture performance ability, thus achieving teaching objectives and meeting policy and school requirements. Other educators and researchers can introduce more courses following the steps of this learning method.

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สำเนาถูกต้อง

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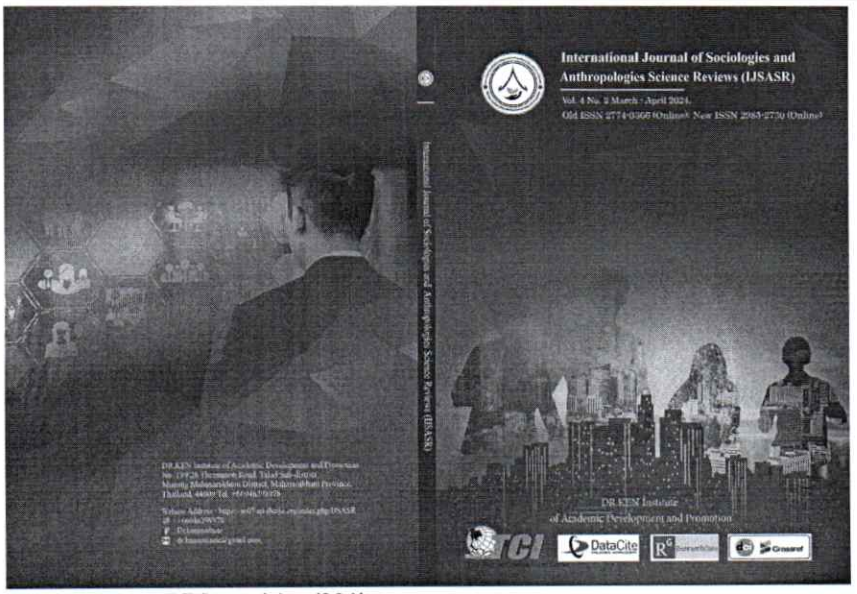

(https://so07.tci-thaijo.org/index.php/IJSASR/issue/view/381)

Published: 2024-03-01

Articles

Research on the Winning Factors of 3x3 Basketball Techniques (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3730)
Xian Li , Thongchat Phucharoen
1-12
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3730/2824)

A Construction of Physical Activity Games to Develop Physical Health of Kindergarten Aged 5-6 Years in Tianhe District, Guangzhou City (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3784)
Hongfang Wu, Chanchai Siriphan, Prakit Hongsaenyatham
13-22
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3784/2825)

A development Evaluation Index System of Public Sports Football University Course Based on OBE Concept in Guangdong Province (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3763)
Lin Zuo, Saknasan Jintasakul, Prakit Hongsaenyatham
23-34
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3763/2826)

Analysis on the Influence of Rural Tourism on Farmers' Income in Western Hunan (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3658)
Reyu Song, Zhang Li
35-52
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3658/2827)

Exploring Organology and Learning Techniques of Dongxiao Chinese Folk Musical Instruments in Shandong Province (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3751)
Feng Lu, Phiphat Sornyai

สำเนาถูกต้อง
นโยบายการคุ้มครองข้อมูลส่วนบุคคล
หมายเลขอ้างอิง ๑๙๐๑๑๑๑L๖๗๐๓๐๖๐๓
URL http://esaraban.vru.ac.th/archive/identityTags

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3751/2828)

(https://www.nstda.or.th/home/nstda-privacy-policy/)
Privacy policy (https://www.nstda.or.th/en/nstda-privacy-policy.html)

Future Trends of Wushu and Education Process for Sport University China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3775)
Qimin Liang, Pattarapon Maharkan, Prakit Hongsaenyatham
67-78
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3775/2829)

Organizational Belonging Sense and Turnover Intention of Service of Outsourcing Employees in Zhongguancun in IT Industry in Beijing, China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3719)
Aifang Gong, Somkiet Kietjareon
79-92
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3719/2830)

Determinants of Physical Teachers' Attitude toward Technology Integration in Shenzhen Schools, China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3541)
Jiaoshiyun Xu, Satha Phongsatha
93-108
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3541/2831)

From Clicks to Satisfaction: A Study on How Customer-Based Brand Equity Shapes Customer Satisfaction in Online Food Delivery Realm for Generation Z in Lampang Province, Thailand (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3819)
Pongsiri Kamkankaew, Pojnicha Thongyoy , Yontida Phonracharnon
109-124
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3819/2832)

Apply an Inclined Track to Enhance the Performance of Fosbury Flop High Jump Athletes (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3799)
Yu Ma , Wisute Tongdercharoen
125-136
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3799/2833)

Perceived Participation to Kindergartens, Teachers, and Parents of Physical Education in Xi'an, Shaanxi Province, China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3852)
Shasha Wang , Panya Sungkawadee
137-156
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3852/2842)

Development and Promotion of Wushu Guidelines in Shanxi Province University (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3840)
Xiaobin Gao, Rumpai Soonjan
157-172
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3840/2843)

The Effect of Agility Balance and Coordination Warm-Up on Children's Tennis Performance (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3856)
Siqi Lv , Sukol Ariyasajsiskul, Suvachai Rittisom
173-188
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3856/2844)

The Problems and Difficulties of Medical Devices in Chongqing in Response to Public Health Incidents in 2022 (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3870)
Ziyue Sheng
189-200

สำเนาถูกต้อง

นโยบายการคุ้มครองข้อมูลส่วนบุคคล

หมายเลขอ้างอิง ๑๙๐๑๑๑L๖๗๐๓๐๖๐๓

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Privacy policy (https://www.nstda.or.th/en/nstda-privacy-policy.html)

Development Program of Basic Physical Movement Skills for Early Childhood in Guangzhou City, China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3772)
Xiaomiao Sheng , Pattarapon Maharkan
201-218
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3772/2846)

Research on the Status Quo and Strategies of Chinese Education in Primary and Secondary Schools in Thailand (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3564)
Dong Xiao, Chunlai Tian
219-224
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3564/2847)

Study on Kinematic Characteristics of Tennis Serve Technology under Different Serving Modes (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3871)
Guang Shi
225-240
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3871/2848)

The Development of Specific Training Programs to Improve the Speed, Agility, Quickness, and Pass-Receiving Performance of Soccer Players (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3855)
Tong Hui, Wisute Tongdecharoen, Nopporn Tasnaina
241-250
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3855/2849)

The Relationship Between Personnel Development and Employee Performance at Zhuoyue Human Resources Service Co. LTD., Hohhot, People's Republic of China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3841)
Shiqing Han, Watcharin Sutthisai
251-270
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3841/2850)

Folk Elements Compilation in Chinese Textbooks for Thai Elementary Schools (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3831)
Zhao Dong, Zhiyan Li
271-278
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3831/2851)

Exploring the Narrative and Aesthetic Aspects of Huanglong Opera in Nong'an County Jilin Province China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3930)
Qianqian Liu, Jarernchai Chonpairot
279-288
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3930/2852)

สำเนาถูกต้อง

Anthropological Perspectives on the Historical Development of Salar Folk Songs in Qinghai Province, China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3965)
Xiuhong Luo, Tawanchai Suanmonta
289-298
PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3965/2853)

The Effects of Blockchain Technology Adoption on Business Ethics and Social Sustainability: Evidence from Chinese FinTech Companies (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3932)
Wenbo Yu
299-308

นโยบายการคุ้มครองข้อมูลส่วนบุคคล
หมายเลขอ้างอิง ๑๙๐๑๑๑L๖๗๐๓๐๖๐๓
URL http://esaraban.vru.ac.th/archive/identityTags

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3932/2854)

(https://www.nstda.or.th/home/nstda-privacy-policy/)
Privacy policy (https://www.nstda.or.th/en/nstda-privacy-policy.html)

The Historical Process and Deep Influence of Sino-Thai Educational Intermingling—A Case Study on Yunnan Context (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3985)

Peng Xu, Yinsheng Li

309-326

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3985/2855)

An Anthropological Analysis of He Peng's Works and Transmission in Bayin Zuochang National Music Art Education (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3994)

Yan Guo, Khomkrich Karin

327-342

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3994/2856)

Sustainable Career Development of Nursing Graduates in Higher Vocational Colleges: A Case Study of Weifang Nursing Vocational College (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3955)

Peng He, Walaiporn Chaya, Suthin Rojprasert

343-356

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3955/2857)

The Effect of teaching a Small Private Online Course (SPOC) on Elementary Number Theory course based on Constructivism Theory to Enhance Mathematics Logical Reasoning Ability for First Year Students of Xi'an University (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3948)

Qin Wei, Suwana Juithong, Wassaporn Jirojphan, Pimlak Moonpo

357-366

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3948/2858)

The Contemporary Status of Pingxian Folk Songs and Their Educational Significance in Qinghai Province Through Anthropological Analysis (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4013)

Jing Yang, Suthasinee Theerapan

367-378

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4013/2859)

A Guzheng Musical Aesthetic on "Hai Zhi Bolan" based on Chinese Aesthetic Education (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4020)

Yuchen Du , Thanyawat Sondhiratna, Ampaipan Kaosawang

379-384

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4020/2860)

A Development of Athletes Towards Excellence Model for Chinese Table Tennis Association (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4015)

Zongjue Ma, Suvachai Rittisom

385-396

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4015/2861)

สำเนาถูกต้อง

A Developing Competency of High-School Physical Education Teacher Model in Eastern Guangdong Province (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3997)

Ling Qin , Rumpai Soonjan

397-406

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3997/2872)

A Development of the Teaching Plan on Flower Ball Cheerleading in Physical Education Course to Improve Physical Fitness and Mental Health for Primary School Students (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4008)

Mengjiao Wang , Yurasin Wattanapayungkul

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หมายเลขอ้างอิง ๑๙๐๑๑๑L๖๗๐๓๐๖๐๓
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407-416

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4008/2873)

(https://www.nstda.or.th/home/nstda-privacy-policy/)
Privacy policy (https://www.nstda.or.th/en/nstda-privacy-policy.html)

Empirical Determinants of Research and Development (R&D) Investment in Chinese Manufacturing Companies (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3983)

Yang Li
417-424

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3983/2874)

A Managerial Development Model for Promoting Elite Futsal Players at University (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4005)

Zhiyan Zeng, Chanchai Siriphan
425-436

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4005/2875)

THE The Management Strategies to Develop Physical Exercise for Secondary School Students in Industrial Zone of Shaanxi Province, The People's Republic of China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4096)

Boyu Lin, Wanit Nirantranon, Chanchai Siriphan
437-450

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4096/2876)

High-quality Development Model of Industrial Integration of Sports Characteristic Towns in Northeast China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3999)

Zhiliang Song , Nopporn Tasnaina
451-466

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/3999/2877)

The Development Process of Qinghai Mongolian Folk Songs Through Anthropological Perspectives (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4148)

Qin Han, Peerapong Sensai
467-476

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4148/2878)

Guideline of Integration Flipped Classroom and Peer Teaching Method and Peer Teaching Method to Improve the Tennis Learning Outcome of Students at Wuhan Sports University, People's Republic of China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4046)

Xinran Yang , Yurasin Wattanapayungkul
477-484

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4046/2879)

Development of Male Soccer Training Model for Primary School Students in Guangzhou City (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4099)

Tianfu Cao, Prakit Hongsaenyatham, Chanchai Siriphan
485-498

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4099/2880)

สำเนาถูกต้อง

A development Management Process to implement smart Sports in Higher Education Institutions in Heilongjiang Province, the People's Republic of China (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4084)

Han Guo, Prakit Hongsaenyatham, Chanchai Siriphan
499-514

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4084/2881)

Research on the Path of Enhancing the Serviceability of University Educational Administration Personnel Based on Knowledge Management (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4339)

Juanjuan He
515-526

นโยบายการคุ้มครองข้อมูลส่วนบุคคล
หมายเลขอ้างอิง ๑๙๐๑๑๑L๖๗๐๓๐๖๐๓
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PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4339/2930)

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Privacy policy (https://www.nstda.or.th/en/nstda-privacy-policy.html)

The Perspectives On Piano Teaching Strategies At Qingdao Art School in Shandong Province (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4481)

Mengjing Yin , Thanyawat Sondhiratna

527-534

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4481/2931)

Measuring Parents' Perceptions About Adolescents' Interactive Online Learning: A Case of the Vocational Enlightenment Education Online Program in a Middle School (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4437)

Chen Chen, Leehsing Lu

535-548

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4437/2932)

The Analysis of Time Management and Students' Self-efficacy of Blended Learning: A Case Study of College English Course in the University of Science and Technology Liaoning (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4510)

Da Liu, Leehsing Lu

549-566

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4510/2933)

"Public Sphere" and the Constructing of Strong Communities (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4484)

Banjerd Singkaneti

567-576

PDF (https://so07.tci-thaijo.org/index.php/IJSASR/article/view/4484/2934)

Journal Information

สำเนาถูกต้อง

นโยบายการคุ้มครองข้อมูลส่วนบุคคล

หมายเลขอ้างอิง ๑๙๐๑๑๑L๖๗๐๓๐๖๐๓

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สำเนาถูกต้อง

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URL http://esaraban.vru.ac.th/archive/identityTags