

The Exploration of the Development of Medical Students' Reflective Ability

—Research on the Cultivation of Reflective Thinking of Medical Students

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Abstract—Reflective thinking arrives at a judgment on a question by looking back in a reasonable way at the relevant evidence. It is “reasonable critical thinking focused on deciding what to believe or do”. This paper introduces the connotation of reflection, expounds the characteristics of reflection thinking, and is of great significance to the cultivation of reflective ability of medical students. This paper deeply discusses the reflection ability for the importance of medical students and puts forward effective ways to cultivate medical students' reflection ability.

Keywords—*Medical students; Reflective thinking; Critical thinking Reflection ability*

Reflection ability is an important content that promotes the lifelong development of mankind. It is not only the process of thinking, but also a manifestation of ability. Because of its importance and complexity, the cultivation of medical students' reflective ability is of great significance to improve the quality of education.

I. THE ORIGIN AND CONNOTATION OF REFLECTION

For the word "reflection", it can be understood from two aspects, one is from the perspective of philosophy and psychology, representative scholars include Spinoza, Hegel, Locke, etc. The other is the applied research in the practice of pedagogy and education, and the representative is Dewey.

A. *It is a process of metacognition to interpret "reflection" as introspection and self-examination*

In ancient China, although there is no "reflection", it attaches importance to the consciousness of "reflection", which has "introspection". The ancients of our country will "reflect" on more definitions "based on one's own thinking", and will "turn to the other" and "self-realization", take which as the basic means of moral cultivation. As the analects of Confucius, the introspective is not guilty^[1], why is he afraid?^[2]

In the view of the sages, "self-examination" is an important way of self-improvement. Psychologists call this mental activity "metacognition". In the process of reflection, as an activity of self-supervision,, we should self-control and supervise our ideological and moral cultivation. Through self-

reflection, self-reflection, and continuous improvement, we can make it develop according to the planned plan.

The word "reflection" is widely used in western philosophy. Locke believed the theory of human understanding is "the principle of innate thinking."^[3] he believed that there are two sources of thought: one is "feeling" and the other is "reflection". He treated reflection as "the perception of inner workings of the mind". It can be seen from Locke that "reflection" is an important source of knowledge acquisition. Spinoza thought that "reflection" is a more advanced way of knowing the truth. To understand the concept of understanding the results, namely "thought"^[4], he thought, the results of thinking should be re-thinking object, which is a sense of thinking and expression of human self-awareness. Locke's experience of "introspection" and Spinoza's rational "reflection" are all reflections of the human mind. Hegel sees reflection as "the process of thinking over and over", which is an afterthought that reflects on the existing and the reality objects.^[5]

B. *The "reflection" is regarded as a "reflective thinking" model and a special way to solve problems.*

The application of "reflection" in pedagogy began with Dewey, who made a systematic exposition of the problem of reflection. In 1910, He wrote a book called *How to Think*, which put forward "reflective thinking is based on beliefs or knowledge behind the hypothesis and it may be possible to deduce its positive, continuous and cautious thinking"^[6]; he pointed out that the best way of thinking is the reflection of thinking (reflective thinking), is "serious, repeated, constantly thinking about the problem."^[7] In 1916, in his book *Democracy and Education*, Dewey talked a lot about "what is thought," stating: "The so-called reflections we have to do are agreeing... Thinking is a conscious effort to discover the specific connection between what we do and what it results in, so that the two are connected^[8]." He also pointed out that "thinking occurs when things are suspicious or uncertain, or when they look at problems."... Since the mind what happened is a suspicious situation, then, thinking is a research process, in this process, the results obtained is secondary, it is to explore the means of action "^[9]" thinking is the investigation,

research, thinking and studying, in order to find a new understanding of known things or new things."^[10]

Dewey believes that reflective thinking has several characteristics: (1) this thinking is essentially true, purposeful, tightly logical, and consciously controlled. It is not an aimless imagination, but a solution to the real problem. (2) Reflective thinking is crucial and faces some questions of doubt and uncertainty. It should arouse the state of suspicion, hesitation, confusion and mental difficulty of thinking". (3) "We should explore ways to solve problems, explore the courage and energy with consciously and initiatively conscious efforts. Only when people are willing to endure confusion and leave behind discussions can they have reflections."^[11]

In recent years, China's education scholars mainly focus on the reflection on the problem of teachers' "teaching reflection" and "reflective teaching" in school education. The cultivation of students' reflective ability is more limited to students' "reflection" and "self" as the main body. The above research shows that the meaning of "reflection" is not single; we should expand its understanding of its connotation.

II. WHAT IS THE ABILITY TO REFLECT?

The combination of the word "reflection" and "ability" means that the ability of reflection is essentially a kind of ability. It contains both the thinking mode and the ability quality. The difference between the ability of reflection and other concepts lies in its reflexivity. The reflective ability is the psychological characteristic and condition that the reflective person must have in the reflective activity. In the process of solving the problem, the reflective ability is often expressed through the implicit thinking process and explicit behavior. In the process of solving problems, people with strong reflective ability generally exhibit the following salient features:

A. *They have strong self-consciousness and rational critical spirit*

Individual self-improvement, the establishment of self-awareness, self-observation, self-calibration, self-monitoring and intrinsic reflection of the initiative with the continuous improvement of intentions are the prerequisite for reflection activities. on the basis of this, the awakening of the blind subject, the examination of things, the avoidance of rigid thinking, the blind reflection and the refinement of constant things and thoughts are not content with the existing state and conclusion. A person who is good at reflection, in thinking and behavior, will have a more significant critical spirit.

B. *They are good at observation and exploration*

Reflection is not only the reflection and review of behavior or activity, but also the thinking in observation, exploring in thinking, finding the "problem" in it, and supporting the judge's standpoint and standpoint with evidence. Through reflection, experience is summed up, lessons are drawn, problems are found, reasons are explored, and solutions of problems and strategies are sought. As Dewey pointed out, reflective thinking is a wise way of learning... It is the method

of experience in the process of thinking. In the view of Dewey "thinking is in doubt, Only people can withstand the difficulties of confusion, explore and gain reflective thinking.. Therefore, in the reflective activities, the initiative to explore the ability is particularly evident.

C. *They have strong will and effective action*

Reflection is the process of doubt hesitation, mental confusion, and at the same time, people need to be firm and indomitable in the difficult exploration process. In the process, strong will is hard to sustain without perseverance. Therefore, the person who is good at introspection has the common character that can overcome difficulties and endure the pain; People who are good at introspection dare to face their own shortcomings, accept the opinions of others, and have strong will. On this basis, reflection is different from the contemplation and meditation. It is inseparable with the practical action. Reflection and action are closely linked and the final purpose of reflection is to improve and perfect. People who have the ability to solve the problem can only find the problem, can't solve the problem, and not really reflect the formal, unified and introspective Dewey's emphatically emphasized experience.. Reflection is the reflection of action.

III. THE MEANING OF REFLECTION ABILITY FOR MEDICAL STUDENTS

Traditional medical education emphasizes students' mastery of medical knowledge, knowledge positioning and delivery, while the teaching mode is relatively single. In recent years, the international medical education reform all requires to improve the overall quality of medical students, pay attention to the extra inspiration for students' learning ability and overall quality of training. Therefore, the ability to reflect on medicine is crucial for the future development of medical students. The lancet in 2010 noted: "Clinician possesses strong ability and good daily medical service. They are good at using communication skills, academic knowledge, clinical reasoning, emotional expression and reflection to serve individuals and communities and provide excellent services to clients. The competency framework curriculum established by the university of Minnesota school of medicine in 2010 includes: "reflective practices and continuous improvement of medical services". To cultivate students' reflective ability, there are several meanings:

A. *To promote the independent learning ability of medical students*

In the traditional medical teaching, the teacher pays attention to knowledge; students are often passive, lack of initiative thinking, can't form a good sense of active learning, seriously restricting the all-round development of medical students.. enable students to take the initiative to learn from passive to acceptable, motivate students' learning enthusiasm through reflection and practice, actively acquire medical knowledge and enhance their ability of sustainable development.

B. To improve the clinical thinking ability of medical students

The modern medicine education focuses on the cultivation of clinical thinking ability of medical students, and the reflection can help medical students to find problems, explore and solve problems independently in clinical practice. Medical students entering clinical practice often lack scientific clinical thinking. By cultivating the ability to reflect, guide students to think actively, ask questions, sit back and come to the correct diagnosis and treatment basis, good thinking habits and scientific clinical thinking process of medical students can be trained then.

C. To enhance the organic integration of medical students' theoretical knowledge and clinical practice;

Medicine is a practical science that requires the organic integration of theoretical knowledge and practice. Medical students should learn the theoretical knowledge of the system before clinical practice, but the memory is more important than the understanding. There is a certain gap between theoretical knowledge and practical application. Reflective learning can promote students to establish a true link between theoretical knowledge and clinical practice. Through clinical reflection, students can translate further theoretical knowledge system into a combination of vivid clinical experience and improve their clinical practice abilities, and gradually form a good habit of "guiding theory with practice and putting theory into practice". Their ability can be improved through reflection and accumulation.

D. To increase students' ability of independent innovation

Due to the influence of traditional teaching mode, medical students are easy to copy teachers' mode of thinking and behavior. Imitating unconsciously makes them lack of innovative consciousness and creative ability. Reflective thinking training help to update the thinking mode of medical students. Through consultation literature and scientific experiments, evidence-based medicine and other means, the students have a critical eye on the medical knowledge of creative thinking and the problems in clinical practice. Cultivate new ideas and awaken the creative potential of students' potentials, making them pioneering talents with innovative thinking.

E. To improve teaching effectiveness

In guiding students' reflective learning at the same time, the teacher is also a reflection of teaching activities. At the same time, cultivating students' reflective ability can help teachers to critically reflect on their own teaching practice. According to the students' learning behavior and learning situation, teachers have an understanding of their teaching effectiveness, which can continuously promote and improve the teaching of teachers so as to improve teaching concepts, update teaching concepts, improve teaching behaviors and improve teaching level. Teaching is also learning.

IV. WAYS OF CULTIVATING MEDICAL STUDENTS' REFLECTIVE ABILITY

A. Renewing educational idea and innovation talent training mechanism

Influenced by Chinese traditional culture and medical education constrained by the educational idea of cultivating adaptable talents,, medical education pays more attention to professional knowledge and skills. However, it overemphasizes the unified standardization of medical students training, which leads to the weak ability of students' knowledge innovation and fails to meet the social needs well. Therefore, it is the first step to improve the reflection ability of medical students, to promote the training of medical students' reflective ability, to renew educational ideas and to innovate the comprehensive education.

B. Adjusting training program and adding thinking training course

The school should adjust the training programs of medical talents and set up reflective thinking, critical thinking, logic thinking training course so that students can understand the steps of thinking, understanding, daily using and analyzing procedures and standards. In addition, the school should also improve the model, analyze, evaluate and construct the students' reflective argumentation skills, guide the students to actually identify the logic fallacies, cultivate students' sophistry of various colors and the constructive and learning habits of rational thinking.

C. Reforming teaching methods and cultivating reflective thinking mode

Our country's long history of teaching medical education lacks memory inspiration and comprehension. Students tend to accept and lack of reflection and innovation. Therefore, we should cultivate students' reflective ability, innovate teaching methods in classroom teaching, take heuristic questions as the center and take students as the center, which helps students improve their reflective ability. Such as: PBL, CBL teaching methods, teaching methods and case teaching methods. They give students a free and open learning environment, guide students to learn to analyze and criticize the society, and guide them to learn induction and reasoning. On the other hand, we should cultivate students' reflective spirit through discussions, lectures, collective activities and other ways to establish the habit of students to reflect on the attitude of learning.

D. Creating problem and promoting clinical integration

Reflective thinking is the advanced stage of clinical thinking, and the ability of reflection plays an important role in improving the clinical ability of medical students. Before clinical practice, students should form a strong sense of reflection and habit, and grasp the skills of reflection and reflection in the stage of clinical practice. Teaching doctors should guide students to reflect on knowledge, skills and medical events and to feel with body and record, think and analyze. Students should summarize, review and form lifelong learning habits after practice in various departments.

E. Improving the evaluation system and valuing the evaluation ability

The lack of a mechanism to evaluate students' comprehensive ability and comprehensive quality is another important factor in the weak reflection ability of medical students. The traditional evaluation system often deals with the results of evaluating students' good and bad data, using a single standard and the only answer. This evaluation method also leads to teachers' only paying attention to the students' professional knowledge and skills, ignoring the students' knowledge integration ability, evaluation and comprehensive evaluation. It is beneficial to the formation and development of the reflective ability of medical students to improve the evaluation system and to diversify the evaluation methods of the students' ability level.

V. CONCLUSION

Medical education should renew educational concept, innovate educational mechanism, improve teaching methods and practice system, cultivate medical students' ability and set up scientific world outlook and methodology, so that medical students can adapt to social development and solve various problems in clinical environment independently.

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