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| **Study Report of the Training program in****Design & Implementation of Online Examination Administration System for Schools.** |

**At University Community Transformation Centre,**

**University of Puthra, Malaysia.**

**From 12- Aug 2018 to 18- Aug 2018**

Department Of Examinations, Sri Lanka

**List of Participants**

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**Abstract**

Online Examination System is a software solution, which provides school, institute or university to arrange, conduct and manage examinations via an online environment. It can be done through the Internet/ and/ Local Area Network environments. Some of the problems accrued during manual examination systems are the delays faced in result processing, filtering of records is difficult. The chance of loss of records is high also record searching is difficult. Maintenance of the system is also very difficult and takes lot of time and effort. Online examination is one of the crucial parts for online education system. It is efficient, fast enough and reduces the large amount of material resource. Malaysian education system has implemented with the development of Industry 4.0 and as a strategic plan for development of Malaysia, Ministry of Education introduces Vision 2020 to reviewing education in Malaysian eco-system for learning. To overcome the challenges occur in Vision 2020 such as fuelled increased socialization through the internet and rising international education standards around the world, increase parents’ expectations of their children’s’ learning environment, ability to adequately prepare young Malaysians for the challenges of a technology driven world. To overcome objectives of Vision 2020, Ministry of Education in Malaysia has introduced Form 3 Assessment (PT3) which is a web based software application and it includes Registration Module, Instrument Assembly Module, Score Entry module, and Reporting module for processing examinations. Apart from that Online Examination Management System (SPPAT) which is a web based application software has introduced to handle overall examination process which consists of 6 modules known as Maintenance, Registration, Indent, Examiner database, Scores Collection and Results, Standards Fixing Modules and Grade Verification System. As per future enhancements, the team proposes to design and implement Online Registering System for School candidates, design and implement Online Registering System for Examiners, Develop an Online Evaluation System for Schools and Other Exams, Develop an Online Results System for Schools and Other Exams, Develop an Online Exam Certificates Payment System for Schools and Other Exams, decentralized proposed systems to provide better security for online examination systems.

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# 1. Introduction

With the development of Industry 4.0, Malaysian education system introduces Vision 2020 which is a liberalization of educational policies leading to the democratization, privatization and decentralization of the Malaysian educational system. In combination with mass education, both the primary and secondary school curricula were revised with great importance on the development of an all-round individual, the acquisition of basic skills, the inculcation of moral values, and the abolishment of early specialization. The educational administrative system has been decentralized to promote school-based management and teacher empowerment. Furthermore, the private sector has been encouraged to play an active role in providing higher education.

## Malaysian Education System

Malaysia is a federation of 13 states located in South-east Asia. The country consists of two geographical regions; Peninsular Malaysia ( West Malaysia) and Malaysian Borneo ( East Malaysia) separated by the South China Sea. The educational administration in Malaysia is highly centralized with four hierarchical levels. That is, federal, state, district and the lowest level, school. Ministry of Education represents as Major Decision- and policy-making take place at the federal level which consists of the Curriculum Development Centre, the school division, and the Malaysian Examination Syndicate (MES).

Furthermore Malaysia has focused on public examination results as important determinants of students' progression to higher levels of education or occupational opportunities. The dominant form of assessment in the Malaysian education system is external centralized public examinations. The Malaysian education system requires all students to sit for public examinations at the end of each level of schooling.

There are four public examinations from primary to post-secondary education. These are

* The Primary School Achievement Test (UPSR) at the end of six years of primary education.
* The Lower Secondary Examination (PMR) at the end of another three years' schooling.
* The Malaysian Certificate of Education (SPM) at the end of 11 years of schooling.
* The Malaysian Higher School Certificate Examination (STPM) or the Higher Malaysian Certificate for Religious Education (STAM) at the end of 13 years' schooling.

**Vision**

Leading a World Class Assessment by 2020

Source: (Case Study: Ministry Of Education Malaysia, 2014)

**Mission**

To develop a world class National Educational Assessment System and ensuring the validity and reliability of the examinations / assessments towards meaningful and effective learning.

Source: (Case Study: Ministry Of Education Malaysia, 2014)

### 1.1.1 Roles of Education System in Malaysia

* Conducting national examinations/assessments in order to assess learners’ performance, in terms of knowledge, skills and values based on the curriculum.
* Conducting national examinations/assessments in order to assess academic, technical and vocational performance, for purposes of certification, selection and placement.
* Conducting external examinations which are not in conflict with national interests
* Scope of duties.

### 1.1.2 Scope of Duties in Malaysian Education System

* Formulating regulations and policies governing examinations/assessments conducted by the Examinations Syndicate.
* Building of tests for all examinations/assessments.
* Managing and administering examinations/ assessments.
* Processing and issuing of examinations results.
* Research in the field of testing.
* Engaging the service of experts and consultants regarding test and examination matters.
* Conducting training in the field of testing.

##

## 1.2 Online Examination Administration System in Malaysia.

In 2014, Ministry of Education in Malaysia has changed the format of examination process in school examinations to overcome objectives of Vision 2020 by improving following 10 skills for school candidates for their future career findings and future development by evaluating with written examination, oral presentation and Assignments.

* Complex problem solving.
* Critical thinking.
* Creativity.
* People Management.
* Coordinating with others.
* Emotional Intelligence.
* Judgment and decision making.
* Service orientation.
* Negotiation.
* Cognitive Flexibility.

To overcome goals of Vision 2020, MOE has introduced Form 3 Assessment (PT3) which is a web based software application and it includes **Registration Module, instrument Assembly Module, Score Entry module, and Reporting module** for processing examinations.

Online Examination Management System (SPPAT) is web based application software which consists of 6 modules which are known as **Maintenance, Registration, Indent, Examiner database, Scores Collection and Results, Standards Fixing Modules**.

Data are maintained by current exam year work schedule with maintaining subjects, exam time table, registry terms and regulations and importing previous exam data and exemption papers.

## 1.3 Online Examination Management System (SPPAT) Modules.

* Registration Management Module

This module is created for register school candidate by Birth certificate number. The candidate has to fill this application by online and have to enter personal information and subjects studying. The module has facility to add new or update subjects and placement of candidate. After entering all details the candidate have auto generated index number.

* Indent Management Module

Above module controls procurement processes of examination process such as registering printing companies, configuring exam papers, maintaining container, vault and regions data, generating estimates of question paper data, generating indent summary reports, loading instructions etc.

* Examiners Management Module

Configure examiners, update examiners’ information, invite new examiners, filter examiners, generate examiner teams specify exam script centers, allocate exam scripts, and evaluate examiners’ performance functions are included in above module to handle examiners.

* Scores collection & Results Management Module

This module contains submitting schools coursework marks, submitting trial exam marks, all examiners to submit exam marks, configuring MCQ answer key, importing candidates’ marks, combining and updating marks, processing results.

* Standard Fixing Management

Generating statistics, maintain cut-off scores, generating grades are function in standard fixing module.

* Grade Verification System (GVS)

Malaysian examinations Syndicate introduces verifying examinations results through online by implementing GVS. This system helps to support jobs Malaysia Portal used by the Ministry of Human Resources to help job seekers to fill vacancies in the government and private organizations.

##

## 1.4 Status of School Exams which are conducted through online in Malaysia.

Currently the whole examination process for G.C.E. (O/L) and G.C.E. (A/L) examinations (SPM and SPTM exams) in Malaysia are conducting written exam paper based. Some Universities conducts online assignments for some courses by using MOODLE software Online assignments consist only Multiple Choices Questions and these assignments are autograded itself.

# 2. Contents and achievements of the Training Program.

The below table represents the content and achievements obtained by the participants of training program which is conducted by UPM.

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Activity** | **Lessons Learnt** | **Sri Lankan Context** |
| 12 Aug 2018(Day 01) | Arrival at KLIA, Malaysia |  - |  - |
| 13 Aug 2018(Day 02) | Principles of Examination Systems in Malaysia @ Industry 4.0 | * Captured the knowledge about Malaysian Education system and how it improves by Industry 4.0
* In the concept of “Vision 2020”, Ministry Of Education in Malaysia has introduced Form 3 Assessment (PT3) which is a web based application and it includes Registration Module, instrument Assembly Module, Score Entry module, and Reporting module for handling and processing examinations.
 | * Currently there is no full Centralized web based software system like “Form 3 Assessment (PT3)”.
* For Some processes got Support from independent systems.
 |
| Examination Systems in Malaysia. | * Using the concept of Industry 4.0 the Ministry Of Education in Malaysia has started a strategic plan to give every child in Malaysia to attain a world class education using “Vision 2020”.
* The successful implementation of Web based software application “Form 3 Assessment (PT3)” and “SPAAT” have projected Malaysia to the forefront of next generation learning, enabling it to become the first country in the world to connect all of its schools through a single, cloud-based learning platform using high-speed 4G internet connectivity and Virtual Learning Education capabilities through ICT.
* Online Examination Management System (SPPAT) is web based application software which consists of 6 modules which are known as Maintenance, Registration, Indent, Examiner database, Scores Collection and Results, Standards Fixing Modules. Grade Verification System (GVS).
 | * In Sri Lanka there is no full Centralized web based software system like “Online Examination Administration System for Schools” in Sri Lankan Examination System.
* But all processes included in SPAAT system are done using computerized system as a Network application such as Enter students Information, Generating Exam papers packing Figures, Printing Admissions, Entering Marks, Releasing Results Also there is separate software for handling Examiners’ data in Evaluation Division.
* The Department of Examinations provide a facility to verify G.C.E. (O/L) and G.C.E.(A/L) examinations results of candidates and as the first step it introduced to all Educational Zonal Offices to verify their officers’ educational qualifications. Further it will be connected to other government organizations and give facility to verify their officers’ educational qualifications such as Grade Verification System (GVS) running in Malaysia.
 |
| 14 Aug 2018(Day 03) | The Eco System of The Internet of Things and Online Examinations. | Internet of Things (IOT) is an intelligent gadget which has a sensor and it is connected with internet to provide an opportunity to leveraging smart connected devices in building managing their products to customers. There are research issues in IOT such as Mobility Management issues and as per the solution introduces Mobile IP. Also learnt about Performance Analysis of IOT and Realization of IOT using Internet of Systems. | In present there is no IOT used for Examination processing systems in Sri Lankan education system. |
| Optical Character Recognition. | Studied concepts of OCR, its technology, the process of OCR and how to apply the OCR software and its related work especially in online business environment.* In simple words OCR converts an image into Text with any of Scanning machine for scanning documents, storing documents, recognizing documents, verifying documents. Instead of ICR, Survey Monkey software can be used as software for OCR machines.
 | OCR machines are not used in Sri Lanka. OCR machines can be used with the software of ICR.  |
| Visit to Microsoft in Malaysia | Captured the knowledge about Online Examination Software developed for Universities, Institutes as for total solution.  |   - |
| 15 Aug 2018(Day 04) | System Security. | Learnt how to manage the system security of Online Examination Management System in Malaysian Education System. To reduce threats accrued for the system the country has decentralized their web based application system. | There is no Online Examination System for Sri Lankan examination system. |
| Database Design for Online Examination System. | Captured knowledge of What is Online Examinations, how it works and how to implement and design Database for Online examination System. | There is no Online Examination System for Sri Lankan examination system. |
| Algorithms Auto Generating Components. | Studied how to implement better auto generating time table schedule using algorithms. | Scheduling Time tables for schools examinations are done by manually. |
| 16 Aug 2018(Day 05) | Visit to Centre for Academic Development in UPM. | Learnt about how UPM handle online conferencing Courses and conducting online exams for courses which are conducted only for MCQs. UPM developed an online exam system using MOODLE by providing MCQs for selected courses as exams. |  - |
| Closing Ceremony |  - |  - |
| 17 Aug 2018(Day 06) | Social Visit to Genting Highlands |  - |  - |
| 18 Aug 2018(Day 07) | Departure to Sri Lanka. |  - |  - |

Source :( Author Complied)

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# 3. Proposals for future enhancement of Online Examination Administration System for Schools in Sri Lankan Education System.

As for recommendations and proposals for future enhancements to the examination processing system to Sri Lankan education system, designing and implementing Online Examination Management System is useful and beneficial project for Government of Sri Lanka. By examine the system of Malaysia; it is more suitable for Sri Lankan context because of the education system in Sri Lanka is much more similar to the Malaysian Education System.

Proposals:

* Design and implement Online Registering System for School candidates.
* Design and implement Online Registering module for Examiners for current Examiners handling system running in Evaluation Division.
* Develop an Online Examination System for School exams and other exams.
* Develop an Online Evaluation System for School exams and other exams.
* Develop an Online Results System for School exams and other exams.
* Develop an Online Exam Certificates Payment System for School exams and other exams.
* Proposing Decentralized online exam system to provide better reliability in aspect of data security.

# 4. References

Case Study: Ministry Of Education Malaysia, 2014