

A New Type of Intelligent Learning Table

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ABSTRACT. *This paper introduces the application technology of intelligent learning table, including infrared posture technology, intelligent grading system, face recognition remote monitoring, network course optimization system, big data analysis technology, cloud technology and so on.*

KEYWORDS: *Intelligent Learning Table, Infrared Pose Correction, Remote Monitoring Technology, Big Data, Cloud Technology*

1 Introduction

Family education, as an important topic in the field of modern education, has been widely concerned by people. As an integral part of family education, parents' company plays an important role in children's physical and mental development. It is believed that many parents have such troubles. When children do their homework, they like to procrastinate. Either I always like to think about playing and drag my homework to finish late after I go home; or I like to play while I'm doing it, which is very easy to be interfered by the outside world, and I have to do it under the constant supervision of my parents; or I can do my homework very quickly, but I'm in a hurry, scribbled, careless, mistakes, and deal with things; or I can forget the homework assigned by my teacher and don't do it at all. Some parents are too busy to accompany their children with their homework. According to the above analysis, "intelligent learning table" will play an important role.

Common learning table function is too single, the project research of intelligent learning table more intelligent, according to the actual situation of the user to adjust, using infrared pose correction, intelligent, face recognition, the optimization of network course, remote monitoring, big data cloud technology fusion of many advanced technologies such as intelligent learning system, the user personalized learning characteristics in the process of research and development to perfect, lays the foundation for the realization of the intelligent learning table, to achieve the most ideal intelligent learning table.

Intelligent learning table, which can be automatically reminded by the device. To improve the current situation that children like to procrastinate when they do their homework, let children like to think about doing homework first and finish it first

when they go home; without external interference, they don't need to do it under the constant supervision of parents: improve the speed of homework, ensure the quality of homework, complete the homework left by teachers, strengthen the knowledge they have learned, keep the knowledge points in mind, strengthen and innovate at all levels, so as to make students relaxed. At the same time, the teacher can automatically grade the homework and feedback the correction to the teacher, so that the teacher can know the absorption degree of the students in time, so as to teach students according to their aptitude. Make parents worry less and worry less.

2 Technology Realization

To realize the intelligent desk is to keep the original style of the desk on the real desk, leave an area to install a display screen, and complete the task through the display of the screen. (1) the homework left in the school is entered by scanning, submitted by the students after completion, and automatically corrected by the teacher through the input answer system. (2) students' own extracurricular books can be input through scanning, with emotional reading, not intelligent voice. (3) enrich students' spare time life, reduce their enthusiasm for mobile games, and cultivate some interests of students. (4) let busy parents not worry about their children's finishing their homework, and let them finish their homework easily and happily. (5) realize online tutoring for teachers after class to reduce the work pressure of teachers. (6) to realize the analysis of students' fallible questions and their habits, to automatically generate a collection of fallible questions, and to help students to reverse their habit of doing questions.

2.1 Infrared Posture Correction Technology

Using infrared technology parameter control driving module to adjust the sitting posture, realizing the automation controller as the core, collecting external data by external sensor induction, and then achieving the intelligent system with stable structure, active performance and high transmission rate through infrared induction ranging, temperature induction measurement, thermal imaging system, etc., and the above data will be transferred[1-3]. Data is presented on the smart desktop. When users begin to use it, the learning desk will detect whether the sitting posture is correct by sensors, and if it is incorrect, it will be reminded by voice transmission to achieve the correct sitting posture. MCU induction timing time will be notified through the background voice module, warning users should relax appropriately, to achieve the combination of work and leisure so as to improve work efficiency.

2.2 Network Course Optimizing System

The network course optimization system draws lessons from MOOC's learning concept, course organization, resource construction and interactive mode, which is different from traditional and national excellent course website. The biggest characteristic of the intelligent learning guidance system is that it can effectively

control the gradual improvement of the network intelligent education to the individual users, automatically adapt to the requirements of different users, and gradually improve their knowledge of individual structure, style and ability. Form a report to diagnose and evaluate[4]. In the intelligent system, different users are divided into different levels to formulate learning programs, and their individual learning behavior, attitude, and comprehensive evaluation of the dynamic. Emphasis is placed on the management and detection of users' learning process, which fully demonstrates the characteristics of openness, sharing, interaction, collaboration and autonomy of intelligent network learning.

In addition to the above information available online, it can also collect user data information, such as registration information, learning dynamics, comprehensive results, exchange information and network answering behavior analysis reports. With the continuous development of big data analysis technology, mining and utilizing the data acquisition in the learning process can realize the intelligent network system.

2.3 Intelligent Correction System

Intelligent correcting is a process of automatically correcting students' homework by using artificial intelligence technology and big data analysis technology, that is, to realize the automatic interpretation and scoring of the right and wrong of the topic. Firstly, the assignments arranged by teachers on-line are uploaded to the system after students finish their assignments[5,6]. By using big data analysis technology, AI technology can automatically correct and generate learning reports which can be timely feedback to teachers, parents and students. It can also list a series of specific topics according to the completion of students' homework, so that students can strengthen the weaknesses of knowledge.

Compared with the traditional teacher's correction, big data intelligent correction can more intuitively feedback students' weaknesses to students, teachers and parents. As far as students are concerned, even if they are not in school, they can get feedback quickly after their homework is completed and solve the problems they encounter in real time. As far as teachers are concerned, they can understand the students' mastery of knowledge by analyzing reports and make follow-up teaching plans. Intelligent corrections reduce the pressure on teachers to correct homework. As far as parents are concerned, the feedback of the results of the analysis reports can make parents more effective[7]. Understanding the students' learning situation comprehensively and supervising them can also have a definite aim. In addition, this intelligent learning method can improve the students' learning enthusiasm and initiative to a certain extent.

2.4 Face Recognition Remote Monitoring

Face recognition technology is an intelligent technology to distinguish the identity of a person according to some information of his face. In daily life, real-time

tracking, monitoring and analysis results are achieved through the background image or video information that contains human faces. Comparing with the information in the database, this technology can not only complete user-to-user authentication, but also provide real-time monitoring services for parents and teachers, and solve the problems of students in time[8,9].

2.5 Big Data Technology

The application of big data technology enables users to complete homework online and generate analysis results of wrong questions and thinking misunderstandings. After students complete their homework, they upload it to the system[10]. After the application of big data analysis technology and artificial intelligence technology, the report can be more intuitively fed back to students, teachers and parents. Through the analysis of students' weaknesses and shortcomings, the system will conduct a comprehensive analysis, give solutions, and list a series of targeted topics according to the completion of students' homework to strengthen weaknesses.

The product structure model is shown in Fig 1.



Fig 1 Product Structure Model

3 Key Issues to Be Solved and Research Significance

3.1 Will the Table Impact Children's Vision?

We have a research on the screen to protect the eyesight. The desk senses the students' sitting posture through intelligence. When the students' sitting posture is not standardized, the voice reminds the students to change their sitting posture, standardize good habits, control the children's writing posture, make the children do straight, without hunchback, and have no impact on the body.

3.2 Will Too Long Time Make Children Tired?

There is a time limit of 35 minutes for the teacher's homework to submit, so as to ensure that the children are lazy and not anxious to finish the successful class. Automatically play a piece of light music after submission to relax the children's vision and have a rest. After submission, the system will automatically grade, and parents will also know about their children's learning situation after finishing their work.

3.3 Will too long use make children dependent?

We implement different time control for children's age, clock in and clock out. After finishing homework, we have an hour's spare time to cultivate children's favorite hobbies and enrich their spiritual world.

3.4 Will the utilization rate of the desk be very low?

There are many modes of desks. According to the different stages of children, choose the corresponding mode. Every family's parents have to buy a desk for their children. The desk can be used not only by primary school students, but even after graduation from high school. Don't worry about the low efficiency. With the screen saver, parents can also work on it.

3.5 Research Significance

(1) Complete homework independently without parents

Recently, different scholars at home and abroad have given different definitions of the operational definition of parental participation, some of which focus on family based parental participation, and think that parental participation is the expectation of parents for children's academic performance, or that parental participation refers to the management and guidance of parents for children's learning activities at home. Some researchers focus on School-based parental participation, which means that parents participate in various activities of children's school, or define parental participation as a communication day between parents and teachers on issues related to children's learning. In fact, more and more researchers realize that parents' participation includes not only parents' participation in family education, but also parents' participation in school education. Ma Zhonghu, a Chinese scholar, thinks that "parents' participation is actually the combination of the two social institutions that have the greatest impact on students - family and school forces to educate students together". The "intelligent learning table" we studied is to enable children to complete homework independently. At the same time, the smart desk can also be equipped with a camera, so that parents can connect to the learning desk through their mobile phones, watch the learning situation during the children's learning period, and play a supervisory role.

(2) Assist teachers in correcting homework and realize online communication between teachers and students

The intelligent learning table provides children with various exercises, including in class exercises and extracurricular knowledge. We will input the exercises and import the answers and specific steps. When they finish, they can grade the children's homework, point out other mistakes, and have detailed solving steps for him to refer to. Then, they will practice with the same type of exercises, and finally put forward for parents Problems with children. This can not only greatly save the time for teachers to grade homework offline, but also reduce some unnecessary mistakes through artificial intelligence, which not only improves the efficiency of homework, but also avoids the error rate. Teachers and students can communicate with each other online, reduce teachers' tasks, and deal with students' problems in time.

(3) Scan and input the text content, complete the answers, and generate automatic correction

With the development of education, contemporary children receive more and more education, and teachers' teaching methods also show a variety of ways. At the same time, the amount of homework for children is greatly increased, and the amount of homework for teachers' correction is also greatly increased. Because the amount of homework for correction is greatly increased, the following problems will inevitably appear. First, the simplification of homework correction The standard answer is too rigid, which hinders children's thinking to some extent. 2、 Teachers use simple "right" and "wrong" to correct homework. Children don't know where their mistakes are. That's meaningless. 3、 Because there are too many assignments that teachers can't correct in time, students can't know whether they have learned in this class, can't know their mastery degree in time, and is not conducive to the next stage of learning. The intelligent desk can send the homework with answers to the internal system of the intelligent desk through the student's voice recognition. At the same time, the teacher will also send the answers to the system. The system can automatically grade the homework. After the correction, the teacher will immediately feedback the mistakes of each student to the teacher, so that the teacher can give the students correct explanations in time, and the students can also follow the self Review your mistakes. The intelligent desk can also automatically generate a collection of error prone questions by analyzing the data of students' error prone questions and their habits, and help students to reverse their habit of doing questions with the help of problem-solving ideas.

(4) Enrich children's spiritual world and cultivate their interests

In order to reduce the pressure and enrich the after-school life, the intelligent learning desk designs activities after finishing the homework, but children need to choose before using it. First of all, it will provide all kinds of label tips according to different ages and genders of children. As long as you are interested in something, you can choose. In addition, our The device is connected to the wireless network. If the tag is not available, you can search. Wait until you have chosen, and you will

jump out of your hobbies after each assignment. Secondly, when we carry out the activity of cultivating hobbies, every time we stick to a certain period, we will crack the next label you choose, which improves the attraction of children and makes them stick to it.

4 Research Methods and Function Innovation

4.1 Research Methods

The questionnaire research and systematic analysis method are adopted for students, parents and teachers.

For students: the ability to complete homework independently is limited due to the different age of children; students do not develop a good ability of independent learning, and have strong laziness; students complete homework slowly.

For parents: some parents have limited educational level and can't tutor their children's homework; schools require parents to sign on their children's completion of homework; most parents are busy with work and can't accompany their children to do homework, etc.

For teachers: students are required to finish their homework with high quality and quantity; teachers are not able to guide children on the same day due to the large amount of tasks for all children, and teachers and students are not able to communicate in time; correcting homework is also a big problem. We analyze and research a product "smart desk" for the above problems, which not only enables students to study independently and finish their homework easily and happily, but also enables parents to know their children's learning situation at ease, promotes online communication between teachers and students, and reduces teachers' workload.

4.2 Technology Roadmap

A touch screen is designed on the desktop, through which the height of the desktop can be adjusted. What's cool is that it has a built-in "learning mechanism", which can analyze and learn the height that is most suitable for you. After that, you can realize the intelligent height adjustment function and simplify the use experience by double clicking the screen. The smart desk can also monitor the user's heat consumption level and display it in an intuitive chart to remind you to stand and use it in time to change the habit of sitting for a long time. It also has very good usability, built-in WiFi and Bluetooth, and a large number of interfaces are designed on the desktop, so that you can easily connect USB devices, and use the desk as USB and hub.

It is hoped that the "smart desk" can provide integration functions with Android or IOS systems, which need to be implemented by a technical team. Add a "camera"

area on the traditional desk to facilitate online communication between teachers and students, so that parents can pay attention to students' learning conditions in their spare time of busy work. Use the data analysis technology of "analysis of error bank". It is necessary to contact all practical software suppliers to undertake product delivery and service and provide integrated services, which can effectively solve the technical problems of software suppliers.

The study data are shown in Table 1.

Table 1 The values of time in the mill drum first section

No.	Brand	Style	Function	Sales Volume
1	Lexian Leju	quality luxury	computer table, up and down	8000+
2	Flange · Bobbi	quality luxury	computer desk, fireproof	3560+
3	Child Care	quality luxury	child care desk and chair, hand shaking	1000+
4	Shuolung	quality luxury	lift table	6000+

4.3 Function Innovation

(1) Research and development of "error database data analysis";

(2) The system of automatically correcting questions;

(3) Touch screen, through which the height of desktop can be adjusted. What's cool is that it has a built-in "learning mechanism", which can analyze and learn the height that is most suitable for you. After that, it can realize the function of intelligent height adjustment and simplify the use experience by double clicking the screen;

(4) The intelligent desk can also monitor the user's heat consumption level and display it in an intuitive chart. The intelligent desk can remind you to stand and use in time to change the habit of sitting for a long time.

(5) Make it easy for you to connect USB devices and use the desk as a USB hub;

(6) "Smart desk" can be composed of Android or IOS system;

(7) "Camera" facilitates online communication between teachers and students, and allows parents to pay attention to students' learning conditions;

(8) Make students feel comfortable, parents feel at ease and teachers feel at ease to achieve innovation driven development

5 Test Plan and Feasibility

(1) For all types of families, the core difference is not the price of the table, but based on the positive impact of the product on children, making it a useful textbook for students.

(2) Due to the technological innovation, the working methods of most occupations have changed dramatically. We will study the new technology "error database data analysis".

(3) Therefore, in terms of product research and development, as college students, we do not have the conditions for research and development. We will contact relevant technology and science research centers to provide ideas for their research and transfer the right of product research and development. In terms of sales, we will adopt the distribution mode, through the agent or point of sale, to establish a sales channel. This kind of distribution mode has a broad prospect. At present, it is an emerging industry with a large development space and is in a rapid growth stage. According to the industry background analysis, the target market demand is strong, and the market share is relatively large. After solving the problem of the number of personnel gap and the number of technical personnel, it can have a good development.

(4) Economic benefits from normal delivery.

(5) In depth service will lead to new business opportunities. Sales opportunities based on normal delivery bring new delivery and service opportunities.

(6) To help students improve their ability of independent learning, a teaching mode with students' practice as the main part and external teaching assistants as the auxiliary part. On the basis of class and practical learning

(7) Training high-quality and high skilled talents through R & D practice.

(8) Make students feel comfortable, parents feel at ease and teachers feel at ease to achieve innovation driven development

6 Conclusions

In summary, the market prospect of intelligent learning desk is very hot, which can fully meet the actual needs of users. The realization of intelligence can not only correct the users' bad working habits, but also help the users to grow up physically and mentally, and improve the learning efficiency effectively. With the continuous improvement of the big data market, it will drive the rapid development of big data analysis, cloud computing and other technologies, and realize technology integration to build an optimized intelligent system. Nowadays, there are still many technologies to be strengthened for the education of network intelligence in our country. Intelligent system is not a very complete and closely connected system. We need to effectively integrate various advanced technologies to create a "Made in

China" intelligent learning table. It contributes a little to the intellectualization of China and contributes to the significance of social practice.

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