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Revitalising Programme Review: Harnessing Data and AI for Evidence-Based Improvement

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Abstract: Traditional annual programme reviews are often slow, data-heavy, and prone to subjective interpretation, with faculties struggling to integrate diverse data for actionable insights. Automating reports and using AI-generated insights speeds up reviews, helping faculties plan interventions to improve student learning and foster continuous improvement. The Programme Learning Analytics Report (PLAR), piloted since October 2023 across 80+ undergraduate programs, has recently been updated with AI technology to enhance data interpretation and generate deeper insights. This AI integration streamlines analysis, enabling faculties, departments and programme leaders to uncover key themes and trends more efficiently, supporting responsive, data-driven decision-making and programme improvements.

Keywords: Programme review, AI-generated insights, Learning analytics, Evidence-based

1. Introduction

In higher education, annual programme reviews (APRs) and departmental reviews are essential for maintaining quality, pinpointing areas for improvement and showing accountability (Manarbek & Kondybayeva, 2024). These reviews are designed to be thorough and systematic examinations of programme operations, student progress and learning outcomes. This process is designed to lead to improvements that are based on strong and reliable evidence (Banta & Palomba, 2014). However, the traditional APR process can often require departments combining information from different sources to be very time-consuming and require a lot of data, which can also lead to interpretations that are influenced by personal opinions, resulting in bias. This paper addresses this challenge by presenting a practical approach to harnessing teaching and learning data and AI-generated insights for more efficient, evidence-based programme reviews.

2. The AI-Powered Programme Learning Analytics Report (PLAR)

The Programme Learning Analytics Report (PLAR) is developed to enhance enhances the efficiency and effectiveness of programme reviews by integrating AI-driven analysis of student surveys and teaching data. It consolidates data from multiple sources into clear, visual formats—charts and tables—that reveal trends and insights.

Using AI algorithms and Natural Language Processing (NLP), PLAR analyses student feedback to identify key themes and categorise comments, enabling deeper understanding of strengths and areas for improvement. AI models like DeepSeek-R1-Distill-Qwen-32B process large volumes of data, summarising insights to support data-driven decision-making and strategic interventions. To ensure accuracy, a Chain of Verification validates AI-generated conclusions. The AI models is customised with university-specific terminology to better interpret context. This approach empowers faculties to quickly grasp complex data,

compare results, and develop targeted strategies that enhance the student learning experience while reducing review time.

The PLAR provides comprehensive data on past and current student cohorts, including academic performance, entry characteristics, satisfaction scores, and learning experience feedback. Delivered in an easy-to-use Excel format with printable layouts, it supports administrative staff in integrating the report into quality assurance processes. The report features tables and visualisations that help programme leaders, deans, and heads gain detailed insights into their students. Here is an example of the visualisation in PLAR:

A chart traces the average semester GPA of recent cohorts from admission to graduation. This aids in identifying challenging semesters, indicated by lower GPAs across cohorts. Examining this pattern alongside other information, such as subject grades in those semesters, helps pinpoint potential causes. This information is vital for devising follow-up actions to address any issues.

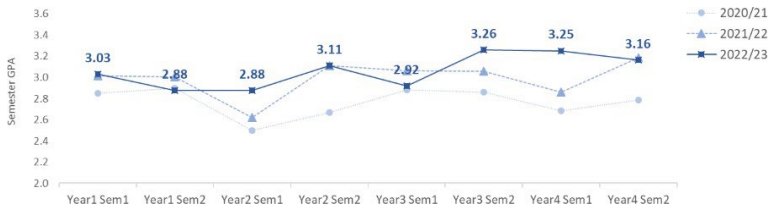

Figure 1. Trend of semester GPA in each semester for graduates.

Stakeholders have praised PLAR for identifying areas to improve student learning quality. A programme leader highlighted its valuable statistics for Annual Programme Reviews, supporting informed decisions to create a more engaging environment. The user-friendly Excel format allows easy annotation and comparison across multiple years and university averages.

3. Conclusion

This paper highlights the transformative impact of AI-generated reports in education. By automating data analysis, AI improves efficiency and delivers actionable insights for more effective and better learning and teaching experiences. While ethical considerations and strong policies are essential, AI streamlines traditionally time-consuming programme reviews into evidence-based, data-driven processes. This enables institutions to focus on continuous improvement and adapt to emerging challenges. Educators and administrators can learn practical ways to integrate AI into reviews, ensuring processes remain dynamic, relevant, and responsive to evolving student and institutional needs.

References

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