IMPLEMENTATION OF AN ONLINE TEACHER ASSESSMENT/APPRAISAL IN TECHNICAL EDUCATION INSTITUTION: A Case Study

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ABSTRACT

Presence of a teacher appraisal system plays a major role in deciding the level of professionalism of an educational institution. In addition to this it also plays a major role in improvement in quality of education imparted by the teacher. Recently assessment of the teaching fraternity has become indispensable measure and thus it is necessary to explore a new assessment techniques and proper implementation of the same in an institution. The paper discusses a case study of implementation of teacher appraisal system which initially non existed. In the first phase it was implemented using printed data forms and subsequently in the whole system was converted to online system, at NIT, Jamshedpur, India .The implementation of online system had reduced the man-hours required in manual processing of all data significantly, and also reduced chances of erroneous results in the process making the system robust.

Keywords: **Faculty, appraisal criterion, online, webapps, appraisal methodology,**

INTRODUCTION

Higher educational institutions, where the intellectuals assemble, are the main support for the progress of science and technology and economic development of the society. How to reasonably rate the work of teachers and subsequently present a suitable system of rewards and penalties is of great significance to motivate the teachers to strive. This is the key point to promote the reformation of the system of higher educational institutions. Although many meaningful attempts have been made in many institutions, all these remain in qualitative description and lack of operability. Considering both scientific research and teaching institutions should introduce a way that is a combination of quantification and qualification to present a methodology to rate the work of teachers, and then give a reformation scheme of the system of higher educational institutions. Some universities have introduced teacher appraisal systems and the methodology adopted varies widely. In this paper a case study of implementation of a teacher appraisal system is discussed.

A well planned and carefully implemented teacher appraisal system can have a far reaching impact on teacher effectiveness, while a poorly planned one can dampen teacher morale and have a negative effect on teacher performance, good practices of a teacher appraisal system may enable personal and professional growth of teachers and form the basis for fair and constructive personal decision (Alan and et.al, 2002).

TEACHER APPRAISAL SYSTEM

Various types of teacher appraisal system have been developed by different researchers throughout the world. The work of Ern Reeders and Helen & Marshall (1996), specifically aims at teachers in institution of higher learning. The practices associated with effective learning are as below:

- **Flexibility in approaches to teaching and learning (including assessment)**
- **Good organization of subject matter and course, including relevance and coherence of content and planned teaching/learning activities**
- **Effective communication**
- **Knowledge and enthusiasm for subject matter and teaching**
- **Facilitation of learning through student interaction and active experience**
- **Respect for and positive attitude toward students**
- **Critically reflective orientation to teaching including effective use of feedback to guide learning and improve teaching**
- **Appropriateness and fairness in assessment and grading**

However, the correlation between these practices and learning is observed not to be perfect; that is, some students still learn without them being present (e.g. when very able students are admitted to a course, experience poor teaching, but effectively learn on their own initiative). Another learning approach, which may be adopted, is the 'duties' approach reported by Dennis C. Stacey, David Holdzkom and Barbara Kuligowski (Dennis and et. al, 1989). This suggests that teacher's professionalism ethically requires that certain things be done in organizing, facilitating, assessing and evaluating teaching/learning practices. Pioneering work in this area has been done by Robert B. Pittman and John R. Slate (Robert & John, 1989), in planning of a faculty evaluation system in higher education certain psychometric questions must be addressed for example the aim of the evaluation, areas of faculty responsibilities to be evaluated, the objective limits of the evaluation etc.

A CASE STUDY OF NIT, JAMSHEDPUR

In this work a case study of the implementation of a teacher's appraisal system, which was implemented at the National Institute of Technology, Jamshedpur, INDIA is reported. Prior to the implementation of this no credible appraisal system existed. In the first phase the teacher appraisal system was implemented using printed data forms. The parameters on which the teachers were assessed/appraised by the students taking a particular subject/course is as per forms (Table: 1).

The forms were distributed to each student taking a particular subjects/courses and the student was asked to appraise the teacher for that particular subject/course. The forms were subsequently collected and manually processed, making the entire exercise a tedious one and also there was always a scope for errors. In the second phase the above mentioned appraisal system was implemented on online system developed for the same.

APPRAISAL METHODOLOGY

The ten parameters on which teachers were appraised are as performs in Table: 1. The students were required to rate each teacher on a (monthly basis) in five categories (Excellent, Very Good, Good, Fair or Poor) for each of these parameter. Subsequently the rating given by all the students for each of the parameters was summed up and an average rating for that particular parameter was calculated. The appraised teacher could go through his average performance for each of these parameters.

ONLINE TEACHER APPRAISAL METHODOLOGY

A software was developed in order to streamline the process of obtaining feedback of teachers, from the students, at NIT, Jamshedpur. Various possible options for implementing the system has been discussed below and option chosen indicated with reasons for the choice. The possible objectives of this work of the development of software are as follows:

- **Confidentiality for the appraiser**
- **Convenience for both appraiser and appraised**
- **Scope of retrospection for teacher**
- **Performance evaluation for improvement**
- **Identification of deficiencies or weaknesses.**

Platform Used

The software was developed taking into consideration different types of computing systems like Windows XP/Windows 98/Unix/ Linux available in the institute. Thus the software to be developed had to be machine independent and thus OS independent so that the feedback could be given from any type of computer system.

Computing Architecture

The institute has hundreds of computers in a network and thus the computing architecture chosen had to be based on client-server model as monolithic application would require the software to be loaded on each system and also data collection would be tedious.

Characteristics Of Client-Server Model

- **The other characteristic of client-server architecture is that it enables the roles and responsibilities of a computing system to be distributed among several independent computers that are known to each other only through a network. This creates an additional advantage for this architecture: greater ease of maintenance. For example, it is possible to replace, repair, upgrade, or even relocate a server while its clients remain both unaware and unaffected by that change.**
- **All the data are stored on the servers, which generally have far greater security and controls than most clients. Servers can better control access and resources, to guarantee that only those clients with the appropriate permissions may access and manipulate data.**
- **Since data storage is centralized, updates to those data are far easier to administer than would be possible under a P2P paradigm.**
- **It functions with multiple clients using different OS as well as different hardware configuration**

The various types of programming environment suitable for this type of work are as follows:

- **Web–based application (web apps)**
- **Distributed application**
- **Real–time application**

The inherent advantages and features of web-based application are that they are small, platform-independent programs, capable of being executed inside a client program,and can be accessed via web over a network such as the Internet or an intranet. Though many variations are possible, a web application is commonly structured as a three-tiered application. In its most common form, a Web browser is the first tier, the engine using some dynamic Web content technology such as ASP, ASP.NET, CGI, ColdFusion, JSP/Java, PHP, Python, or Ruby-On-Rails in the middle tier, and a database in the third tier. The web browser sends requests to the middle tier, which services them by making queries and updates against the database and generates a user interface.Web based application development–provides the developer the opportunity to save time and resources , and improve the way the web-apps interact with users. The above advantages and features of web based application has prompted the use of this programming environment.

Programming Language Used

The software was implemented using Active Server Pages (ASP), JavaScript, VBScript, and PL/SQL. The front end interface was implemented in HTML.

Design of Forms

A webapp can be made to look and act superficially like a form (with selection boxes, text fields, etc.), that undergoes some minimal processing before being sent to a server, but if the processing does not need client-side processing, a declarative (typically HTML-based) form has been chosen. After going through the guidelines student is required to click the next button and moves on to the starting page of the teacher appraisal system (Figure: 2) wherein they are required select the course no, month of appraisal , the teacher's name etc. before proceeding further. The contents of Table 1 show the subsequent forms based on parameters on which teachers are to be appraised. The appraiser is given a choice to select on the form, radio button for each of the parameters. The grading received by a teacher is summed up and an average form-wise and overall grade is computed according to the Equations mentioned in Table: 1. Figure: 9 –10 shows the summary of data fed in by each of the student appraiser for a particular course taken by them. The teachers can view his course appraisal using this form and note their short comings, parameter wise as well as areas of strengths. The system also computes average grade received by a teacher for a particular course taught by him.

SECURITY

The nature of appraisal system requires the data collected to be secure. Every user needs to be given access to data that is relevant to them. To meet these requirement the appraised faculty is allotted an user id and are asked to maintain a password to access the system. The appraiser student has limited access and can view only the data in the appraiser report fed into the system by him. They are not allowed to view/ modify data entered by other appraisers and also are not given access to data of appraised teacher. However the administrator has read-only access to all data and can also access passwords for modification of the data, in case the password are forgotten by the user.The database for the application was built on MS-Access. The database created has over fifty fields. Some of the important fields are listed in Table: 2.

ADVANTAGES OF ONLINE TEACHER APPRAISAL SYSTEM

If education reforms and devolution is a major policy of the government, teacher performance appraisal is one of the key areas; they must work on more effectively. The process of identifying, evaluation and developing teaching performance is important (Nattavud, 2005).

Other than the obvious advantage of reduced workload, minimization of errors etc. the online teacher appraisal system has made it easy for the student (appraiser) to input their views in complete secrecy and at the time of their convenience. Similarly the appraised teacher can view their performance again in complete secrecy. The appraisal system has thus made it possible for the appraiser to communicate their opinion regarding teacher's appraisal and also the teacher to know about the parameters where short comings existed and parameters, where they are excelled, on a monthly basis. The data collected over the period of time is stored safely and securely in electronic format, thus saving on cost of data handling and storage.

CONCLUSION

The online appraisal system implemented at NIT Jamshedpur can also be, similarly implemented in other Institutes/Universities meeting all the setout objectives of confidentiality, convenience, etc.The advantages associated with this online appraisal system are reduced workload, minimization of error, ease of use and enhanced security. Further the appraisal system can be enhanced/ upgraded by incorporating additional parameters thus making the system more comprehensive.

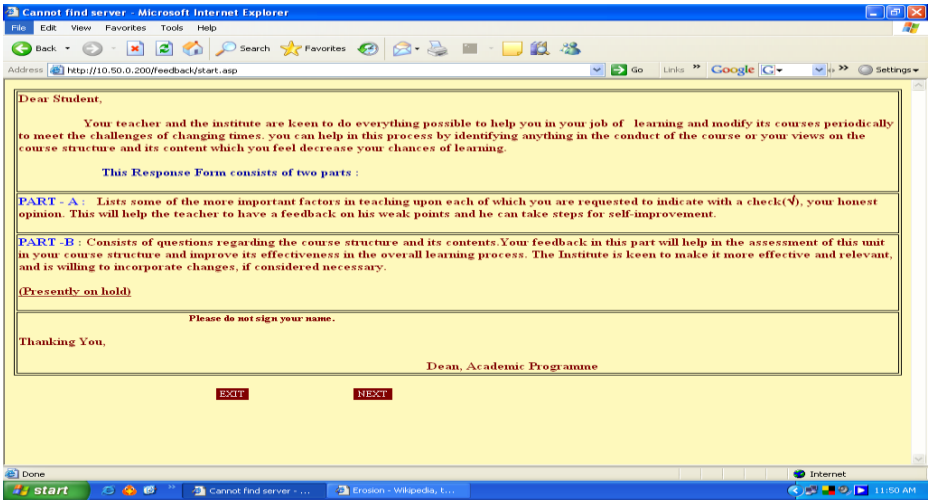

Figure: 1 On-screen instructions to the student using the appraisal system.

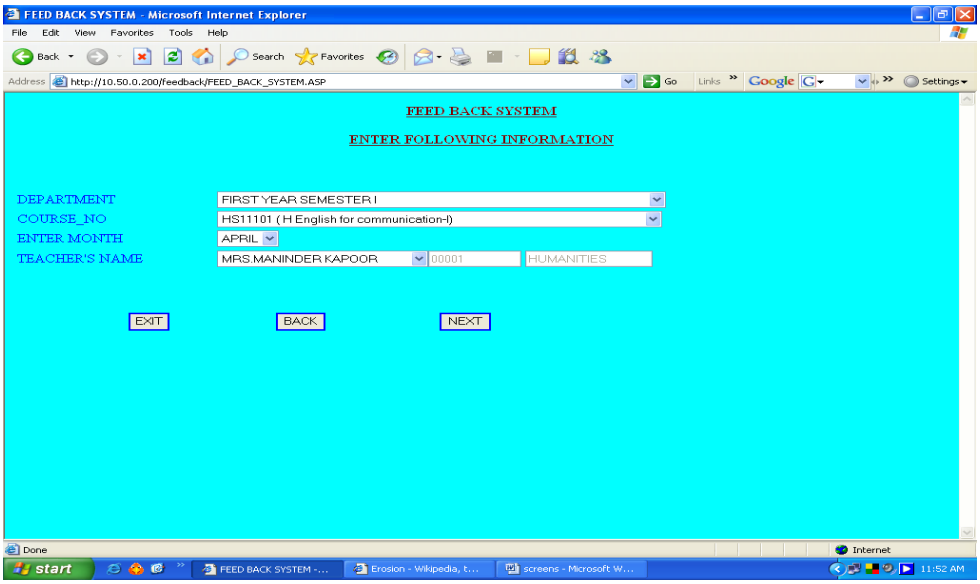

Figure: 2 Screen for Accepting Subject code And Teacher's Name

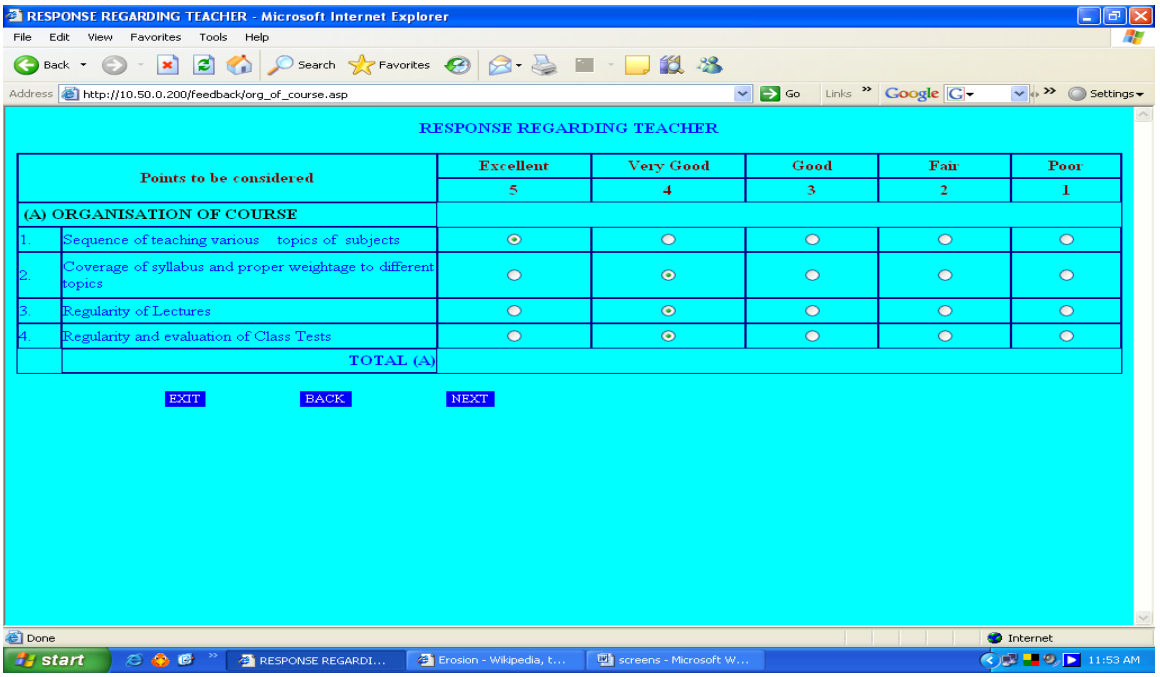

Figure: 3 Response Sheet for the parameters on Organisation of Course

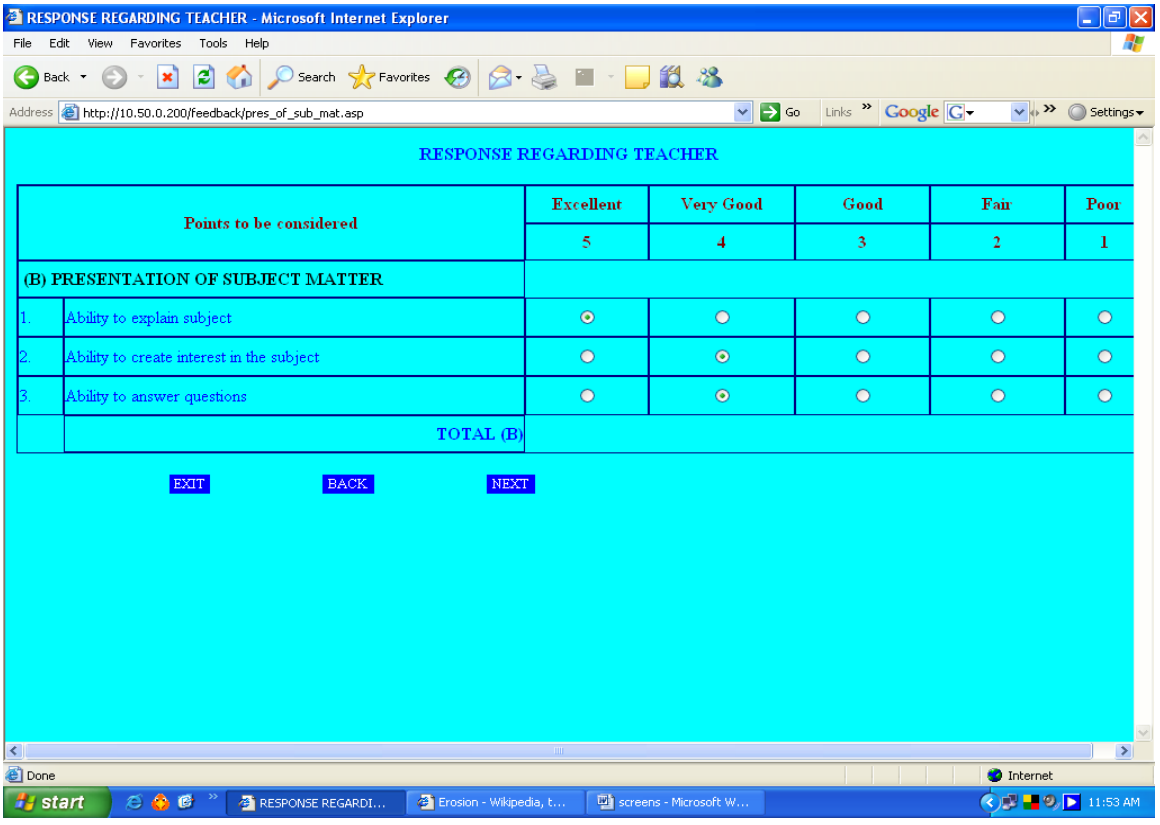

Figure: 4 Response Sheet for the parameters on Presentation of Subject Matters

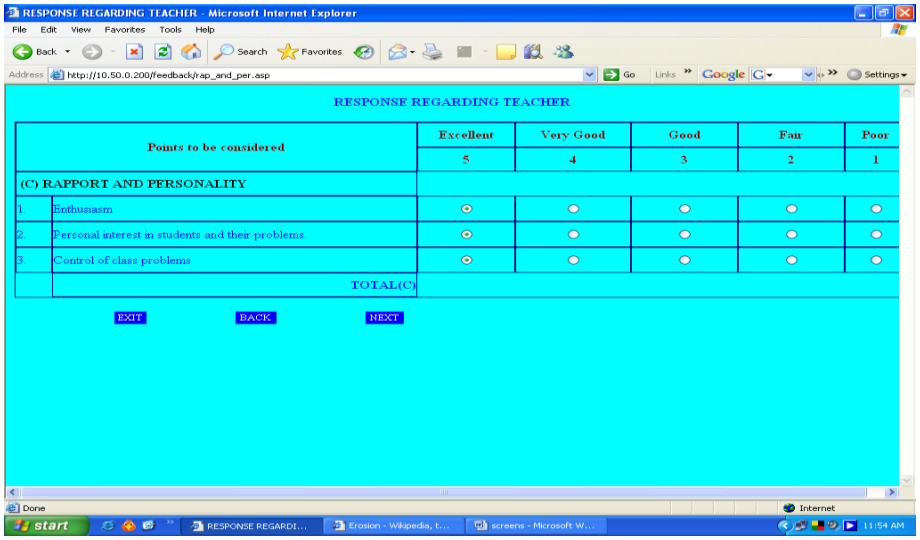

Figure: 5Response Sheet for the parameters on Rapport and Personality

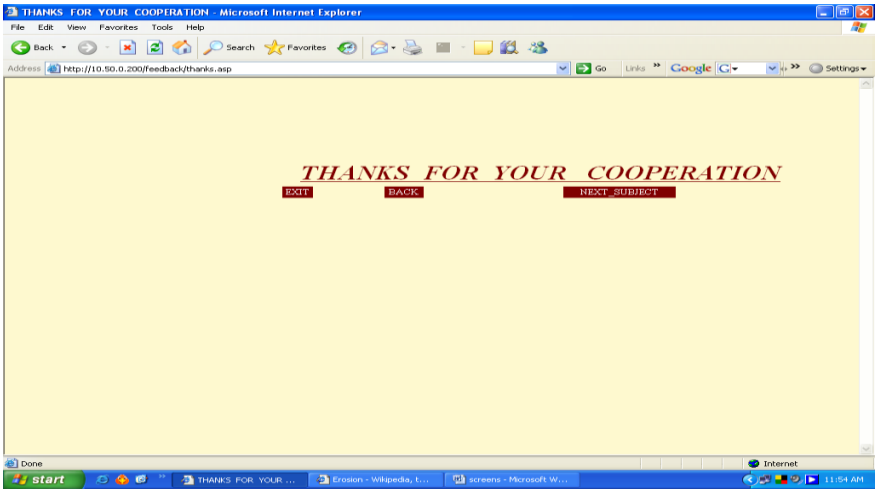

Figure: 6 Screen after submission

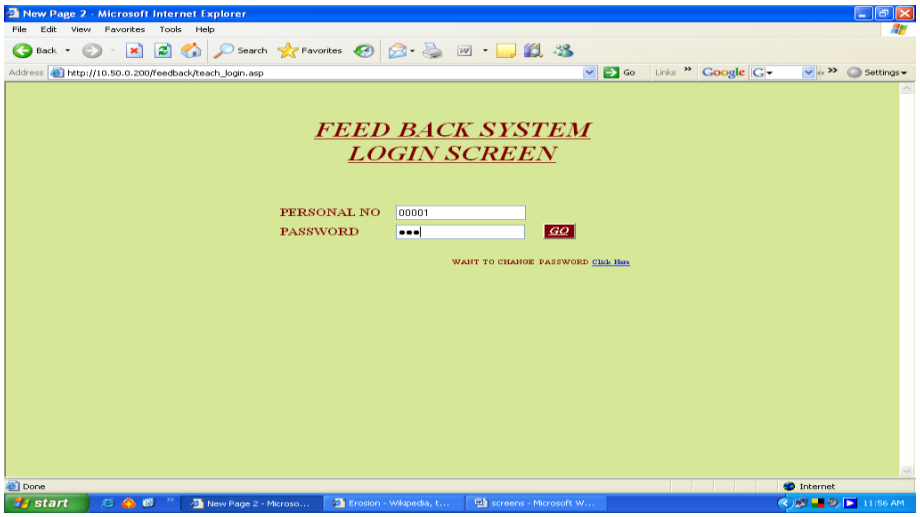

Figure: 7 Login Screen for faculty to see the performance

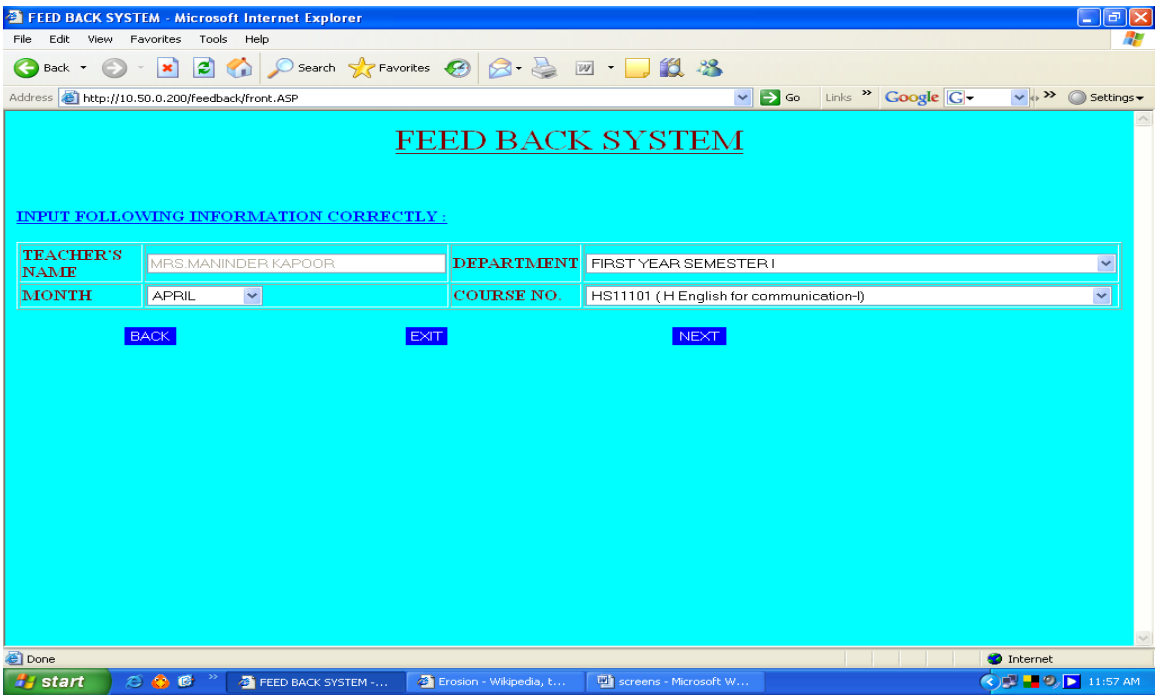

Figure: 8 Screen for accepting month and course no.

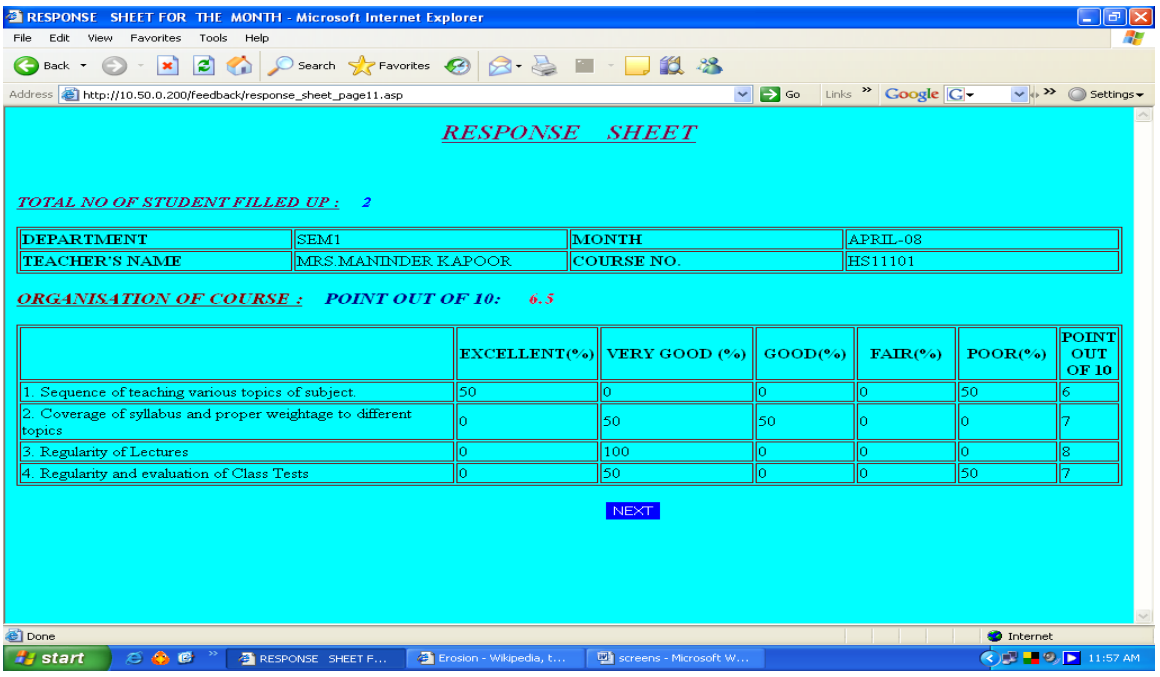

Figure: 9 Response sheet-1 for the faculty

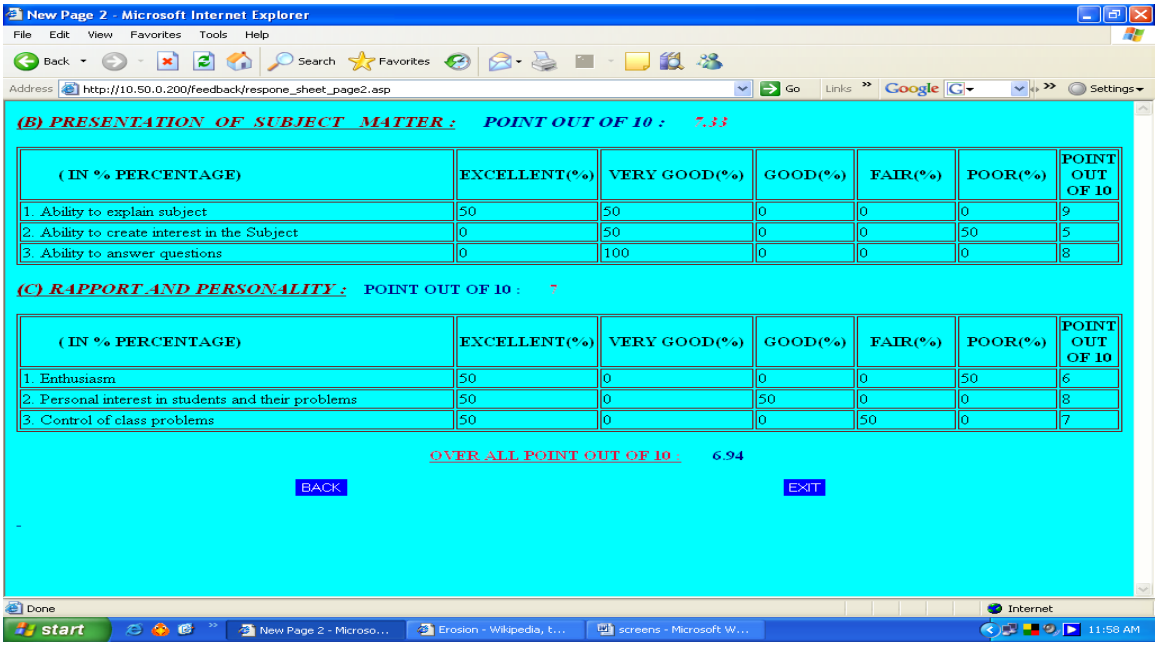

Figure: 10 Response Sheet-2 for the faculty

Table: 1 Formulae and sample calculation used for calculation of grades

A =Percentage of student appraiser giving a particular grade

$$\text{A} = \frac{\textit{Grades received in percentage} * \textit{Total number of appraiser}}{100}$$

Taking the example of 'Sequence of teaching various topics of subject

A_1= Percentage of appraiser giving excellent grade = $\frac{49}{100} * 61$

A_2= Percentage of appraiser giving very good grade = $\frac{38}{100} * 61$

A_3= Percentage of appraiser giving good grade = $\frac{11}{100} * 61$

A_4= Percentage of appraiser giving fair grade = $\frac{2}{100} * 61$

A_5= Percentage of appraiser giving poor grade = $\frac{0}{100} * 61$

X_1= Weightage allotted to Excellent = 10
X_2= Weightage allotted to Very good = 8
X_3= Weightage allotted to Good = 6
X_4= Weightage allotted to fair = 4
X_5= Weightage allotted to poor=2

$$\frac{\sum A_n * \textit{Weightages for each grade}}{\textit{Total No.of Appraiser}}$$

$$= \frac{\sum A_1 * X_1 + A_2 * X_2 + A_3 * X_3 + A_4 * X_4 + A_5 * X_5}{61}$$

Table: 2
Sample of fields and their data types used in the database.

Field Name	Data Type
Teacher_Name	Text
Teacher_Code(Personal Number)	Text
Teacher_Depart	Text
Department	Text
Course_No	Text
Subject_Title	Text
Coverage of syllabus and proper weightage to different topics	Text
Ability to explain subject	Text
Personal interest in students and their problems	Text

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