

Research on the Implementation of a Web Based Institutional Support System for Middle East College: Proof of Concept Study

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The research mainly focuses on the mechanism of designing a Web-based Institutional Support System. The paper is aimed towards enhancing the studying and working experience, reducing the faculty man-hours and increasing the student and faculty satisfaction at Middle East College (MEC). Currently, Middle East College is not having any online platform where students or teachers can register their complaints, provide feedback/suggestions, report lost items, register or search for peer tutors etc. These are just some of the challenges currently being faced by the MEC community. The main objective of the paper is to conduct a study on the challenges faced by the student during their course of study at MEC, to provide a sustainable solution by developing an effective, flexible and versatile online system to automate the current manual procedures and make them easier to monitor, manage and resolve. The research analysis provides an effective tool for identifying the target problems. It focuses on the importance of having a user-friendly system that can be easily operated by people of average intelligence. Dynamic Systems Development Method (DSDM) is used for the research and development lifecycle as it mainly focuses on the expeditious delivery of the system within the specified time-frame and allocated budget. After considering and analyzing all the literature sources, gathered data and information, it is found that developing this system is an important step towards the betterment of the students and faculty. It not only improves the reputation and performance of MEC but also enhances the studying/working experience at MEC. By using the proposed system, verified users can log-on using their MEC ID's and password. The Institutional Support System contains various options such as Complaint Registration, Checking Complaint Status, Adding Suggestions/Feedback, Reporting Lost and/or Broken Items, Managing Peer Tutors, etc. You can also generate various reports on complaints, suggestions, and lost items etc. using the system.

Keywords: Online, Web-Based, Information System, Computing, Automated Process, Information Security, System Optimization, System Analysis and Design

Introduction

This research paper provides an in depth analysis on the mechanisms of designing a Web-based Institutional Support System for Middle East College. It is developed for the students, teachers and administration staff. It consists of a number of various useful features that can be used to replace the manual system that is currently being used at Middle East College.

Currently, Middle East College does not have any option in Student Information System (SIS) where the students and teachers can register their complaints. The students face a lot of difficulty because most of them do not know where to go and whom they should contact.

Similarly, Middle East College is not having any online electronic system to manage the lost and found items. The students usually face a lot difficulty if they lose any belongings. In addition to that, there is no proper system for handling the items that needs to be repaired.

Another problem that is currently being faced is that if you want to give any suggestion or feedback, you have to do it manually by yourself. You have to write your suggestion down on a piece of paper and drop it in the college suggestion box.

In addition to this, MEC is currently not having any online system where students can register as peer tutors. Peer tutors play an important role in helping the teacher and supporting those students who are weak in academics.

All of these problems can be solved and much more can be achieved using the Online Institutional Support System. It is an easy to use, easily accessible to all and time

saving approach to overcome the hurdles that are currently being faced in Middle East College.

Vast literature study was conducted on the recent techniques and terminologies related to the problem and it was decided to use Visual Studio (ASP.Net) for the proposed webbased interface and a secure Microsoft SQL server will be used for storing the database containing all the private data and information.

The Institutional Support System is a highly versatile system that is quite self-explanatory. It is developed while keeping in mind that majority of people with little to no technical knowledge should be able to use it. It automates the manual processes carried out at MEC to help improve the overall performance and enhance the campus environment. It not only provides a positive impact to students by making their experience studying at MEC more satisfying but also facilitates the teaching staff as well as considerably reduces the workload of the administrative staff. So overall, it proves to be a flourishing advancement for Middle East College.

II. SCOPE

An online platform is required by Middle East College to automate the existing procedures which are manually being carried out right now. Institutional Support System is specifically designed and aimed towards the students, teachers and administration staff of Middle East College. The system will improve the current operations and procedures at Middle East College so that the students and teachers can easily report their complaints, provide feedback, register as peer tutors, and search for peer tutors and so on. Moreover, the administration staff can also effectively manage the requests and take immediate action.

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As mentioned earlier, ASP.Net will be used for designing the online interface (front end) of the Institutional Support System. In the back end, Microsoft SQL server will be used for storing the database containing all the data and information.

A. Goals and Objectives

The proposed system mainly focuses on achieving the following,

- To identify the problems and propose a suitable solution
- To suit the individual needs of the users
- To develop a system that is efficient in processing the requests
- To develop a system that is effective in resolving the requests
- To provide opportunities for improvements in performance

B. List of Functionalities

Some of the main functionalities of the proposed system are listed below,

- Complaint Registration
- Compliant Status Checker
- Complaint Status Updater
- Suggestion and Feedback Submission
- Peer Tutor Registration
- Peer Tutor Search
- Lost and Found Requests
- Repair Item Requests
- Stationary Requests
- Pick and Drop Service
- Reports Generation

III. LITERATURE REVIEW

In this section of the research paper, we have conducted a detailed study on the similar systems, research articles and journals related to the area of this research paper. This provides a deeper insight into the chosen area of interest and provides an overview of how others have carried out their work in the same field.

A. Other Similar Systems The University of Queensland is Australia's top leading research and teaching institution. Their complaints management system is very effective in improving the students' services. It assists in identifying the systemic and reoccurring administrative problems. Complaints related to harassment, discrimination, un-satisfaction, misconduct, personal information and privacy breaches can also be issued using the online system. [1]

The Arab Open University (AOU) is a pioneer when it comes to new concepts in the delivery of university education at the highest standards. The Student Complaint System for Arab Open University is an online system administered by the Online Student Services department to enrich the student experience. [2]

The National University of Singapore (NUS) is recognized as one of the best in Asia, and the world. The online Lost & Found System allows the students to post a report of the item which they lost on campus. To access the online lost and found system they have to log into the system using their NUSNET ID and password. [3]

Scottsdale Community College offers a great college experience for students of all ages and aspirations. They have an online Suggestion Box where you can submit your suggestions. This system also asks the user which college employee need be informed about their suggestion and if they would like to have a personal response to their suggestion. [4]

The online lost and found system at Saint Louis University allows the students to report any lost item within the campus premises. You have to provide the property information such as the type of item that was lost, where and where it was lost along with the description of the item. The system also will display a list of all the lost items available at the Public Safety Department. [5]

The peer tutor registration system at Mohawk College is very beneficial because it makes the process of registering as peer tutor very simple. After logging into the system, you can browse through different modules and their schedules. You can choose a module and register yourself as a peer tutor for the selected module. [6]

The Bureau of Study Counsel handles the online peer tutoring registration system at Harvard University. In the last academic year, using the system approximately 400 students registered as peer tutors in over 200 courses and approximately 650 students received peer tutoring. [7]

B. Other Research Articals

Snehal Chaudhary, Poonam Gulhane, Deepika Rai and Navneet Poudutwar declared that a web based Complaint Management System provides an online way of solving the problems faced by the user and it also helps them by saving time. The presented work suggests that the main objective of any complaint management system should be to make the complaints easier to coordinate, monitor, track and resolve. The presented work also points out Cathy Costantino and Cristina S Merchant, and Karl A. Slaikeu and Ralph H. Hasson as they extensively explored the issues of designing complaint management systems. The work also gives an insight of how the proposed complaint management system has been designed by keeping in view the present and future requirements of the system and provides an efficient tool that helps to identify the target problem areas, monitors the complaints handling performance and make improvements with the passage of time. [8]

In 2006, Timothy E. Heron, Donna Villareal, Ma Yao, Rebecca J. Christianson & Kathleen M. Heron stated that peer tutoring approaches drastically improves the academic progress of students. The most systematic and well researched peer tutoring technique is related to peer-tutoring systems as it simplifies the process of evaluation and implementation. According to a survey conducted by the U.S. Department of Education in 2002, peer tutoring is an effective approach for teaching children. According to

(Heward, 1994), “*peertutoring systems are built on the foundations of active student response*”. Based on the studies conducted over the years, the authors claim that peer tutoring systems has an increasingly wide variety of applications. Results of these studies showed that students, teachers and parents favored peer tutoring system which is a positive impact for its continuation in the future. The presented work also focuses on the continued research on peer tutoring systems that can extend its applicability in an increasing number of environments such as public and private schools. [9]

Christiaan Van Dijk & Jan Van Den Ende stated in the year 2002, that “*suggestion systems are among the instruments for channeling creativity*.” The work demonstrates the successful use of suggestion system. Suggestion systems are used to capture the ideas and suggestions from the end users which can be customers, employees, and /or students depending on the environment. The functioning of any suggestion system basically consists of three phases; idea extraction, idea landing and idea follow-up. In the idea extraction phase, the end user shares his or her idea or suggestion with the organization. In the idea landing phase, the idea is set down in the organization for consideration. And finally the idea follow-up is the processing of the idea or suggestion into a proposal. The authors claims that suggestions systems provide a systematic and formalized mechanism that encourages the users to contribute ideas, suggestions and feedback for improving the performance of the organization or institute. [10]

In 2002, Yooncheong Cho, Il Im, Roxanne Hiltz & Jerry Fjermestad stated that web based customer complaint management system handles the customer dissatisfaction which is a critical issue for the online customer service solutions. In the presented work the authors investigate the current online complaint systems, examine the effective ways of handling the complaints and provide guidelines for developing a successful complaint management system. The authors also state mentions that successful complaint management system requires a stable and consistent strategy which focuses on the main goal of maintaining customer loyalty. The proposed system should also handle the problems and issues raised by the customers. Web based complaint management systems are considered as an important aspect of online strategic marketing tool. [11]

IV. METHODOLOGY

Dynamic Systems Development Method (DSDM) is a suitable approach for Institutional Support System (ISS) because it allows frequent changes and additions throughout the development life cycle. It is appropriate because all the requirement changes during the development lifecycle are reversible. Multiple prototypes of the system can be created before finalizing the design for the final system. Each prototype can be reviewed and modified as required until all the requirements are satisfied.

Since ISS is an online system it requires active user involvement and DSDM supports the active involvement of

the user. It also focuses on designing, developing and implementing the system on specified time as well as within the pre-defined budget. DSDM is a highly versatile methodology that allows you to build multiple prototypes until all the requirements are fulfilled and the final design consists of all the necessary features and functionalities.

A. Advantages

DSDM provides a lot of beneficial advantages over the other methodologies. Following are the advantages of applying Dynamic Systems Development Method for Institutional Support System,

- It is one of the most suitable and flexible methodology for developing online systems.
- Main focus is on the expeditious delivery of the system within the specified time frame and allocated budget.
- Requirement changes are frequent and all changes during the development life cycle are reversible.
- Active user involvement is imperative during the last three phases of the development cycle.
- Suitable for small and large projects and provides prototyping feature along with feasibility and business study.
- Testing is conducted throughout the lifecycle to ensure high quality standards.

B. Life Cycle

The lifecycle of Dynamic Systems Development Method consists of four primary stages; feasibility study and business study, functional model iteration, design and build iteration, and implementation.

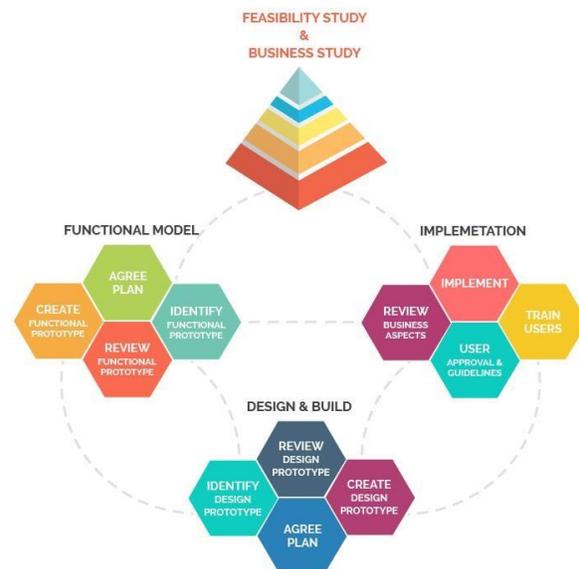


Fig.1 Lifecycle of Dynamic Systems Development Method

In Figure 1, during the feasibility study; we will focus on the analysis and evaluation of the Institutional support system. The problem will be defined and the proposed system (ISS) to solve the problem will be represented. We will determine whether or not the ISS will be technically feasible and profitable.

A functional prototype of Institutional support system will be created during the functional model iteration after settling on an agree plan. Once the prototype of ISS is created, it will be reviewed and evaluated. After identifying all the necessary changes required in the prototype; the ISS prototype will be modified as necessary. This process will be continuous until all the functional requirement changes in the ISS prototype are identified. All the analysis, coding and testing will be done during this phase as well.

During the design and build iteration, the final design prototype of the Institutional support system will be created with all the required functionalities. After agreeing upon the final prototype, the final ISS design model will be created. It will be coded and reviewed to ensure that it contains all the required system features and functionalities.

In the implementation phase, the requirements of the Institutional support system will be compared to ensure that the system contains all the necessary features as proposed. After reviewing and getting approval from the users, the Institutional Support System will be implemented and training will be provided to the end users if necessary.

C. Comparison with other methodologies

In this section, we have compared the functionalities of different methodologies with dynamic systems development method to have a better understanding of the features that it provides.

TABLE I. Comparison Table

Functionalities	Different Methodologies		
	<i>DSDM</i>	<i>Prototyping</i>	<i>Incremental</i>
Flexibility	Fully	Fully	Moderately
Cost	High	High	High
Development Time	Moderate	High	High

Risk Factor	Less	Adequate	Moderate
User Interaction	High	High	Less
Time Required	Moderate	More	More
Resources Required	More	More	Few

TABLE I. shows a clear comparison of how the different functionalities that are provided by these methodologies vary from each other in terms of cost, time, and effort. DSDM has been selected for the proposed system after considering all of these prominent factors so that the final system is up to the standards.

V. DATA ANALYSIS

In this section, the analysis of the data collected through surveys conducted at Middle East College by distributing questionnaires is presented. Following are the results of the analysis regarding their opinions about the Institutional Support System,

A web based Institutional Support System will be more useful over the existing manual processes currently being carried out?

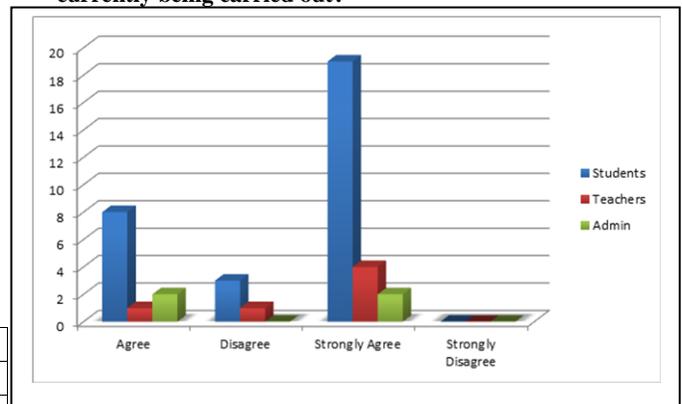
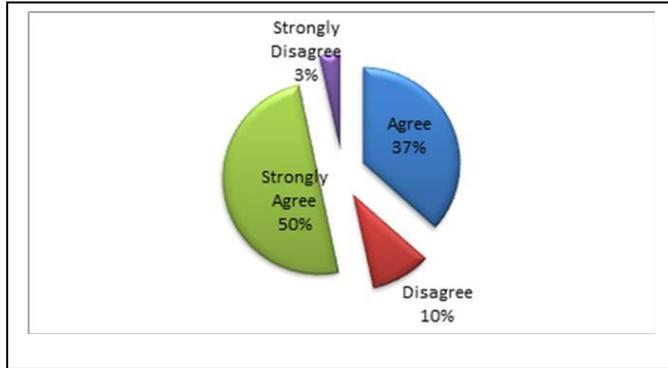


Fig.2 Results of survey conducted at MEC

From Figure 2, it is clear that majority of the respondents agrees to the fact that a web based College Support System will be very effective and efficient approach to replace the

There should be an online system where everyone can register complaints and provide suggestions?



manual processes.

It will enhance the experience of the students, teachers and admin staff as they are the end users who will be using the system on a regular basis.

Fig.3 Results of survey conducted at MEC

In Figure 3 after analyzing the data, more than 80% of the respondents agree to the fact that is a need for an online suggestion and complaint system where they can easily add suggestions and submit complaints without any hustle.

The current process of finding a lost item is quite hectic and time consuming?

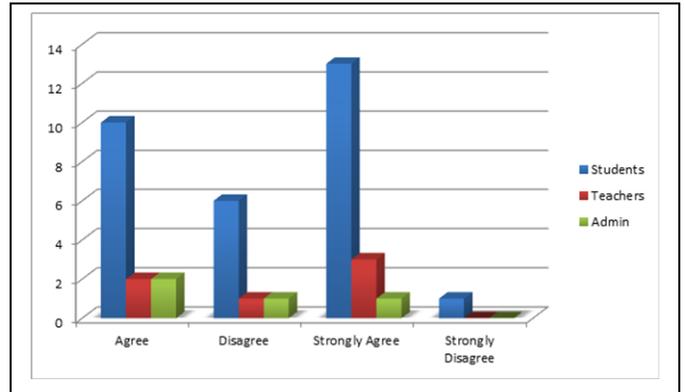


Fig.5 Results of survey conducted at MEC

It is clear from Figure 5 that majority of the students, teachers and admin istration staff agrees to the fact an online web based system for registering complaints is much more effective and efficient. The proposed system will turn out to be a success among them as they are the end users who will be using the system on a daily basis

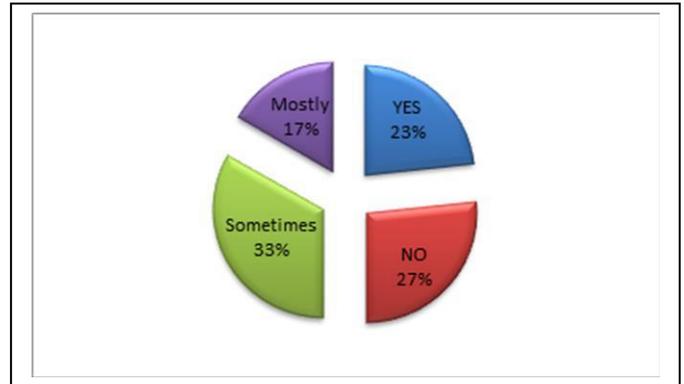


Fig.4 Results of survey conducted at MEC

It is clear from Figure 4 that more than 60% of the respondents feel that the process of finding lost and found items is quite hectic and time consuming. Many of the students are busy with their assignments and projects, and hence do not want to waste their time going from one place to another. Using the online system they can simply report the lost or found item without any hustle.

An online system for registering complaints will be more effective and efficient?

VI. PERFORMANCE MEASURES

Performance requirements define how well the system is supposed to work for which it is developed for. The system

should meet all the performance targets and resolve any performance issues. To assess the performance of the system; the following performance requirements should be satisfied,

□ Response Time

The system should have quick response time to keep the user's attention focused. When the user is using ISS, it should make the user feel that the system is reacting instantaneously.

Great consideration should be taken to ensure that the performance measurements are concise and clearly defined. A delay in the response time affects the performance of the system (ISS).

□ Workload

The workload specifications of ISS must be met check to ensure that all relevant functionalities have been covered in the institutional support system. If the workload specifications are not clearly stated and met, it can disrupt the performance of the system immensely.

The workload specifications not only include user workloads but also management requests, error handling and backups. After considering the entire load, the entire workload should be specified and defined that needs to be supported by the system. The performance of the Institutional Support System depends on how the load is delivered to the system.

□ Scalability

The ISS should be highly scalable and it should be able to process the requests flexibly. The system should be scaled to perform well under all the workload. A system with high scalability will be able to maintain its level of performance and efficiency over the span of time.

□ Platform

Different factors must be taken into consideration when deciding what platform should be used for developing the Institutional Support System. It is important for the developer to know exactly what should be specified and understand the capacity of the platform to fulfill all the necessary performance requirements. All the external resources such as connections to the databases etc. should be considered whether everything will be compatible with the platform or not.

□ Quality

It is necessary to achieve all the quality requirements of the ISS in order to maintain and achieve high system performance. Quality testing and monitoring should be conducted to ensure that the system is up to the specified quality standards with high level performance. Results of the quality testing/monitoring should be used to improve the overall performance of the ISS system.

VII. CONCLUSION

Outstanding service is a genuine key for a better and prosperous future for any institute but this can only be

achieved with effective problem solving techniques. A fundamental element for developing Institutional Support System comes from complete user satisfaction.

After thoroughly analyzing the research we come to this conclusion that Institutional Support System is a highly versatile system that is quite self-explanatory. It is developed while keeping in mind that anyone with little to no technical knowledge should be able to use it.

It automates the manual processes that are currently being carried out at Middle East College. It not only helps the students to make their experience studying at Middle East College more satisfying but also facilitates the teaching staff as well as reduces the workload of the administrative staff.

Before the implementation of Institutional Support System at Middle East College, the average closing time for answering complaints and other requests normally takes weeks. But after its implementation, it will only be a matter of days. Hence, the overall percentage of closed cases and requests will be increased drastically.

In the future, a cross-platform mobile application is planned to be developed for the system having all the feature of the online system. By doing so, accessing the system will be with more ease.

Institutional Support System is not only confined for Middle East College, it should be implemented in every educational institute, regardless of its size and structure.

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