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Design and Implementation of a Poll Management System for Computer Science Department Ogun State Institute of Technology, Igbesa, Nigeria

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ABSTRACT

This study identify the use of online surveys in education; detailing systems currently used by many institutions to facilitate the creation of a web base Survey System that would solve the latter challenges. The principal idea was to create a system that would provide the Ogun state institute of Technology, Igbesa Computer Science department with a web-based tool for creating surveys and administering them online. The surveys will be created by departmental members; Survey Administrators, and administered to students. With the system, departmental members are able to create surveys for classes taught, providing questions and responses deemed suitable. Once a survey is administered, students can access the survey by logging onto the system. Upon authentication students are able to complete surveys online. The system stores survey criterion in a database, which is retrieved when generating a survey for a survey taker to complete. The system developed focused on providing functionality that would increase the convenience of completing evaluation surveys and protect anonymity of students.

Keywords: Poll management, survey, web base system .

INTRODUCTION

Electronic surveys are commonly accepted as one of the standard tools to facilitate the research process, both in academic and commercial environments, where they tend to replace traditional media. The reasons for the success of electronic surveys lie in both the gaining momentum of computing technology and the increase in the number of technically proficient users that are able to take advantage of it (Walt, Atwood, & Mann, 2009) (Yun & Trumbo, 2000) (and thus might simply be prone to favor electronic medium (Shannon, Johnson, Searcy, & Lott, 2011)). Despite response rates of electronic surveys being generally lower (Gunn, 2011) (Kaplowitz, Hadlock, & Levine, 2004) (Klassen & Jacobs, 2001), factors like cost, flexibility, comparative easiness of computerized evaluations, broader reach possibilities (Andrews, Nonnecke, & Preece, 2003) and even more obscure metrics such as researcher's safety (Andrews, Nonnecke, & Preece, 2003) also make electronic surveys highly advantageous over their traditional counterpart.

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It is also pertinent to note that most of the research suggesting lower response rates for electronic surveys as compared to more traditional types, tends to be rather dated and itself suggests the reason being in the lower technological capabilities of the responders (Klassen & Jacobs, 2001), which in itself has become much less of an issue in the latest decade.

1.1 Background of the Study

Surveys is a means of determining a population's characteristics, self-reported and observed behaviours, awareness of programs, attitudes or opinions, and needs (Sekaran, 1992). It is an ideal mechanism to gather and analyze large amounts of direct feedback about someone's members, prospects, and employees. In supports of gathering big amount of data, computer technology may be a good option (Hair,et al., 2006). In fact, it is commonly experienced that surveys are distributed through emailing services. Also, there are Web-based systems developed for administering survey practices. A web-based survey is the collection of data through a self-administered electronic set of questions on the Web (Thomas, 2003). Web-based surveys are able to conduct large-scale data collection. Web-based survey management system encompasses how the organizations organize, run and manage various types of surveys through the internet networks. It lets the user not only to build questionnaires but also to publish questionnaires to the respondents. This technology provides an inexpensive mechanism for conducting surveys online instead of through traditional survey methods. Also, it speeds up the distribution and response cycles. Web-based surveys are expected to be popularly used.

However, it is observable that most people or organizations manage their survey using traditional method by distributing their survey through the mail or by telephoning, and some may afford to self-distribute by hand (Ariffin & Norshuhada, 2008; Zulikha & Ariffin, 2005; Tronstad, Phillips, Garcia, & Harlow, 2009). In current age, where digital is the theme, this is not a timely solution for gathering information because it does not have fast circular returning and responding from the respondents. Other issues such as cost, time and effectiveness are also within considerations. Therefore, a conceptual model of web based survey management system is required to be the solution for these issues. This initiative is proposed to solve problems as described in the next section. There are many types of surveys carried out by researchers which are by distributing the questionnaires to potential respondents manually through mail.

This method requires cost, time, and efforts (Sekaran, 1992; Hair et al., 2006). A preliminary study involving 12 lecturers found that they agree to implement any tool that can assist them in administering survey practice. There are many commercial web-based survey management systems, but users have to pay for use besides having to register. When these were asked to the lecturers, they prefer not to use the commercial web-based survey management system because they do not have trust on the system. This shows that the lecturers want to use any tool that help them in administering their survey practice, but the system is more preferably be in-house. Based on the described problem, a web-based system will be developed.

The system will be designed to cater the needs of traditional survey practice; including functions to disseminate questionnaire, gather feedback and store data, specify the period, and analyze the data (Sekaran, 1992; Barnum, 2002; Hair et al., 2006). Accordingly, this study is proposed to determine functional components of the system, to develop a prototype of it and to evaluate the prototype of polling system in terms of usefulness and ease-of-use This study is expected to contribute significantly to different parties, including to the body of knowledge and to the researchers.

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2. REVIEW OF RELATED WORKS

Nowadays, Web-based surveys are everywhere on the Internet. There are various categories of Web-based surveys. According to (Couper, 2000), there are two major categories of Web based surveys: probability-based or non-probability-based surveys. (Couper, 2000) included the following in the non-probability-based category: Entertainment surveys, Self-selected Web-surveys Surveys made up of volunteer panel of Internet users Entertainment surveys consist of questionnaires that request a vote on particular questions and other instant polls. Usually, people need to spend a lot of time to complete an entertainment survey. These surveys do not lead to generalizations of viewpoints across populations, and are not intended for that reason. Other non-probability-based surveys include dedicated survey sites maintained by owners of Web sites. Such surveys could allow multiple submissions, and make no attempt to be representative of the whole Internet population. On the other hand, there are several types of probability-based Web-based surveys as listed below (Couper, 2000): Intercept surveys which are frequently used to survey on customer satisfaction (Couper, 2000):

2.1 Overview of related work / Comparable Survey Systems in Current Use

There are few systems already in existence implementing the same basic goals as the system that will be produced as a result of this thesis. The first is the Web-Online Feedback system (WOLF). This was implemented as part of research at Queensland LIniversity of Technology [Nulty, 2000]. The research aimed to "overcome the common problem with student evaluation of teaching" [Nulty, 2000]. The research found that "qualitative components of student evaluations (in particular student comments) were not being made available to teaching staff concerned until sometime after the teaching has occurred." The system developed offered a user-friendly, web-based interface that allowed users to generate web- based questionnaires. Access to the system was 24 hours a day. The main goals for the system were:

1. Reduce/remove delays in receiving feedback from paper-based surveys.
2. Improve on the range of different ways that people have to obtain feedback on conceivably any aspect of their work or service.
3. Support the gradually changing ethos surrounding evaluation of teaching and units from one-off sporadic evaluations to that which evaluation is seen as an integral part of the daily practice.
4. Enable people to obtain context-specific feedback as and when it is needed.
5. Ability to review pre-existing questions available in item banks (for paper and pencil questions) to ensure that issues explored questions posed are adequately represented in those item banks.

It was found that academic staff opposed questionnaires which made use of a "fixed bank of optional items or consisted of a fixed set of compulsory items limiting them from conducting meaningful evaluations in relation to their context" [Nulty, 2000]. Hence, as part of the fourth goal of the system, WOLF allows people to specify their own questions. The system was not used as expected, so the success rate was low. However, there was success with the response rate of questionnaires created on the system "by lecturers in the faculty of Information Technology and Brisbane Graduate School of Business" [Nulty, 2000].

The second system was a pilot program for an evaluation system implemented by the College of Computer Science, Mathematics and Physical Science at the University of Maryland. Instead of building a system from the ground up, the researchers made use of the features available in WebCT [Denman, Robinson &White, 2004]. The feasibility of moving from classroom paper-based evaluation to web-based evaluation forms was investigated by the Physics department. The paper-based forms were mimicked within a web interface to a database.

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The success of the pilot was measured by the amount saved on paper and scanning cost (scan of paper forms). The pilot also eliminated sources of potential error (damaged or misplaced scan sheets). This also reduced the amount of time required to produce the final reports. In this study, a clear picture about the web-based survey and the administration process are needed in order to come out with the Polling system. All stages must be done one by one.

3. METHODS

After obtaining user requirement in the analysis phase through comparative study and user interviews, it is appropriate to justify on how it meets the identified requirements. In this stage, the interfaces for the prototype will be designed. Besides, the database will also be designed and developed. The prototyping process comprises of three steps which are adapted from Prototyping Process (Laudon, 1995), as shown in Figure 3. Prototyping provides end users with artefacts that allow them to gain insight into the behavior of the system before the final delivery.
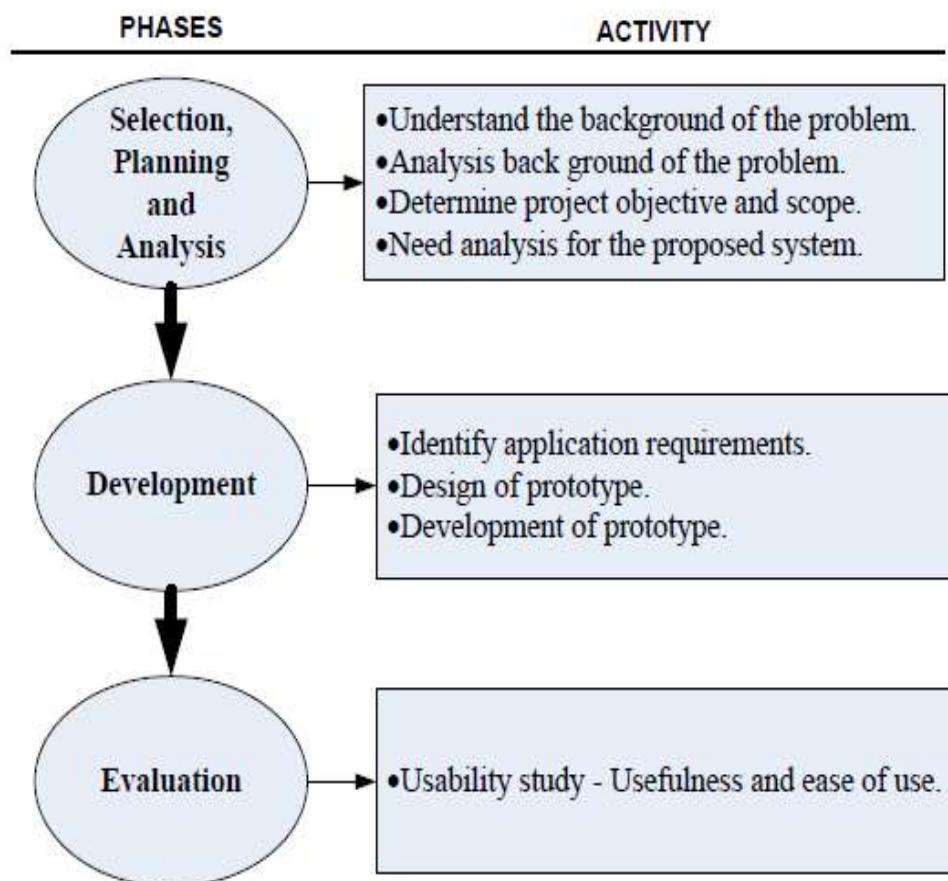

Figure 2: Methodology Design

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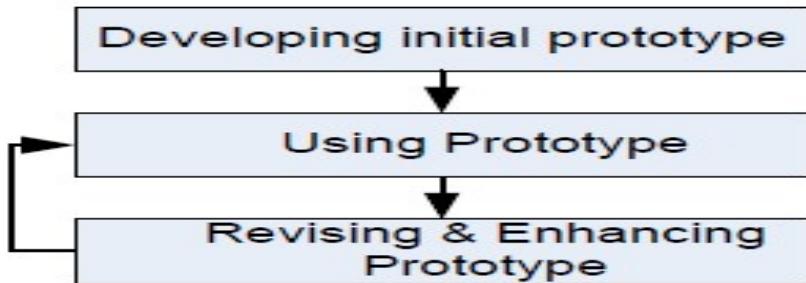
Figure 3: Prototyping Process

3.1 Evaluation

Finally, the polling system will be evaluated. 60 lecturers of computer science department will involve in the evaluation; First, the lecturers will be demonstrated with the Polling system, and then they will try the system on their own. A week will be allocated for the lecturers to try the polling system. Then, their responses on the usefulness and ease of use of the polling system will be gathered through an instrument. This study has decided to utilize an existing instrument. The instrument by (Davis, 1989) that measures Perceived Usefulness and Ease of Use) has been widely used in various fields of study such as banking , education, and marketing.

3.2 Use Case Model
Actors and their Goals
**1. Respondent: a. Log into system**
b. Answer survey questions

2. Staff: a. Log into system
b. Manage respondent data
c. Manage survey questions
d. Manage surveys
e. Manage help documentation
f. Send e-mail notices
g. Generate reports

3. Administrator:
 a. Same goals as Staff, plus
b. Manage system access
c. Back-up system data

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3.4.1 Use Case Diagram
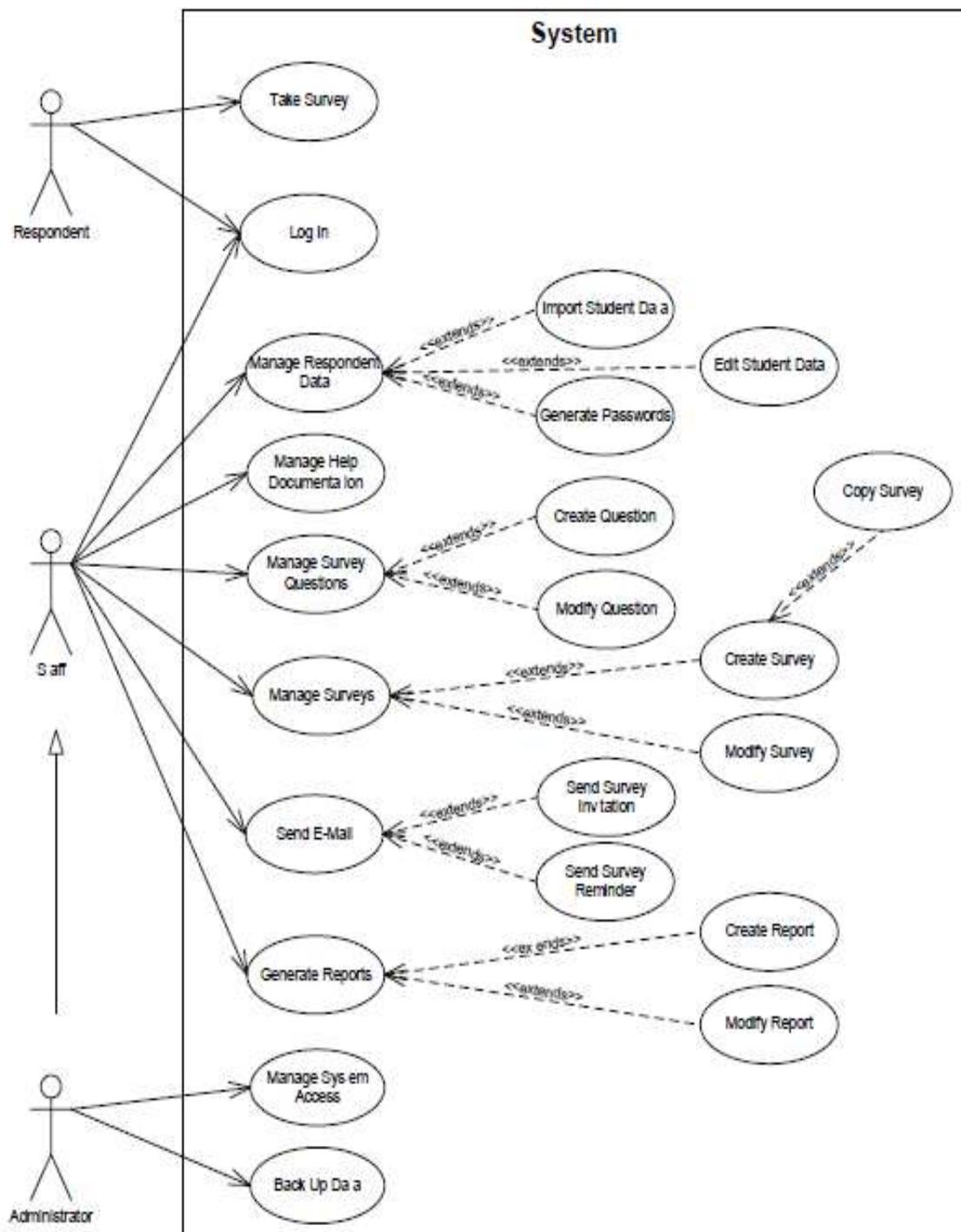
Analysis and Design of a Survey Management System Tamara Barker (11861636)

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4. RESULT AND DISCUSSION

Performing analysis and design of a Survey Management System was a good project for an individual project. Neither the scale nor scope of the domain was so large as to be overwhelming for just one individual, although completing the project as an individual rather than as part of a team does have its challenges in terms of not being able to share the workload or having other people with whom to brainstorm ideas.

The hardware basic requirement of the system includes:
1.   Processor   Dual core and above
2.   RAM   2 GB RAM and above
3.   Hard Disk   100GB and above
4.   Mouse   Standard Mouse
5.   Keyboard   Standard Keyboard
6.   Processor Speed   2.4GHZ and above

4.1 Software Requirements
The software basic requirement of the system includes:
1.   Operating System: Microsoft Windows XP With Service Pack 2, Microsoft Windows7,8 &10, Linux OS rpm.
2.   Front-End: Sublime Text 3, PHP4.0 or higher
3.   Back-End: MySQL 4.0.1.8 or higher, PostgresSQL8.0 or higher (Standard Conforming strings must be set to off, starting from PostgressSQL9.1 default is on)
4.   Web server with approximately six megabytes of available disk space.
5.   A web server that supports PHP, such as Apache or IIS.

4.2 Programming Language Used
A programming language is an artificial language designed to communicate instructions to a machine, particularly a computer. Programming languages can be used to create programs that control the behavior of a machine and/or to express algorithms precisely. Programming languages are sets of codes that are not understandable by the computer. MYSQL is a structured query language that is used to store information. The MYSQL comes with the database server, different client application and several utilities.

Managing HTML form is a two-step process, first you create the HTML form itself using any text editor you choose and then u create the corresponding PHP script that will receive and process the form data. One of the task that your application must do is move data into and out of the database and PHP has built-in features to use when writing program that move data into and out of the MYSQL database The brief overview of the technology/ tools used for the designing and structuring of the OGITECH Forum system are:

Front End: HTML, CSS, JavaScript
1.   **HTML**: HTML is used to create and save web document. E.g.Notepad/Notepad++
2.   **CSS** : (Cascading Style Sheets) Create attractive Layout for the forum
3.   **JavaScript**: it is a programming language.

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Back End: PHP, MySQL
1. **PHP**: Hypertext Preprocessor (PHP) is a technology that allows software developers to create
2. dynamically generated web pages, in HTML, XML, or other document types. PHP is open source software.
3. **MySQL**: MySql is a database, widely used for accessing querying, and managing data in databases.

4.3 System Testing

As the part of system testing we execute the program with the intent of finding errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied. The ultimate aim is quality assurance. Tests are carried out and the results are compared with the expected document. In the case of erroneous results, debugging is done. Using detailed testing strategies a test plan is carried out on each module. The various tests performed are unit testing, integration testing and user acceptance testing.

i. Unit Testing

The software units in the system are modules and routines that are assembled and integrated to perform a specific function. As a part of unit testing we executed the program for individual modules independently. This enables, to detect errors in coding and logic that are contained within each of the three modules. This testing includes entering data that is filling forms and ascertaining if the value matches to the type and entered into the database. The various controls are tested to ensure that each performs its action as required.

ii. Integration Testing

Data can be lost across any interface, one module can have an adverse effect on another, sub functions when combined, may not produce the desired major functions. Integration testing is a systematic testing to discover errors associated within the interface. The objective is to take unit tested modules and build a program structure. All the modules are combined and tested as a whole. Here the admin module, sec module and student module options are integrated and tested. This testing provides the assurance that the application is well integrated functional unit with smooth transition of data.

iii. User Acceptance Testing

User acceptance of a system is the key factor for the success of any system. The system under consideration is tested for user acceptance by constantly keep the records of applicants and making changes to the details and password whenever required.

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4.4   System Description

1.   USER LOGIN PAGE: It enables the authorized users and administrator to login and have access to the system.
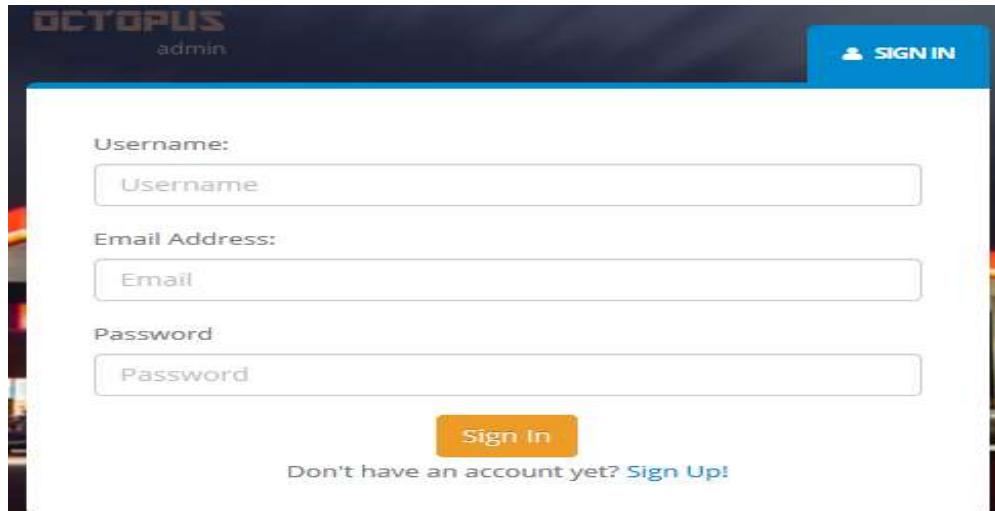
2.   DASHBOARD PAGE: This page displays the landing page after the user logs in.

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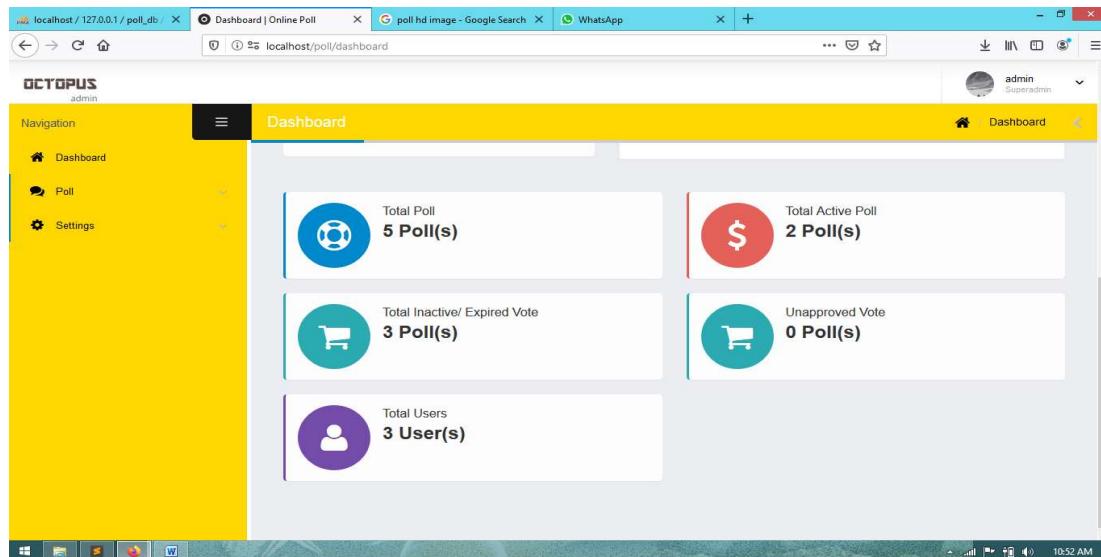
3.　　　**ADD POLL PAGE:** This page displays the where the admin add a new poll/survey.
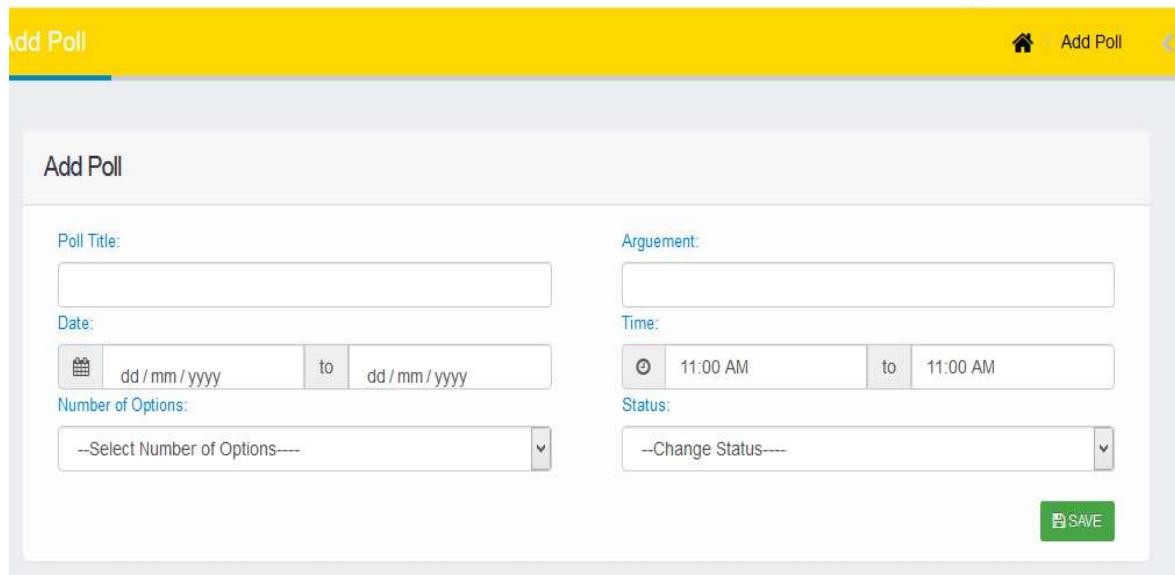
4.　　　**MANAGE POLL PAGE:** This page displays the where the admin checks and edit all the poll/survey.
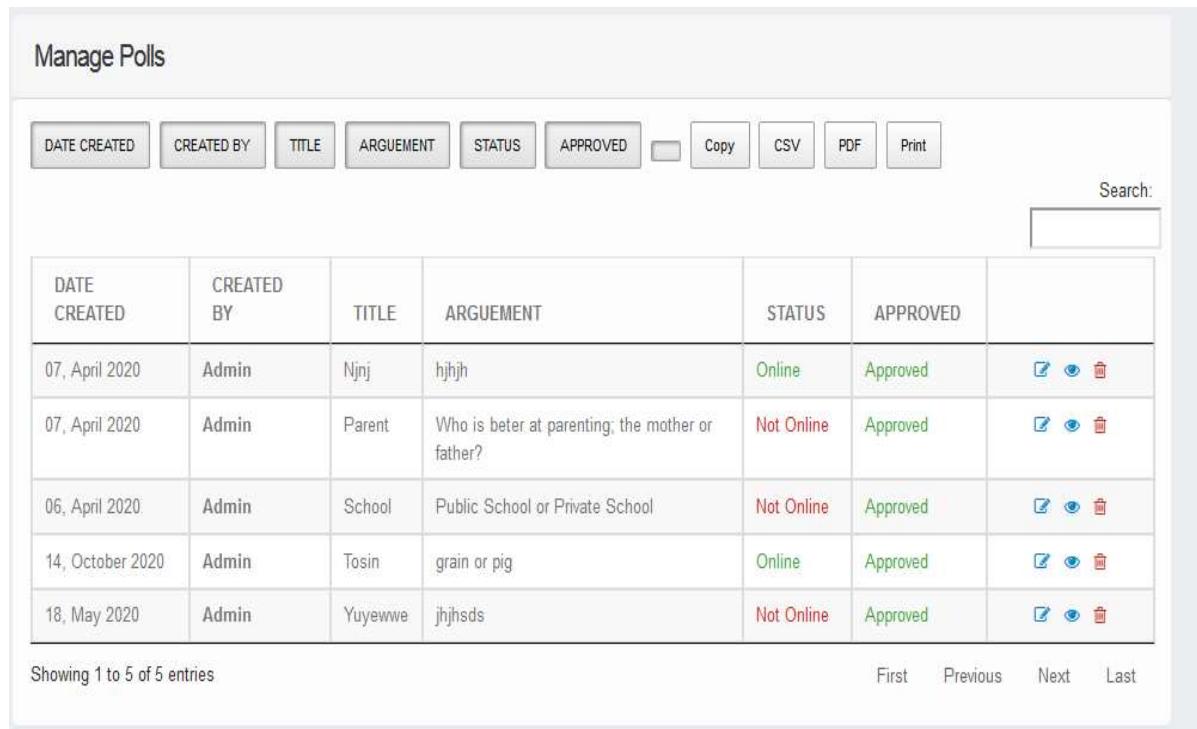
DATE CREATED	CREATED BY	TITLE	ARGUEMENT	STATUS	APPROVED	
07, April 2020	Admin	Njnj	hjhjh	Online	Approved	✎ 👁 🗑
07, April 2020	Admin	Parent	Who is beter at parenting; the mother or father?	Not Online	Approved	✎ 👁 🗑
06, April 2020	Admin	School	Public School or Private School	Not Online	Approved	✎ 👁 🗑
14, October 2020	Admin	Tosin	grain or pig	Online	Approved	✎ 👁 🗑
18, May 2020	Admin	Yuyewwe	jhjhsds	Not Online	Approved	✎ 👁 🗑

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5. CONCLUSION

The design and implementation of the web based poll management system should be seen as a contribution towards analysing and generating polls in the department. This project tried to draw attention of everybody to the usefulness of computer in surveying industry. The development of the Online Survey system was successful and provided the functionalities initially proposed. However, when considering the further development and improvements for the system, a few new features were realized. These features are outlined below with an explanation of their purpose.

Updating of questions and answers to the database
Currently the option to update questions and responses are available, but when these changes are written to the database a new survey is created. It is desirable that updates to survey questions and answers be written to the database as updates rather than new records. Ability to resend surveys to different groups of students than those which they were originally sent .Once a survey has been distributed to students, a survey administrator can only send reminders to the group of students the survey was initially distributed to. The system does not allow a survey administrator to include another group of students to receive the survey.

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