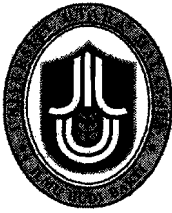


DEVELOPING PMSAS TO MONITOR POLYTECHNIC
STUDENT ATTENDANCE (SUBJECT TO STANDARD
PROCEDURE)

AZRUL NIZAH BINTI YUSSOF

UNIVERSITI UTARA MALAYSIA
2011



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ABSTRAK

Fokus kajian ini adalah untuk membangunkan Sistem Pemantauan Kehadiran Pelajar Politeknik yang dikenali sebagai PMSAS. Ianya dibina menggunakan teknologi intranet bagi melaksanakan pencatatan dan pelaporan kehadiran pelajar. Sistem ini dapat memudahkan pensyarah dalam merekod, menyimpan, mencapai dan melaporkan kehadiran pelajar pada masa nyata dengan lebih berkesan dan sistematik untuk memastikan pemantauan maklumat penting tentang kehadiran dan komitmen pelajar dalam menghadiri kelas. PMSAS dibangunkan telah menggunakan metodologi *Rational Unified Process (RUP)* dan antaramuka pengguna bergrafiknya dibangunkan dengan menggunakan Ms Access 2007 dan Pengaturcaraan Visual Basic bagi membolehkan pangkalan datanya lebih mudah diakses. Pembangunan prototaip ini berinspirasi kajian yang telah dibuat di Jabatan Perdagangan PTSS di mana sistem semasa yang diterapkan sangat rentan terhadap kesalahan kecuaiian manusia di samping fakta dari kajian terdahulu menyatakan bahawa rekod kehadiran pelajar adalah salah satu elemen terpenting yang mencerminkan pencapaian akademik pelajar. Ini membuktikan bahawa sistem yang lebih sistematik dan berevolusi amat diperlukan bagi meningkatkan proses pemantauan kehadiran. Penerimaan pengguna terhadap sistem ini telah dinilai berdasarkan soalan soal selidik terhadap para pensyarah di Jabatan Perdagangan PTSS di mana keputusan penilaian telah menunjukkan pengguna bersetuju dan menerima sistem ini kerana keberkesanan penggunaannya. Kesimpulannya, sistem ini amat berpotensi membantu para pensyarah mengurus dan memantau kehadiran pelajar dalam rangka mematuhi prosedur kualiti PTSS-AK-PK-PPP-05-05 yang telah ditetapkan.

ABSTRACT

This study focuses on the development of a Polytechnic Monitoring Student Attendance System or known as PMSAS which has been built using the intranet technology to cater the recording and reporting of the student's attendances. It can be easily accessed by the lecturers and the reports can be generated in real time processing. Besides the way of taking, storing and reporting become easier and more systematically, thus, providing invaluable information about the students' commitments in attending the classes. In order to develop this system, Rational Unified Process (RUP) methodology is applied and the Graphical User Interface (GUI) was developed using Ms Access 2007 and Visual Basic programming to make the database easier to access. The development of this prototype system is inspired by the feasibility study carried out at PTSS Commerce Department where the current practice implementation is becoming more prone to human errors and frauds, also owing to the fact that the students' attendance records are one of the important elements that reflect their academic achievements. From the analysis done, it has revealed that a more systematic and revolutionary system is indeed needed to be reinforced in order to improve the process of recording and reporting the attendances. User acceptance towards this system is gathered by distribution a whole set of questionnaire to PTSS Commerce Department's lecturer. The overall results of this study indicate that user agreed and accept to use this system because of the effectiveness of its usage. In conclusion, this system has a great potential to help the lecturers to manage and monitor student attendance and most importantly to comply with the quality procedure of PTSS-AK-PK-PPP-05-05.

DEDICATION

Alhamdulillah...

All praises and gracious are due to Allah who has arranged all the affairs of life.

I dedicate this success especially to:

My beloved and cherished husband, Surizan Romli

The irreplaceable dear mother Hajjah Sofiah Haji Wahab

Apples of my eyes, Israt Aisyah, Hilman Husaini and the one soon to be born

All of you are my pillar of strength, keep on supporting me and lift me up when I am down without fail. Please forgive all my weaknesses as there are so many sacrifices, troubles and inconvenience imposed on each and every one of you along this journey of success. It is true as the old saying goes, “we gain some we lose some”. There is always reason behind every occurrence and there is always going to be bumpy road here and there. May Allah bless all of you and rewards your kindness and generosity. I truly appreciate and love each of you sincerely from my deepest heart.

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Apart from that, to all the staff of Commerce Department, PTSS, I am everlasting grateful for your willingness and cooperation in the process of data collection up until the evaluation process of PMSAS prototype. Not to forget, to all the Committee Members of Quality Unit who are willing to provide information regarding quality procedures needed and also to College of Arts and Sciences, Universiti Utara Malaysia staff for their top notch cooperation, I can never repay your help and kindness.

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LIST OF ABBREVIATIONS

PTSS	Politeknik Tuanku Syed Sirajuddin
PMSAS	Polytechnic Monitoring Student Attendance System
SIRIM	Standards and Industrial Research Institute of Malaysia
RUP	Rational Unified Process
UML	Unified Modeling Language
SDLC	System Development Life Cycle
QA	Quality Assurance
MAMPU	Malaysian Administrative Modernization and Management Planning Unit
MS ISO 9001	Quality Systems - Model for Quality Assurance In Design, Development, Production, Installation and Servicing

CHAPTER 1

INTRODUCTION

1.1 Background

Quality assurance (QA) processes vary depending on the educational design and delivery methods of the institution but must fundamentally be concerned with the iterative use of feedback information from a range of sources, including admissions data, examinations data, student progress statistics, survey data, interview data, tutor data, graduate employment information, and employer views. Quality assurance has been the subject of much debate in Malaysia higher education over the past years and polytechnic have been subject to both external assessments of teaching quality focuses on particular subjects and external academic audits, which address the workings of polytechnics as a whole. Polytechnic Monitoring Student Attendance System (PMSAS) for example is one of a system to be developed for daily student attendance in polytechnic higher education institution in order to enhance the QA compliance of Politeknik Tuanku Syed Sirajuddin. It facilitates to access the attendance information of a particular student in a particular class. This system will also help in evaluating attendance eligibility criteria of a student and manage all the documents effectively.

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References

- Aamir Ahmed Khan, Syed Faraz Ahmed, Ahmed Naail Abeer, Adnan Afzal and Kamran ul Haq Malik. (2007). Digital Attendance Recording System
- H.C. Ting and T.O. Ting. (2009). An Online Attendance Record System (OARS)
- JW Cameron. (2004). Managing School Attendance. *Audit Report of Auditor General Victoria*, 22-26.
- Joyce L. Epstein and Steven B. Sheldon. (2002). Present and Accounted for: Improving Student Attendance Through Family and Community Involvement. *The Journal of Educational Research*, 308-310.
- Mustaffa Kamal Shuib, Sharifah Norul Akmar Syed Zamri, Rosman Abdullah, Fatimah Said and Rohani Yusof. (2007). Implementation of Quality Assurance In Public Higher Education Institutions: University Of Malaya Experience. *Regional Conference on Quality In Higher Education, December 10-11, 2007*, 2-10.
- Fatt Hee Tie. (2005). Quality-Driven Initiatives in Higher Education: A Case Study. *Conference on Trends in the Management of Human Resources in Higher Education*, 2-5.
- Alan Tait. (1997.) Perspectives On Distance Education: Quality Assurance In Higher Education: Selected Case Studies.
- Mustaffa Kamal e.t al. 8-11.
- Rohani Binti Abu Bakar. (2009) Pemantauan Kehadiran Pelajar (PTSS-AK-PK-PPP-05-05). *Manual Quality Prosedur MS ISO 9001:2000 of Politeknik Tuanku Syed Sirajuddin*, 1-3.
- Mahfudzah Othman, Siti Nurbaya Ismail and Mohd Ikhsan Md Raus. (2009). The Development of The Web-Based Attendance Register System (ARS) for Higher Academic Institution: From Feasibility Study to The Design Phase. *IJCSNS International Journal of Computer Science and Network Security VOL.9*, 203-205.

V. Vaishnavi and W. Kuechler. (2007). Design Research in Information System

Norshuhada Shiratuddin and Shahizan Hassan. (2010). Design Research in Software Development
Constructing and Linking Research Questions, Objectives, Methods and Outcomes. 98-100.

Terry Quatrani. (1999). Visual Modeling with Rational Rose 2000 and UML.

Philippe Kruchten. (2004). The Rational Unified Process: An Introduction

A. Mortazavi. (2008). Rational Unified Process Methodology.

T. David. (2008). Measuring Satisfaction: Beyond the Usability questionnaire. Retrieved Jun 29, 2011
from <http://www.userfocus.co.uk/articles/satisfaction.html>

J. R. Lewis. (1993). IBM Computer Usability Satisfaction Questionnaires: Psychometric Evaluation and
Instructions for Use.

IEEE Std 830. (1998). IEEE Recommended Practice for Software Requirements Specifications. Retrieve
Jun 26, 2011 from <http://www.standards.ieee.org/>

D. Wiegars and E. Karl. (2003). Software Requirements 2: Practical Techniques for Gathering and
Managing Requirements Throughout the Product Development Cycle.

Hanney, S. Davies and A. Buxton, M. (1999). Assessing Benefit from Health Research Projects: Can Use
Questionnaires Instead of Case Study?

J. Nielson. (2006). Qualitative Studies: How many users to test Alert Box. Retrieve Jun 30, 2011 from
<http://www.useit.com/alertbox/>