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On reasonably and appropriately using of iPad in mathematics classroom teaching

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Abstract
The iPad is a useful instrument for teaching. At present, many teachers have started to try to use it in their teaching. Based on the characteristics of iPad and the requirements that middle school teachers use modern educational technology in teaching, this paper put forward some corresponding suggestions for schools, teachers, and students, aiming to apply iPad into middle school mathematics teaching reasonably.

Keywords: iPad, mathematics, teaching, middle school

1. Introduction
With the rapid development of modern educational technology, the teaching instrument is becoming modernizing gradually. By bringing the specialized teaching mobile platform, the iPad promoted the informalisation of teaching, made teaching and learning no longer to be restricted by region and time, and played a very good role in improving classroom teaching efficiency, respecting students' subjective status and developing individualized teaching. Consequently, applying the iPad into teaching became a new trend, and the iPad will be used widely in class in the future (Xiao & Zhang, 2012) [9]. What are the requirements for teaching with the iPad? How should the teachers and students use the iPad to achieve the maximum effectiveness of teaching? These are the questions should be discussed immediately.

2. The advantage and disadvantage of the iPad
Regarding the characteristics of the iPad, especially the advantages for teaching, there are many conclusions currently, such as the follows: The present iPad which is as a teaching instrument covers the system platform of preparing lessons, classes, tutoring, testing, and homework, which changes the presentation of textbooks, activates the content in textbooks and makes the teaching becomes lively and interesting (Xiao & Zhang, 2012; Zhu, 2011; Guo, 2015) [9, 11, 2]. In classroom teaching with iPad, teachers can record the acquired information in time, give feedback to students, solve the student's confusion in time, and improve the efficiency of class teaching with it. Additionally, when the students are discussing, the teacher can share their wonderful views in class real-time to achieve the goal of interaction and feedback timely (Guo, 2015; Mao, 2014) [2, 4]. iPad can integrate the student's entire learning process in teaching so that the teacher can evaluate students in a diverse and open manner (Zhu, 2011; Guo, 2015; Mao, 2014; Wei, 2014) [11, 2, 4, 8]. Meanwhile, Students can have their own individualized learning progress independently in the process of the teachers' teaching, so as to help them to form a habit of active learning (Qiu, 2012) [5].
Certainly, the iPad also has some shortcomings in teaching. Using the iPad, students usually cannot help asking for the machines and network when they encounter problems, which to some extent will lessen students' thinking and weaken students' ability to think actively (Zhu, 2011; Guo, 2015; Mao, 2014; Wei, 2014; Qiu, 2012; Wang, 2013) [11, 2, 4, 8, 5, 6]. Moreover, some entertainment games in the iPad easily make students to immerse, delay normal learning time, and dilute their interest in learning (Zhu, 2011) [11]. Students who communicate with iPad for a long time will get used to dealing with problems alone and ignore emotional communication with others (Guo, 2012) [3]. Additionally, The use of the iPad will put a burden on the students' eyes and affect the physical and mental development of them (Wang, 2013) [6].

3. The requirements for using modern information technology
3.1 Teachers should own the educational concept of keeping pace with the times
In the "Internet +" era, the widespread use of modern information technology has had a profound impact on mathematics education. In mathematics teaching, information technology is an important auxiliary means for students' learning and teachers' teaching. It provides a platform for communication between teachers and students, students and students, men and machines, and provides abundant resources for learning and teaching (Department of Education, 2017) [10]. Therefore, teachers should update their educational concepts with the times, constantly apply information technology which is conducive to teaching, and better promote teachers' teaching and students' learning.

3.2 Teachers should be proficient in modern information technology
It has become an inevitable trend to apply modern information technology into the teaching process of middle school mathematics, and the middle school mathematics teacher is the organizer and implementer of middle school mathematics teaching activities. Whether they have good information technology literacy will directly affect the application of information technology in middle school mathematics teaching activities. Therefore, in order to ensure the effective application of information technology in middle school mathematics teaching, middle school mathematics teachers should improve information technology literacy and master various mathematics teaching software and teaching tools.

3.3 Teachers should have the ability to integrate modern information technology with teaching content.

The use of modern information technology can achieve the effect that traditional teaching methods are difficult to get. As an example, the computer can display the function image and the change process of geometric motion; using the computer, teachers can explore the algorithm, carry out large-scale calculation, obtain data from the database, and draw appropriate statistical graphs; using computer-random simulations, teachers can help students better understand random events and the probability of random events (Department of Education, 2017) [10]. Therefore, while preparing lessons, teachers should be very familiar with the content of their lectures, and presuppose in advance which knowledge points need to use the specific functions of information technology, that is, realizing the integration of teaching content with modern information technology, using information technology to present knowledge to students in the best way, so as to help students understand and master knowledge better.

3.4 Teachers should build a teaching model based on modern information technology environment

The appearance of information technology has had a great impact on teachers' teaching and students' learning. It overcomes the shortcomings of traditional mathematics teaching models, which makes the communication between teachers and students no longer limited by the two dimensions of time and space and students' access to knowledge is no longer limited to teachers, classrooms, and textbooks. Therefore, middle school mathematics teachers should build a teaching model based on the modern information technology environment, make full use of the advantages of information technology, give play to the subjectivity of students and improve the efficiency of mathematics teaching.

3.5 Teachers should make full use of modern information technology to improve their teaching ability

The information technology can record the relevant data of students' learning process and teachers' teaching process. Teachers should make full use of this advantage of information technology to collect, collate and analyze the above-mentioned data so as to understand their teaching achievements and problems, reflect on the reasons that affect the development of students' learning ability, improve their qualities of teaching, seek for countermeasures to improve their teaching ability, and then implement them to achieve the effect.

4. How to use iPad in mathematics teaching

By analyzing the advantages and disadvantages of iPad in teaching and the requirements of middle school mathematics teaching for teachers to use modern information technology, we give the following measures to help student's better use iPad to learn.

4.1 Teachers should install relevant programs in the iPad to prevent its abuse or improper use

The iPad has a lot of built-in entertainment games, such as watermelon cutting, angry birds, fruit lianliankan, etc., which are popular games among children. The games have a great appeal to middle school students, but the self-control ability of middle school students is not as good as adults', and it is easy to be addicted to games. Middle school students tend to immerse themselves in fun games, delay normal learning time, and dilute interest in learning (Zhu, 2011) [11]. In order to reduce the interference of entertainment games on students' study, teachers can make the relevant settings to the iPad. First of all, do not install APP programs unrelated to teaching. Second, block unnecessary internet connections or restrict the use of certain applications based on the actual needs of the learning in class. There are two concrete solutions. The first method is to prevent the external network connection of students through the school's network management settings, so that students' iPad devices can only use the internal network resources. The second method is to temporarily disable applications such as Safari through policy settings for MDMD while opening external network connections (Deng, 2015) [1].

4.2 Teachers and students should be familiar with the use of iPad

After the iPad is equipped for classroom teaching, the school should arrange courses on how to use the iPad to help teachers and students become familiar with the teaching software and functions and master them. As an example, teachers should familiarize Math Ref, Quick Graph, and Symbolic Calculator. Since they can help teachers explain more in the teaching process and help students understand more thoroughly; teachers should familiarize and master the functions of hyperlinks, data statistics, wireless transmission screen, iHomework and electronic portfolio in iPad. Since they can help teachers timely understand students' learning situation; students should familiarize the function of QQ groups, navigation, and bookmarks so as to help them learn mathematics better.

4.3 Teachers should arrange for students to try out the iPad before class

When students get the iPad, they may be curious about some software built in the iPad and try to use them, which will interfere with the students' attention during class. Therefore, teachers should inform students in advance which software to use during class, have the students familiarize with the corresponding software, and release the curiosity of students, so as to concentrate their attention during class.

4.4 Teachers should correctly understand the role of the iPad in teaching

The application of the iPad in teaching makes teaching have more vigor and vitality. The advantages, functions and effects of the iPad in teaching are difficult to achieve by traditional teaching methods. However, teachers should not use the iPad for the sake of using it. It should be clear that iPad is a tool to help students learn better, and the main goal of teaching is to let student's master knowledge. In teaching, all the activities served by teachers are aimed to impart knowledge, and the choice of teaching methods depends on the characteristics of students to receive knowledge. As an example, teachers should choose traditional teaching means when explaining the judgment theorem of the straight line and plane parallelism, so as to guide students to come up with the idea of proving the theorem and meanwhile writes the proof steps on the blackboard and demonstrates the standard proof steps to students.

4.5 Teachers should record micro-courses and make courseware before class

Teaching with iPad can improve the efficiency of teaching to a great extent. In order to allow students to prepare for new knowledge before class and consolidate the weak knowledge after class, teachers can make micro-courses to help students learn better. Moreover, teachers should make courseware about knowledge points and targeted exercises. When making the courseware, teachers can use the hypertext link function of iPad to set up hyperlinks to some unfamiliar words for students, such as profit and interest rate, so as to facilitate students to inquire the words' meaning when doing exercises. Teachers need to collect teaching materials, write instructional designs and record videos when making micro-courses and teaching courseware. In order to reduce the workload of teachers, mathematics teachers in the same lesson preparation group can work together.

4.6 Teachers should present the knowledge according to the characteristics of the teaching content.

The teaching content determines the teaching form, and the teaching form serves for the teaching content. In order to make the students understand the teaching content better, the teacher should integrate the teaching content and the teaching form perfectly with the help of the iPad according to the characteristics of the teaching content. For example, when learning ellipse and its standard equation, teachers can use the iPad to share a micro video with the students to help students understand the relationship between the ellipse and the circle, so as to inspire students to study the properties of the ellipse based on the properties of the circle. The video shows a glass placed horizontally on a horizontal table. At the beginning, the entire figure is round; after that, the cup begins to tilt, and a squashed ellipse is shown (Wang, 2016) [7].

4.7 Teachers should innovate the teaching mode by combining the functions of the iPad

After iPad is applied to teaching, students' learning is no longer limited to the classroom. Teachers should innovate the teaching mode by combining the functions of iPad to help students understand and master knowledge better and faster. For example, the teacher can upload the micro-video and courseware of the content to the QQ group before class, and the teacher can assign different homework to the students according to their knowledge base and acceptance ability. In class, the teacher can use the data statistics function of iPad to know each student's level of mastery of knowledge in time, give targeted advice, and truly fulfill the teaching according to the aptitude. After class, the teacher can let the students finish the homework through iHomework, the students can give feedback to the teacher in time after finishing the homework, and the teacher can read and give some specific suggestions in time. When evaluating students, the teacher can make a multivariate and comprehensive evaluation based on the learning process recorded in the electronic portfolio.

4.8 Teachers should guide students to organize learning notes with the iPad

As a saying goes, "Good memory is not as good as bad writing." Students are most impressed with the self-organizing knowledge. Therefore, the teacher should set a few minutes in class to let students organize their class notes with the help of the iPad. For example, students can record the following three parts in notes: first, why you want to learn this knowledge point (concept, theorem, formula, rule); second, what problems can be solved in life after learning this knowledge point; third, sort out the mathematical ideas used in this class and the ideas for solving the problems. In the end, students organize their own unique electronic notes which is convenient to consolidate and review their knowledge after class.

4.9 Students should use the learning materials stored in the iPad reasonably

The iPad can store the learning materials of the teacher's lecture content, and also provide plenty of extracurricular reading materials. Students should use the iPad reasonably according to their own learning conditions to consult the learning materials. For example, if a student is weak in understanding or unable to understand the definition of derivative, the student can watch the micro video uploaded by the teacher repeatedly according to his own situation to understand the definition of derivative. In order to develop their own knowledge and promote the divergent thinking, students can look up special reading materials about derivatives on Internet.

5. Closing remarks

The application of the iPad in teaching is a new try of educational development. Schools should provide a suitable environment for the application of iPad in teaching. Teachers should change their educational concepts, recognize the role of iPad in teaching, and use the functions of iPad to present knowledge to students in the best way, so as to help students understand and master knowledge more deeply. Students should be good at making use of the iPad to consult learning materials to help themselves learn knowledge better. It is believed that as long as schools, teachers, and students do the above work well, the iPad will further promote the development of education in the future.

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