

Blackboard Tests and Surveys – An Enterprise Reporting Solution

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Background

The University of Leicester's (UoL) Medical School (LMS) has internal and statutory external (UK General Medical Council) obligations to retain records and to report on student's progress and achievements. These reports used to be created by LMS by downloading the results for each test from within the Gradebook and collating them in a third party package. However, compiling the data for the reports was a time consuming process for the LMS technologists and the task was considered to be unsustainable for the long term. A bespoke solution was developed by UoL IT Services to extract test question/response data from the Blackboard database and process it into a format that could be reported on through enterprise-level SAP Business Objects software. The solution has been running successfully for over three years and provides a reporting facility that requires no involvement by the technologists to download and collate data for report updates.

Technical Overview

Figure 1 provides an overview of the system architecture for the technical solution. UoL is a Blackboard managed hosted site, so raw data (dates, question type, test questions /responses in binary format) are retrieved overnight from a clone of the live Blackboard Learn database using the SAP PI integration engine, storing it in a local UoL staging database.

UoL developed a Microsoft C# .Net application to then process the raw data converting the binary XML data into plain text extracting discrete question and student response data for each user. A SAP Business Objects (v4) MultiSource universe was created connecting the Blackboard managed hosted cloned live database with the local UoL hosted processed question/response data. The universe allows reports to link UoL processed test questions and user's responses to additional user and course data hosted by Blackboard.

The solution identifies both new and updated test submissions in their various submitted stages (saved, submitted, graded) for all question types including Question Sets and Random Blocks. Any superfluous HTML added when copying text into a response is also removed. Data is refreshed automatically on a daily basis and is retained for a rolling window of 24 months.

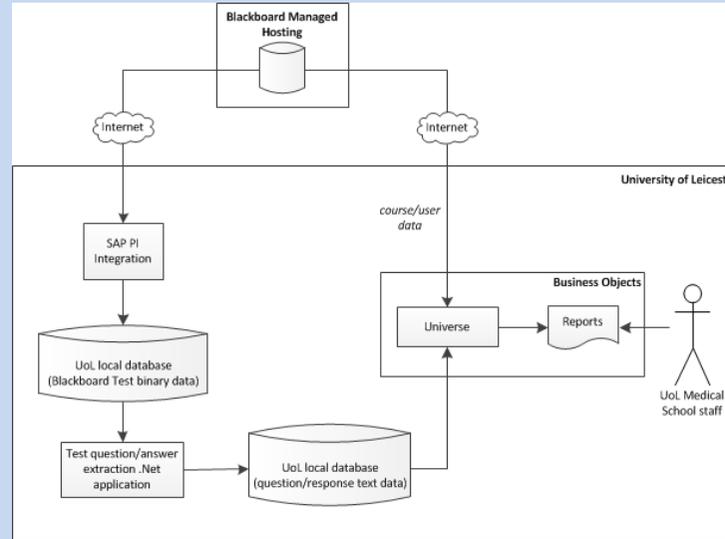


Figure 1: Overview of the Solution System Architecture

Current Usage and Future Potential

Within this solution, LMS technologists maintain a number of centrally administered reports that are accessible to authorized users who can run them on demand without referring to the technologists for manual data updates. Figure 2 demonstrates two example reports that are used to evaluate feedback from students on particular learning/teaching topics. The reports combine both formative assessments for ongoing reflective practices and summative assessments for objective measurement of responses. The reports have been significantly used to gather reflective and summative responses from students' experiences during their medical work placements. Whilst summative tests can be objectively measured, question types such as the essay and short-answer can provide a structured method to gather students' reflective responses which include strengths/weaknesses of learning modules/practices. Further value can be added by analysing report data which can support assessment design e.g. the effect of different question types on response levels. The enterprise approach provides the capability to analyse student results across tests in the same and/or different courses thereby identifying trends in student responses and/or question design.

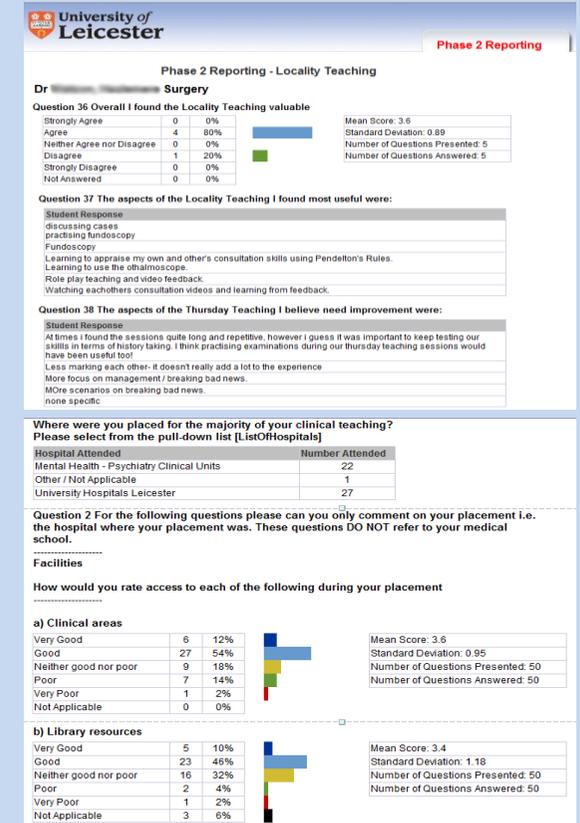


Figure 2: Example Reports using SAP Business Objects

Conclusion

The solution provides a capability to meet an essential requirement for LMS which previously was provided by Blackboards Gradebook test result download functionality and a third party reporting package. Scheduled data extraction and processing now allow centralised reports to be used for continual reporting with no intervention for data updates. This has facilitated improved efficiency amongst technologists and has the potential to increase its benefit to LMS by contributing to continual assessment evaluation and design.