

# Generic Functional Requirements for Effective School Parents Interaction System (SPIS)

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## ABSTRACT

*An effective interaction system in school environment is certainly vital in order to improve communication and relationship between school and its community. Apart from that, information can be shared and exchanged easily. Through use of Internet, the drawback in old style of school-parent relationship including problem with parents do not have enough time to get involve in their children life school will be solved without doubt. Although there are some existing Internet-based systems for school-parent interaction that currently available in the market, the specifications and the features of these systems are different. Thus, this paper will propose generic functional requirements of school-parent interaction system. The proposed requirements can be used as a standard requirement which beneficial for developers in constructing an effective school-parent interaction system. Thus, reduce the development time and effort.*

### Keywords

*School Parent Interaction System, Functional Requirement, Use Case Diagram*

## 1.0 INTRODUCTION

Interaction is a communication process in exchange and sharing of ideas or information from one party to others party including in school environment. Good relationship between school and parents is a main component in teaching and learning process, especially in school curriculum (QSCC, 1998). The relationship can be realized through teacher and parents association, parents visit or parent participation in school activity (Berger, 1983). To bring the best education for the school student, the

parent and the school management must play a major role. A great school needs community and the community needs the school (Poston et al., 1992) and parents are one of the components in the community.

In Malaysia, every school has an active Parent and Teacher Association (PIBG) which is an association that comprises the parents and school management including the headmasters or the principle of the school, teachers and the advisor. The PIBG is founded as a students' welfare where the parents and the school management will meet at least twice a year to discuss and identify the best effort and action to be taken to ensure the students activities and financial support. Moreover, once a year appointment parents or guardians will be invited to come to the school and meet their children's teacher. The purpose of this special appointment is to discuss about academic performance and other problems including discipline matters of the students. The current situation of school-parent interaction indirectly reveals that parents or guardians will be informed or acknowledged about their children performance just in a certain period of time. The parents are not accessed to the current records from the school if the parent did not attend the meeting at school, or if there is no official report from the school. The acknowledgment process of the students' school life by the parents cannot be done frequently and it is totally depended on the teacher availability and effort.

Through the emergence of information and communication technology (ICT) usage, the drawback in old style of school-parent relationship including problem with parents do not have enough time to get involve in their children life school will

be easily solved (Razik & Swanson, 2001). Web based system or web information system (WIS) is an information system that delivers information and services via Intranet or Internet. WIS can be defined as an application that not only disseminates information, but also proactively interacts with the user to aid them in their task (Takahashi & Liang, 1997).

Currently, there are approximately 15.9 million Internet users in Malaysia and the users growth is 328.9% from year 2000 to year 2008 (IWS, 2009). With the use of ICT, the school supplies data of students through a specific database application meanwhile the parent retrieve the data from the web page in the browser application.

According to Gallagher, Bagin, and Moore (2005), the bottom line of any school community relations program is to help the children learn better. The study showed that children learned better if parents were involved. Therefore, a good school-community relations program should encompass the concept of partnership between the school and the parents through ICT which can improve the relationship.

Although there are some existing systems for school-parent interaction that currently available in the market, the specifications and the features of these systems are different. Thus, this paper will propose generic functional requirements for effective school-parent interaction system. The proposed requirements can be used as a standard requirement model which beneficial for developers in constructing a new school-parent interaction

system. Thus, reduce the development time and effort.

## 2.0 THE USE OF ICT IN SCHOOL ENVIRONMENT

ICT in school has started in 1984 when Ministry of Education has released the guidance of Computer Club foundation for each school (Rahmad & Mohd, 2001). Introduction to Computer Program has been introduced in 1986 and Database Education National System in 1989 (Ibrahim, 2001). The related ICT program has conducted by the ministry such as Computer Literate Project (1992), Education Resource Center (1993), Education Network Project (1994), Computer Support Command (1994), Computer Project in Education (1994), Munsyi Network Project (1995) and Education Management Information System (1995) (Rahmad & Mohd, 2001).

According to Rahmad and Mohd (2001), the use of ICT not only affects the physical aspects but also motivates a new way of administration in school. ICT creates six styles of transformation in school management (see Table 1). Besides that, Crawford (1997) has classified the implementation of information system in school management or environment into fifteen different areas as follow:- Student information, school administration and planning information, personnel information, school future planning, library automation, sport management, premise maintenance and checking, inventory management, school message system, human resource development and assessment, school timetable and personnel attendance.

Table 1: Six Styles of Transformations in School Management  
(Adapted from Rahmad and Mohd, 2001)

Style of Transformation	Description
<b>Internal Process</b>	Transformation in school internal process in school such as creating new procedure, workflow, work group, basic knowledge, services and communication
<b>Organizational Structure</b>	Transformation in school organization structure. The Information Technology (IT) Unit will be created to enable information communication to the users and to produce the school report accurately, faster and complete
<b>Interaction</b>	Transformation in school interaction among the outside parties such as new customer, vendors, partner and association
<b>Financial Management</b>	Transformation in financial management which it involves usage of electronic devices, new market for school promotion and advertisement, budget and style of administration with customers and suppliers
<b>Administration</b>	Transformation in way of school administration which it involves video conference, email, online meeting, groupware and video streaming. This kind of transformation helps in long distance teaching and learning especially for rural school
<b>National Development</b>	Transformation in national development where the school will face a local and international competition including the public facilities. The schools need to spend more money to set up the IT infrastructure and it gives a chance to improve school services to the public

### 3.0 REQUIREMENT COLLECTION

As mentioned earlier in this paper, the aim of this study is to construct a generic functional requirement for effective school-parent interaction system. To achieve this goal, requirements were collected by using fact-finding techniques and review on the related systems. The techniques were observation, document sampling and interviews with school administrator and the parents.

Observation is looking at an activity, an action or a process without disturbing what is happening (Whitten et al, 2001). The observation was done at Sekolah Menengah Kebangsaan Bandar Baru Sintok (SMKBBS). Finding from this technique indicates that the school uses two (2) information management systems known as Educational Management Information System (EMIS) and Student Information System (SMM). Based on Whitten et al. (2001), a good analyst always gets facts from existing documents rather than people. Therefore, documents like manual book, log book and slide documents were reviewed in helping us to get details for a certain function or process.

Apart from these two techniques, this study also involved conducting interviews held with school administrator, school data information officer and seven parents. The interview was conducted in order to meet the following objectives:

- to understand the current interaction practices among the teachers and parents in term of number of official meeting, the topics or issues that commonly discussed during the meeting and current practices to keep in touch with parents regarding students' issues.
- to understand the procedure used in distributing the latest information to the parents.
- to know how school and parents work together to supervise the students behaviors and disciplines.
- to identify respondents' perception on the current interaction practices between school and parents.
- to identify important components that considered by parents to be included in the school parent website.

In order to ensure the completeness of collected requirements, this activity has been supported with reviewing existing and similar systems. Although there are many similar products have been published in the literature, due to time restriction, this study had identified three related systems that has been used as a reference system for requirements identification. The systems are:

1. E-SCHOOL which is a portal service for the schools in Malaysia. In this system mobile messaging application also included to inform parents about the related information. It also

benefits to the school administration. E-SCHOOL provides the infrastructure while the school only needs computer labs and internet connection. E-SCHOOL provides 8 main modules of application which are school portal, e-support, e-report card, e-teaching, e-learning, e-repository, SPS, and online chatting. These modules were designed based on four main target groups which are:

- a. **Parents Group:** concentrates interaction between parents and school/teachers. It has real time information on child's progress in school reports such as homework, examination, discipline records, attendance and timetable. The parents also contribute feedback to the school.

- b. **Students Group:** enables the students to access the computer based learning resources prepared by the teachers. It carries out online learning, online tutoring and reference materials. They also can do self-assessment on any subject, check score/grade and study performance. The system provides the time management calendar such as homework, examinations schedule, holiday list, announcement, quiz and events.

- c. **School Group:** lets the school manage the staff and student information. It centralized documentation and reporting.

- d. **Teachers Group:** helps teachers to monitor the student assignment and viewing reports. They can send emails to parents, students, other teachers and school administrator.

2. TMS School Management System (TMS) is a complete web-based system for administrators, teachers, parents and students; to help schools improve the quality of education, increase student performance and better communicate with parents. Its intuitive navigation and multilingual support is simple to use and can be easily personalized to individual user's preference. Some functionalities that provided by TMS are class management, marks management, registration management, hostel management, administration management, disciplinary management, learning management the functionality into two major level; Ministry Level and School Level. The parents' community is included under School Level. TMS also integrates the individual school administration level to the government ministry level to enable better transparency, macro-management, reporting analysis and data-driven decision making.

3. TASS.web is a web based administration and portal software system. The package is developed and supported by 'the alpha school system PTY LTD' based in Brisbane, Australia. TASS.web provides schools with a student and financial administration system, developed using the latest web based technologies. TASS.web specifically addresses the Kindergarten to Year 12 school market. TASS.web is running equally as successful in small primary schools as it is in large

multi-campus schools of over 2000 students. *TASS.web* has three main categories of data management; Student Administration, Financial Administration and Information Portals. The Information Portals provides the following functionalities to support school parent interaction:

a. **Teacher Kiosk** provides teachers with the ability to view a complete student's profile. Student information includes: photograph, curriculum, behavioral, timetable, extra-curricular, assessment, attendance and medical details. The Behavior Management tools allow teachers to record incidents against students and assign points for their positive or negative behavior.

b. **Parent Lounge** allows parents to update their address information. This will reduce the clerical workload for the school in keeping parent contact and address information up to date. It also provides a facility for parents to pay fees or other payment through on-line using a credit card. This facility is practical in reducing the amount of paper based correspondence by providing parents with on-line access to the Tours and Excursions that their child has been invited to attend. Parents can also accept and pay on-line. Bulletins and calendar information is available for parents on-line. Other information such as school policies, newsletters and information sheets can also be made available.

c. **Student Café** where assessment items are displayed, ordered by due date. As soon as an assessment item has been marked by the teacher in *webBook*, the results can be published to Student Café and made available to the student. Time table, bulletins and calendar information are also available for students on-line.

d. **webBook** allows a teacher to enter students' assessment results or comment at home (across the Internet) or at school (using the school Intranet). *webBook* also features a curriculum designer for the teachers to create their curriculum for each class including homework, tests and assignments.

#### 4.0 PROPOSING GENERIC FUNCTIONAL REQUIREMENTS FOR SPIS

From the interview with teachers and parents, the study had identified some required features that should be considered when developing SPIS. Table 3 shows the features.

The analysis showed that the items in the interview were not organized efficiently and accordingly. Some of the features were redundant and ambiguous. Therefore, the features cleansing was done in this research. Most of the generated

standard terms were a functional set and the original term (from the parents and school) was a functional subset of the generated standard term. Table 4 presents the standardized terms of SPIS functions together with the accessibility of the functions.

After the collected requirements have been validated and refined, the proposed model was constructed by using Use Case diagram. The objectives of the Use Case Model were:-

- i) To identify the organization requirements.
- ii) To present the user requirements.
- iii) To illustrate the system functions.
- iv) To provide an outside view of the system.

Table 3. Required Features of SPIS

Features	Respondents
Announcement/News	100%
Academic Profile / Exam Result	100%
Attendance	100%
School Events / Calendaring / Activities / Holiday	100%
Forum / Discussion Board	14.3%
Teacher's Comment	42.8%
Suggested Link (Tuition Online, Reference, etc)	14.3%
Complaint Board	28.6%
Exam Questions Bank	14.3%
Contact Person Info	100%
School General Information (Organization Chart, School Performance Record, Mission, KPI, Hotline, Facilities, Response Time, etc)	28.6%
Class Info	28.6%
Fees Info	57%
Student Discipline/ Problem / Behavioral Report / Special Focus / Teacher's Advice	57%
Smart Partnership Activity Between School and Parents	14.3%

Based on the gathered requirements, this study divides the SPIS users into two categories: Public User; and Registered User. The Public User is an anonymous user that able to access the system without any authorization to login. The Registered User is a registered and authorized user which can be categorized into four groups: teacher, parents, students and administration staff.

Figure 1 demonstrates that a new user will be registered by the administrator. Teachers play key roles to the system where they have to manage all information that related to students such as class management (including managing attendance, examination and assessment results), students and parents information, and disciplinary records. Apart from able to view information of their children, the parents also can view teachers' profile, obtain latest news of the school events and receive announcements from the school management.

Table 4. The Standardized Terms of SPIS

PARENTS FEATURE'S TERMS	SCHOOL FEATURE'S TERMS	STANDARD TERMS
<b>Anonymous Access</b>		
<ul style="list-style-type: none"> <li>School General Information (Organization Chart, School Performance Record, Mission, KPI, Hotline, Facilities, Response Time, etc)</li> <li>Smart Partnership Activity Between School and Parents</li> </ul>	<ul style="list-style-type: none"> <li>School General Information</li> <li>School Resource Center</li> <li>Statistical School Examination Achievement Result</li> </ul>	School Profiles
<ul style="list-style-type: none"> <li>News</li> </ul>		News
<ul style="list-style-type: none"> <li>Announcement</li> <li>Fees Info</li> </ul>	<ul style="list-style-type: none"> <li>Message/Announcement/Notice</li> </ul>	Announcement
<ul style="list-style-type: none"> <li>School Events / Calendaring / Activities / Holiday</li> </ul>	<ul style="list-style-type: none"> <li>Calendaring</li> </ul>	Calendaring
<ul style="list-style-type: none"> <li>Contact Person Info</li> </ul>	-None-	Contact Person
<ul style="list-style-type: none"> <li>Suggested Link (Tuition Online, Reference, etc)</li> <li>Exam Questions Bank</li> </ul>	-None-	Student Online Reference
<b>Authorized Access</b>		
<ul style="list-style-type: none"> <li>Academic Profile / Exam Result</li> <li>Attendance</li> <li>Teacher's Comment</li> <li>Student Discipline/ Problem / Behavioral Report / Special Focus / Teacher's Advice</li> <li>Class Info</li> </ul>	<ul style="list-style-type: none"> <li>Examination Result</li> </ul>	Student Profiles
-None-	<ul style="list-style-type: none"> <li>Teachers Profile</li> </ul>	Teachers Profile
<ul style="list-style-type: none"> <li>Forum / Discussion Board</li> <li>Complaint Board</li> </ul>	<ul style="list-style-type: none"> <li>Forum / Discussion Board</li> <li>Complaint Board</li> </ul>	Discussion Board

## 5.0 CONCLUSION

In general, this study has successfully identified generic functional requirements for SPIS which allows interaction between four different groups of school community: teachers, school administrators, students and parents. The proposed requirement

might be useful to help software designers and developers in developing a new or improving features and capabilities of existing SPIS. The requirement has been presented using Use Case diagram. However, the findings still can be improved by increasing the number of respondents in the requirements analysis.

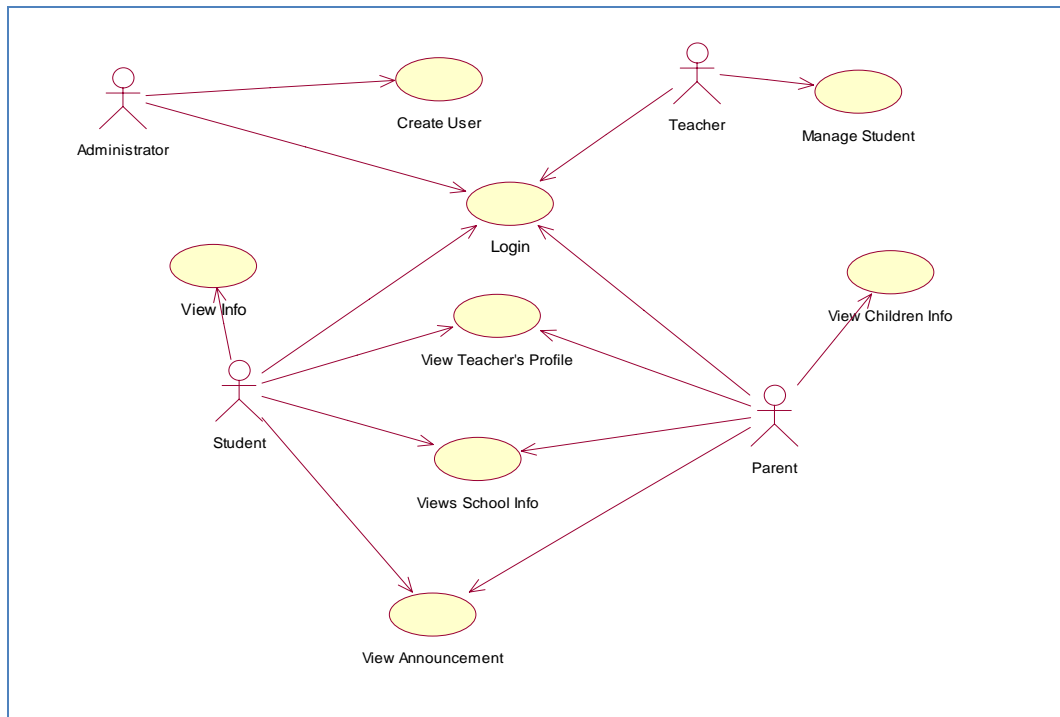


Figure 1. The Use Case Diagram of SPIS

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