*Nat. Volatiles & Essent. Oils, 2021; 8(5): 7678- 7688*

NVEO
Natural Volatiles & Essential Oils

# The Influence of Design Thinking Teaching Mode on Shaanxi's College Students' Innovation Ability

**Jing Li[1] and Wei Chen[2]**

[1] Krirk University, Thanon Ram Intra, Khwaeng Anusawari, Khet Bang Khen, Krung Thep Maha Nakhon 10220, Thailand

[2] Krirk University, Thanon Ram Intra, Khwaeng Anusawari, Khet Bang Khen, Krung Thep Maha Nakhon 10220, Thailand

Email: daphenichen@gmail.com

---

**ABSTRACT**

Based on the theory of design thinking, this article attempts to find out the impact of design thinking in teaching on college students' innovation ability through case study. The main purposes are to provide a workable reference for the integration of design thinking teaching in Shaanxi's college education, promote the reform of the teaching models of higher education, and cultivate more college students with innovation ability, cooperative ability and problem-solving ability. The research results confirm that the teaching and application of design thinking not only changes the students' perception of innovation, but also provides an innovative experience. Through training, students can face more complex and comprehensive problems, and their innovation ability has been significantly improved.

***Keywords*:** design thinking, innovation ability, teaching mode, problem-solving

---

## INTRODUCTION

Innovation is the spirit of a nation's progress, the inexhaustible driving force for a country's prosperity, and the deepest national endowment of the Chinese nation. In fierce international competition, only the innovator advances, strives, and wins[1]. The research on innovation ability has become a topic of common concern to the whole society, and how to foster college students' innovation ability has become an important content of teachers' teaching research.

Design thinking, as the key to thinking about solving problems in the information era, has been generally applied in design, engineering, management and other fields, and it has also been increasingly approved and favored in education[2]. In the last decades, researches and teaching practice in the educational world at home and abroad have confirmed that thought can be designed. Design thinking, another creative way of thinking that differs from scientific thinking, has tremendous potential and can be taught to each student through teaching[3].

This essay intends to see how teachers use design thinking to teach in the process of project completion, and ultimately improve students' innovation ability by combining an industry-college-research cooperation project in which

the author Li Jing participated in 2019. This article is trying to provide an operable reference for the integration of design thinking teaching in Shaanxi's college education, promote the reform of teaching models of higher education, and cultivate more college students with innovation ability, cooperative ability, and problem-solving ability.

## LITERATURE REVIEW

### CONNOTATION AND DEVELOPMENT OF DESIGN THINKING

Over the past half century, scholars have documented and debated the intricate concepts of design thinking. It is broadly described as a way of thinking, or a study of the cognitive process that subsequently manifests in designing actions. Theoretical study on design thinking is still at the growing stage, and the specific connotation of design thinking has not be universally approved[3]. Researchers comprehend design thinking from their respective perspectives and fields. That is to say, design thinking still lacks a generally accepted definition. Even the term itself is controversial among its practitioners and advocates.

The concept of design thinking is derived from the book *The Science of the Artificial* published by Simon in 1969. He describes the distinctions between artificial science and natural science. One of the significant differences is that artificial science cannot be designed without human. It is inseparable from people's thinking to integrate them. In 1992, Buchanan published an article called Difficulties in Design Thinking, stating that design thinking can be extended to all areas of social life[7]. In 2012, the Wall Street Journal published an article, Forget B-school, D-school is hot, meaning that forgetting Business School, School of Design is a better choice. The article introduced the popularity of design thinking in the business and corporate circles.

The three most commonly cited definitions of design thinking in the various literatures are as follows. Design thinking is a people-oriented innovation and is refined from designers' accumulated methods and tools to integrate human needs, technological possibilities, and the requirements for business success which is put forward by Tim Brown, the president and CEO of IDEO[4]. Lockwood pointed out that design thinking is a human-centered innovation process which put emphasis on observation, collaboration, accelerated learning, thought visualization, rapid conceptual prototype design, and concurrent business analysis, thus underlining the applications of professional designers' workflow based on observation, visualization, and prototype. Instead, Martin stressed the elements of thinking, defining design thinking as an effective combination of analytical thinking and intuitive thinking.

Of course, other scholars have defined design thinking from other views. For example, Warren Greving, the director of the S laboratory of Srishti in India, considers that design thinking can be understood as a creative process that is separated from design and can be adopted in a wide range of fields. Razzouk and Shute believe that design thinking is a set of heuristic rules, and a series of steps or strategies that can guide people to solve complex or obscure matters and make innovative products[5]. However, there is a consensus in the various descriptions of design thinking, which is people-oriented. The basic characteristic of design thinking is often considered user-centered or people-centered. Design thinking begins with people, their desires and needs. To understand consumers and get inspiration from them is an initial point to seek pioneering innovation[6].

On the basis of previous studies, this article focuses on the application of design thinking in the field of education. Warren Greving regards design thinking as a creative process that is separate from design and can be widely used in various kinds of fields. This article agrees with this view.

### RESEARCH STATUS OF DESIGN THINKING

NVEO
Natural Volatiles & Essential Oils

At present, theoretical research on design thinking is mainly reflected in three aspects. The first is that the research on the basic theory and model building of design thinking, bases on the principles of structuralism and positivism, and studies the inherent laws of design thinking at both the macro and micro levels. Study of design thinking tools and methods is the second. The third one is the research of applying the theory of design thinking in teaching.

RESEARCH ON THE BASIC THEORY AND MODEL BUILDING OF DESIGN THINKING

In terms of research on the basic theory of design thinking, we currently analyze two orientations from the literature. The first one is the research of design thinking bases on problem-solving theory. The core of this kind of design thinking research is fundamental to the philosophical foundation of structuralism, which prescribes the model for designers to solve problems. It is characterized by a linear description and stipulation of the problem-solving process[8]. Buchanan's research deems that design thinking helps people to solve complex and obscure problems, and it is a problem-solving activity[7]. Razzouk and Shute[5] consider design thinking as a set of heuristics rules, and a series of steps or strategies that can guide people to solve complex or arcane problems and make innovative products. Coley thinks that design thinking is a structured method used to lead people to solve practical problems. These methods include research, analysis, brainstorming, innovation, and development, etc. to help people come up with creative solutions.

The second one is the research of design thinking bases on the theory of reflection in action. These theoretical studies explore how designers manipulate the perceived information in design scenarios, describe and summarize the designer's behavior and law of thinking in various conditions including natural conditions or labs, hope to explore the underlying structure and mechanism of design thinking by studying the phenomenon of designing act, and do researches on the inherent law of thinking of the outstanding designing scheme from bottom to top[8]. Tim Brown[6] believes that design thinking cannot be regarded simply as an analytical thinking, and it is a process of inspiration, conception, and implementation. The essence of thinking is of living, the ideation professionalizes, and the implementation results are generalized, in which the thinking process includes three elements of insight, observation ability, and transpositional consideration, as well as the three principles of viability, continuity, and desirability. Dunne and Martin[9] consider that design thinking is the way designers think, and a psychological process for designers when designing goods, services or systems, not the result of elegant and useful products they design.

THEORETICAL RESEARCH ON THE CONSTRUCTION OF DESIGN THINKING MODEL

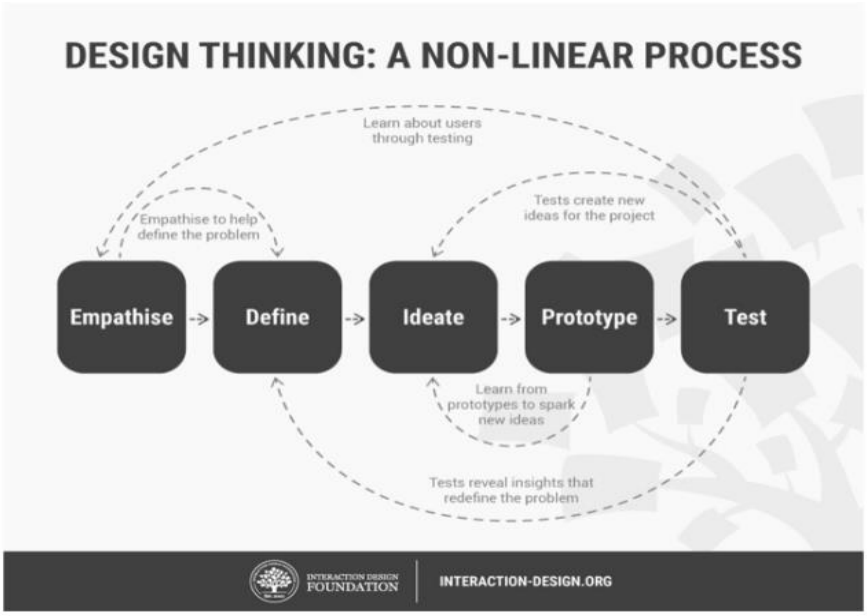
Simon's model consists of seven main stages, each of which contains smaller stages and activities that influence and shape some of the most widely used design thinking process models today. In 2018, Pietro Micheli and other 5 scholars analyzed 104 literatures connecting with design thinking to find out the three models that are of most influence, namely, the three-stage model (3I model) proposed by IDEO, and the five-stage model presented by Stanford Design School and IBM's four-stage model[10].

The three most influential types of design thinking modes

| Users | The main stages of design thinking |
|---|---|
| IDEO | inspiration, ideation, implementation |
| Stanford Design School | empathy, define, ideate, prototype, test |
| IBM | understand, explore, prototype |

Data source: Pietro Micheli et al., 2018:1-25

In the industry-university-research project that the author participated in, the five-stage model proposed by D. school (as shown below) was primarily used-empathy, question determination, ideation, prototype and test.




Data source：Teo Yu Siang and Interaction Design Foundation，CC BY-NC-SA 3.0

(1) EMPATHISE: EMPATHY (EMPATHIZE)

Empathy is deemed as the main means to achieve the user-centered principle. In effect, when considering the nature of design thinking, many scholars refer to empathy as the people-centered core value. In the context of design thinking, empathy refers to starting from the perspective of another person, for example, identifying their behavior and physical and emotional needs, and understanding what they perceive to be meaningful. According to Brown[4], people using design thinking can imagine the world from multiple perspectives-colleagues, customers, ultimate users and current or future clienteles.

(2) DEFINE: QUESTION DETERMINATION

Design thinking has been widely regarded as a way to solve problems, especially wicked problems[7]. Horst Rittell defines wicked problems as a type of social system issue that the expression is incorrect, the information is puzzling, the values of many customers and decision makers conflict, and the impact of the entire system is thoroughly confusing. The authors of most articles believe that the matters in real world are usually wicked, so the analytical methods advocated by management theory cannot solve them. Design thinking is considered as an alternative to solve typical linear problems. Therefore, to determine question is to gather together the information collected during the empathy phase, analyze the observed results, comprehensively process them, and finally determine the core issues.

(3) IDEATE: CONCEPT FORMATION

When the conceptual stage is initially formed, as many ideas or problem-solving solutions as possible need to be obtained. At the end of the conceptualization phase, you can investigate and test your ideas, and find the best way to solve the problem or the elements needed to circumvent the problem with the help of choosing other evaluation

methods[11].

(4) PROTOTYPE: PROTOTYPES MAKING

Prototypes play a key role in the design thinking process because they enable stakeholders to know the advantages and disadvantages of an idea and further determine new directions with more prototypes needed. Indeed, empathy is a user-centered approach, while prototypes are viewed as a way to experiment and develop concepts, rather than a method to finalize them.

(5) TEST: USER TEST

The nature of the design process is to embrace early failures and uncertainties in order to iterate continuously to find more good solutions. Indeed, rapid testing and prototype designing should enable innovators to learn from early failures and thereby obtain relatively low-cost returns from them.

RESEARCH OF DESIGN THINKING THEORY APPLIED IN TEACHING

With the application and development of design thinking in enterprises, universities in various countries also try to use design thinking in education through teachers and teaching methods. The first two schools that employ design thinking to teach are D. School at Stanford University in Silicon Valley founded in 2005 and D-School at the Hasso-Plattner Institute in Potsdam established in 2007. The establishment of D. School is dedicated to stimulate students' innovation ability, cooperative ability and problem-solving ability. Students come from different disciplines, and are merged for an interdisciplinary study along with each other, so the courses adopted are jointly developed and taught by professors from various majors. Sometimes firms, companies, governmental agencies, and social organizations also join them. The Design Thinking for Educators, developed by IDEO, a world-renowned design company, in collaboration with Stanford University, offers practical educational guidance.

The Australian government’s project named Transformational Interdisciplinary Teaching Methodology Based on Design Thinking Framework aims at cultivating the innovation ability of undergraduates and graduate students. At the same time, in the field of K12, design thinking is also increasingly used in course teaching. Carroll and others have also conducted in-depth exploration and research on the integration of design thinking in K12 classrooms. The results show that design thinking can provide students with a set of feasible thinking methods and can effectively cultivate students' imagination and enhance their confidence in creativity. With the successful application of design thinking in education, more and more universities have recognized the teaching methods of design thinking, such as the University of Tokyo in Japan, AgroParisTech in France, the University of Sydney, the Carnegie Mellon University and other world-class universities, and have opened some courses relating to design thinking or employed the teaching methods of design thinking to implement teaching.

Cara Wrigley & Kara Straker reviewed 51 selected courses from 28 international universities in 2015. Map course information to pre-designed data sheets developed by researchers to ensure consistency in the data collected. Each course is outlined according to the name of organization, location, school or college, course title, unit outline, course goals and objectives, and assessment process. The five themes of the content of design thinking taught and the teaching of applying design thinking through the analysis embrace theory, methods and concepts, the keys of products, design management, business management and professional development. In order to keep pace with changes in the social and business environment, schools need to adopt new teaching methods to provide students with skills and attitudes that society or companies now value[13].

Lin Lin and Shen Shusheng mentioned why design thinking needs to be introduced in the teaching process. There are five reasons as follows. Firstly, the old teaching paradigm has further promoted the imitation of students. Secondly, the simple coexistence of new and old paradigms has increased the burden on teachers and students. Then, simple cognition of evaluation restricts students' problem-solving ability. What's more, the simple understanding of "double subjectivity" restricts the breadth of the learner's thinking. Lastly, the simple judgment of the learner's answer ignores the depth of thinking of the learner. Introducing design thinking into teaching can precisely solve the above problems.

Nick Kelly et al.[14] proposed that design thinking can help teachers collaborate in a real and efficient way because design thinking is a great way to learn 21st century skills such as creativity and critical thinking. If teachers apply these skills themselves, they will be better able to teach students. Design thinking involves not only understanding the design process and having the tools to use it, but also pondering in a way of design thinking. It refers to looking at the world with a solution-centered approach and trying to solve problems with creative confidence in new ways.

In conclusion, the research of applying the theory of design thinking in teaching is mainly aimed at three aspects. The first one is the collaborative learning and teaching between teachers. The second one is that teachers use design thinking to guide and teach students' courses or activities. The third one is the design thinking teaching is arranged directly in the students' courses. But no matter what kind of research, it is clear that the application of design thinking can enhance or provoke the creative ability of teachers and students. Let's talk about how the theory of design thinking can improve students' creative ability in teaching proceeding from the project the author has participated in.

## THE TEACHING PRACTICE

### PROJECT INTRODUCTION

In January 2019, the author's institution signed an agreement with a Beijing investment company on the R & D of Mount Wutai Natural Research Project and it is completed in the form of a horizontal project on campus. The teacher team in the school inspired and guided the student team to accomplish the entire project with the teaching method of design thinking, and achieve the project validation in June 2019. The products developed in July were put on the market for iteration. The student team is recruited for all majors of the college. After several rounds of selection, a stable student team of about 20 people is left. In the process, the innovation ability of teachers and students has been greatly stimulated and improved.

### PROJECT PROCESS

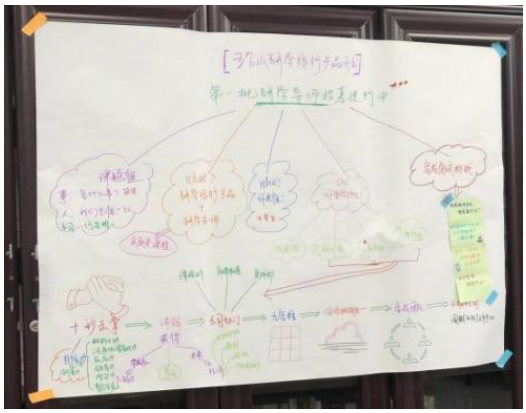
This project needs to build on the R & D of Mount Wutai Natural Research Project. The project team finally delivers a type of model of education products to the investment corporation, which mainly includes three aspects, including how to train students with innovation ability; how teachers cooperate with students for the entire project's research and development process; how's the performance of the students trained in the teaching model of design thinking in the market. The main concern of this article is how to train students with innovation ability through the application of design thinking teaching in this process. Design thinking emphasizes the consideration of problems from different specialities and diverse points of view. Students follow the five steps called empathy, questions, concepts, prototypes and tests on the basis of D. school's design thinking course, iterate quickly, analyze deeply user needs, and use the R&D of Mount Wutai Research Project as a carrier for innovative learning and practice. In the course of the research and development of research project, the author, as a member of the teacher team participating in the project, witnessed every step of the improvement of students' ability, and was able to guide students to use design thinking to solve problems when

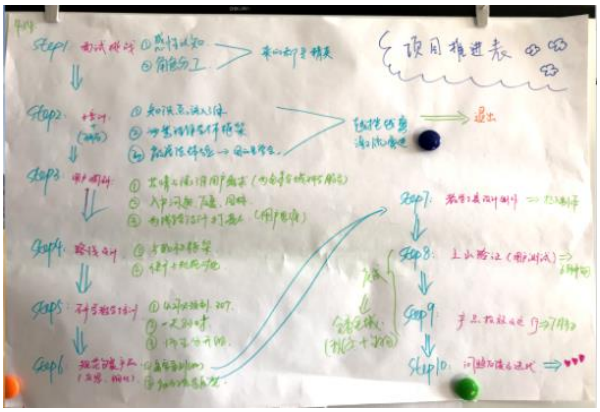
students encountered them, and deeply realized the impact of design thinking on the innovation ability to college students.

PROJECT PREPARATION STAGE

Through random grouping of students from different disciplines and majors, they learn to communicate with different students, study different thinking modes, think about how to put people first into practice, and understand what a real problem is and how to solve it. In the phase of project preparation, the first step is to recruit students. During the process of recruiting students, the teacher sets some small challenges. The students will truly understand the project when they complete these challenges step by step. At the same time, they will learn to cooperate with other majors, take counsel together and improve mutually in the process. Of course, some students who are unsuited to the research and development of project will naturally withdraw. The 20 people left will be randomly divided into 5 groups to cooperate and run in the subsequent project process. At this moment, each group member can realize their own full potential, improve their own ability and enhance their self-confidence during the project.

During recruiting students and at the process of students accepting various small challenges, teachers communicate again and again to confirm the model of training students and the objectives and outputs to be completed at each step, and provide necessary help when students get into trouble. Teachers must understand their dual identities throughout the entire process. One is the controller of the teaching process of design thinking, and the other is the enabler of students when they encounter difficulties. In the stage of project preparation, whether it is the teacher team or the student team, everyone has carried out team building together time and time again, and each has formulated the cooperation rules for their respective small group to make certain that the next research and development can proceed smoothly.





PROJECT PROMOTION PHASE

In the project promotion phase, we follow the five steps of design thinking. Since each of these five steps of design thinking is closely related to the next step, the project is divided into four parts as shown in the figure:

(1) STAGES OF EMPATHY AND QUESTION DETERMINATION

The teacher team invited academic experts to explain the relevant knowledge points of Mount Wutai so that students have a general understanding of Mount Wutai's natural geography. Then some students will deepen their comprehension through field visit. All students participate in the user research to realize user needs, and some users need to communicate repeatedly to confirm users' expectations. Each stage needs to have a good result after completing,

such as pictures, mind maps, etc. At this stage, students in each group begin to give play to their subjective initiative to complete tasks. For example, at the moment of users research, students will find relevant information, make outlines, design the tables of user research, determine the division of labor, and so on. Group members are also slowly learning to appreciate their team members, encourage each other, and know the importance of the team.

(2) STAGES OF QUESTION DETERMINATION AND IDEATION

After basically confirming the user's needs, the design of line of research is initially carried out. It is hoped that students will deepen their comprehending and attempt to solve the problem initially. At the same time, in this process, policy-making experts of research are invited to explain policies and related knowledge to help students further widen their knowledge of research and form a certain concept. At this stage, students' learning abilities have been greatly developed. Policies of research, lines of research, the organization of knowledge points related to curriculum standards, professional knowledge, etc. need to be considered and sorted out, and finally materials full of group characteristics were presented.

(3) STAGES OF IDEATION AND PROTOTYPE

Refine and standardize the circuit based on the preliminary designed research line and the production of relevant teaching tools is completed at this stage. Students used design thinking tools such as brainstorming and storyboards. This is the stage where the various groups began to cooperate, listen to mutual lines, give each other opinions and suggestions, and then continuously improve the prototype. Students' skills of cooperation, communication and expression have been exercised. In addition, they can express their views clearly, accurately, and humorously, and they also can empathize with the feelings of other students when they listen to different opinions. Finally, the team is steadier.

(4) Stages of prototyping and user testing

After the completion of the previous work, the first field visit was carried out and the unreasonable and irregular standpoints in the research line were modified. The second time we invited angel users, who identify with the product the most among the earliest users and want more people to identify with the product, to verify and continue to ameliorate the iterative research products. Then it will be put on the market and run. During the execution, incessantly complete the product iteration and the flexible variation of the circuit. In this process, students may face the most problems, but we see that students can analyze each problem calmly and clearly, and can correct the untimely and inappropriate points. This process is also the most intensive stage. In addition to handling what happened through the field visit, they must summarize their observations and experiences of the day together and make adjustments in time. The students' ability to deal with problems is becoming more mature, and they are calmer when encountering unexpected problems. They can even turn accidents into opportunities, and the group atmosphere is optimistic and harmonious.

CONCLUSIONS

In the process of advancing the whole project, teachers and students have continuously improved their self-awareness in the application of design thinking teaching, and at each stage they are achieving their own growth. As some students said during the stage of report: "Participation in this project has changed my daily learning style, and the way of knowing the world and interpersonal communication"; "at the final phase of verification, I really understand that I have done a particularly good thing, and I have changed without knowing it "; "Unconsciously, I will adopt the problem-solving methods used in the project process in my life"; "I never thought that the learning process can be so enjoyable…." This

NVEO
Natural Volatiles &
Essential Oils

project won second place in the Chinese division and successfully advanced to the finals in London, England at the Sino-British Investment Contest held in Shanghai in 2019. All teachers and students who participated in the project felt the charm of design thinking teaching. It can be seen that the improvement of innovation ability is not a particularly mysterious thing, and it will naturally be improved in the teaching of design thinking.

Kim Jacobson mentioned that design thinking teaching is trained through scientific methods so that everyone can have innovative design thinking. The practice of design thinking encourages students to come up with as many ideas as possible and make their own choices through investigation and survey. Every idea in design thinking teaching is a seed with infinite possibilities, which should be developed and encouraged. The teacher's experience is no longer the criterion for evaluation, and the idea should be developed in practice. In the process, as a teacher, you must keep telling yourself that you are an enabler, not a judge. Only by putting students in an environment of respect and encouragement, helping students build an environment of experiential learning, treating the success and failure of the development of each idea with usual mind, and embracing failure and accidents, can we maintain confidence for the practices of continuous innovation and can students' creative ability be improved faster. This teaching mode is a useful attempt and a new model for cultivating talents with innovation ability. It not only achieves the teaching objectives but also obtains good results. Let us rethink how design thinking will change our teaching in the future, enhance the confidence to help students learn new knowledge, and hope to explore more possibilities in the practice of design thinking teaching.

Design thinking is an iterative process, in which knowledge is constantly questioned and acquired, so it can help us redefine the problem in an attempt to identify alternative strategies and solutions that will not appear immediately at our initial understanding level. Design thinking is often referred to as limitless thinking. It changes the way students think so that they may find better and more excellent ways to solve problems. The teaching and application of design thinking not only changed students' perception of innovation, but also provided an innovative experience so that the students are able to gain such innovation ability during college. At present, the competitiveness of college graduates is mainly reflected in their ability to solve complex and comprehensive problems originally. I think that our students can better face and solve the problems encountered in life if they can apply the design thinking teaching round by round.

**REFERENCES**

1. X. JIN PING: Speech at the Centennial Celebration of the European and American Alumni Association. (2013).
2. Y. XIN KAI: Thinking and Exploration of Course Teaching Based on Design Thinking Framework. Educational Progress 7 (6): pp 376-380 (2017).
3. C. QIAN: Comparison of the Similarities and Differences between Design Thinking and Scientific Thinking. Design Art Research 02: pp 32-36 (2012).
4. B. TIM: Design Thinking. Harvard Business Review 6: pp 84-92 (2008).
5. R. RIM, S. Valerie: What Is Design Thinking and Why Is It Important ? Review of Educational Research 82(3): pp 330-348 (2012).
6. B. TIM: IDEO: Change by design HOU Ting Trans (Liaoning: Volumes Publishing Company) (2011).
7. R. BUCHANAN: Wicked Problems in Design Thinking (MA: The MIT Press) (1992).
8. Y. BI JU ET AL: Research Status and Development Trend of Design Thinking. Computer Integrated Manufacturing System 19(6): pp 1165-1176 (2013).

9. D. DAVID, M. ROGER: Design Thinking and How It will Change Management Education: An Interview and Discussion. Academy of Management Learning & Education 5(4): pp 512-523 (2006).
10. P. MICHELI.EL: Doing Design Thinking: Conceptual Review, Synthesis, and Research Agenda. Journal of Product Innovation Management: pp 1-25 (2018).
11. K. JACOBSON, Z. YILIAO, LU YAN: Experiential Design "The Essence of Design Thinking": SIVA-Stanford Teaching Innovation Practice: pp 98-104 (2019).
12. T. KATJA: Design Thinking as an effective Toolkit for Innovation. Proceedings of the XXIII ISPIM Conference: Action for Innovation: Innovating from Experience (Barcelona) (2012).
13. C. WRIGLEY, K. STRAKE: Design Thinking pedagogy: the Educational Design Ladder. Innovations in Education and Teaching International11: pp 22-32 (2015).
14. N. KELLY.EL: How design thinking can help teachers collaborate: https://theconversation.com/howdesign-thinking-can-help-teachers-collaborate-95932 (2018).
15. Berdimuratova, A. K., & Mukhammadiyarova, A. J. (2020). Philosophical and methodological aspects of the interaction of natural environment and man. International Journal of Pharmaceutical Research. https://doi.org/10.31838/ijpr/2020.12.03.235
16. Pirnazarov, N. (2020). Philosophical analysis of the issue of spirituality. International Journal of Advanced Science and Technology, 29(5).
17. Pirnazarov, Nurnazar; Eshniyazov, Rustam; Bezzubko, Borys; Alimov, Atabek; Arziev, Amanbay; Turdibaev, Alauatdin; ,Bachelor degree programs in building materials technology,European Journal of Molecular & Clinical Medicine,7,10,1780-1789,2021,
18. Nurnazar, Pirnazarov; ,Scientific and Philosophical Analysis of the Concept of «Spirituality»,Адам ?лемі,83,1,3-10,2020,"050010, Алматы ?аласы,«Философия, саясаттану политологии и религиоведения …"
19. Алима, Бердимуратова; ,Хабар ?ам оны изетрлеўдин философиялы? методологиялы? усыллары,Вестник КГУ,47,2,127-130,2020,Государственный университет имени Бердаха
20. Бердимуратова, Алима; ,ТІЛЕУБЕРГЕН Ж?МАМ?РАТОВ ШЫ?АРМАШЫЛЫ?Ы ФИЛОСОФИЯЛЫ? АНАЛИЗДІ? ОБЪЕКТІ РЕТІНДЕ,Адам ?лемі,85,3,19-27,2020,?аза?стан Республикасыны? м?дениет ж?не а?парат министрлігі А?парат ж?не …
21. Алима, Бердимуратова; ,Хабар ж?мийети т?синиги: теориялы?-категориялы? анализлеў тийкарлары,Вестник КГУ,47,1,144-149,2020,Каракалпакский государственный университет
22. Pirnazarov, Nurnazar; Utebaev, Madiyar; ,METHODS AND FORMS OF GREETINGS,Scientific enquiry in the contemporary world: theoretical basics and innovative approach [L 26],,,,2016,
23. Alimbetov Yu., Pirnazarov N; ,Culture: tradition and novation,East European Scientific Journal,54,2,38-41,2020,"Aleje Jerozolimskie 85/21, 02-001 Warszawa, Polska»"
24. Pirnazarov, Nurnazar; ,Structural model of spirituality as a philosophical phenomenon,Адам ?лемі,88,2,10-17,2021,
25. Pirnazarov Nurnazar Rashid uli. (2021). Spirituality of the Human Being as A Philosophical Problem. Zien Journal of Social Sciences and Humanities, 1(1), 15–20. Retrieved from https://zienjournals.com/index.php/zjssh/article/view/

26. Sultanov Atabek, & Pirnazarov Nurnazar. (2021). The Phenomenon of Mass Culture. Zien Journal of Social Sciences and Humanities, 1(1), 49–52. Retrieved from https://zienjournals.com/index.php/zjssh/article/view/19
27. Pirnazarov Nurnazar, & Sultanov Atabek. (2021). Mass culture: towards the essence of the concept. Journal of Pedagogical Inventions and Practices, 1(1), 40–43. Retrieved from https://zienjournals.com/index.php/jpip/article/view/37
28. Ul?, Pirnazarov Nurnazar Rahsid; ,INFLUENCE OF VIRTUAL REALITY ON THE SPIRITUALITY OF INFORMATION SOCIETY,Евразийский Союз Ученых,,2-2 (71),,2020,ООО «Евразийское Научное Содружество»
29. Pirnazarov Nurnazar Rashid ul?. (2021). Development Of a Person's Spirituality in Dialogue with Another. Zien Journal of Social Sciences and Humanities, 1(1), 133–135. Retrieved from https://zienjournals.com/index.php/zjssh/article/view/83
30. Pirnazarov Nurnazar Rashid uli. (2021). Spirituality of the Human Being as A Philosophical Problem. Zien Journal of Social Sciences and Humanities, 1(1), 15–20. Retrieved from https://zienjournals.com/index.php/zjssh/article/view/12
31. Gerdruang, Atiporn; Panwatanasakul, Chaipat; Nurnazar, Pirnazarov; ,THE DESIRABLE MANAGEMENT OF EDUCATION IN URBANIZATION AREA UNDER THE OFFICE OF NON-FORMAL AND INFORMAL EDUCATION IN BANGKOK THAILAND,?????? (???),48,10,,2021.
32. Akkaif, M. A., Daud, N. A. A., Sha'aban, A., Ng, M. L., Abdul Kader, M. A. S., Noor, D. A. M., & Ibrahim, B. (2021). The Role of Genetic Polymorphism and Other Factors on Clopidogrel Resistance (CR) in an Asian Population with Coronary Heart Disease (CHD). Molecules, 26(7), 1987.
33. Akkaif, M. A., Ng, M. L., Kader, M. A. S. A., Daud, N. A. A., Sha'aban, A., & Ibrahim, B. (2021). A review of the effects of ticagrelor on adenosine concentration and its clinical significance. Pharmacological Reports, 1-14.
34. Dr. Naveen Nandal, Ms. Neetu Jora. (2020). Impact of Household Income on Investors Attitude towards Crypto Currency. Annals of the Romanian Society for Cell Biology, 449–458.