

# A Practical Study on the Application of Smart Education Platform for Teaching and Research by Primary and Secondary School Teachers

Pengcheng Xing<sup>1,\*</sup>

<sup>1</sup>College of Education, Inner Mongolia Normal University, Hohhot, China

\*Corresponding author: xingpengcheng2023@163.com

**Abstract:** In the context of the rapid development of information technology, intelligent education platforms for primary and secondary schools have come into being. Teachers can carry out teaching and research activities based on the resources provided by the platforms, but they will encounter some obstacles in educational practice. Based on the realistic needs, three teaching and research modes are proposed: combining autonomy and teamwork, combining theoretical learning and practical exploration, and applying typical lesson examples. After practice, it was found that it could effectively promote teachers' attitudes towards participating in teaching and research activities and enhance their teaching knowledge and skills. In the later practice and research, more urgent attention should be paid to the actual needs of teachers' teaching and research, to solving specific problems, and to the improvement of teachers' actions in teaching and research activities, and finally a community of teachers' teaching and research activities should be formed to promote teachers' exchange and collaboration.

**Keywords:** teaching; teaching and research; educational practice; educational research

## 1. Introduction

With the rapid development of Internet technology, China's education informatization construction has gradually entered a stage of transformation from hardware network construction to application support system and quality digital resource content construction. In this process, the construction and application of quality digital education resources are also receiving increasing attention from education departments at all levels. In order to further implement the National Education Digital Strategy Initiative and vigorously promote the high-quality development of basic education, the Ministry of Education has revamped and upgraded the former National Primary and Secondary School Network Cloud Platform and launched the National Smart Education Platform for Primary and Secondary Schools. This platform went live on 1 March 2022 for a trial run, followed by an official launch on 28 March.

When we talk about the effective design and implementation of classroom teaching, we find that it requires appropriate resources, diversified learning activities, effective support tools, and teachers' innovative exploration and practical application of ideas, methods and models<sup>[1]</sup>. However, there are many practical dilemmas for frontline teachers in the implementation of their teaching, which can affect the smooth running and quality of their classroom teaching.

As one of the important project elements offer digital transformation of education, the national smart education platform for primary and secondary schools can provide better support for teachers to solve the real-life dilemmas of classroom teaching<sup>[2]</sup>. However, in actual teaching practice, teachers still encounter some obstacles in applying the smart education platform to carry out teaching and research. Therefore, we need to explore in depth how to use the WEB in frontline practice to carry out teaching and research activities in order to help teachers' development. Through the use of smart education platforms in practice, teachers can better understand and apply digital education technologies to improve the effectiveness of classroom teaching and learning, as well as to better meet the learning needs of students.

## 2. A model for teaching and research using a smart education platform

The Teacher Training section of the National Smart Education Platform for Primary and Secondary Schools is a platform for teachers to improve themselves and grow professionally. The platform aims to

provide teachers with various training resources to help them improve their teaching skills and educational quality. Nine sections, including Teacher Ethics, General Studies and Subject Training, are important sections in the platform. In the teacher ethics section, teachers can learn about professional ethics and educational ethics to improve their education and professionalism. In the General Studies section, teachers can learn about various subjects unrelated to education, such as literature, history and geography, in order to improve their general and cultural literacy. In the Subject Training section, teachers can learn knowledge and skills related to the subject they teach in order to improve their subject knowledge and teaching skills. Through these training sections, teachers can choose their own training content according to their needs, in order to improve their professional, political, information and ethical literacy.

### ***2.1. Self-directed and group learning teaching and research models***

The primary prerequisite for teachers to carry out teaching and research activities is that they should be able to commit themselves to teaching and research activities and be willing to give more time and effort in order to deliver a good lesson. In order to achieve this, teachers need to focus on independent learning in the process of teaching and research. After the topic of teaching and research has been decided, teachers can rely on their previous experience to give initial thought to the teaching and research content that needs to be carried out, and to collate and summarize the relevant content. In addition, teachers can also make use of the resources of the Smart Education Platform to learn, study and hone in order to improve their teaching.

In the process of independent learning, teachers may encounter problems, at which point they can communicate with others. Teachers can team up with other teachers and constantly communicate with each other. Communication includes different levels, such as communication between teachers of the same subject in the same work unit, communication between teachers of different subjects, or even exchange and study activities with teachers from all over the country. Through such exchanges, teachers can draw on the experience and wisdom of others to continually improve their own teaching and provide better teaching for their students.

### ***2.2. Teaching and research model combining theory and practice***

In the actual practice of teaching, teachers tend to overlook theoretical learning as a necessity. However, theoretical learning is very important for teachers because it can help them better understand the nature, purpose and methods of education and thus improve the quality of teaching. At the same time, teachers also need to update their educational philosophy, focusing not only on the learning of basic subject knowledge, but also on the development of the overall quality of students. To this end, the Smart Education Platform offers a variety of functions that revolve around the needs of learners. In teacher training, the platform has set up subject and general studies sections to help teachers take on the task of developing the overall quality of their students.

In addition, the platform provides corresponding study courses for early childhood and special education, emphasising the personalized development of students and reflecting the concept of student-centred and learning process-focused education. The National Smart Platform for Primary and Secondary Schools also guides teachers to look at the various processes of education and teaching with a digital philosophy, allowing them to move away from simply videoing offline education methods and to be able to improve teaching and learning through the platform's functions such as homework, question and answer, evaluation and after-school service management. These very valuable resources allow teachers to disengage from repetitive tasks so that they can engage in creative educational activities that are more valuable to their students<sup>[3]</sup>.

### ***2.3. Applying the teaching and research model of a typical course***

The lessons displayed on the Smart Education Platform have been selected and screened. These lesson examples are of high quality and typical, and can help teachers better understand the subjects they teach and improve the quality of their teaching. By observing these quality lesson examples, teachers can study how their lessons should actually be taught and thus improve their own teaching standards.

However, at present, teachers are busy with teaching duties and have big work conflicts, making it difficult to watch and learn all the quality lesson examples during teaching and research activities or in their spare time at work. This has led to a certain degree of reduction in the use of quality lesson resources.

In order to use the resources more effectively, when using quality lesson examples for teaching and research, you can selectively intercept exciting, typical and valuable lessons from the quality lessons<sup>[4]</sup>. Teachers only need to target the key and difficult points in the teaching content of their subject to carry out teaching activities, thus better focusing on key typical issues, deepening research themes, providing leading teaching and research development, and spending their time and energy on more valuable teaching and research activities. In this way, teachers will be able to make more efficient use of quality lesson examples and improve their own teaching.

### **3. Effectiveness of using the smart education platform for teaching and research**

The Teacher Training section of the National Smart Education Platform for Primary and Secondary Schools is a platform for teachers to improve themselves and grow professionally. The platform aims to provide teachers with various training resources to help them improve their teaching skills and educational quality. Nine sections, including Teacher Ethics, General Studies and Subject Training, are important sections in the platform. In the teacher ethics section, teachers can learn about professional ethics and educational ethics to improve their education and professionalism. In the General Studies section, teachers can learn about various subjects unrelated to education, such as literature, history and geography, in order to improve their general and cultural literacy. In the Subject Training section, teachers can learn knowledge and skills related to the subject they teach in order to improve their subject knowledge and teaching skills. Through these training sections, teachers can choose their own training content according to their needs, in order to improve their professional, political, information and ethical literacy.

#### ***3.1. Effective promotion of teachers' attitudes towards participation in teaching and research***

The findings of the study showed that teachers' attitudes towards online teaching and research activities were very positive. The majority of teachers agreed that online teaching and research activities are a very effective way to alleviate the constraints on teachers' professional development, and that the Smart Education platform provides an opportunity and platform for teachers' professional development. Through online teaching and research activities, teachers are able to exchange and learn from teachers and experts from other teaching sites, learn relevant knowledge and skills, improve their professionalism, and improve their teaching methods, thereby enhancing the quality of teaching. Online teaching and research activities have greater advantages than previous forms of teaching and research activities. As online teaching and research activities can be conducted on a smart education platform, teachers have access to more quality educational resources, which means that they are more willing to invest more time and effort in teaching and research activities. This situation also helps to improve teachers' teaching skills and professional development, making them more willing to invest in teaching and research activities.

However, although teachers are new to online teaching and research activities, how to maintain their enthusiasm for teaching and research after this novelty has worn off needs to be further explored and explored. Therefore, we need to further investigate how to maintain teachers' enthusiasm in their teaching and research activities and how they can make better use of the smart education platform for their teaching and research activities. This will help teachers to better utilise their teaching abilities, improve the quality of teaching and learning, and provide better educational services to students.

#### ***3.2. Effective in enhancing teachers' teaching knowledge and skills***

By participating in the online teaching and research activities, teachers have not only learnt certain knowledge and skills, but have also applied the knowledge and skills they have learnt to their own teaching practice and achieved significant teaching results. Through the online teaching and research activities, teachers have not only learnt about educational concepts and teaching methods, but also accumulated relevant teaching experience. These experiences not only helped teachers to better understand and apply teaching theories, but also made them more confident in facing the challenges of teaching.

The Smart Education Platform provides teachers with a wealth of quality case studies. The same teaching content and topics can be tapped into the methods and strategies used by different teachers, which provides frontline teachers with more options for their teaching knowledge and skills. Teachers can select suitable quality cases based on their own thinking, adapt them and apply them in their own classroom teaching, which not only helps to improve teaching standards, but also stimulates students'

interest in learning and promotes their overall development. The online teaching and research activities of the Smart Education Platform are therefore important for teachers' performance.

### ***3.3. Enriching the way teaching and research activities are conducted***

The richness of the resources available in the Smart Education Platform, in terms of the application platform on which teaching and research activities are carried out and the different teaching and research methods used according to the needs of different teachers, means that the richness of the quantity and variety of teaching-related materials available in the Smart Education Platform is helpful to teachers in carrying out their teaching and research activities, and in the form in which they are carried out because of the richness of the resources available to ensure that different forms of teaching and research can be carried out, such as the use of group listening. This means that teachers can choose different platform resources in their educational practice, thus increasing the effectiveness of their teaching and research activities.

## **4. Practical reflections on the application of smart education platforms**

### ***4.1. Focus on teachers' teaching and research needs to solve practical teaching problems***

Teaching and research activities are a process of mutual consultation, complementarity and mutual understanding, which provide opportunities for teachers to communicate and learn by asking questions, analysing problems and solving them. The Smart Education Platform, on the other hand, is a platform that brings together a rich and diverse range of quality lesson examples and teaching resources to support teachers' classroom teaching. As there are significant differences in the teaching and research resources required by teachers in different subjects, at different stages and in different regions, it is important that teaching and research activities meet teachers' individual needs and revolve around the real problems they encounter in their teaching.

Only in specific teaching situations can teachers face various elements related to teaching activities at the same time, think about the interactions between them, and thus develop a comprehensive understanding of them. Therefore, in practice, platform builders and resource developers should pay attention to the actual teaching and research needs of teachers and improve the supply of platform resources in order to better serve frontline teachers in their educational teaching and research activities.

At the same time, the feedback collected from frontline teachers can also be used as a generative resource for the platform to provide further reference and guidance for practitioners. In this way, the platform can become a practical tool for teachers, providing them with powerful support and assistance in their teaching practice.

### ***4.2. Focusing on teachers' teaching actions for improvement in teaching and research activities***

Teaching and research is in fact a process of continuous learning, reflection and improvement. In the field of education, teachers need to constantly improve their teaching in order to better serve students' learning. The Smart Education Platform provides a bridge between theory and practice, enabling teachers to design and reflect on their teaching by observing examples of master teachers' lessons. Through multiple rounds of iterative polishing, teachers can continuously improve their teaching methods and skills and achieve their own growth.

Using the Smart Education Platform, teachers should not only focus on the output of the results, but also follow up on the process of carrying out them, continuously following up on their teaching behaviors and recording their reflective process so as to better facilitate their professional growth. After recording and learning through quality resources, teachers need to think deeply about whether there has been any real improvement in their own teaching behavior. To do this, teachers can use audio and video recording of classroom teaching to record the process of their own teaching, then compare it with quality classroom teaching, find the shortcomings and record the problem areas, and improve their teaching activities based on the resources provided in the platform. In this way, teachers can better exploit the advantages and value of teaching and research to improve their own teaching and provide better educational services to their students.

#### ***4.3. Forming a community of teachers' teaching and research activities to promote communication and collaboration***

A teacher's teaching activity is more than just imparting knowledge; it is an art. Each teacher has his or her own characteristics and style, and therefore will differ in their teaching strategies and methods. The popularity of the Internet has made it easier for teachers to communicate with each other. They can share teaching resources through the Smart Education Platform, as well as share their own teaching experiences and insights. Such exchanges and collisions can facilitate the enhancement of teachers' thinking and teaching skills, which in turn can improve teaching performance.

To better promote teacher professional development, teachers can form a teacher professional development learning community to conduct communication and writing activities<sup>[5]</sup>. In this community, teachers can discuss teaching strategies and methods, and share teaching resources and experiences based on their interests and a shared vision of educational development as a starting point. By collaborating with each other, teachers can continuously improve their communication and teaching skills and achieve continuous improvement in their teaching performance.

However, teachers need to be aware of the different roles they play in the community in order to achieve more professional growth and enhance their professionalism. Teachers can play different roles in the community such as leaders, advocates and participants, so as to gain a broader perspective and deeper professional growth. In this process, teachers need to focus on their own professionalism and ethics to continuously improve their teaching and make a greater contribution to the growth and development of their students.

#### ***4.4. Teachers need to improve their ability to use IT platforms for teaching and research***

When teachers apply the wisdom education platform to carry out teaching and research activities, it is found that not all teachers are able to master the application of the platform, or even face the operation of the platform seems relatively rusty, so in the wave of development of information technology, teachers also need to change their own concept, from the teacher to the mindset of the learner, open-minded learning, the continuous pursuit of progress, to overcome the obstacles in the application of wisdom education Ping Tim, and New teachers were found to be better able to adapt in the face of new technology, but some older teachers may not appear to adapt when faced with the operation of the wisdom education platform, due to the different age gradients of teachers and their different levels of acceptance of emerging technologies. Teachers need to adapt to the new and efficient form of teaching and research by adjusting their mindset, adjusting their practices and facing the change in their roles.

#### ***4.5. Relevant departments should strengthen the management and support of teaching and research activities***

School support for teachers' teaching and research has a significant positive correlation with teachers' willingness to use online teaching<sup>[6]</sup>. The relevant departments should first of all pay attention to teachers' teaching and research activities, as they are one of the factors that can have an impact on the effectiveness of teaching and learning, and if the teaching and research activities are carried out well, then teachers' teaching may achieve twice the result with half the effort, but if the teaching and research activities are not effective, they may have a negative impact on teaching and learning. Promote teachers' willingness to carry out teaching and research activities, to want to do so, and to gain from this activity.

At the same time, for teachers to use the platform, schools can regularly organise training on topics related to the operation and application of the platform, which is crucial for teachers to be able to use the teaching and research platform well, especially in the face of teachers with poor IT application skills, to increase training efforts, so that they can gain more from the training activities, thus promoting the level of teachers to use the intelligent education platform to carry out teaching and research.

### **5. Conclusions**

In summary, the use of smart education platforms for teaching and research activities is a research topic that has great value for education and teaching and can continue to be explored in depth. On this basis, how to improve the quality and efficiency of classroom teaching is a content worthy of continued investment, and we look forward to hearing from more practitioners and researchers in the future.

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