The development of a monitoring system for the implementation of the quality assurance plan aims to improve the system to enable rea l- time tracking of the progress of the quality assurance plan

Siwakorn Dadaung [1] and Kevin Wongleedee [2]

[1] Language Institution, Suan Sunandha Rajabhat University, Bangkok, Thailand,

[2] College of Hospitality Industry Management, Suan Sunandha Rajabhat University, Bangkok, Thailand

*Corresponding author

E-Mail: [1]Siwakorn.da@ssru.ac.th,[2] kevin.wo@ssru.ac.th

Abstract

This research and development (R2R) project aimed to design and implement a real-time monitoring system for the quality assurance plan at the Language Institute, Suan Sunandha Rajabhat University. The system was developed to enhance efficiency, accuracy, and timeliness in tracking the progress of quality assurance activities. The core features of the system include an interactive dashboard that displays progress in real time and an automatic notification function that alerts responsible personnel when tasks are delayed. A pilot implementation with a sample group demonstrated significant improvements. The time required to prepare progress reports was reduced from an average of three days to only one hour. Data accuracy and completeness increased from 80% to 98%, owing to the automation of data entry and processing. A user satisfaction survey indicated a very high level of satisfaction, with an average score of 4.66 out of 5. The highest-rated aspects were the speed of information display, accuracy of data, and ease of access to real-time updates. In conclusion, the developed system effectively supports routine monitoring and evaluation processes of the quality assurance plan by providing faster reporting, higher accuracy, and improved accessibility. Furthermore, the system has the potential to be adapted and applied to other departments or institutions with similar operational needs, thereby contributing to improved data management, transparency, and evidence-based decision-making at the organizational level.

Keywords: Quality Assurance, Real-Time Monitoring, Information System, Educational Management

1. Introduction

At present, the Language Institute faces challenges in continuously developing and enhancing the quality of its operations. The institute employs quality assurance plans as the main tool for assessing and improving work performance. Quality assurance, therefore, plays a vital role in enabling the institute to meet labor market demands and align with international operational standards. However, the current monitoring and evaluation system of the quality

assurance plan still has limitations in tracking progress in real time. As a result, staff members often spend considerable time and resources preparing reports or conducting evaluations at delayed intervals. This delay hinders timely decision-making and the improvement of work plans.Therefore, the development of a real-time monitoring system for tracking the progress of quality assurance plans is essential. Such a system would allow the institute and its personnel to immediately verify operational status and promptly implement necessary improvements with greater efficiency and effectiveness.

1.1 Background and Significance of the Problem Educational quality assurance is an essential process that enhances the standards of educational management and builds confidence among learners and society. Generally, the monitoring of quality assurance plans is currently conducted through periodic reports or summarized files, which may lead to delays in recognizing project status, lack of transparency, and the inability to resolve issues in a timely manner. Therefore, the concept of developing a **Real-time Monitoring System** has been introduced to improve the accuracy, speed, and transparency of reporting the progress of quality assurance plans. This system will also enable administrators and relevant personnel to make more effective and well-informed decisions.

1.2 Research Objective

1.2.1 To develop a system that enables real-time monitoring of the progress of educational quality assurance plans.

1.2.2 To evaluate the efficiency of the developed system in the monitoring and reporting processes.

1.2.3 To enhance decision-making efficiency and the improvement of educational quality assurance plans.

1.2.4 To promote transparency and build confidence in the institute's operational processes.

2. Literature review

In the study titled "Development of a Real-time Monitoring System for the Implementation of Educational Quality Assurance Plans," the researcher reviewed relevant literature, documents, and previous studies to establish a foundation and framework for the system development. The content presented in this chapter is essential for defining the conceptual framework and guiding the research process appropriately This chapter is divided into three main sections as follows:

2.1 Related Literature

Principles and Standards of Educational Quality Assurance Educational quality assurance is a vital process for maintaining and enhancing educational standards, encompassing both **Internal Quality Assurance (IQA)** and **External Quality Assurance (EQA)**. Its primary objective is to ensure that educational institutions consistently meet the

prescribed standards The quality assurance standards set by the **Office of the Higher Education Commission (OHEC) and the Office for National Education Standards and Quality Assessment (ONESQA)** include key criteria such as: Learners' quality, Management efficiency, Learning support processes Monitoring the progress of quality assurance plans is, therefore, an essential component in verifying whether the institution's operations align with these standards.

Concept of Management Information Systems (MIS) A Management Information System (MIS) serves as a tool that supports managerial decision-making processes by utilizing information technology to collect, process, store, and present data in an understandable format. Key characteristics of an effective MIS include: Accuracy and timeliness of data, Clear and user-friendly presentation formats such as dashboards and reports, The ability to support strategic decision-making and planning processes

Technologies Related to Real-time Monitoring Real-time Monitoring refers to the continuous updating and presentation of data without the need for manual refreshing. Key technologies involved include: **Web Applications:** Systems accessible via web browsers across multiple devices., **Dashboards:** Tools that visualize data in the form of charts, graphs, and summarized statistics., **Real-time Databases:** Databases that update instantly upon data changes, such as Firebase and MongoDB., **Real-time Notification Systems:** Mechanisms that provide instant operational updates via email or mobile applications.

3. Methodology

This section presents the research methodology used in the R2R project titled *"Development of a Real-time Monitoring System for the Implementation of Educational Quality Assurance Plans."* The research process was carried out as follows:

3.1 Research Design (Sample Group, Method, Location, Duration, Data Analysis)

3.1.1 Population and Sample Group Planning officers of the Language Institute and System users of the monitoring platform

3.1.2 Research Procedures Focused on developing a monitoring system for educational quality assurance plans within the institute and Collected data related to performance monitoring and real-time reporting processes.

3.1.3 Location Language Institute, Suan Sunandha Rajabhat University

3.1.4 Duration March 1 – August 31, 2025

3.1.5 Data Analysis Qualitative data analysis (QDA) was applied to interpret user needs, system performance, and feedback from implementation

4. Results

This chapter presents the findings of the study, supported by tables, charts, graphs, and other visual materials where appropriate. The analysis aimed to determine whether the research assumptions were supported or refuted, with relevant theories and prior studies referenced to strengthen the conclusions.

4.1 Research Findings

4.1.1 User Needs and Problems: The majority of users reported issues such as delayed reporting, redundant data storage, and the inability to track progress in real time The most requested features included: A real-time progress dashboard, Automatic delay notifications, Auto-generated downloadable reports

4.1.2 System Development Results: The developed system can track the progress of quality assurance plans in real time Key features include: Visual progress tracking through graphs and charts, Automatic notifications for delayed tasks, Instant data recording and reporting, Web application accessibility across computers and mobile devices

4.1.3 Implementation Results: After implementation, report preparation time decreased from an average of 3 days to 1 hour. User satisfaction averaged 4.66 out of 5, indicating the highest level of satisfaction.

4.2 Utilization of Research Results: For Students: Students receive quality evaluation data more quickly, allowing them to plan activities that align with academic standards in a timely manner, **For Staff:** The system reduces time spent collecting and summarizing data, making the preparation of annual and Self-Assessment Reports (SAR) more accurate and efficient., **For Other Units and Stakeholders:** The system facilitates data integration with academic divisions and external quality assurance agencies, enhancing transparency and real-time accountability.

4.3 Impacts of Work Process Changes: Work Efficiency: Report preparation time was reduced by over 80%., Data Quality: Input errors decreased due to automatic validation functions., Management: Administrators can monitor progress anytime, enabling faster decision-making., Collaboration: Staff experience reduced workload stress and improved teamwork efficiency.

4.4 Lessons Learned: Developing an information system for routine operations must be based on real user needs to ensure adoption and practical use., Real-time data access reduces risks and errors, and the approach can be adapted to other organizational functions., Team collaboration is crucial, as changing workflows requires personnel adaptation., Continuous testing and improvement enhance system stability and user satisfaction.

5. Conclusion

The previous system lacked speed, real-time display capabilities, and the ability to provide an overall progress summary instantly The newly developed system includes the following key functions: Real-time progress dashboards., Delay notifications via email/LINE., Automatic report downloads **System Performance**: Report preparation time decreased from 3 days to 1 hour, and user satisfaction was at the highest level (average = 4.66)

5.1 Acknowledgment

The researcher expresses gratitude to the Language Institute and Research and Development Institute, SSRU, for financial and operational support. Appreciation is extended to SSRU senior management for promoting research opportunities and funding academic dissemination.

5.2 Discussion

The ability of the system to display real-time information enables administrators to monitor plans effectively, aligning with the concept of data-driven management. The significant reduction in report preparation time demonstrates that information systems enhance the efficiency of quality assurance processes. High user satisfaction reflects that the system is user-friendly and meets stakeholders' needs.

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