

# Research on the Precision Teaching and Research Strategy of Teacher Ability Improvement in the Era of Big Data

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## ABSTRACT

This work mainly explores the ways to improve teachers' ability through precision teaching and research in the era of big data. It is necessary to make full use of big data for precision teaching and research, to study innovative teaching methods, to deepen the research of teaching content, to create high quality courses in the era of big data. This work attempts to use a variety of research methods, including interview, questionnaire, comparative research, case analysis, literature review and other research methods to do precision teaching and research. Teachers in the colleges and universities should strengthen precision teaching and research, expand the extension and connotation of precision teaching and research, promote precision teaching and research, improve teacher team building, and innovate teachers' ideas and ability of development.

**Keywords:** *big data; teacher ability; ability enhancement; precision teaching and research*

## 1. INTRODUCTION

With the new requirements for the quality of classroom teaching, the excellent course has become the goal and requirement of the efforts of teachers in colleges and universities. The key to the creation of an excellent course lies in the improvement of teachers' abilities. Teachers in colleges and universities need to keep pace with the times and strengthen the abilities of teaching and research. Education without research is shallow, research without teaching is empty. Teachers need both teaching and research, but with the development of various information technologies, education and teaching are deeply influenced by big data, the teaching and research effect of teachers is not good, the research motivation is too utilitarian, the attitude towards teaching and research is not good enough, the problem is not precise enough, the process and the form of teaching and research is single, and the phenomenon of research and teaching appears separated from each other. Precision teaching and research has become a trend in the era of big data. Teachers should participate in precision teaching and research, promote teaching and research together, and cultivate higher quality talents. Therefore, we should make full use of big data for precision teaching and research, study innovative teaching methods, deepen the research of teaching content, create high-quality courses, create more excellent courses, and train high-quality talents in the era of big data. Classroom management needs to be more standardized, scientific and refined, colleges and universities need to transform and

develop, deepen classroom teaching reform. Strengthening precision teaching and research is to build a deep classroom, and use precision and effective methods for different majors, different subjects, different means and different students. We should give full play to the professional and academic advantages through precision teaching and research, integrate teaching with research deeply, take the lead in studying new hot spots of curriculum, curriculum reform ideas, curriculum methods, curriculum innovation methods, and strive to cultivate precision teaching and research studios and create famous teachers who know modern information technology education. Entering the era of big data, it is possible to improve teachers' abilities through precision teaching and research. Teachers in colleges and universities will carry out in-depth analysis and research on education and teaching reform, curriculum reform, teaching mode, teaching behavior, etc., establish the most suitable resource bank of teaching and research, accumulate data of teachers' teaching and research, and form high-quality teaching and research results, so as to create an efficient precision teaching and research team through precision teaching and research. Strengthening precision teaching and research is of great significance to the improvement of teachers' ability. This work first analyzes the necessity of precision teaching and research in the era of big data, and then analyzes the current situation and existing problems of precision teaching and research. Finally, it tries to explore the strategy of precision teaching and research in the era of big data.

## 2. THE NECESSITY OF PRECISION TEACHING AND RESEARCH FOR THE IMPROVEMENT OF TEACHERS' ABILITY IN THE ERA OF BIG DATA

With the deepening of higher education reform, the ability of teachers in colleges and universities needs to keep pace with the times, find an important way to improve their ability of precision teaching and research, innovate in inheritance, break through the significance of traditional teaching and research focus on teachers' professional development[1]. We can improve teachers' teaching ability through precision education, focus on the topics in the field of education and teaching reform, enhance the interaction between teachers, form effective data of teachers' teaching and research, and create an efficient teaching team in the era of big data[2].

### 2.1. Focusing on topics of educational reform

Internet technology, digital technology, cloud computing technology, artificial intelligence, block chain technology and so on, have brought profound influence to education and teaching. Internet education has developed vigorously, and college teachers have carried out online education, online curriculum design, curriculum resources construction and so on, which requires higher learning ability of teachers in colleges and universities[3]. Teachers in colleges and universities strengthen precision teaching and research with big data, focus on topics in the field of education and teaching reform, strengthen communication and discussion, and explore more feasible schemes for education and teaching.

### 2.2. Improving the teaching and research efficiency of teachers in colleges and universities

Teachers in colleges and universities strengthen precision teaching and research, establish online and offline teaching and research space, enhance the interaction between teachers, improve the effectiveness of teachers' teaching and research. Through team discussion, brainstorming, strengthening the communication and discussion among college teachers, refining the problems and cases in the practice of education and teaching, and doing precision research, it is conducive to giving full play to the wisdom of the group, promoting the sharing and exchange of experience among college teachers, and more conducive to putting forward new ideas.

### 2.3. Effective teaching and research data for teachers are developed

Teachers carry out precision teaching and research, teachers' personality, psychology, behavior, results can effectively form in the process of precision teaching and research in the era of big data[4]. For example, the psychological data of college teachers include the psychological state of college teachers' participation in precision teaching and research, their satisfaction with teaching and research activities, their sense of efficacy and the changing trend of teaching and research, such as the behavior data of college teachers, the frequency of college teachers' speeches, the number of times teachers upload materials, the number of times teachers' comment, the results data of college teachers, teachers' teaching design, teaching resources, teaching cases, teaching reform works, scientific research works, etc.[5]

### 2.4. Building efficient teaching teams

The precision teaching and research of teachers' ability improvement in colleges and universities, guided by solving practical education and teaching problems, needs to clarify the key points and difficulties of teaching and research, which can not only improve teachers' thinking, improve teachers' teaching and research ability, but also help teachers to sort out ideas, accumulate teaching and research achievements and create more excellent courses in the era of big data. We should enhance the awareness of precision teaching and research, strengthen the research of the latest educational reform ideas and methods, pay attention to the sharing and flow of teaching results, and produce more high-quality teaching research results through the efficient teaching team in the era of big data.

## 3. THE CURRENT SITUATION AND EXISTING PROBLEMS OF PRECISION TEACHING AND RESEARCH IN THE IMPROVEMENT OF TEACHERS' ABILITY IN THE ERA OF BIG DATA

### 3.1. Low prevalence of precision teaching and research in colleges and universities

According to the questionnaire survey, 44.44% of the teachers know precision teaching and research, 55.56% of the teachers do not know precision teaching and research, 22.22% of the teachers have participated in precision teaching and research, and 77.78% of the teachers have not participated in precision teaching and research. Therefore, the popularization rate of precision teaching and research of teachers in colleges and universities is low, and the number of precision teaching and research of college teachers is also relatively small.

### ***3.2. Less use of technical tools for teacher precision teaching and research***

There are few technical tools for teachers in colleges and universities to apply precision teaching and research, even some college teachers do not know which tools can be applied precision teaching and research, but according to the survey, there are more technical tools for precision education in the market now. Some teachers apply technical tools such as Yi Qixiu, Meitu, Lan Moyun, Wisdom Tree, Tencent classroom, recording software, and other teaching and research software, but college teachers are less proficient in the application of these teaching and research tools.

### ***3.3. Less focus on new media for precision teaching and research***

Some teachers in colleges and universities have never paid attention to the new media of precision teaching and research, and a number of teachers have paid attention to the public teaching and research tools and platforms, such as the excellent class platform, the string of education, the teacher's gas station, the McCarthy research, the wisdom tree and so on. There are few new media about precision teaching and research, which makes it difficult for teachers in colleges and universities to study the latest teaching and research theory and practice cases, and it is difficult to put precision teaching and research into practice.

## **4. OBSTACLES TO PRECISION TEACHING AND RESEARCH IN THE ERA OF BIG DATA**

The improvement of teachers' ability requires the precision of teaching and research, but the precision of teaching and research is limited by the conditions of teachers' idea, mode of teaching and learning, technology and basic conditions, which hinders the effective implementation of precision teaching and research in the era of big data.

### ***4.1. The concept of precision teaching and research***

Teachers in colleges and universities think that precision teaching and research is what primary and secondary school teachers should do, the inner level of cognition and recognition of precision teaching and research of the teachers is low, and the recognition of precision teaching and research of the teachers is low. With the arrival of the big data era, the possibility of data-driven precision teaching and research has increased. Teachers' teaching and research activities need to pay more attention to the improvement of each teacher's ability and professional development.

### ***4.2. Precision teaching and research model has no mature experience***

For teachers in colleges and universities, precision teaching and research is still a more conceptual thing, colleges and universities carry out precision teaching and research less, even some teaching and research offices in colleges and universities do not carry out teaching and research activities. The teaching and research of teachers in colleges and universities tend to be precise, and the technical requirements of precision teaching and research of teachers in colleges and universities are higher. Teachers are also required to apply information software and platform in the era of big data.

### ***4.3. Basic conditions for precision teaching and research need to be improved***

The ability of teachers in colleges and universities needs to carry out precision teaching and research in a down-to-earth and effective manner in the era of big data. All kinds of online office tools need colleges and universities to strengthen economic investment and improve the basic conditions of precision teaching and research.

## **5. STRATEGIES OF PRECISION TEACHING AND RESEARCH FOR THE IMPROVEMENT OF TEACHERS' COMPETENCE IN THE ERA OF BIG DATA**

Improving teachers' ability through precision teaching and research need to pay attention to strategies, have effective methods, establish innovation mechanism of precision teaching and research based on data diagnosis, and establish specialized development mechanism of teachers' ability in the era of big data.

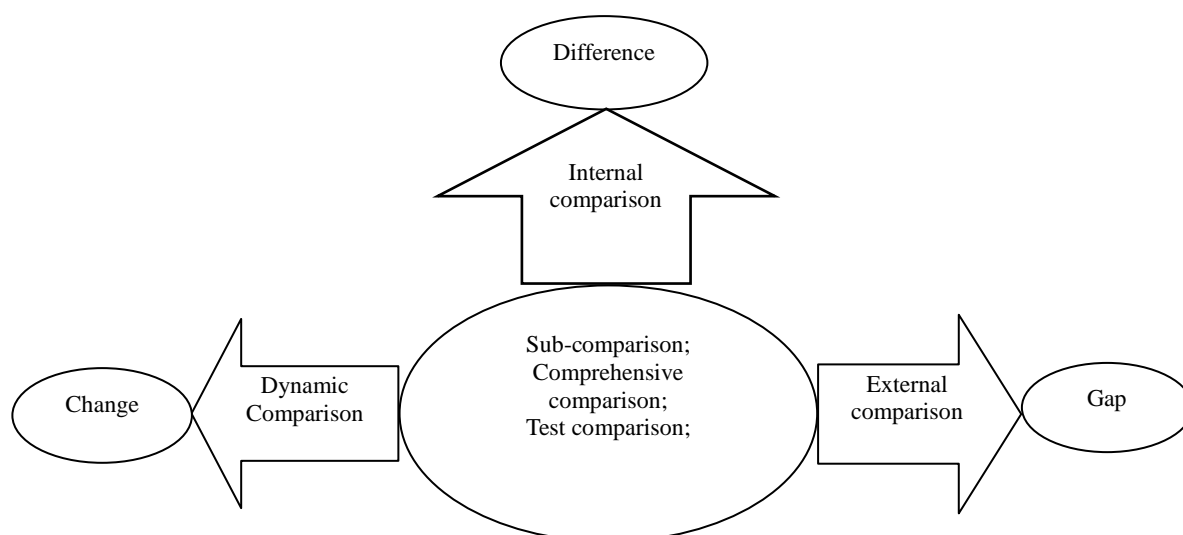
### ***5.1. Effective methods of implementing precision teaching and research***

Teachers in colleges and universities should carry out precision teaching and research with effective methods, precision grasp teaching needs, locate teaching level, guide discipline pain point, diagnose discipline quality and help professional development in the era of big data. The teachers can make full use of the results of precision refining of teaching and research, inheriting and innovating the mature teaching mode, making sure to make the brand of precision teaching and research, to find out the problems existing in the teaching work to make the corresponding solution measures, to make up the short board, to realize the precision object of precision teaching and research. It is necessary to set up a lesson preparation group in a certain

subject to achieve the precision of the task in the aspects of teaching link, teaching process, teaching method, teaching task, teaching practice, etc..It is important to use the information technology environment to carry out effective activities of teaching and research, such as live broadcast platform, online interactive platform, micro-class platform, forum, blog, QQ group, WeChat group, or public number, and establish network teaching and research records.

### ***5.2. Establishment Innovation Mechanism for precision Teaching and Research-Based on Data Diagnosis***

The improvement of teachers' ability in colleges and universities need to establish a precision teaching and research innovation mechanism based on data diagnosis, to diagnose problems through big data, to focus on them for theme extraction, to grind teachers collectively, to form plans or cases, to conduct classroom teaching practice. Through three-dimensional data, it is important accurately grasp the learning situation, from the internal comparison, external comparison, dynamic comparison, grasp the differences in the study, learning situation gap and learning situation changes, It is necessary to master the situation through comprehensive comparison, sub-comparison, test comparison, details saw the following figure1:



**Figure 1.** Learning through 3D Data

### ***5.3. Establishment professional development mechanism for teacher empowerment***

Colleges and universities need to establish a professional development mechanism to carry out precision teaching and research effectively, to improve teachers' ability [6]. Based on the practical needs of teachers in colleges and universities, we should improve the competence of teachers in colleges and universities through the practice of subject teaching and research base, advocate the exchange between teachers and teachers, carry out the academic exchange of teaching and research forums, and encourage teachers to share more knowledge and information with each other[7].

### ***5.4. Building a multi-carrier and platform for precision teaching and research***

It is necessary and important to create precision education model, improve teachers' professional ability, and build a multi-carrier and platform for precision teaching and research. Precision teaching and research of each course can establish curriculum development and construction group, such as WeChat group, QQ group, or online conference software, etc.. Each professional precision teaching and research can establish professional public number; each teaching and research office should make full use of campus resources, strengthen interaction with other majors, establish teaching salon or teaching forum; each teaching and research office should strengthen cooperation with outside resources, build an out-of-school base for teachers' ability improvement, and build multiple carriers and platforms to effectively help teachers in

colleges and universities to carry out precision teaching and research[8].

## 6. CONCLUSION

The environment of management and operation of higher education has changed greatly in the era of big data. With the deepening reform of higher education, the improvement of the ability of the teachers in colleges and universities needs to keep pace with the times, find an important way to improve their ability. Precision teaching and research innovate in inheritance, break through the significance of traditional teaching and research, help teachers in colleges and universities focus on professional development, strengthen precision teaching and research focus on data-driven, expand the extension and connotation of precision teaching and research, continuously promote precision teaching and research, strengthen typical demonstration and paradigm guidance, focus on project promotion and classification guidance, improve the building of teaching and research of teacher team, innovate development ideas and ability of teachers, to build high-quality teachers and achieve high-quality talent training goals.

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