



DESIGN AND IMPLEMENTATION OF A WEB-BASED LECTURERS' EVALUATION SYSTEM (A CASE STUDY OF COMPUTER SCIENCE DEPARTMENT, ISA MUSTAPHA AGWAI I POLYTECHNIC, IMAP, LAFIA)

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ABSTRACT: *The study focused on design and implementation of a web-based lecturer evaluation system. To accomplish this, the structured system analysis and design methodology (SSDAM) was adopted. The software development tools used were PHP, CSS5, HTML, and MYSQL. The application has the Admin, Student and Lecturer modules. The admin manages students, courses, evaluation questions and criteria. The student module manages students' ratings of their lecturers while the lecturer module manages lecturers and enables a lecturer to view his mean rating report at the end of a semester.*

KEYWORDS: Teacher/lecturer, Rating, Evaluation, Implementation.



Background of the Study

Teachers are the bedrock of society. Without teachers the society will be clueless and meaningless and as such, the effectiveness of teachers directly or indirectly translates into an effective society. The rating of teachers' effectiveness is one of the cardinal areas that require urgent attention by the education regulatory authorities across the globe [4]. Students' rating of teachers' effectiveness is not a recent phenomenon in the world of education. The initiative to evaluate the effectiveness of teachers started as early as 1915 and that ushered in the first teacher rating scale [5].

The first study of students' evaluation of teachers' effectiveness was in 1920, and the evaluation serves as an important tool for measuring the teaching quality of a teacher. It portrays a true reflection of qualities associated with good teaching, such as subject knowledge, effective communication skills, classroom management, effective use of teaching aids, good lecturer-students relationship, punctuality and coverage of the curriculum [7].

Besides being a measurement tool, the feedback obtained from the evaluation helps the lecturers to grow and develop professionally through self-reflection on their practices [3]. This also helps an academic institution identify specific areas for improving the effectiveness of the lecturers and as such organizing relevant in-service professional development trainings for them [7]. Furthermore, the outcome of teacher evaluation helps to formulate a key performance index for the lecturers during staff appraisal for both promotion and tenure decisions [2].

Different works of literature support the view that students can provide valuable information about their lecturers' teaching effectiveness given that the evaluation is properly designed [6], and as such, the study considered four primary uses of teaching evaluations which are premised under formative and summative evaluation [2][3][4]. The formative uses include improving the lecturer's teaching and improving the course contents and formats. The summative uses are influencing the lecturer's tenure, promotion and salary increment; and making the evaluation reports available for heads of department to use during course allocation.

Statement of the Problem

As lecturers in IMAP are rated and promoted based on academic qualifications, number of years in service and the number of publications (journals, conferences, books, etc), their attention has been shifted to acquiring higher qualifications and publishing more articles and paying less attention to curriculum activities. Consequently, most of them put up a perfect front with good qualifications and a good number of publications but are most times unable to impart knowledge as required. As students have clear pictures of the lecturers since they do have first hand interaction with them regularly, there is a need to craft a system that enables them to rate their lecturers' teaching effectiveness in Isa Mustapha Agwai I Polytechnic, Lafia and the rating results published and used along with other parameters to effect decisions concerning their promotion, appointment, retrenchment, tenure extension, etc.



Objectives of the Study

The primary objective of this study is to design and implement a web-based lecturer evaluation system for Isa Mustapha Agwai I Polytechnic, Lafia. However, the study specifically addressed the following:

- i. To create a platform where students rate their lecturers' effectiveness at the end of every semester.
- ii. To create a form of decision making system for the institution regarding lecturers' promotion, appointment, and retrenchment.
- iii. To develop a form of personal work performance check for the lecturers.

METHODOLOGY

The study adopted the structural system analysis and design methodology (SSADM). It is a systems approach to the analysis and design of information systems. Feasibility study, investigation of the current environment, definition of requirements, system design, logical design, and physical design were various stages undertaken in building the application.

System Design

Database Format:

The relational Database Management System (DBMS) was used and it contained the following tables:

Table 1: Login

| Name | Data type | Length |
|----------|-----------|--------|
| Username | Varchar | 30 |
| Password | Varchar | 100 |

Table 2: Criteria

| # | Name | Type | Collation | Null | Default | Extra |
|---|----------|---------|--------------------|------|---------|----------------|
| 1 | id | int(30) | | No | None | AUTO_INCREMENT |
| 2 | Criteria | text | utf8mb4_general_ci | No | None | |
| 3 | order_by | int(30) | | No | None | |

**Table 3: Question Answers**

| # | Name | Type | Null | Default |
|---|---------------|---------|------|---------|
| 1 | evaluation_id | int(30) | No | None |
| 2 | question_id | int(30) | No | None |
| 3 | Rate | int(20) | No | None |

Table 4: Teacher

| # | Name | Type | Collation | Null | Default | Extra |
|---|--------------|--------------|--------------------|------|-------------------|----------------|
| 1 | id | int(30) | | No | None | AUTO_INCREMENT |
| 2 | teacher_id | varchar(100) | utf8mb4_general_ci | No | None | |
| 3 | Firstname | varchar(200) | utf8mb4_general_ci | No | None | |
| 4 | Lastname | varchar(200) | utf8mb4_general_ci | No | None | |
| 5 | Email | varchar(200) | utf8mb4_general_ci | No | None | |
| 6 | Password | text | utf8mb4_general_ci | No | None | |
| 7 | date_created | datetime | | No | CURRENT_TIMESTAMP | |

Table 5: Student

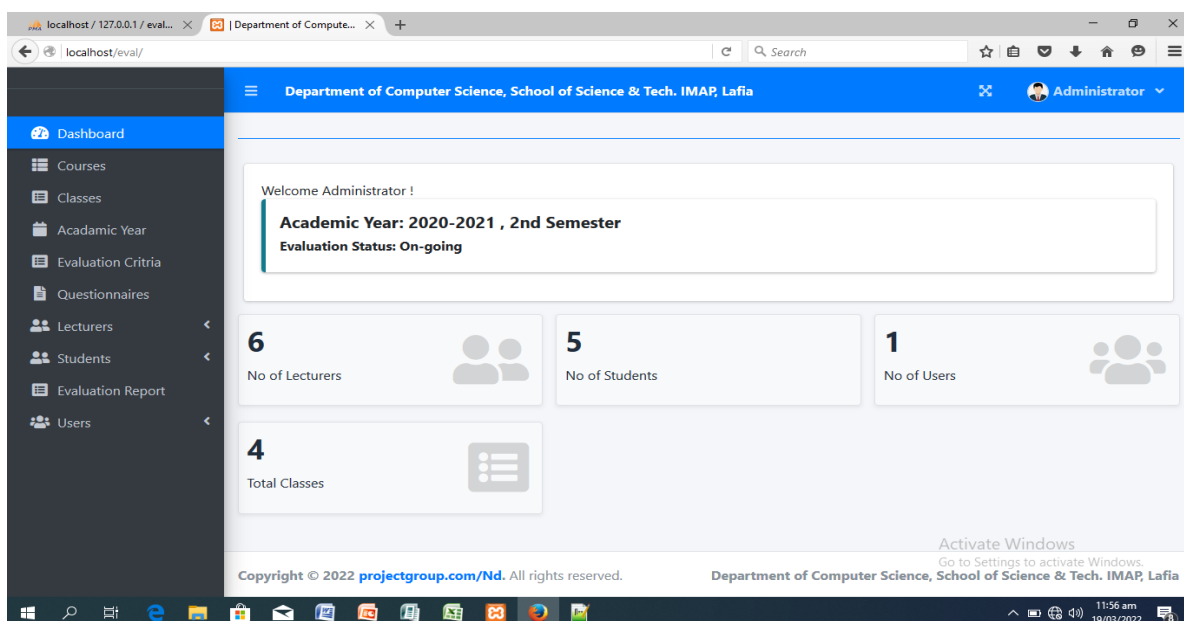
| # | Name | Type | Collation | Null | Default |
|---|--------------|--------------|--------------------|------|-------------------|
| 1 | id | int(30) | | No | None |
| 2 | std_id | varchar(100) | utf8mb4_general_ci | No | None |
| 3 | firstname | varchar(200) | utf8mb4_general_ci | No | None |
| 4 | lastname | varchar(200) | utf8mb4_general_ci | No | None |
| 5 | email | varchar(200) | utf8mb4_general_ci | No | None |
| 6 | password | Text | utf8mb4_general_ci | No | None |
| 7 | class_id | int(30) | | No | None |
| 8 | date_created | datetime | | No | CURRENT_TIMESTAMP |

Table 6: Question

| # | Name | Type | Collation | Null | Default | Extra |
|---|-------------|---------|--------------------|------|---------|----------------|
| 1 | id | int(30) | | No | None | AUTO_INCREMENT |
| 2 | academic_id | int(30) | | No | None | |
| 3 | question | Text | utf8mb4_general_ci | No | None | |
| 4 | order_by | int(30) | | No | None | |
| 5 | criteria_id | int(30) | | No | None | |

Program Flow Diagram

Input and Output Specifications

**Fig 1: Control Center Main Menu**

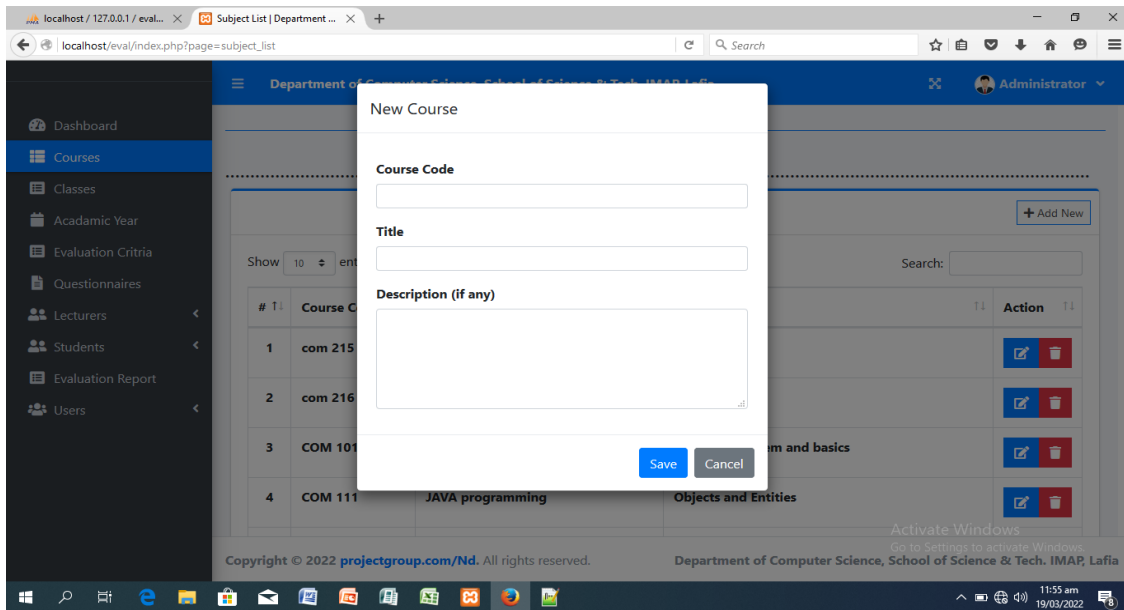


Fig 2: Add New Course

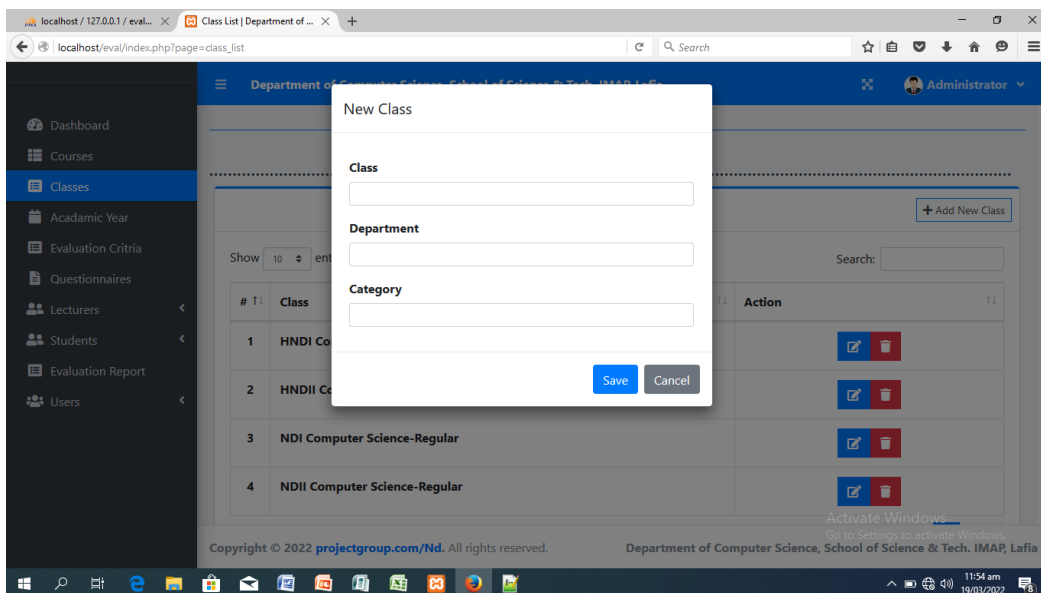


Fig 3: Create Class

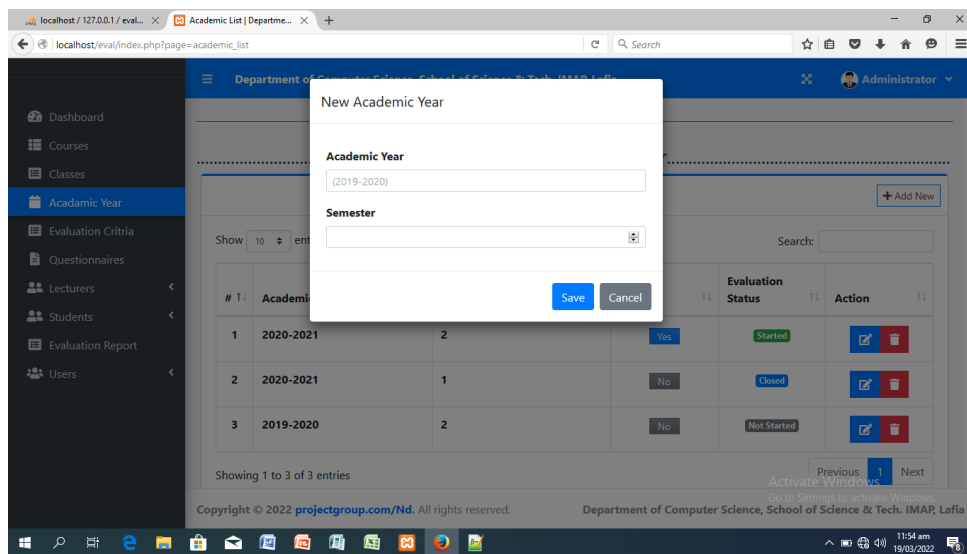


Fig 4: Create Academic Year

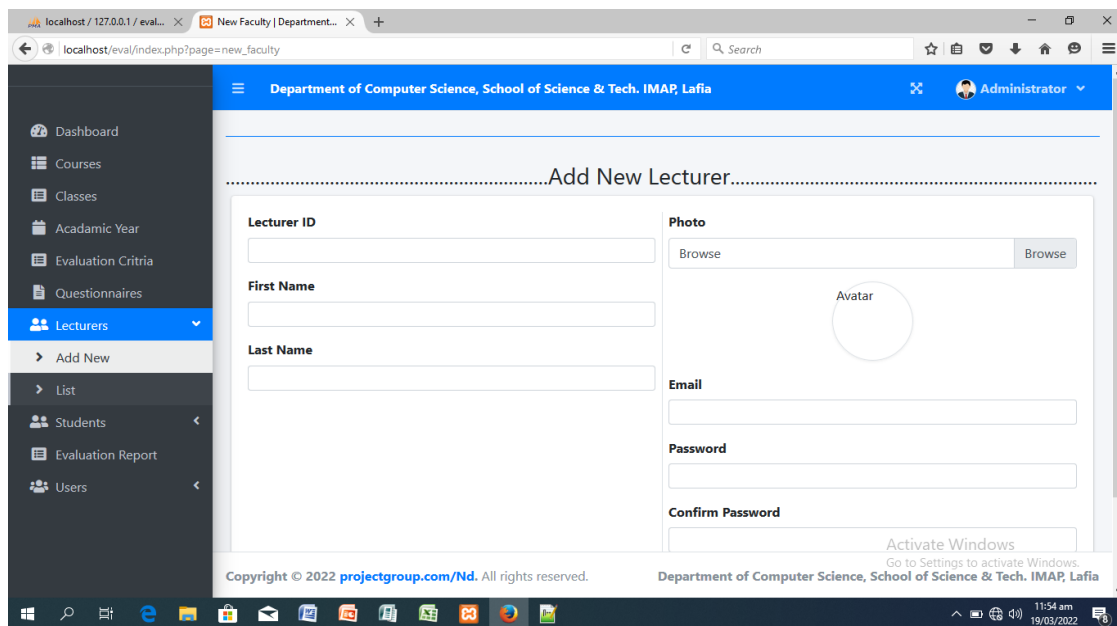


Fig 5: Create Lecturer

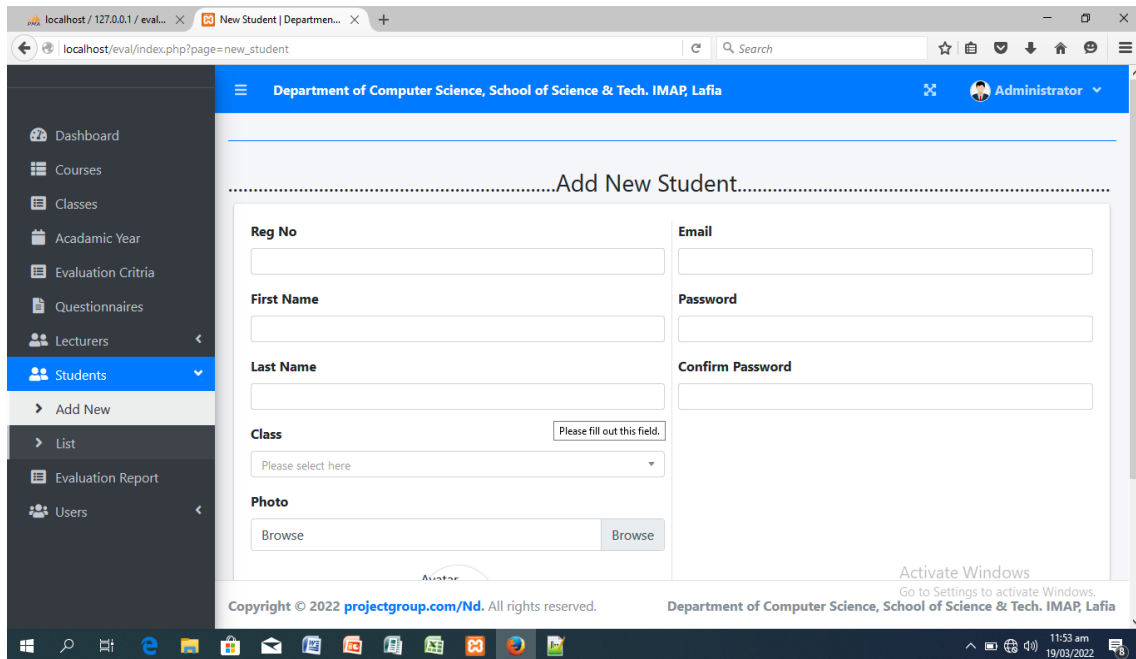


Fig 6: Create Student

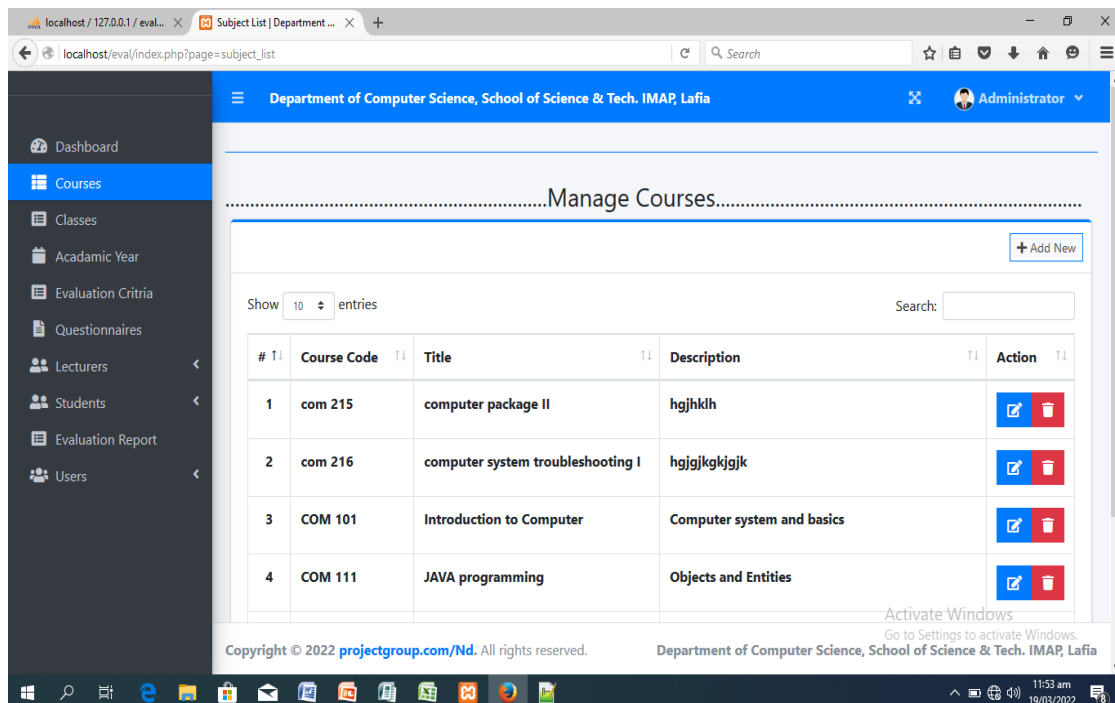


Fig 7: Course List

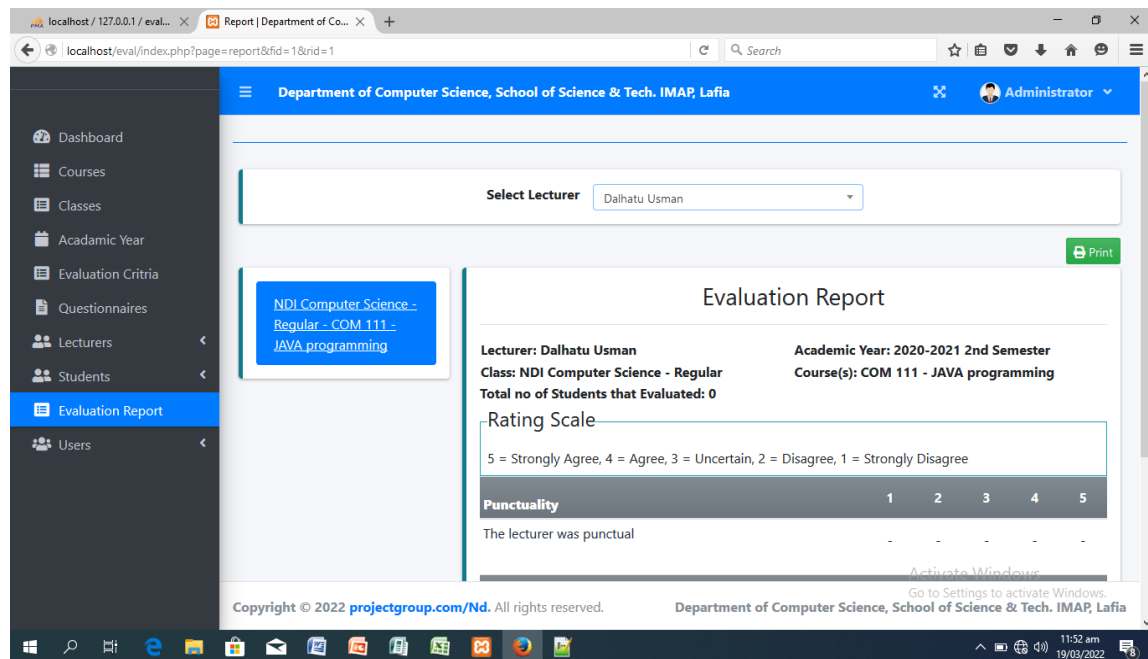


Fig 8: Evaluation Report

Choice and Justification of Programming Language

The project was designed using PHP, MySQL, CSS5 and HTML. These tools were used because of the following:

PHP: Hypertext Preprocessor

No fee for commercial user license; it is compatible with most servers; it has secure database connection; and it has dozens of frameworks and high speed.

MYSQL: Relational database management system (RDBMS)

It is open source and compatible with a wide range of systems, programming language and database models, fast and reliable. It is scalable and it provides automatic data retrieval.

CSS5: Cascading Style Sheet

It improves application performance; it provides easy control over layout and presentation of other elements of the application; and it provides layout for other tools and helps to load application pages fast.

HTML: Hypertext Markup Language

It provides the application structure; it helps to reduce server load; and it is compatible also.



Usability Test

To evaluate the proper operation and robustness of the application, the application was deployed in the Computer Science Department for two semesters in the 2020–2021 academic sessions. To ascertain the educational value of the software, both students and lecturers in the department were requested to complete a questionnaire. Seven (7) lecturers and 15 students were randomly picked to respond to the following questions:

(i) **User Interface:** How well did you find the application interface?

(ii) **User Friendliness:** How would you rate the user friendliness of the application?

(iii) **Robustness:** How would you describe the application in terms of robustness?

(iv) **Functionality:** How would you rate the application in terms of functionality?

The scale of 1–5 was used as follows: 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good and 5 = Excellent. Their responses were analyzed and presented in Table 7.

Table 7: Usability Test Responses

| Parameters | Poor (%) | Fair (%) | Good (%) | Very good (%) | Excellent (%) |
|-------------------|----------|----------|----------|---------------|---------------|
| User Interface | 0 (0%) | 0 (0%) | 0 (0%) | 10(45.5%) | 12(54.5%) |
| User Friendliness | 0 (0%) | 0 (0%) | 2(9.1%) | 9(40.9%) | 11(50%) |
| Robustness | 0 (0%) | 0 (0%) | 0 (0%) | 6(27.3%) | 16(72.7%) |
| Functionality | 0 (0%) | 0 (0%) | 0 (0%) | 15(68.2%) | 7(31.8%) |

Table 7 shows that 54.5% of the respondents agree that that application interface is excellent. On the application user friendliness, 90.9% of the respondents are quite satisfied with the application in terms of its user friendliness. Also, 72.7% of the respondents perceived the software to be highly robust. They are satisfied with the current version of the software. In terms of functionality, 68% of the respondents opined that the software is very functional in terms of logic and effective automation.

CONCLUSION

In an increasingly diverse teaching and learning environment today, there have been countless discussions and debates on the effectiveness of teaching in higher institutions of learning. Even with decades of research, the issue of effective teaching has yet to be resolved. Acknowledging this literature gap, this study was conducted to assess the effectiveness of teaching using students' rating of lecturers' performance at the end of the semester in IMA. The findings of the study revealed that none of the ten items on lecturers' teaching effectiveness was given an 'excellent' rating. The students perceived the teaching effectiveness of lecturers as 'good' in 3 out of the 5 items surveyed and 'fair' in 2 out of the 5 items surveyed. These five items were related to the lecturers' ability in conducting teaching-learning activities in accordance with the course proforma—providing awareness on the development of human capital, commitment towards teaching and learning, monitoring and



giving feedback, and motivating students to pursue learning activities. It is hoped that lecturers would continue to maintain the strengths as detected from the empirical data of the study. The evaluation results disclosed areas of knowledge and skills that lecturers should consider for further enhancement.

REFERENCES

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APPENDIX

CODE SNIPPETS

Login:

```
<!DOCTYPE html>
<html lang="en">
<?php
session_start();
include('./db_connect.php');
    ob_start();
    // if(!isset($_SESSION['system'])){

        $system = $conn->query("SELECT * FROM system_settings")->fetch_array();
        foreach($system as $k => $v){
            $_SESSION['system'][$k] = $v;
        }
    // }
    ob_end_flush();
?>
<?php
if(isset($_SESSION['login_id']))
header("location:index.php?page=home");

?>
<?php include 'header.php' ?>
<body class="hold-transition login-page bg-black">
    <h2><b> <marquee><?php echo $_SESSION['system']['name'] ?> </marquee><b></h2>
<div class="login-box">
```



Lecturer Evaluation System

```
<div class="login-box">
```

```
<div class="login-logo">
```

```
<a href="#" class="text-blue"></a>
```

```
</div>
```

```
<!-- /.login-logo -->
```

```
<div class="card">
```

```
<div class="card-body login-card-body">
```

```
<form action="" id="login-form">
```

```
<div class="input-group mb-3">
```

```
<input type="email" class="form-control" name="email" required
placeholder="Email">
```

```
<div class="input-group-append">
```

```
<div class="input-group-text">
```

```
<span class="fas fa-envelope"></span>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
<div class="input-group mb-3">
```

```
<input type="password" class="form-control" name="password" required
placeholder="Password">
```

```
<div class="input-group-append">
```

```
<div class="input-group-text">
```

```
<span class="fas fa-lock"></span>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
<div class="form-group mb-3">
```

```
<label for="">Login As</label>
```



```
<select name="login" id="" class="custom-select custom-select-sm">
  <option value="3">Student</option>
  <option value="2">Lecturer</option>
  <option value="1">Admin</option>
</select>
</div>
<div class="row">
  <div class="col-8">
    <div class="icheck-primary">
      <input type="checkbox" id="remember">
      <label for="remember">
        Remember Me
      </label>
    </div>
  </div>
  <!-- /.col -->
  <div class="col-4">
    <button type="submit" class="btn btn-primary btn-block">Sign In</button>
  </div>
  <!-- /.col -->
</div>
</form>
</div>
<!-- /.login-card-body -->
</div>
</div>
<!-- /.login-box -->
<script>
```



```
$(document).ready(function(){
    $('#login-form').submit(function(e){
        e.preventDefault()
        start_load()
        if($(this).find('.alert-danger').length > 0 )
            $(this).find('.alert-danger').remove();
        $.ajax({
            url:'ajax.php?action=login',
            method:'POST',
            data:$(this).serialize(),
            error:err=>{
                console.log(err)
                end_load();
            },
            success:function(resp){
                if(resp == 1){
                    location.href ='index.php?page=home';
                }else{
                    $('#login-form').prepend('<div class="alert alert-danger">Username or password is incorrect.</div>')
                    end_load();
                }
            }
        })
    })
})
</script>
```



```
<?php include 'footer.php' ?>
```

```
</body>
```

```
</html>
```

Index Page:

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<?php session_start() ?>
```

```
<?php
```

```
    if(!isset($_SESSION['login_id']))
```

```
        header('location:login.php');
```

```
    include 'db_connect.php';
```

```
    ob_start();
```

```
    if(!isset($_SESSION['system'])){\
```

```
        $system = $conn->query("SELECT * FROM system_settings")->fetch_array();
```

```
        foreach($system as $k => $v){
```

```
            $_SESSION['system'][$k] = $v;
```

```
        }
```

```
    }
```

```
    ob_end_flush();
```

```
    include 'header.php'
```

```
?>
```

```
<body class="hold-transition sidebar-mini layout-fixed layout-navbar-fixed layout-footer-fixed">
```

```
<div class="wrapper">
```




```
<?php include 'topbar.php' ?>
<?php include $_SESSION['login_view_folder'].'sidebar.php' ?>

<!-- Content Wrapper. Contains page content -->
<div class="content-wrapper">
    <div class="toast" id="alert_toast" role="alert" aria-live="assertive" aria-atomic="true">
        <div class="toast-body text-white">
            </div>
        </div>
    </div>
    <div id="toastsContainerTopRight" class="toasts-top-right fixed"></div>
    <!-- Content Header (Page header) -->
    <div class="content-header">
        <div class="container-fluid">
            <div class="row mb-2">
                <div class="col-sm-6">
                    <h1 class="m-0"></h1>
                </div><!-- /.col -->
            </div><!-- /.row -->
            <hr class="border-primary">
        </div><!-- /.container-fluid -->
    </div>
    <!-- /.content-header -->

    <!-- Main content -->
    <section class="content">
        <div class="container-fluid">
            <?php
```



```

    $page = isset($_GET['page']) ? $_GET['page'] : 'home';
    if(!file_exists($_SESSION['login_view_folder'].$page.".php")){
        include '404.html';
    }else{
        include $_SESSION['login_view_folder'].$page.'.php';
    }
?>
</div><!--/. container-fluid -->
</section>
<!-- /.content -->
<div class="modal fade" id="confirm_modal" role='dialog'>
<div class="modal-dialog modal-md" role="document">
<div class="modal-content">
<div class="modal-header">
<h5 class="modal-title">Confirmation</h5>
</div>
<div class="modal-body">
<div id="delete_content"></div>
</div>
<div class="modal-footer">
<button type="button" class="btn btn-primary" id='confirm'
onclick="">Continue</button>
<button type="button" class="btn btn-secondary" data-
dismiss="modal">Close</button>
</div>
</div>
</div>
</div>

```



```
<div class="modal fade" id="uni_modal" role='dialog'>
  <div class="modal-dialog modal-md" role="document">
    <div class="modal-content">
      <div class="modal-header">
        <h5 class="modal-title"></h5>
      </div>
      <div class="modal-body">
      </div>
      <div class="modal-footer">
        <button type="button" class="btn btn-primary" id='submit' onclick="$('#uni_modal
form').submit()">Save</button>
        <button type="button" class="btn btn-secondary" data-
dismiss="modal">Cancel</button>
      </div>
    </div>
  </div>
</div>
<div class="modal fade" id="uni_modal_right" role='dialog'>
  <div class="modal-dialog modal-full-height modal-md" role="document">
    <div class="modal-content">
      <div class="modal-header">
        <h5 class="modal-title"></h5>
        <button type="button" class="close" data-dismiss="modal" aria-label="Close">
          <span class="fa fa-arrow-right"></span>
        </button>
      </div>
      <div class="modal-body">
      </div>
    </div>
  </div>
</div>
```



```
</div>

</div>

<div class="modal fade" id="viewer_modal" role='dialog'>
  <div class="modal-dialog modal-md" role="document">
    <div class="modal-content">
      <button type="button" class="btn-close" data-dismiss="modal"><span class="fa fa-
times"></span></button>
      <img src="" alt="">
    </div>
  </div>
</div>

</div>

</div>

</div>

<!-- /.content-wrapper -->

<!-- Control Sidebar -->
<aside class="control-sidebar control-sidebar-dark">
  <!-- Control sidebar content goes here -->
</aside>
<!-- /.control-sidebar -->

<!-- Main Footer -->
<footer class="main-footer">
  <strong>Copyright &copy; 2022 <a
href="https://www.projectgroup.com/">PPPPPP.com</a>.</strong>
  All rights reserved.
  <div class="float-right d-none d-sm-inline-block">
    <b><?php echo $_SESSION['system']['name'] ?></b>
  </div>
</footer>
```



</div>

<!-- ./wrapper -->

<!-- REQUIRED SCRIPTS -->

<!-- jQuery -->

<!-- Bootstrap -->

<?php include 'footer.php' ?>

</body>

</html>