Study on Strategies for Improving Rural Teachers' Information Technology Application Ability

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Abstract: *With the extensive application of information technology in the field of education, the modern education model is developing rapidly in the direction of digitalization and intelligence. However, compared with urban schools, there is a significant lag in technology integration and application in rural education. Due to the limitations of geography, resources and economic conditions, rural teachers are facing the challenge of improving their ability to apply information technology. This not only affects the teaching effect, but also concerns the overall development of rural students and the overall quality of rural education. Based on this, this paper studies the strategies for improving the ability of rural teachers to apply information technology, in order to promote the informatization process of rural education, ensure educational equity, and help the sustainable development of rural education.*

Keywords: *Rural teachers; Information technology application ability*

1. Introduction

In urban schools, we have witnessed how information technology is deeply integrated into teaching and learning, bringing unprecedented convenience and efficiency to teaching and learning. However, compared with urban areas, rural education still lags behind in the application of technology. Due to the limitations of geography, economy, resources and other factors, rural teachers are often unable to obtain technology-related training opportunities, which makes them feel overwhelmed when coping with the challenges of modern education mode. The ability of rural teachers to apply information technology not only affects their teaching effect, but also relates to the future development of rural students and the overall level of rural education. How to create an effective way for rural teachers to improve their skills, so that they are not marginalized in the wave of information education, education researchers and policy makers need to pay attention to the problem.

2. Problems in the application of information technology for rural teachers

2.1 The integration of technology is not strong

The problem of weak technology integration is mainly reflected in the failure of teachers to effectively integrate various information technology resources in education and teaching, which leads to various adverse effects. First, the weak integration of technology means that teachers fail to give full play to the potential of information technology and fail to integrate different technology tools into classroom teaching, thus failing to achieve diversified teaching methods. As a result, classroom teaching is monotonous, students' learning experience is limited, and it is difficult to stimulate their interest in learning. Secondly, the lack of technology integration also affects teachers' ability of education management and teaching evaluation. The lack of effective information technology integration makes it difficult for teachers to conduct online student assessment and track students' academic progress, which further limits the improvement of education quality. Third, the lack of integration of technology also leads to the waste of resources and the increase of teachers' workload. Educational institutions invest a lot of resources in purchasing various information technology equipment and software, but teachers fail to make full use of these resources, resulting in a waste of resources. At the same time, teachers need to spend more time to cope with the use of technology, which increases their workload.

2.2 Less frequent communication opportunities

Compared with teachers in urban areas, rural teachers often face more limited opportunities for

practical communication in the application of information technology. This lack of communication is reflected on multiple levels. First of all, limited by geographical location, it is difficult for rural teachers to establish in-depth academic and technical exchanges with external peers in a timely manner, which leads to relatively lagging behind teachers in teaching methods, tool use, and new technology application. Secondly, due to the lack of stable network infrastructure in rural areas, teachers also face many practical difficulties when conducting online learning or participating in remote training, which undoubtedly further limits the space for teachers' professional development. Finally, the lack of communication opportunities further affects the education and teaching activities of rural teachers. On the one hand, teachers may miss many advanced teaching ideas and strategies combined with information technology, which in turn affects the learning effect of students and the teaching quality of teachers. On the other hand, rural teachers may form an educational island due to the lack of communication with their peers. This state will make them too closed and conservative in educational practice, which is not conducive to educational innovation.

2.3 Lack of resource support

Resource support is not in place, which has a profound impact on teachers' information technology application. Firstly, rural teachers often do not have access to the necessary hardware equipment, such as computers and Internet connections, as well as the necessary software tools, due to insufficient resources. This makes teachers unable to make full use of information technology in the process of education and teaching, resulting in the limitation of teaching content and the uniformity of teaching methods. It is difficult for teachers to carry out interactive teaching, multimedia teaching and personalized education in the classroom, which affects the learning experience of students and the quality of education. Secondly, the lack of resource support also leads to the limitation of information technology training and professional development of rural teachers. Lack of adequate training and support makes it difficult for teachers to master the latest information technology knowledge and educational skills. This leads to teachers' insecurity about information technology and outdated ideas about educational technology, making education teaching unable to keep up with the development trend of The Times. At the same time, rural teachers also lack the opportunity to exchange information technology experience with peers and experts, and cannot obtain timely feedback and guidance, which limits their professional growth. Finally, due to insufficient resource support, rural teachers face aging equipment and maintenance difficulties in the application of information technology. Educational institutions are often unable to update equipment in time, resulting in poor performance of computer hardware and easy to malfunction, which brings unnecessary trouble to teachers' education and teaching work. Teachers need to spend a lot of time and energy to deal with equipment problems, which affects the efficiency of education and teaching.

2.4 Lack of in-depth skills mastery

In the wave of informationized teaching, the challenges faced by rural teachers involve not only basic computer operation skills, but also how to effectively combine these technologies with teaching content, methods and strategies. But unfortunately, some rural teachers often only stay at the surface level in the mastery of information technology, it is difficult to go deep into the application of actual education and teaching. This lack of in-depth mastery of skills can be seen in the following aspects: First, in the use of educational software or platforms, rural teachers often only use its basic functions, such as simple PPT production or video playback, but lack sufficient understanding and operational ability on how to integrate interactive modules, real-time feedback and other advanced functions. Secondly, for the application of emerging educational technology such as virtual reality and artificial intelligence in teaching, most rural teachers are in the attitude of watching or even ignoring, and have not really understood the educational philosophy and practical operation skills behind it. Third, when rural teachers face technical problems or difficulties, they often choose to avoid rather than actively seek solutions, which undoubtedly limits the depth and breadth of their technology application. The problems caused by the lack of in-depth mastery of skills cannot be ignored. This not only directly affects the teaching effect of rural teachers, but also may lead to students' cognition and application of information technology to stay at a relatively shallow stage, which is difficult to adapt to the future digital and information social needs. In addition, the lack of in-depth skills also means that the gap between rural areas and urban areas in the application of educational technology will be further widened, which is undoubtedly a great challenge for the balanced allocation and implementation of educational resources.

3. Strategies for improving rural teachers' information technology application ability

3.1 Guidelines for optimizing technology integration

Rural teachers often face the dilemma of limited resources and few training opportunities in the application of information technology. Therefore, it is particularly important to optimize the technology integration guidelines. In the process of optimizing the technology integration guide, the first task is to clarify the specific needs of teachers. Through regular questionnaire survey and discussion, the technology application problems encountered by rural teachers in their daily teaching can be accurately understood, so that the content of the guide is closer to reality and targeted to solve problems. Next, we should sort out the existing teaching resources, such as open resources and free teaching software, integrate these resources and provide links to download and use, so that teachers can easily find what they need. At the same time, the presentation of the content of the technology integration guide is also crucial. Teachers are generally short of time, so the content of the guide should be concise and clear, and adopt the form of pictures and text, such as screenshots of steps and video demonstrations, which can help teachers quickly grasp the operation essentials. On this basis, online question-answer and forum areas can be set up to encourage communication and sharing among teachers and form a learning community that combines self-help and assistance. Considering the instability of the rural Internet environment, the technology integration guide should also be provided with an offline version, so that teachers can use it normally even when they are not online. In addition, continuous updating and improvement is an indispensable link. In order to keep teachers at the forefront of educational technology with the rapid development of information technology, the guidelines should be updated regularly to include the latest teaching cases and techniques. At the same time, experienced teachers or experts can be invited to carry out online live teaching to share their successful experiences and cases in integrating information technology into education, so as to stimulate rural teachers' interest in learning and practical enthusiasm.

3.2 Add an online communication platform

Rural teachers often feel isolated in the process of applying information technology due to their remote location and limited resources. It is very important to set up an online communication platform, because it is not only a place for technology learning and knowledge sharing, but also a community where teachers encourage each other and help each other to progress. In order to achieve this goal, the following measures can be considered. (1) Determine the core function of the platform is the premise. The online communication platform should meet the basic needs of rural teachers, such as online training, video tutorials, question and answer areas, resource sharing, etc. The Settings of these functions should ensure user-friendly, simple and easy to understand, so as to reduce the threshold for teachers to use. Moreover, the design should take into account the instability of the network in rural areas, optimize the page loading speed, provide low traffic mode and other functions. (2) Choosing the right technical framework and partners is also key. Schools can consider partnering with existing education platforms to take advantage of their mature technologies and resources to quickly deploy and go online. In addition, when choosing a cloud service provider, it is necessary to consider its server distribution and stability in rural areas to ensure the normal operation of the platform. (3) In terms of content construction, it is necessary to ensure high quality and practicality. Schools can invite senior educators and information technology experts to record special courses and share their experiences and skills. At the same time, teachers are encouraged to upload and share their own successful cases in the classroom to form a knowledge base that truly belongs to rural teachers. (4) In order to ensure the activity and sustainability of the platform, regular online activities are indispensable. For example, monthly online seminars, technical challenges, resource sharing contests, etc. are organized to provide teachers with opportunities to interact and show, and to stimulate their interest and motivation in learning.

3.3 Providing teaching resource support

In the field of rural education, the challenge faced by teachers in the application of information technology is not only the lack of skills, but also the lack of teaching resources. Therefore, providing teachers with rich, diverse and high-quality teaching resources is a key link to improve their ability to use information technology. To provide teaching resource support, the following strategies and methods can be adopted. (1) Determining the types and needs of resources is the basis for providing teaching resource support. Schools can conduct in-depth research on the teaching content, difficulties and pain points of rural teachers to understand what resources are most urgently needed by teachers. This includes but is not

limited to courseware, exercises, teaching videos, simulation software and experimental materials. (2) In the production of resource content, focus on practicability and localization is the key. For example, teaching resources should be tailored for topics and content specific to rural education to ensure that they are in line with students' real life experience and background knowledge. At the same time, resources can be produced in cooperation with major education and research institutions, institutions of higher learning and other relevant organizations, with the help of their professional capabilities and experience, to ensure the quality and authority of resources. (3) For technically complex teaching content, detailed teaching videos and tutorials can be produced to ensure that rural teachers can easily master the teaching content according to the steps. Interactive and testing links can be added to the resources to help teachers test the learning effect and constantly adjust and improve the teaching methods. (4) The storage and distribution of resources is also an important link. Schools can consider building a cloud-based teaching resource library, allowing teachers to download and use it freely according to their needs. Considering the possible instability of the network in rural areas, the resource library should also provide an offline version to ensure that teachers can use it without barriers in any environment. (5) In order to ensure the continuous update and enrichment of resources, schools can also build a resource sharing platform to encourage rural teachers to upload and share high-quality teaching resources that they have made or discovered. At the same time, an evaluation and feedback mechanism should be set up to allow teachers to comment on and give suggestions on the used resources to further improve the quality and practicability of resources[1].

3.4 Strengthen skills training courses

In the context of rural education, teachers are faced with not only teaching difficulties for students, but also multiple difficulties in the application of information technology. Strengthening skills training courses has become an urgent task. How to provide skills training for rural teachers more efficiently involves many considerations and strategies. It is the key to design the training content according to the actual needs of rural teachers. Through in-depth understanding of rural teachers' daily teaching activities, we can find their blind spots and shortcomings in the application of information technology. For example, teachers may have a greater need to understand how to use digital tools for instructional design, or how to use online resources to provide students with more diverse learning experiences[2]. Based on these needs, schools can tailor training courses to ensure that teachers gain real skills and knowledge during each training session. For the form of training, blended learning may be a more suitable way for rural teachers. The combination of traditional face-to-face training and online learning allows teachers to quickly master key skills in a short time. At the same time, through online learning, teachers can learn according to their own time and progress. In the process of training, we should pay attention to practice and operation, and provide a large number of hands-on experiments and operation exercises to ensure that teachers can not only hear and see, but also really apply. In order to make the training effect more lasting, it is necessary to establish a long-term skills follow-up and support system. This could be an online support community or regular retraining sessions. Here, teachers can share their own experiences in practical teaching, exchange tips with each other, and get instant feedback and guidance from experts. The participation of senior teachers and technical experts will bring more value to the training. They can not only share their experience and skills, but also provide real and in-depth guidance for rural teachers[3]. Therefore, these experienced teachers should be invited to participate in the training activities and become the main speakers or instructors of the training. Finally, the evaluation and feedback of the training effect is an important means to improve the quality of training. This can be self-evaluation by teachers, or it can be assessed through actual teaching application. Only by truly understanding the effect of training, can we make more targeted improvements and ensure that every training can make rural teachers full of harvest[4].

4. Conclusion

Through in-depth research and analysis, rural teachers face many challenges in the application of information technology. However, just as every difficulty hides an opportunity, rural education also has its unique resilience and potential. Through the strategies proposed in this study, it is believed that rural teachers can gradually overcome the difficulties in the application of information technology, better serve students, and improve the quality of education and teaching. At the same time, it also calls on relevant departments and all walks of life to give more attention and support to rural education, so that technology can bring real light and hope to rural areas.

Acknowledgements

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