

The Comparison and Improvement Strategies of Home-School Interactive Platform Based on Network Enviromnet ¹

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Abstract: With the development of modern information technology, the Home-School interactive platform (HSIP) supported by technology gradually becomes the main way for Home-school communication. In order to utilize and promote it better, the author has operated the current HSIPs that were developed by different operators. Based on this, the author also has compared and analyzed the features about the structure, function, operation approach of the systems and the principle of sending messages. Finally, the results reveal that the platforms have some shortcomings, such as the poor stability of the system, higher technical requirements, Cross-network running blocked, expensive communication costs, and the messages without polymerizing. As mentioned above, the author puts forward some strategies, in terms of improving the system function, reducing the technical requirements for users, producing reasonable Incentives and fees mechanism, and developing the multi-source messages synthesis system, to improve HSIPs' shortcomings and obtain the optimal results for collaborative education.

Keywords- *Home-school interactive platform; Comparison;Improvement strategies*

I. INTRODUCTION

The temporal discrepancy between schools and families, the fast-paced lifestyle and great competitive pressure of modern society, all of which lead to the traditional home-school interactive modes, such as home visit, phone interview, and parent conference, are gradually unable to meet the needs of home-school communication. The families and schools can't undertake synergistically the effective education to students, and which causes the ineffective educational effect. Thus, it is very necessary to develop the Home-school interactive platform which is based on modern information technology ^[1].

II. HOME-SCHOOL INTERACTIVE PLATFORM BASED ON NETWORK ENVIRONMENT

Home-school interactive platform is a SMS sending system based on PSTN, Mobile communication network and Internet, and which is aimed at achieving the fast and real-time communication between schools, families and teachers.

Besides, the HSIP integrates computer technology, Internet technology, wireless communication technology and attendance information technology to implement home-school communication by means of SMS interactive inquiry^[2]. The teachers send the messages (notice of the parents meeting, notice of charges, students' classroom performance and recent situation of students, homework, examination results and so on) to parents' mobile phone by the way of SMS. Meanwhile, the parents can exchange views to teachers and schools' leaders by means of replying or leaving the messages.

Nowadays, there are large numbers of home-school interactive systems on the market, for example, Mobile School Xun Tong, Sunshine Tong, Telecom All-rounder. With the reduced cost of network equipment and the popularity of mobile phone, the application of HSIP developed rapidly. And at present, numerous primary and secondary schools in china take the HSIP as the main approach for home-school communication. Taking "Mobile School Xun Tong" for example, there are 67,097 schools in china to use it. It not only has the rate of business coverage to 30.95% in urban schools, but also has the number of users to 26.23 million^[3].

III. THE COMPARISON OF HOME-SCHOOL INTERACTIVE PLATFORM(HSIP) BASED ON NETWORK ENVIRONMENT

With the further research and development of collaborative education, the design and development of HSIP also become more mature. At present, there are two main categories to comparative influential HSIPs in china. One is made by three telecom operators that are China Mobile, China Telecom, China Unicom; the other is made by special ISP. The later makes use of message gateway offered by telecom operators to realize the communication between families and schools, such as Sunshine Tong ^[4].

Therefore, in this paper, the author will select five platforms to compare their structures, functions, operating modes of system and methods of SMS sending. And the five

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platforms are Mobile School Xun Tong, ZhongYu Home-School Tong, Telecom All-rounder, Sunshine Tong, and Schoolcomms, all of which are developed by different operators and have a large market share.

A. The Comparison of System Structures among Home-School Interactive Platforms(HSIP)

The five platforms based on different operators and different deployment methods, Mobile School Xun Tong, Telecom All-rounder, ZhongYu Home-School Tong are developed respectively by the three major telecom operators: China Mobile, China Telecom, China Unicom, while SunshineTong and Schoolcomms are based on special ISP. Furthermore, SunshineTong and Schoolcomms make use of

the SMS Gateway provided by the three major telecom operators to achieve information sharing in home-school interaction. For the ways of system deployment, in addition to Mobile School Xun Tong, SunshineTong and Schoolcomms by way of distribution and centralization, the others are adopted centralized approach. For login ways, except for Schoolcomms based on client software, the other four platforms are adopted by web login. Combining the SMS sending system, voice system and attendance system, Mobile schoolXun Tong, ZhongYu Home-School Tong and SunshineTong have a better compatibility and scalability, so they require higher skills to operate the system and send messages for users. By contrast, Telecom All-rounder and Schoolcomms are simpler and more practical for users to use. The comparison of system structures is shown in table 1.

TABLE I. THE COMPARISON OF SYSTEM STRUCTURES AMONG HSIPS

Structural Features of the Systems		the Home-school Interactive Platforms (HSIP)				
		<i>Mobile School Xun Tong</i>	<i>Telecom all-rounder</i>	<i>ZhongYu Home-School Tong</i>	<i>Sunshine Tong</i>	<i>Schoolcomms</i>
Deployment	Distribution	Y	N	N	Y	N
	Centralization	Y	Y	Y	Y	Y
	Hybrid mode	Y	N	N	Y	N
Login	Web	Y	Y	Y	Y	N
	Client Software	N	N	N	N	Y
Operators		China Mobile	China Telecom	China Unicom	Special ISP	Special ISP
Technical Requirement		M	L	M	M	L
Compatibility (Expansibility)		Y	N	Y	Y	N

Y - Yes, N - No, H - High, M - Middle, L - Low

B. The Comparison of System Functions Among Home-School Interactive Platforms (HSIPs)

According to running the five HSIPs, the author comparatives and analyzes the feature of the five systems' functions. The results are shown in table 2. The five platforms all have the following functions: student attendance notification, Home-school communication by SMS, calling home phone for students, and cooperating office automation of school etc. On the basis of login roles, information communication methods, management module, incentive mechanism, reviews database, resources website, the author finds that the five systems have relatively perfect and powerful functions. Except for Schoolcomms only having teacher login permissions, the others all have different login roles and access permission. But, the five platforms all have the functions of sending SMS.

What is more, the HSIP based on the three major telecom operators have the function of calling the family phone any more. Mobile School Xun Tong and Sunshine Tong have provided reviews database for teachers to select, and also have developed corresponding resource site for different users to apply. In terms of incentive mechanism for teachers, only ZhongYu Home-School Tong offers incentive mechanism with sending messages to exchange gifts. However, the others have nothing. Therefore, the irrational incentive mechanism not only cuts down the teachers' positivity to participate in

collaborative education, but also leads to useless messages to fill the parents' phone.

TABLE II. THE COMPARISON OF SYSTEM FUNCTIONS AMONG HSIPS

Features of System Function		the Home-School Interactive Platforms (HSIP)				
		<i>Mobile School Xun Tong</i>	<i>Telecom All-rounder</i>	<i>ZhongYu Home-School Tong</i>	<i>Sunshine Tong</i>	<i>Schoolcomms</i>
Login Role	Administrator	Y	Y	Y	N	N
	Teacher	Y	Y	Y	Y	Y
	Parent	Y	N	N	Y	N
	Student	N	Y	Y	Y	N
	Others	N	N	N	Y	N
Information Methods	SMS	Y	Y	Y	Y	Y
	Telephone	Y	Y	Y	N	N
	Email	N	N	N	N	Y
Management Modules	Sector Management	N	Y	Y	N	N
	Personnel Management	Y	Y	Y	Y	Y
	Curriculum Management	N	Y	Y	Y	N
	Examination Management	Y	N	N	Y	N
	Attendance Management	Y	Y	Y	Y	Y
Reviews Database		Y	N	N	Y	N
Incentive Mechanism		N	N	Y	N	N
Resource Website		Y	N	N	Y	Y

Y - Yes, N - No, H - High, M - Middle, L - Low

C. The Comparison of Operating Modes Among Home-School Interactive Platforms (HSIPs)

The operating modes of the five platforms (table 3), except for SunshineTong and Schoolcomms based on special ISP, the others designed and developed by the three major telecom operators are in condition of independent operation and haven't achieve information sharing in different networks. During the process of applications, parents need to pay for 3-

20RMB per month as communication costs to telecom operators by means of phone payment or cash payment. Because of the competing interests among China Mobile, China Telecom and China Unicom, the out-network users have to exchange their phone cards or pay additional charge. Or else, the telecom operators will interrupt their communication. As a result, these problems eventually cause disputes and contradictions among telecom operators, schools, and parents.

TABLE III. THE COMPARISON OF OPERATING MODES AMONG HSIPS

Operational Characteristics		the Home-School Interactive Platforms (HSIP)				
		<i>Mobile School Xun Tong</i>	<i>Telecom All-rounder</i>	<i>ZhongYu Home-School Tong</i>	<i>SunshineTong</i>	<i>Schoolcomms</i>
Cross-network Running		N	N	N	Y	Y
Payment Methods	Phone Payment	Y	Y	Y	N	N
	Cash Payment	N	N	N	Y	Y

Y - Yes, N - No, H - High, M - Middle, L - Low

D. The Comparison of Messages Delivery Mechanisms Among Home-School Interactive Platforms (HSIPs)

At present, existed HSIPs have two message delivery methods, including real-time and timed sending methods [5]. On the methods of interaction, all the platforms have the function of sending SMS instantly, but only the Mobile School Xun Tong can send SMS regularly. In all platforms, except for Telecom All-rounder, the others all support to receive review

messages from different teachers. For the way of handing message sources, no one can synthesize the messages from different teachers before sending them to parents. The messages without synthesizing appear repeatedly in parents' mobile phones, which makes the constant SMS ringtones become parents' interference. Scattered messages are not useful for parents to form integral sensory about the performance of their children in school.

TABLE IV. THE COMPARISON OF MESSAGES DELIVERY MECHANISM AMONG HSIPS

Information Delivery Mechanism		the Home-school interactive platforms (HSIP)				
		<i>Mobile School Xun Tong</i>	<i>Telecom All-rounder</i>	<i>ZhongYu Home-School Tong</i>	<i>Sunshine Tong</i>	<i>Schoolcomms</i>
Multiple Information Sources		Y	N	Y	Y	Y
Message Polymerization		N	N	N	N	N
Sending Method	Real-time	Y	Y	Y	Y	Y
	Timing	Y	N	N	N	N

IV. THE DEFICIENCIES OF CURRENT HSIPs AND SOME RELATED RECOMMENDATIONS

The HSIPs based on SMS, have convenient ways of information communication and also have perfect services. So they were once favored by the public, and will have broad prospects for development. However, according to a long-term practical application in primary and secondary schools, the using effect of HSIP is not as good as expected in Home-school communication. Therefore, the author hopes to seek the objective reasons from HSIP itself to solve the above problems. Through the above comparative analysis for HSIP about its system structure, system function, operation mode and message delivery mechanism, the results reveal that HSIP itself has still many deficiencies.

A. The Deficiencies of the Current HSIPs

1) *The poor stability of the system and the high technical requirements for users*

For existed HSIPs, the single centralized management structure will gather all the information to the management nodes, which results the information obstructed. What is more, once the management nodes go wrong, which will affect the whole network, and will lead to unstable system operation. Although each platform provides a lot of user roles, most management works about classes, courses, grades and so on, are committed by the head teacher. Meanwhile, when teachers want to send the information of the students in school, the records of their studies, homework etc. to parents' mobile, they need to choose the sending objects, the types and the subjects etc., and can't compile the information by Natural language. As a result, all the operation processes increase the technical requirements for users.

2) *The complex system function and the imperfect incentive mechanism.*

In order to attract more users, the HSIPs try to design powerful system functions and provide more extended interfaces. Each platform sets many functions, such as System management, SMS, Telephone calls, Attendance supervision, and also develops appropriate collaborative educational websites. But, after the actual use, the author finds that many HSIPs have different shortages on different functions, and their contents are not really useful. In addition, there aren't any effective monitoring and incentive mechanisms to improve the effects of using. The existed HSIPs mostly make the amounts of sending messages as the evaluation criteria to exchange phone fee or gifts, and without any supervision measures to evaluate the quality of the messages. As a result, the parents' mobiles are filled with the useless messages sent by teachers. Finally, the imperfect incentive mechanism makes parents doubt the payment and the actual effects of the HSIP, and also prevents the HSIP's application and promotion.

3) *Restricted Cross-network communication and expensive communication cost.*

Among most HSIPs, only few platforms that are developed by the third-party ISP can achieve cross-network

communication. Because of competing interests among China Mobile, China Telecom and China Unicom, the HSIPs developed by them are in the condition of independent operation, and the communication among different networks is restricted. Eventually, the out-network users have to exchange their phone cards or pay additional charge. In such circumstances, parents are still required to pay for 3-20 RMB per month as communication costs. However, it is not proportional between the high communication costs and the quality of the messages sent by teachers. The results cause the disputes and contradictions among developer, schools, and parents, and impede the development of HSIP.

4) *The messages without synthesized and the sending ways of them are unreasonable*

At present, the existed HSIPs all have the function of receiving multiple information sources and sending messages on real-time, but there is no HSIP that can synthesize the messages from different teachers before sending to parents. It means that parents may receive several messages in a day. These messages without synthesizing appear repeatedly in parents' phone, which makes the constant SMS ringtones become parents' interference. Also, the scattered messages are not useful for parents to form integral sensory about the performance of their children in school.

B. Improvement Strategies about HSIP

1) *Simplifying the functions of the system and reducing the technical requirements for users*

The goal of HSIP is to serve home-school communication, and provide various stable, convenient and efficient technologies, and make up for the shortcoming of the traditional ways of home-school interaction. And the shortcomings of traditional interaction ways include the restriction in time and space, lower frequency of communication, poor effect of interaction and so on. Therefore, for the system deployment, we should make use of the combination with distribution and centralization to improve the stability of the system operation. What is more, the design of the system should not just chase a complex function, more importantly. We should try to simplify the managerial affairs and the procedures of operation to reduce the technical requirements for users. Only by this way, the HSIP can be accepted by the users more easily, and can attract teachers and parents to participate in the collaborative education more effectively.

2) *Designing the reasonable incentive mechanism and charging system to improve users' motivation*

The parents hope to know about their children's specific performance in school by the HSIP. But, in disappointment, the information received by parents is all about the notification of schools or homework. There is no doubt that the reason of this phenomenon is that teachers send blindly messages for the purpose of exchanging the points or gifts. They emphasize on the quantity of message, without paying more attention to its quality. As a result, the parents are dissatisfied with the application of HSIP, because they believe that it is not worth spending so much money on

these useless messages. For this reason, the HSIP should design the function of automatic filtration system to filter the useless messages sent by teachers. Finally, the automatic filtration system will evaluates and records rewarding points in accordance with the quality and quantity of messages received by parents. In this way, we can supervise the teachers to send personalized information for every student to their parents.

3) Developing the multi-source synthesis system to aggregate the scattered messages and implementing the Cross-network communication

All of the HSIPs support the review messages from different teachers, but they can't synthesize these reviews before sending them to parents' phones, which means that parents may receive various messages from different teachers in a day^[6]. Therefore, the HSIP should design a multi-source synthesis system that can synthesize these messages, and finally send a piece of message to parents' phone in the fixed time. In addition, the three major telecom operators should reduce the competition for business profits, and provide SMS gateway to support Cross-network communication. Only by this way, the dilemma of Cross-network communication can be solved, and the HSIP will really serve the education to enhance the effect of collaborative education.

V. CONCLUSION

In summary, the existed HSIP still has some disadvantages on system structure, system function, operation mode, and the message delivery mechanism etc., and should be further improved. Thus, it is the future research direction to make use of modern information technology to design and develop more economical and practical HSIP to form timely and convenient communication between homes and schools.

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