A Research Activity Early Warning System: Enabling Decision-making Through the Visualisation of Postgraduate Data

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Objective

The aim of this presentation is to share first-hand experiences, challenges and successes of this pro-active intervention and its impact on decision-making.

This contributed to the body of knowledge and practitioners will gain a better understanding of how to implement pro-active data visualisation to influence decision-making.

Background

Over the past few years, technology has modernised how we live, do business and communicate at institutional and personal level.

The development of new self-service technologies and interactive communication tools, like dashboards, has changed how we experience institutional processes.

Self-Service Technologies

Self-Service Technologies are interfaces that allow users to obtain their own information independently of direct service employees, with the intention to speed-up service delivery, making it convenient and accessible.

Dashboards

A dashboard is "an easy to read, often single page, real-time user interface, showing a graphical presentation of the current status and historical trends of an organisation's key performance indicators

to enable instantaneous and informed decisions to be made at a glance."

In real-world terms – “dashboard” is another name for “progress report” or “report”.

Often, the dashboard is displayed on a web page linked to a database which allows the report to be updated constantly in real-time.

Dashboards were built in the Higher Education Data Analyser (HEDA) environment.

power HEDA
simplicity through innovation

Adoption of Technology

It is in the adoption of new technology that opportunities arise to present and disseminate flat data in the visualised environment of dashboards to entice the user to engage with data differently.

Business intelligence tools enable the developer to investigate, find, evaluate, analyse, apply, modify and present information in new modern ways by applying various technologies to support management and decision-making.

Decision-making

Evidenced-based decision-making in Higher Education in South Africa is integral to complying with three steering mechanisms:

- *Funding*
- *Quality*
- *Planning*

– encapsulated within legislation.

Funding:

- *Based on DHET directives – all public institutions have to submit annual HEMIS data*

  ~ *HEMIS – Higher Education Management Information system*

  ~ *DHET – Department of Higher Education and Training*

… Funding:

- *Funding differs according to levels of courses linked to qualifications*
  - ~ *Postgraduate research components are funded on a higher level*
- *Only academic active students are allowed to be included in HEMIS submissions*
  - ~ *Have proven activity records*

Opportunity:

A gap was identified to create a hands-on management postgraduate research activity dashboard.

An intensive investigation has shown that several graduates have been omitted from the HEMIS submissions because

- *research activities have not been captured,*
  - ~ *resulting firstly in inaccurate reporting reflecting incorrect throughput rates, and*
  - ~ *secondly impacting negatively on output funding, quality and planning.*

… Opportunity:

Various attempts were made to assist in this process through formal communication throughout the university community as well as the development of various datasets and reports.

These attempts led to only a slight increase in the capturing of these activities.

Implementation

Dashboards were created within the HEDA environment to:

- *Present aggregated figures*
- *Visualise progress*
- *Improve management of this process, and*
- *Assist in decision-making in real-time.*

Dashboard

PG Dashboard

College

- CAES
- CAS
- CEDU
- CEMS
- CGS
- CHS
- CLAW
- CSET
- SBL

Module Type

Applied Filters: No filters applied

Qualification Type

Applied Filters: No filters applied

2013

	Not Active	Active
	Students	Students
Proposal	204	247
Full Dissertation	14	243
Limited Scope	0	14
TOTAL	**218**	**504**

2013

% Active Students **69.8%**

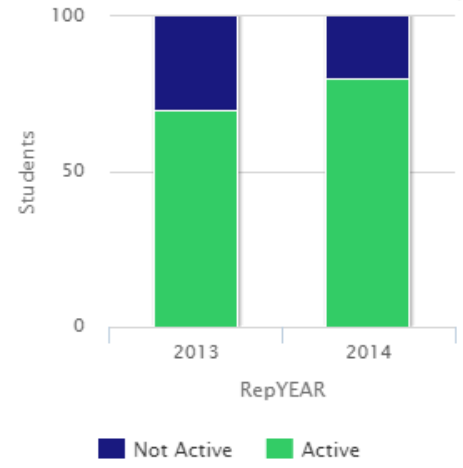
2014

	Active	Not Active
	Students	Students
Full Dissertation	313	34
Proposal	183	94
Limited Scope	12	0
TOTAL	**508**	**128**

2014

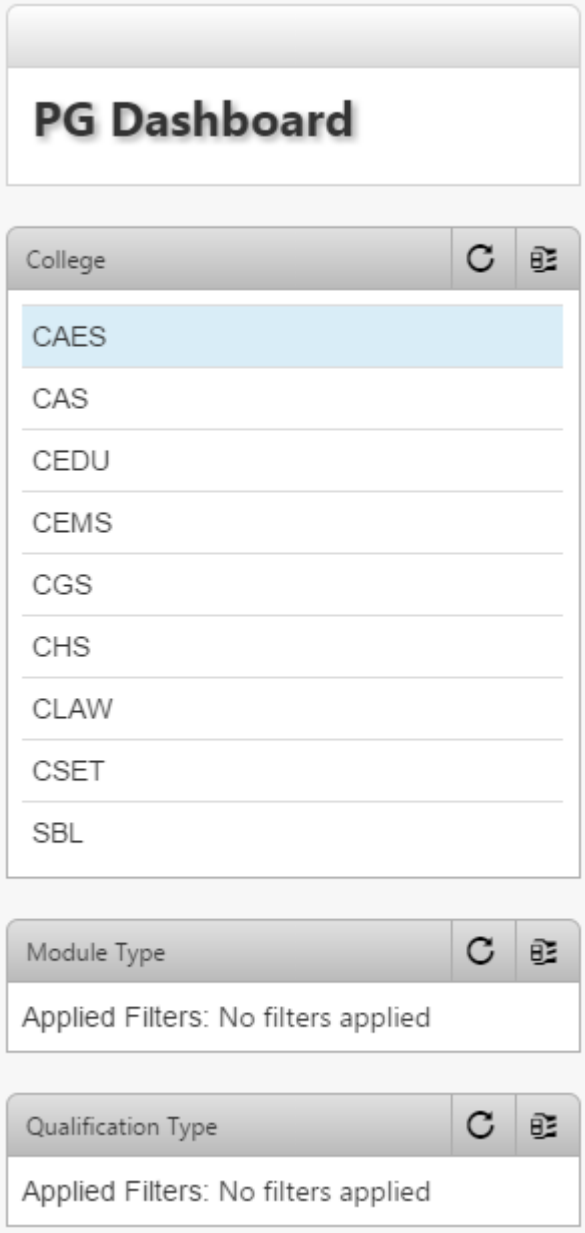
% Active Students **79.9%**

Activity

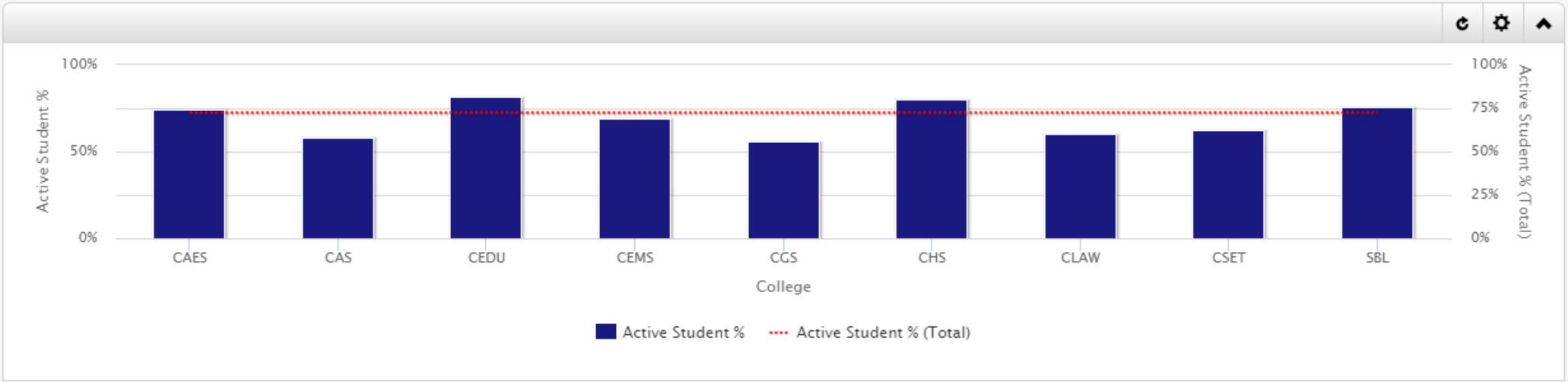


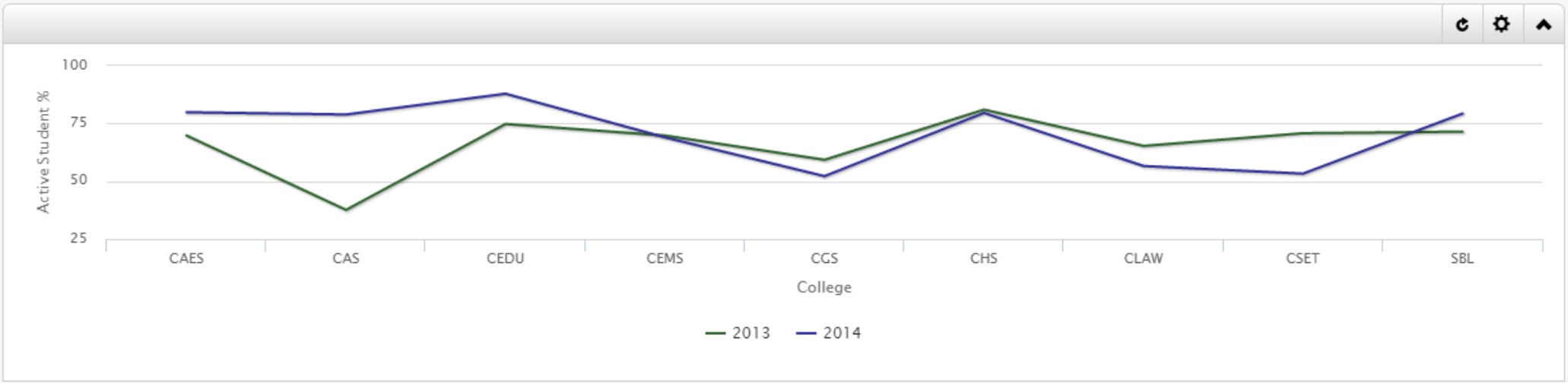
	2013	2014
	Students	Students
Not Active	218	128
Active	504	508
TOTAL	**722**	**636**

Filters


PG Dashboard
College
CAES
CAS
CEDU
CEMS
CGS
CHS
CLAW
CSET
SBL
Module Type
Applied Filters: No filters applied
Qualification Type
Applied Filters: No filters applied

Trends


100%
50%
0%
Active Student %
100%
75%
50%
25%
0%
Active Student % (Total)
CAES
CAS
CEDU
CEMS
CGS
CHS
CLAW
CSET
SBL
College
Active Student %
Active Student % (Total)


100
75
50
25
Active Student %
CAES
CAS
CEDU
CEMS
CGS
CHS
CLAW
CSET
SBL
College
2013
2014

Detail

Activity Targets

	2013		2014		
	Students	Active %	Students	Active %	Active %
DOCTOR OF PHILOSOPHY IN ENVIRONMENTAL MANAGEMENT	57	63.16%	46	86.96%	
MASTER OF SCIENCE in Environmental Management (Full Dissertation)	140	58.57%	87	87.36%	
DOCTOR OF LITERATURE AND PHILOSOPHY IN GEOGRAPHY	3	100.00%	3	100.00%	
DOCTOR OF PHILOSOPHY IN GEOGRAPHY	43	100.00%	42	97.62%	
HONOURS BACHELOR OF ARTS IN GEOGRAPHY	21	90.48%	19	52.63%	
BACHELOR OF SCIENCE HONOURS in Geography	72	81.94%	80	45.00%	
MASTER OF SCIENCE in Geography (Full Dissertation)	26	100.00%	24	95.83%	
MASTER OF SCIENCE in Life Sciences (Full Dissertation)	31	67.74%	35	77.14%	
DOCTOR OF PHILOSOPHY IN ENVIRONMENTAL SCIENCE	59	66.10%	72	80.56%	
MASTER OF SCIENCE in Agriculture (Full Dissertation)	109	48.62%	96	82.29%	
MASTER OF SCIENCE IN ENVIRONMENTAL SCIENCE	3	100.00%	0	0.00%	
MASTER OF CONSUMER SCIENCE (Full Dissertation)	14	100.00%	13	100.00%	
MASTER OF ARTS in Geography (Full Dissertation)	6	100.00%	4	75.00%	
MASTER OF SCIENCE in Environmental Science (Full Dissertation)	59	66.10%	58	86.21%	
MASTER OF SCIENCE in Nature Conservation (Full Dissertation)	12	58.33%	16	68.75%	
MASTER OF SCIENCE IN GEOGRAPHY	2	100.00%	2	100.00%	
MASTER OF CONSUMER SCIENCE	1	100.00%	0	0.00%	
DOCTOR OF LITERATURE AND PHILOSOPHY IN ENVIRONMENTAL MANAGEMENT	5	80.00%	4	100.00%	
MASTER IN HUMAN ECOLOGY	14	100.00%	12	100.00%	

Impact

- *Quality of the data and overall awareness within the postgraduate environment has improved.*
- *Planning has improved through correct student data reporting, supported by quality programmes and infrastructure,*
- *resulting in correct funding and enrolment planning based on a true reflection of institutional progress regarding students.*

Conclusion:

This initiative was intended to increase awareness and hands-on interactive visualisation of research activity status at postgraduate level, to advance throughput and therefore prevent under-reporting for subsidy.

What started off as a proactive early alert for academics and administrators in managing academic research activities, matured into positive results not anticipated when this project was conceived.

Thank you!