

Student Retention and Early Warning Systems



An Evaluation of Implementation Options Off the Shelf or Custom Build

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Introduction

This paper discusses the two main approaches to implementing an early warning and student retention system. The two main approaches are:

1. Implement an off the shelf system.
2. Build a custom business intelligence solution.

The goal of this discussion paper is to allow the reader to gain a high level understanding of each approach and its appropriateness (advantages and disadvantages) in different situations.

When used appropriately, both approaches can produce significant actionable insights. However there are differences in the amount of time, resources and costs of each approach which should be understood before making a decision.

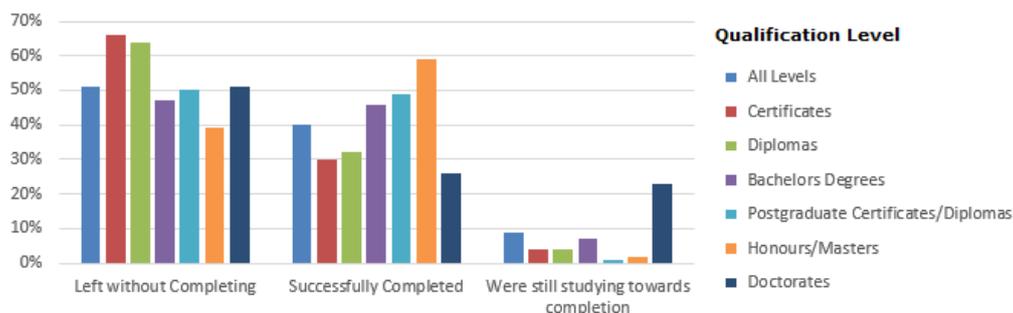
The paper has the following structure:

- Introduction
- Why Focus on Student Retention
- Student Retention Strategy
- Features of a Student Retention System
- Implementation Options
- The Recommended Option for Your Institution

Why Focus on Student Retention?

There are many studies that reveal student retention in Higher Education to be a significant issue that needs to be addressed. For example, a study conducted by Ministry of Education New Zealand (2005, David Scott) highlights the retention issue. Of the domestic students which started a qualification at a tertiary institution:

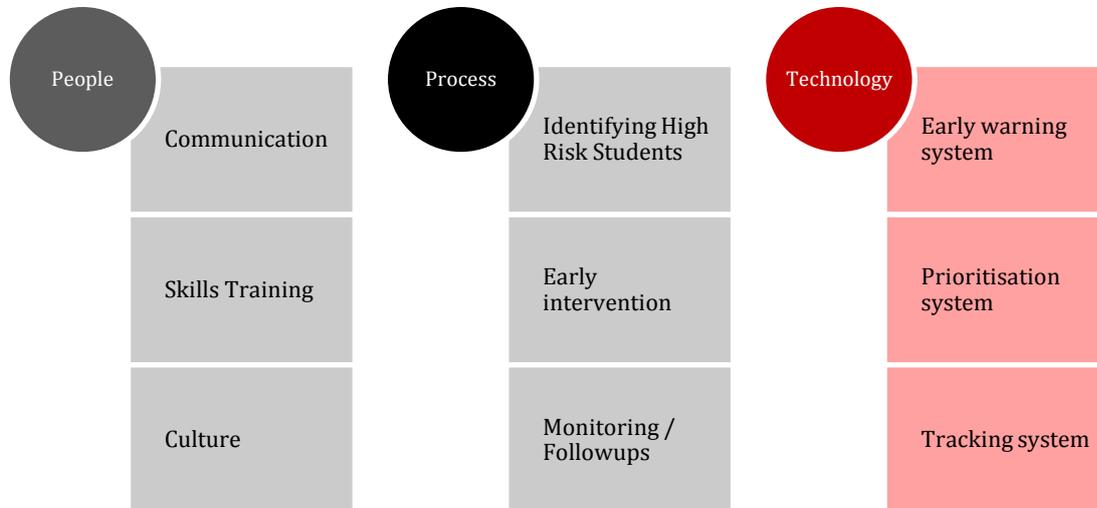
- 40% had gained a qualification in 5 years (1998 – 2002)
- 9% were still studying after 5 years
- 51% had left without gaining a qualification



Scott (2005) also highlights that significant variations exist for different demographics. There are many other international studies that support Scott's findings.

Student Retention Strategy

Like most other strategic initiatives, a strategy to improve student retention in tertiary institutions is dependent on 3 strategic components i.e. people, process, tools.



A detailed discussion of such a strategy is outside the scope of this paper but in brief the focus of a successful strategy involves engaging people (key stakeholders such as staff) and developing processes that enable identification, intervention and monitoring of high risk students.

Technology should be used support the people and the processes i.e. empower staff to identify and reach more high risk students as early as possible.

Features of a Student Retention System

The following table summarises some of the key attributes of a good early warning and student retention system.

Dashboards	Snapshot of high risk students
	Report by demographics, department, courses, resolution status etc
	Trend analysis
	Drillthrough capability (link to department, course and student records)
Actionable information	Prioritisation of high risk students
	Generate assignable actions
	Manage and monitor agent and student interaction
	Setup and generate early warning alerts to appropriate staff / agents
Outcome	Configurable risk factors
	Ability to connect and extract data from multiple student management databases.

Implementation Options

The two main options for implementing an early warning and student retention system are either implementing an off the shelf system or developing a custom business intelligence application.

The goal in both instances is to analyse and predict student behaviour and take some action to improve the chances of a favourable outcome. This falls in the business intelligence category of predictive analytics.

	Off The Shelf Product	Custom BI Implementation
Cost Involved	Product Licensing Integration with student management system Internal testing	Business Intelligence Consultants / Development resources Internal project team (subject matter expert and tester) <i>Note : More details in resources section</i>
Implementation Time	4 to 8 weeks	3 to 12 Months <i>Note: This depends on scope of requirements and resources dedicated to the project.</i>
Resources Required	Vendor implementation consultants	Requirements gathering (business analyst / consultant) BI Developers / Consultants Testers Project Manager
Flexibility	Configurable risk criteria Integrates with multiple systems	The scope of custom built systems is more flexible. Analysis may also include other metrics such as profitability, staff retention, asset utilisation etc.

Off The Shelf Product

The diagram below shows the high level steps involved in implementing an off the shelf product.



Product Evaluation

Expected Time Frame: This should take only a few hours for each products that is evaluated.

The assessment should involve a small group of key stakeholders that is led by a subject matter expert.

Outcome: The outcome is a recommendation to senior management about which products provide the most suitable functionality at an acceptable price.

Pilot / Test Run

Expected Time Frame: This depends on internal resource availability but it is expected to take between 2 to 6 weeks.

This is used to confirm that the shortlisted product delivers the required functionality. Useability is a key measure of success for the pilot run. This should be limited to a particular department or faculty to avoid full implementation costs.

Outcome: A decision to either go ahead with the full implementation of the selected product or to test a product from a different vendor.

System Integration

Expected Time Frame: This depends on the complexity of the source system but a reasonable time is between a few days (less than a week) and 4 weeks.

For complex systems, a data analyst may be required to provide mapping rules between the student management system and the student retention system.

Outcome: The student retention system is now able to access and analyse data from the student management system.

Implementation

Expected timeframe: This depends on the level of custom configuration required but it can take a few days or approximately a month.

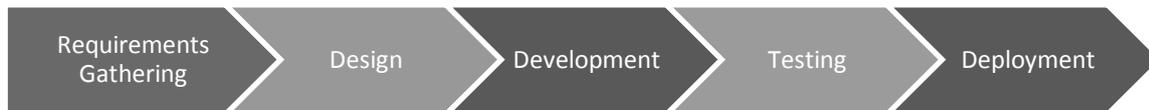
The configuration will likely involve adjusting risk assessment criteria. User access, alerting and assigning students to agents may also be configured at this stage.

Users training should also be carried out during this stage.

Outcome: Users are trained and the system is configured and ready to be used.

Custom Business Intelligence Implementation

The diagram below shows the high level steps involved in implementing a custom business intelligence solution.



Requirements Gathering

Expected Time Frame: This depends on the scope of the requirements and the number of stakeholders to be consulted but in general it is expected to take between 1 and 4 weeks.

Outcome: A document containing the detailed requirements of the stakeholders.

Design

Expected Time Frame: The initial design should take between 2 to 10 days of effort (depends on the scope). In our experience designs are revisited as more requirements are introduced through the development phase of the project.

Outcome: A design document that can be approved by key stakeholders and subject matter experts. Another output is the technical design which will be used by developers and testers.

Development

Expected Time Frame: The best approach is an iterative approach which allows some functionality to be deployed each month. That way users do not have to wait until the end to see and use the solution. The total time frame will vary depending on user requirements but 1 to 6 months is normal for medium sized projects.

Outcome: Testable software.

Testing

Expected Time Frame: This is an ongoing activity. Planning will most likely start straight after design and the actual testing will continue until the deployment phase.

Outcome: Initially a test plan and subsequently a list of defects and issues that the stakeholders have to prioritise and the developers have to resolve.

Deployment

Expected Time Frame: This is usually short (1 or more days) but it depends on the release procedures of the institution that is implementing it. For example those institutions that follow ITIL will have a strict release management process.

The Recommended Option for Your Institution

A key question that most readers will have is “so which option is best for our institution” and the answer is it completely depends on your requirements.

The **off the shelf option** is best if you have the following requirements:

- Quick implementation time
- Relatively low cost
- Want to benefit from the vendor’s experience in solving the same issues for other institutions.
- Benefit from the ongoing product investment and enhancements from the vendor.

The **custom business intelligence** is best for institutions that have the following requirements:

- Need to analyse and report on data that is broader than student retention e.g. revenue, expenses, staff metrics such as turnover, asset information etc.
- More information that was what is provided by off the shelf systems.
- Already have an existing data warehouse that fulfils most of the reporting requirements.

Sometimes both solutions are implemented i.e. an off the shelf system that fulfils the specific student retention requirement and an enterprise data warehouse and business intelligence system that allows an institution to analyse and understand all aspects of its operations.

For an implementation to be successful we recommend that an institution wishing to improve their student retention does the following:

1. Ensure that they have a strategy that takes into account its people, processes and technology.
2. Understand its own requirements and budgets.
3. Evaluate and test potential solutions and vendors.
4. Implement a solution that supports an improved early warning and student retention process.

About the Author

Tino Turo is the principal consultant at Techlogix (www.techlogix.com.au), an Australian based Data Warehouse and Business Intelligence consultancy that specialises in Microsoft SQL Server based solutions. Techlogix is also the distributor and implementation partner for deFacto (www.defactoglobal.com) a Microsoft based budgeting, forecasting and planning application.

About the Sponsor

This discussion paper was sponsored by Cobek (www.cobek.com). Cobek develops sophisticated solutions for higher education institutes focused on assessment and results, student attendance tracking, and student retention management.