

Remote Advisory Web Board Service Enhancement using the DS-SOS Protocol

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ABSTRACT

This paper proposes the Distant Student Support Online System (DS-SOS) protocol for improving the web board-based student support system as the remote advisory service of the School of Science and Technology, at Sukhothai Thammathirat Open University. This protocol is a technology-enhanced student support tool that is faster effective communication between students and helpdesk staff, tutors or advisors. Due to various problems of remote advisory, such as discontinuity in advising students' particular case, lack of attention to student problems and the termination of communication channels, the DS-SOS protocol was taken into account as the solution for these problems. This protocol has been installed and operated in the school's web board system. The results, in terms of number of problems solved successfully with a high level of satisfaction, could be obtained via monitoring the interactivity between users. The DS-SOS protocol consisted of 2 functions: query processing and interactive sessions. The former function was implemented as the FAQ database. All query items, access times, numbers of posts etc. were categorized and stored as history log data and references. The latter function was related to maintaining communications between students and staff using the interactive tool on the web board. All participants of each thread were notified via email whenever the next conversation was responded and posted on the web board. Furthermore, notifications of student problems posted on the board were automatically forwarded to the designated staff members by email. The interactive session function was able to help users keep communicating with each other, especially remote students who were in urgent need of help. As a result, communication channels between both ends were connected anywhere at any time with effective success in remote advisory service.

INTRODUCTION

Previously, there were many researchers studying the remote advisory service in order to support distant students and to reduce many problems of distant learning management. As a consequence, self-directed students could gain more concentration on their academic studies without any worries about the distant learning system. Distant student support system should respond to all students' enquiries instantly. Students' problems should be solved completely at the first instance by staff without letting students deal with further problems themselves at the other stages. Thus, one stop service was suggested by (Suratinah and Antoro, S. D. 2009) in order to improve the distant student support system.

Ratcliffe et al. (1996) from the University of Wales, Aberystwyth proposed the remote advisory system operated by the advisors, lecturers, academic staff and experts from other universities or industrial field. This system was installed on the university network as communication channels for email, calling, video conference and image transfer. Students could capture pictures of monitors at any time when problems occurred. And they could send these pictures to academic staff asking for some useful suggestion. Furthermore, Ratcliffe et al. (1999) also proposed the queuing system for remote advisory service. Assigned university staff were trained to handle specific tools and system functions prior to launching the service online. This system consisted of the schedule of service time, and discussion forums for group assignments and for laboratory projects. In addition, Ishikawa et al. (2002) improved the remote advisory service by developing the online center as academic forums with email notification to students, tutors and instructors. A question was sent via email to the assigned tutor or instructor for the purpose of initiating everyone into a conversation. Responses from staff or student would be displayed on the central website. All questions and replies were stored in the database. Whenever any other student sends an email to the center in order to ask the same question already posted previously, the central system would forward that question to the same person who had responded to that question instead of sending the question to the daily designated staff.

According to the survey of the remote advisory service system via the web board channels of Sukhothai Thammathirat Open University (STOU), such as schools' web boards, the registry department's web board and the student center service's web board, there were two main problems with these official web board services. Firstly, it was found that some problems could not be solved properly due to the lack of continuity of advisory services, i.e. a help desk staff did not keep communicating with students until their problems could be solved, or students' problems were switched to be suggested by other staff without cooperating or sharing previous information about the cases among staff. Secondly, there were many topics posted on the web board subject to the same problems. Although the current web board system contained the Frequently Asked Question (FAQ) function, this feature did not work effectively as indicated by the many questions still being posted on the web board repeatedly regarding the same problems.

Concerning these two main obstructions of the remote advisory service, the Distant Student Support Online System (DS-SOS) protocol was proposed in this research paper in order to improve the message board service. This research developed the interactive tool to enhance the remote advisory web board service using the DS-SOS

protocol, which could improve the web board performances and gave benefits mainly to distant students.

OBJECTIVE OF RESEARCH

The objective of this research is to help users keep communicating with each other via the remote advisory service, especially remote students who are in urgent need of help by:

1. Implementing DS-SOS as the main protocol for the remote advisory web board service;
2. Developing a query processing session as the FAQ database containing all query items, access times, numbers of posts and users' information;
3. Developing an interactive session to maintain communications between students and staff using the interactive tool on the web board.

Consequently, communication channels between both ends enable effective connections anywhere at any time through the remote advisory service.

Research Methodology

This paper proposes the DS-SOS protocol for improving the web board-based student support system as the remote advisory service for the STOU School of Science and Technology. This protocol is a technology-enhanced student support tool that can lead to smooth communication between distant students and helpdesk staff, tutors or advisors. The research methodology was divided into two sections. Firstly, the DS-SOS protocol was created and implemented on the school's remote advisory web board system. Secondly, a survey of users' satisfaction before and after processing the proposed DS-SOS protocol was carried out. The results of the survey were analyzed and the useful comments were determined as the technical solutions for developing the school's web board system to become more user-friendly with the DS-SOS protocol.

Users in this research were classified into 2 groups: 1) STOU students as general users asking for help or suggestions from staff, and 2) lecturers of the School of Science and Technology as staff, tutors or advisors. A survey was carried out in order to determine users' satisfaction with the school's web board and the possibilities for improvement. The school's web board satisfaction from both groups can be summarized as follows.

Users rated satisfaction on a scale from one to five (5: very high, 4: high, 3: fair, 2: poor, and 1: very poor) The satisfaction of users with the convenience of posting and replying to messages on the web board was at a high level (4.85), but the web board display and the FAQ function were poor (2.3). According to users' satisfaction with remote advisory service via a school web board, responses of interactivity between students and staff, usefulness of information provided and effectiveness of communication via the school's web board channel were at a high level. However the student support process was discontinuous. Some problems were not responded to because staff did not receive any notification. According to the observation survey, it was found that only 31% of staff kept checking for further responses from students after posting answers on the web board. This led to uncompleted student support process. Staff could not know whether their

answers had provided enough information for solving students' problems, unless they kept monitoring a school web board and detect further responses from students.

Furthermore, many useful and interesting comments were suggested, such as creating the FAQ function, classifying questions, setting priorities for serving students, and making it more user-friendly. Together with the main features developed in this research, all these responses were taken into account as user requirements for web board service improvement and were proposed as the Distant Student Support Online System (DS-SOS) protocol.

There are four main sessions for DS-SOS protocol. The first one is User Information, which contains general and confidential information. Users have to enter their contact information especially email address into the system during the registration stage. DS-SOS will notify users by emails when there are further conversations posted on the topic. Secondly, the Post New Topic: there are two ways for posting: asking questions directly to staff or asking/informing general news among students. In addition, all new topics posted are classified into specific types. All categorized topics can interact with the frequently asked questions function. Thirdly, Reply to Topic; users can post answers or further information regarding each topic. Whenever additional conversations are posted, there are notification emails sent to all relevant users. Finally, Advisory Schedule Link is the process by which DS-SOS sends emails corresponding to the record of staff designated for remote advisory on each day.

The author proposed this DS-SOS protocol in order to improve the capability of the school's web board in effectively supporting distant students, as described in the next section.

DS-SOS Protocol Operation Procedure

This section demonstrates the operation procedure of DS-SOS protocol subject to the main objective that keeps connecting communication channels between both ends, distant students and STOU staff, anywhere at any time with effective success in remote advisory service. Figure 1 presents the diagram of the proposed DS-SOS protocol.

The DS-SOS protocol consists of 2 main functions: query processing and interactive sessions. The first function is implemented as the FAQ database. Students can select the type of problems to be asked for help either asking directly to staff or just communicating with other students. All query items, access times, numbers of posts, and other factors are categorized and stored as history log data and references. The interactive session function helps with keeping communications open between students and staff with the interactive tool on the web board. All participants of each thread are notified via email whenever a reply is responded to and posted on the web board, either asking any further questions or giving answers. Since helpdesk staff, tutors or advisors are daily assigned as student assistants, notifications of student problems posted on a board are automatically forwarded to the designated staff email.

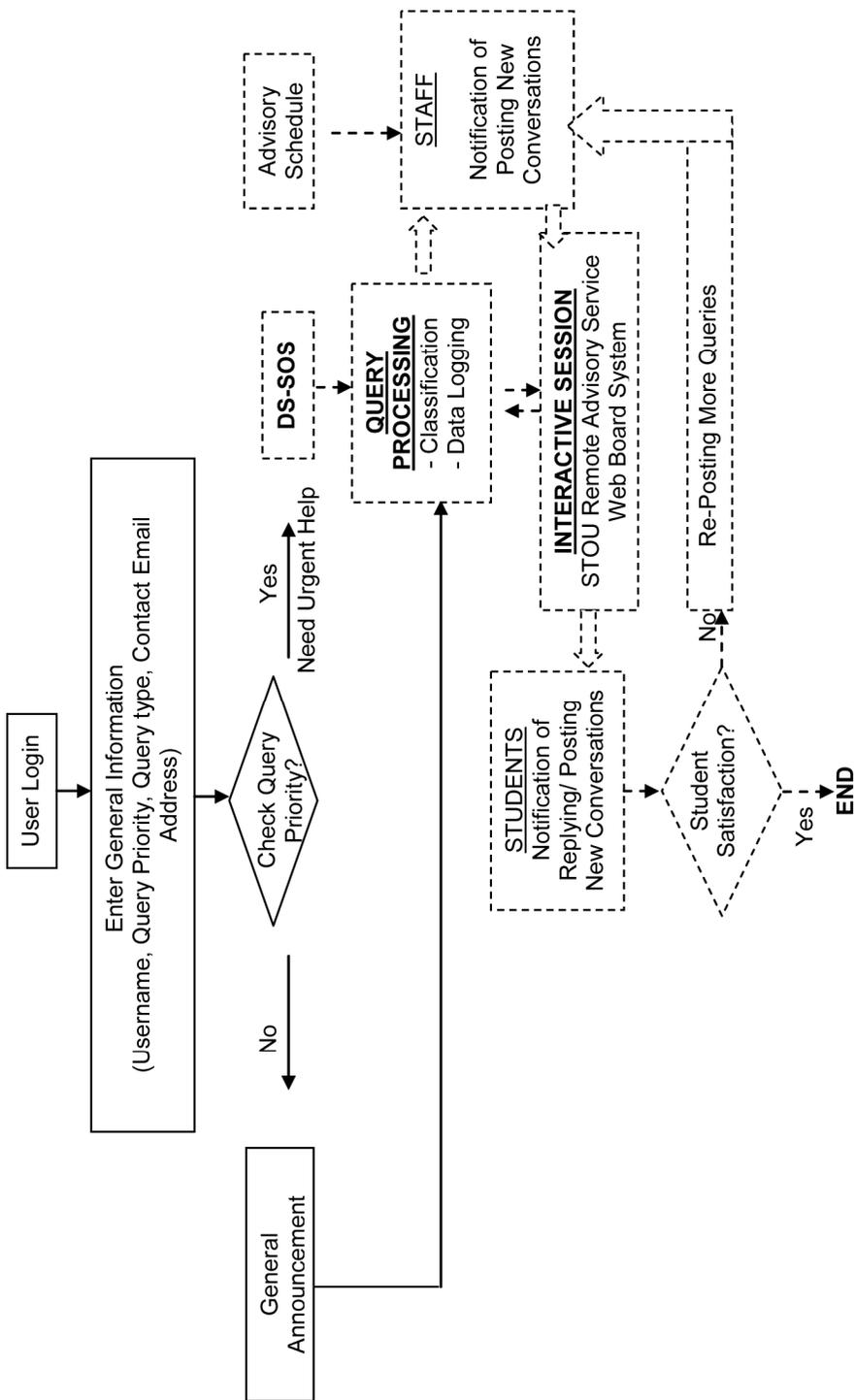


Figure 1: DS-SOS protocol diagram

As a result, the interactive session function can help users keep communicating with each other, especially remote students who are in urgent need of help. Both designated advisors and students can be informed about subsequent conversations; thus student problems can immediately be solved without running the web board program all the time. Although there are several functions adding into the original school's web board, the modified-web board displays still resemble the original one. Users do not recognize any changes in the web board apart from some additional functions. According to Figure 1, the DS-SOS protocol contains three operation systems as demonstrated:

1. Log in System: All users should apply for member registration and log in to the DS-SOS web board system first before posting new topics or answers.
2. Query Processing System: In addition to the original web board system, many useful functions have been developed and modified corresponding to users' requirements. For examples:
 - 2.1 Query Priority Check: DS-SOS can set the priority of each topic by the selection of
 - Questioning directly to staff: In this scenario, student definitely requires support from school staff, thus all new messages posted in this topic will be notified instantly to a designated staff's email address.
 - Informing news: There is no email sent to advisory staff when a user selects this priority. Only general news or questions are broadcasted among students following those threads.

Figure 2 describes the priority of Questioning directly to staff. When this option is selected, there is a message showing that the notifying email will be submitted to the remote advisory staff for that day.

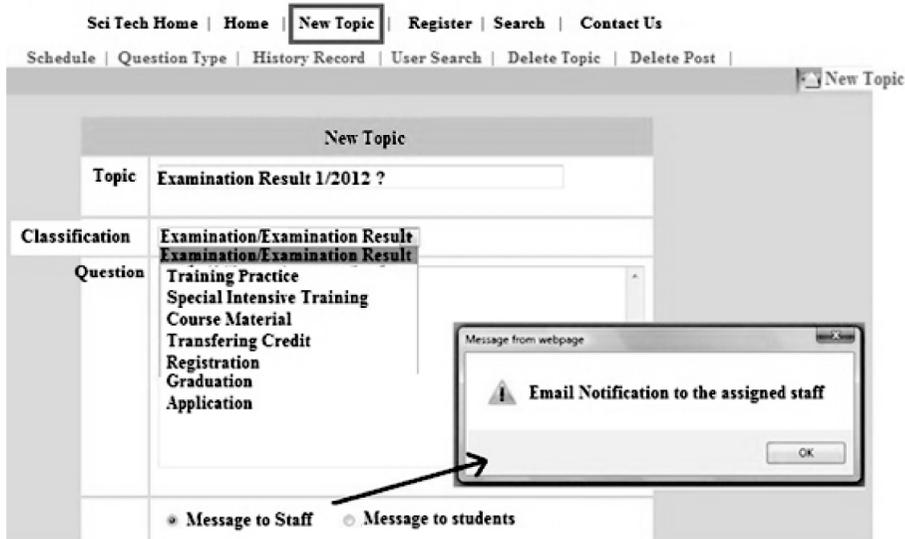


Figure 2: The example of posting new topic



- 2.2 Query Classification: There are 8 categories that users can choose from to classify their questions. The new topic creator has to identify the specific type of a question i.e. Examination/Examination Result, Training Practice, Special Intensive Training, Course Material, Transferring Credit, Registration, Graduation and Application.
 - 2.3 Data Logging: All relevant information posted in DS-SOS web board is recorded for referencing purposes at a later time. Examples of this useful information, presented in Figure 3, include titles of topics, dates of post, numbers of visitors and replies, names of topic creators, answerers' names and topic's classification.
 - 2.4 Frequently Asked Questions: Classification of topics and other relevant data are stored in the database and implemented as the FAQ function. Any users can search for a guideline of each problem case and follow its procedure to sort a problem out. Thus, FAQ is implemented as the preliminary solution. Figure 3 presents the example of Search and FAQ features. Users can reorder the topic lists subject to the alphabetical format or numbers of visitor or numbers of reply.
3. Interactive Session Control System: DS-SOS notifies all users when someone posts a new message in each thread. As a consequence, all users can continuously be updated with new information without any termination of connection. Communication channels between a topic creator and followers are still linked together. There are 4 sub-functions in this system supporting remote advisory web board service as follows:

[Sci Tech Home](#) | [Home](#) | [New Topic](#) | [Register](#) | [Search](#) | [Contact Us](#)
[Schedule](#) | [Question Type](#) | [History Record](#) | [User Search](#) | [Delete Topic](#) | [Delete Post](#) |

	Transferring Credit Examination/Examination Result Training Practice Special Intensive Training Course Material Transferring Credit Registration Graduation Application	Visitor Number	Reply Number	Date of Post
ขอสอบตามการเทียบโอนฯ[๔]		52	2	Wednesday, March 14, 2012
ขอสอบตามการเทียบโอนฯ[๔]		67	6	Wednesday, March 14, 2012
ขอสอบตามการเทียบโอนฯ[๔]		141	2	Wednesday, March 14, 2012
สอบตามการ เทียบโอนวิชา		79	5	Sunday, April 01, 2012
ลงทะเบียนครบ 3 วิชาแล้วสามารถโอนวิชาได้หรือไม่		26	1	Thursday, April 05, 2012
ลงทะเบียนครบ 3 วิชาแล้วสามารถโอนวิชาได้หรือไม่		14	0	Thursday, April 05, 2012
ลงทะเบียนครบ 3 วิชาแล้วสามารถโอนวิชาได้หรือไม่		49	1	Thursday, April 05, 2012
โอนวิชา		59	2	Monday, April 30, 2012
ต้องการทราบชื่อกำหนดการเทียบโอนชุดวิชา		42	1	Wednesday, June 06, ๒๐1๒

Figure 3: DS-SOS FAQ feature

- 3.1 Advisory Schedule: The DS-SOS administrator can assign the shifts for remote advisory support service via the DS-SOS web board. The email addresses of each staff will be matched with the advisory schedule on each day as illustrated in Figure 4.

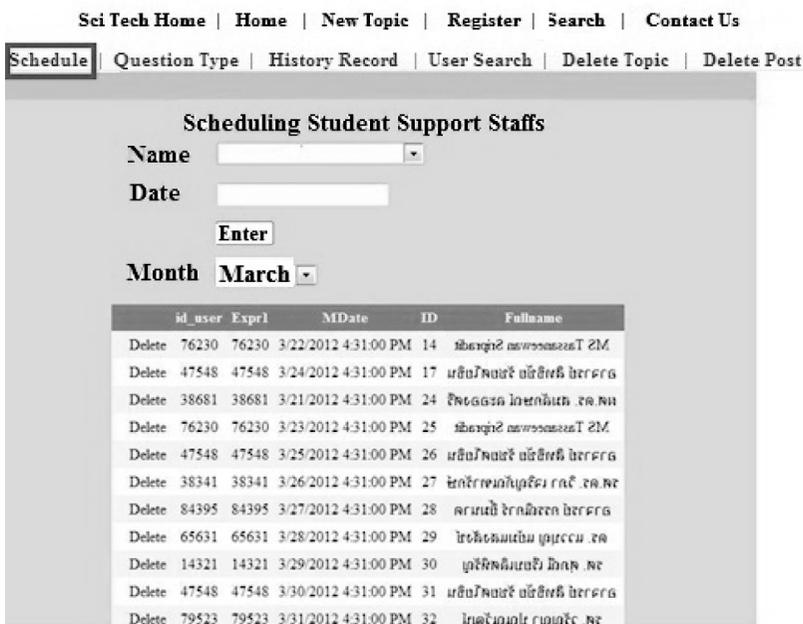


Figure 4: Scheduling student support staff

- 3.2 Staff Notification: Staff who operate the remote advisory support service will receive email notifying them when there are new messages for that designated staff to respond with. Furthermore, if there are further messages posted in the topics previously created, the staff who first respond to those topics will still receive emails from DS-SOS until no further messages are posted in those topics. It can be implied then that students are satisfied with the answers and their problems have been resolved.
- 3.3 Student Notification: Whenever a new conversation is posted either by other students or staff, all those following students' postings in that topic are notified by DS-SOS via email.
- 3.4 Interactivity Record: This function can help monitor the remote advisory support service of each staff member. Questions to and answers from each staff member can be displayed for the specified range of time as shown in Figure 5. However, having no record of answers does not mean that the staff involved have not provided remote advisory support service. Those staff might operate services over telephone, a school web board or through other channels instead.

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