

NELSON MANDELA
UNIVERSITY



The piloting of an Early Warning System and student Academic Support Intervention at Nelson Mandela University

5th Siyaphumelela Conference
The Wanderers, Johannesburg
25-27 June 2019

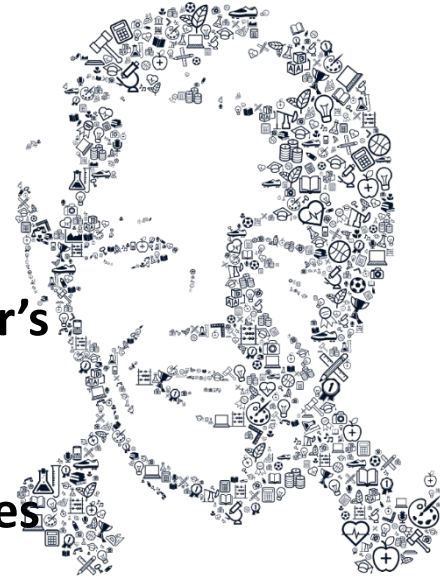
**INTRODUCTION - NELSON
MANDELA UNIVERSITY
SIYAPHUMELELA BOUNS
PROJECT**

RYAN PILLAY,
OFFICE FOR
INSTITUTIONAL PLANNING

Outline



- Siyaphumelela Project Goals & BONUS Project Goal & Activities**
- Student Dashboard & a Student's view on the Student Dashboard**
- Academic Advising in the School of Engineering & Lecturer's view on the Lecturer Dashboard**
- Academic Advising in the Faculty of Law**
- Link to Student Career Counselling & Development Services**
- Overview of Research - to inform further dev of RADAR & Academic Advising Services at Nelson Mandela University**
- Conclusion and the way forward**



Nelson Mandela University Siyaphumelela Project Goals

❖ *To develop:*

1.

- a comprehensive set of student success indicators and data, and identify monitoring & evaluation methods for each indicator

2.

- an electronic early warning, tracking & monitoring system to monitor student progress, optimise early intervention, & observe the take up of academic support & development opportunities

3.

- the capacity to generate and use data analytics related to student success

4.

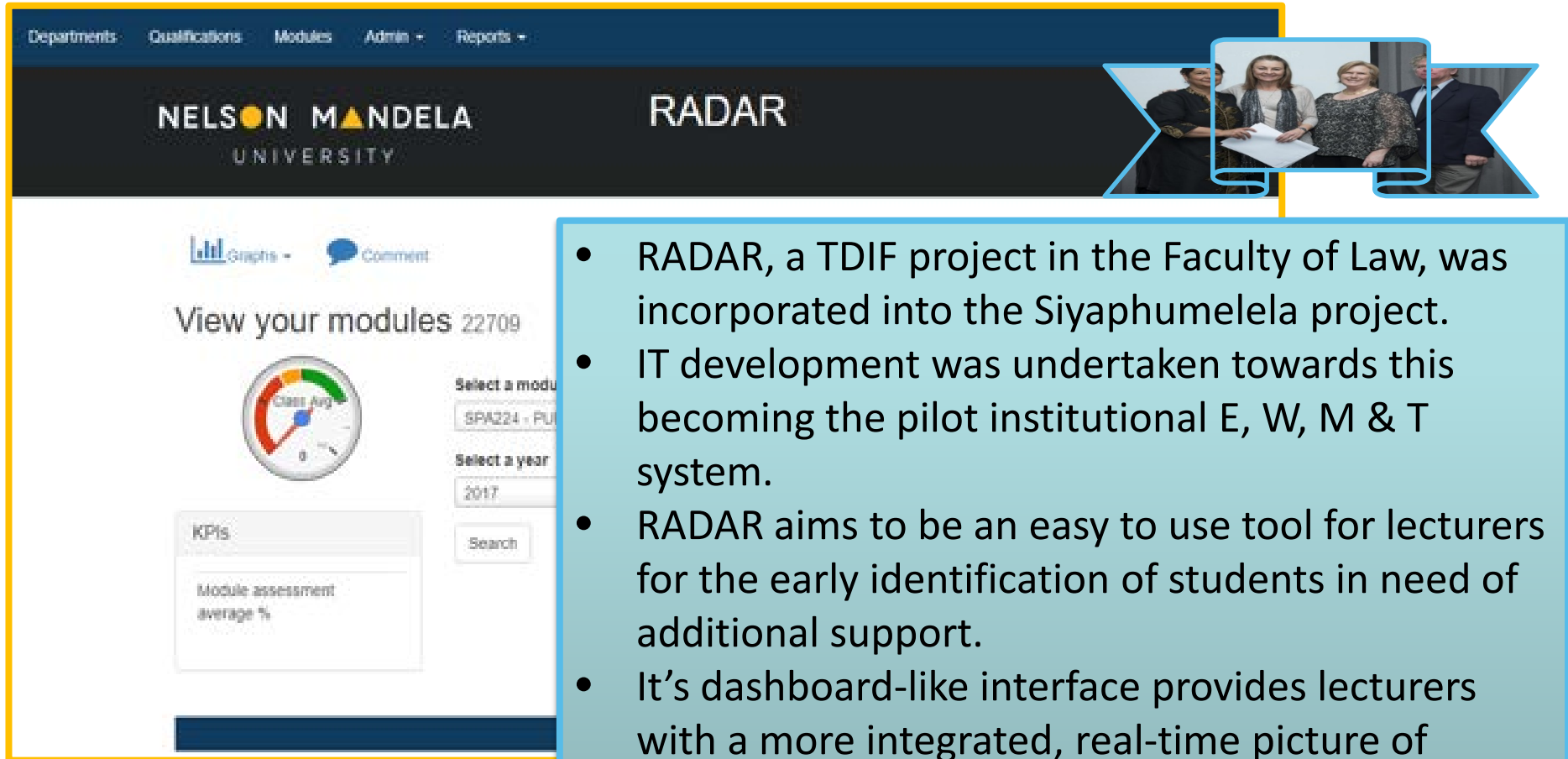
- Improvement of student success initiatives

(Foxcroft and Sheppard 2014)



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Institutional Early Warning, Tracking & Monitoring System



- RADAR, a TDIF project in the Faculty of Law, was incorporated into the Siyaphumelela project.
- IT development was undertaken towards this becoming the pilot institutional E, W, M & T system.
- RADAR aims to be an easy to use tool for lecturers for the early identification of students in need of additional support.
- It's dashboard-like interface provides lecturers with a more integrated, real-time picture of students' academic performance in class tests and assignments across all modules.
- Lecturers can email students from the system and access drop down lists of support interventions.

Siyaphumelela Project – BONUS PROJECT Goal

GOAL:

To roll-out the early warning, tracking and monitoring system - RADAR - in the Faculty of Law and the School of Engineering, with the referral to interventions component effectively linked to RADAR, and supported by academic advising.



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Siyaphumelela Project – BONUS PROJECT Activities

- 1. Complete roll out of RADAR & enhancements focussing on 1st yr students.
Lecturers to use the system to its maximum by:**
 - ❖ identifying students for early academic interventions using RADAR
 - ❖ referral of students for academic advising and/or other interventions & working with advisors to monitor attendance of interventions
 - ❖ working with advisors to establish data trends
- 2. Development, roll-out and monitoring of the student dashboard**
- 3. Providing academic advising capacity under the mentorship of the Centre for Teaching Learning and Media (CTLM)**
- 4. Development of an academic advising database and Linking RADAR to Student Counselling's LEC and all other interventions**
- 5. Researching possible predictors of student success in support of the development of the predictive capabilities of RADAR**



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**ACTIVITY 2 Development of the
Student Dashboard & a
Student's view on the Student
Dashboard**

CHUMA MADYOSI,
INFORMATION SYSTEMS
DEVELOPER,
ICT SERVICES

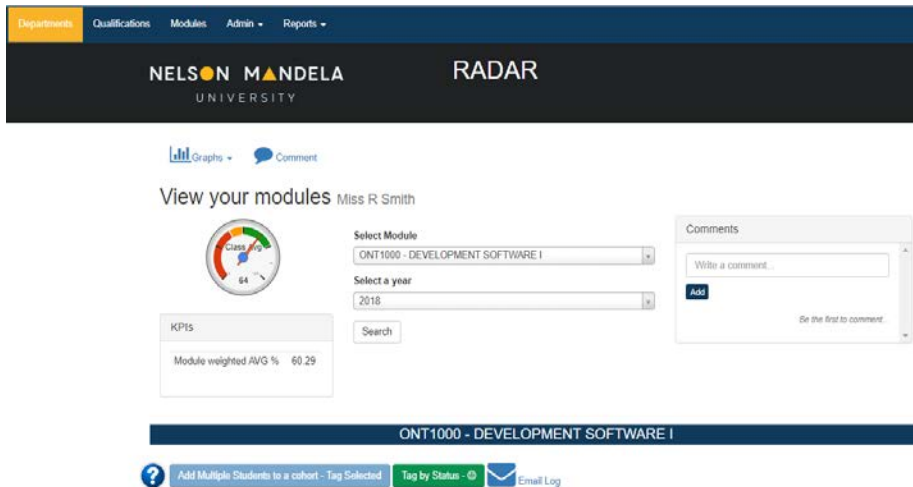
AND

LAWRENCE LWANGA,
STUDENT,
FACULTY OF LAW

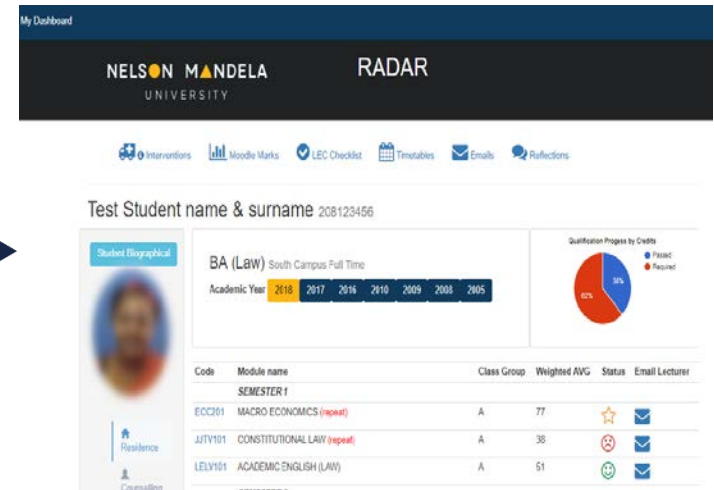
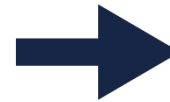
RADAR – STUDENT DASHBOARD

RADAR Enhanced

- ❑ Advanced e-mailing functionality (e-mail logs)
- ❑ Adding of bulk students to a particular cohort (e.g. watch List) to allow for tracking at a later stage
- ❑ Additional KPIs were developed added to the system
- ❑ More reporting mechanisms to assist lecturers and academic advisors.
- ❑ **A birth of a new individual student dashboard**



The screenshot shows the RADAR dashboard interface. At the top, there are navigation tabs: Departments, Qualifications, Modules, Admin, and Reports. The main header displays the Nelson Mandela University logo and the RADAR title. Below the header, there are icons for Graphs and Comment. The main content area is titled "View your modules Miss R Smith". It features a "Class" gauge showing a score of 64. There are dropdown menus for "Select Module" (currently showing "ONT1000 - DEVELOPMENT SOFTWARE I") and "Select a year" (currently showing "2018"). A "Comments" section includes a text input field and an "Add" button. A "KPIs" section shows "Module weighted AVG % 60.29". At the bottom, there are buttons for "Add Multiple Students to a cohort - Tag Selected", "Tag by Status", and "Email Log".



The screenshot shows the "My Dashboard" interface. At the top, there are navigation tabs: Interventions, Moodle Marks, LEC Checklist, Timetables, Emails, and Reflections. The main header displays the Nelson Mandela University logo and the RADAR title. Below the header, there are icons for Interventions, Moodle Marks, LEC Checklist, Timetables, Emails, and Reflections. The main content area is titled "Test Student name & surname 208123456". It features a "Student Biographical" section with a profile picture. A "Qualification Progress by Credits" pie chart shows 67% Passed and 33% Failed. Below the chart, there is a table of modules:

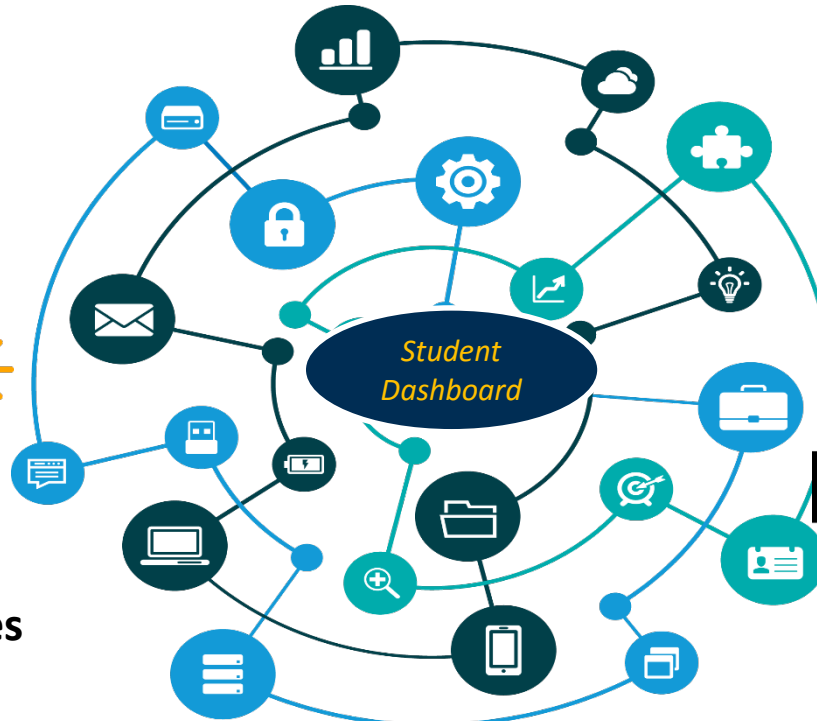
Code	Module name	Class Group	Weighted AVG	Status	Email Lecturer
SEMESTER 1					
ECC201	MACRO ECONOMICS (repeat)	A	77	☆	✉
JITV101	CONSTITUTIONAL LAW (repeat)	A	38	☹	✉
LEL3101	ACADEMIC ENGLISH (LAW)	A	51	😊	✉

At the bottom, there are buttons for "Resilience" and "Counseling".

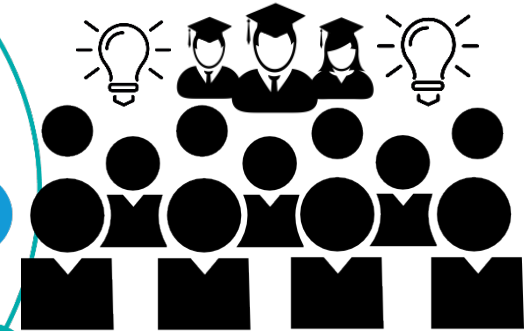
RADAR – STUDENT DASHBOARD



University Initiatives



ICT Tools



Collaborated Ideas

RADAR – STUDENT DASHBOARD

Student Dashboards

- Tracking qualification progress
- Interventions
- Learning enhancement checklist
- Student counselling
- Moodle Integration
- Timetabling
- Emails
- Diary/Reflection

NELSON MANDELA UNIVERSITY
RADAR

Interventions
 Moodle Marks
 LEC Checklist
 Timetables
 Emails
 Reflections

Qualification Progress by Credits

Test Student name & surname 208123456

Student Biographical

- [Residence](#)
- [Counselling](#)
- [Financial Aid](#)
- [Links](#)
- [Information](#)

BA (Law) South Campus Full Time

Academic Year 2018 2017 2016 2010 2009 2008 2005

Code	Module name	Class Group	Weighted AVG	Status	Email Lecturer
SEMESTER 1					
ECC201	MACRO ECONOMICS (repeat)	A	77	☆	✉
JJTV101	CONSTITUTIONAL LAW (repeat)	A	38	☹	✉
LELV101	ACADEMIC ENGLISH (LAW)	A	51	😊	✉
SEMESTER 2					
ECC202	MICRO ECONOMICS (repeat)	A	10	☹	✉
JJHV202	HUMAN RIGHTS LAW	A	5	☹	✉
LELV102	RHETORIC AND LANGUAGE (LAW)	A	61	😊	✉
TERM 3					
SLCV102	INTRODUCTION TO CONFLICT MANAGEMENT (repeat)	A	41	😊	✉
TERM 4					
SLPV112	INTRODUCTION TO INTERNATIONAL RELATIONS A (repeat)	A	0	☹	✉



Counselling

What is the LEC?

The Learning Enhancement Checklist (LEC) is an online questionnaire.



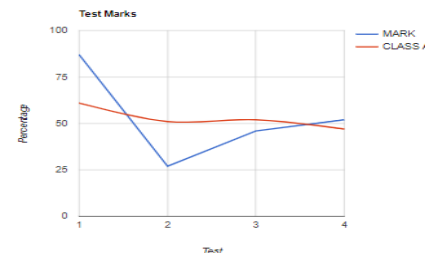
My Reflections:

Add New Item

JLKV1X1 AUGMENTED INTRODUCTION TO LAW 90



Test Marks Progress Graph (Student Mark vs Class Average)



**ACTIVITY 1 RADAR &
enhancements focussing on 1st
year students & ACTIVITY 3
Providing academic advising
capacity under the mentorship
of the Centre for Teaching
Learning and Media (CTLM)**

CURWYN MAPALING,
ACADEMIC ADVISOR,
SCHOOL OF ENGINEERING
and
JOHAN DE JAGER,
LECTURER,
MATHS AND APPLIED
MATHS

2018 Recap:

- “You can’t solve a problem until you ask the right question”: All-inclusive ownership is key! (Siyaphumelela, SAAIR)
- Elements of a relational centered framework for Afrocentric Communities: A scoping literature review

Points of Connectivity and Research:

- **Meal-A-Day Project:** 123 Students, R101 302
- **First-Year Questionnaire:** Majority accepted for first choice of programme at first choice of university, minority were first-generation
 - Individual and Group **Tutoring:** 213 (Sessions); 1072 (Attendance)
 - Group **Mentoring:** 46 (Sessions); 1419 Students (Attendance)
 - Feedback from the **LEC (2018)** results taken into 2019



2019



Pilot Initiative:
Embedding Academic Support into the Curriculum

Team:

- Facilitator of Learning Communities
- Success Coach (Academic Advising Support Intern)

“Do you see me as I really am?”

- Student Wellness, Learning and Teaching Collaborative
- SAACDHE Conference



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First Semester 2019

School of Engineering	Number of Students	Number of Sessions
Civil Engineering	26	53
Electrical Engineering	17	29
Industrial Engineering	13	26
Mechanical Engineering	28	61
Mechatronic Engineering	17	33
Total	101	202

Meal-A-Day Project:

- 72 Students
- R 69 983



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Siyaphumelela Project – School of Engineering

Faculty: EBEIT	Number of Students	Number of Sessions
School of Engineering	101	202
School of Information and Communication Technology	10	22
School of the Built Environment	17	27
Total	128	251

Other Faculties	Number of Students	Number of Sessions
Arts	3	3
Business & Economic Sciences	8	11
Health Sciences	2	2
Science	2	7
Total	15	23



Siyaphumelela Project – School of Engineering

Type of Group Session	Number of Sessions	Attendance
Tutorial: Engineering Drawing	15	315
Tutorial: Mathematics 1	20	226
Tutorial: Physics 1	15	175
Tutorial: Professional Communication Computers	7	284
Tutorial: Mechanotechnology	1	10
Review Lecture: Mathematics 1 & Physics 1	7	335
Critical Thinking	21	2101
Total	86	3446



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■ LARGE GROUPS

- Tutorial model - Target: Whole module group - Response: Good
- Lecture model - Target: Whole module group - Response: Very good

■ SMALL GROUPS

- Peer learning model - Target: Within 5% points of the mean - Response: Poor

■ CONCLUSIONS

- Anonymity of large groups
- Awareness of own 'in need of support' status: *Orientation week? Statistics?*
- Peer learning system early marketing: *Orientation week?*
- Culture of *after-hours* learning support needed: *Faculty cooperation*

• **ONLINE LEARNING SUPPORT SYSTEMS – FOCUSSED & HOLISTIC**



**ACTIVITY 1 RADAR &
enhancements focussing on 1st
year students & ACTIVITY 3
Providing academic advising
capacity under the mentorship
of the Centre for Teaching
Learning and Media (CTLM)**

**KIM HURTER,
ACADEMIC ADVISOR,
FACULTY OF LAW**



IN JUNE 2018...

Academic Advising in the Faculty of Law A Story Unwritten

Key Focus Areas Over 2018 & 2019

Pre-entry

Transitioning **towards** university

1st Year
Success

Transitioning **into** university

Support
for
Student
Success

Transitioning **through** university

Siyaphumelela Project – Individual Sessions

Law	Number of Students	Number of Sessions	First Year	Senior	Extended	Other
2018	59	97	47%	53%		
2019	84	136	14%	71%	10%	5%
Total	143	233				

Other Faculties	Number of Students	Number of Sessions
Arts	3	4
Business & Economic Sciences	1	1
Education	1	2
Not Applicable	1	1
Total	6	8



Focus of Individual Sessions

Law	Academic Performance	Program Pathways	Success Skills	Warning Exclusion Readmission	Study Strategies	Personal
2018	58%	16%	16%		Referred	11%
2019	6%	32%	18%	17%	6%	4%
Total	143	233				

Other issues that have been addressed:

- Employability and Career
- Admission and Registration
- Check-In
- Writing Tests and Exams



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Activities Focusing on Pre-entering Students

Pre-entry

Transitioning towards university

Pre-application service

Pathways

Provisionally Accepted Students

Welcome call

Newsletter

Activities Focusing on First-Year Students

1st Year
Success

Transitioning **into** university

Registration
and
Orientation

Early Alert
Programme

Individual
Sessions

Linking to
Lecturers

Mentoring
Programme

reachUP

Research on
pre-entry
variables

Activities Focusing on Supporting Senior Students

Support
for
Student
Success

Transitioning **through** university

reachOUT
Campaign
(mental health)

Mini contact
points in class

Class
Presentations

Staff Focus

Academic
Warning,
Readmission
and Exclusion

Build
relationships

Meet with
students

Pathways

Individual
Sessions

**ACTIVITY 4 Development of an
academic advising database and
Linking RADAR to Student
Counselling's LEC and all other
interventions**

DALRAY GRADIDGE,
COORDINATOR
COUNSELLING RESEARCH
AND DEVELOPMENT,
STUDENT COUNSELLING
AND CAREER
DEVELOPMENT CENTRE

Funding Outcomes

- ✓ Counselling capturing and reporting database cloned for use with academic advising.
 - Capturing screens (individual + group clients / sessions)
 - Admin lists
 - Reports (individual + group clients / sessions)
 - Summary all advisors
 - Faculty-specific
 - Advisor-specific
- 1. Integration RADAR + faculty-specific counselling statistics profile
- 2. Integration RADAR + LEC

Funding Outcomes

1. Academic advising database

2. Integration RADAR + counselling statistics

3. Integration RADAR + LEC

Capture ▾

Admin ▾

Reports ▾

Log out

Clients

Individual Sessions

Group Sessions

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Capture ▾ Admin ▾ Reports ▾ Log out

- Academic Status
- Campus
- Advisor
- Ethnic Group
- Faculty
- Department
- Focus of Appointment
- Language
- Referred By
- Referred To
- Group Session Duration
- Group Session Faculty
- Group Session Title
- Group Session Venue
- Group Session Initiator

Surname	Name
ADAMS	SIMAMKELE
ADAMS	LUSHANE

Ukubamba: Academic Advising

Capture ▾ Reports ▾ Log out

Academic Advising Clients

Surname

Name

Student Number

ID Number

Anonymous #

File Number

Search

Show 25 entries

[Add Client](#)

Surname	Name	Student No	ID No	Title	Gender	Anonymous #	File No	
ADAMS	SIMAMKELE	214160416	9504255608087	Mr	Male	30505		Edit
ADAMS	LUSHANE	220044848	9711035430084	Mr	Male	30668		Edit

Report

From Date To Date Report On

Frequency Count Per Demographic	<input type="text" value="Academic Status"/>	<input type="button" value="View"/>
Clients by Advisor		<input type="button" value="View"/>
Clients by Capturer		<input type="button" value="View"/>
Faculty Summary Report	<input type="text" value="Select Faculty"/>	<input type="button" value="View"/>
Summary Report	<input type="text" value="All Clients"/>	<input type="button" value="View"/>
Advisor Report	<input type="text" value="Select Advisor"/>	<input type="button" value="View"/>
Campus Totals Report	<input type="text" value="Windows CSV (Comma Delimeted)"/>	<input type="button" value="Excel Export"/>

Group Session Report

From Date 25 Dec 2018

To Date 25 Jun 2019

Faculty Summary Report

Counsellor Report

Group By

Report on






Select Faculty

Select Counsellor

✓ Campus

Category


View



-  Residence
-  Counselling
-  Financial Aid
-  Links
-  Information Access

-  Interventions
-  Moodle Marks
-  LEC Checklist
-  Timetables
-  Emails
-  Reflections

Test Student name & surname: 208123456

Student Biographical




-  Residence
-  Counselling

BA (Law) School Campus Full Time

Academic Year: 2018 2017 2016 2010 2009 2008 2005

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JJY101	CONSTITUTIONAL LAW (repeat)	A	38	☹	✉
LAW101	ACADEMIC ENGLISH (LAW)	A	51	😊	✉

Qualification Progress by Credits



62% Passed
38% Required

-  Interventions
-  Moodle Marks
-  LEC Checklist
-  Timetables
-  Emails
-  Reflections

LEC Questionnaire

WELCOME TO THE LEARNING ENHANCEMENT CHECKLIST

Nickname: *

StudentNo:

Group ID:

Start LEC

[Continue a Previous Session](#)

Please enter your Nickname: This can be a pseudonym (e.g. Foxy) OR a five-digit number. This personal code only exists to help you to identify a print-out of your personal report, and to ensure that your participation is anonymous.

Please enter your Student Number: We would also appreciate it if you would enter your student number in the space provided. Ethics approval has been obtained to use your student number to access your academic records in order to evaluate the success of our counselling interventions. This is however OPTIONAL - your participation in this research project is voluntary. All information that you provide will be treated as strictly confidential and will be used only for problem-solving and research purposes (if you enter your student number). Under no circumstances will your individual LEC or academic results be revealed to anyone except your counsellor and the researcher attached to this project.

The LEC & RADAR

My Dashboard

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RADAR



What is the LEC?

The [Learning Enhancement Checklist \(LEC\)](#) is an online questionnaire. This is NOT a test. There are no right or wrong answers.

What will the LEC question you about?

- The LEC includes questions about 9 main areas of your life. These include:

- Career choice
- Financial concerns
- Tests and exams
- Study management skills
- Time management skills
- Issues relating to your social environment (e.g. accommodation, student life)
- Issues relating to your academic environment
- Personal / emotional problems
- Feelings about yourself

Student Reflection

Reflect and write...

Add

reflect on the session...

LEC Dimensions

- Career choice
- Financial
- Tests and exams
- Study management
- Time management
- Social environment
- Academic environment
- Personal / emotional
- Feelings about self

LEC 2019 Y2D: Career Concerns

(1 Jan – 24 June 2019)

- I felt underprepared when I started my university studies (52%)
- My current course choice was not my first choice (44%)
- I was not aware of the nature / content of my course before I started my studies (31%)
- It is possible that I will change my diploma, degree / course in the near future (27%)
- The course(s) I have chosen has not lived up to my expectations (25%)
- My current course is not suited to my career interests (17%)
- Since I enrolled, circumstances have caused me to change my diploma, degree, course or programme (16%)
- My current course is not suited to my abilities (14%)
- My family pressured me into my current course (13%)



LEC 2019 Y2D – General

(1 Jan – 24 June 2019)

- I come from a financially disadvantaged family (i.e. unemployed or not earning enough) (67%)
- I have not found a study group (72%)
- I don't ask questions in all of my classes (62%)
- I don't read ahead before attending the class (58%)
- I am too shy to speak in class (56%)
- I am not able to stick to a study plan (67%)
- I procrastinate (put tasks off until later) (74%)
- I experience test / exam anxiety (62%)
- I am anxious or worried (53%)
- I struggle to cope with a heavy work / study load (54%)
- I have failed a module (87%)
- I am not getting the marks that I expect for the effort that I am putting in (53%)

RADAR: Integrating counselling & LEC data

Modules Reports ▾

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RADAR

LEC & Student Counselling Faculty Report

Report type

Counselling

Faculty

1700 - ENGINEERING BUILT ENVIRON & IT

From date

01/01/2019

To date

25/06/2019

Download Report

**ACTIVITY 5 Researching possible
predictors of student success in
support of the development of
the predictive capabilities of
RADAR**

MARIAN NEALE-SHUTTE,
INSTITUTIONAL
RESEARCHER,
OFFICE FOR
INSTITUTIONAL PLANNING

Research studies re the dev. of predictive capabilities of RADAR

❖ **3 Research Studies:**

Factors impacting on first semester academic success, and first to second year persistence in the Law Faculty at Nelson Mandela University - Marian Neale-Shutte, Andrea Watson, Kim Hurter & Qobo Qwaka

Exploring the predictors of first year success in first year Accounting - Lorelle De Villiers

Indicators of student success in the Departments of Dietetics, Emergency Medical Care, Social Development Professions and Pharmacy - Prof Annelie Gresse & Candice Stansbury

Research studies re the dev. of predictive capabilities of RADAR

- ❑ **Utilise the Bonus Grant funds to incorporate predictive analytics into the RADAR system** by conducting:
 - ❑ **Further IT development to link the historical data in the student information system (ITS), and various other databases** [such as: the Centre for Access Assessment and Research database, Ulwazi, Financial Aid, Ukubamba, Academic Advising, and the Learning Management System (Moodle)].
 - ❑ **Further research per academic programme of study** (start with 1st year):
 - quantitative and qualitative research to better understand student pathways through their programmes, important transition points, and all predictors; and
 - identify predictive algorithms/ utilise machine learning to mine historical data to discern the aspects/variables associated with students likely to graduate, and those associated with those not likely to graduate, per academic programme of study.
 - ❑ **IT development work to build these predictive algorithms into RADAR.**
 - ❑ **Early in the year** (just after registration), **the system could then run these algorithms against the new intake of first year students, & then generate automated lists of students flagged as ‘in need of support’ based on these (historical) identified ‘predictors.’** Through RADAR, lecturers and academic advisors could then intervene early & meet with these watch-listed students to provide them with any needed support, & monitor their progress through their 1st assessments, and beyond as needed.
 - ❑ **Monitoring** via RADAR (with further data-mining/ various algorithms) **could continue into second and third year/ or at the key transition points**

CONCLUSION AND THE WAY FORWARD

DR CHARLES SHEPPARD,
DIRECTOR MANAGEMENT
INFORMATION,
OFFICE FOR
INSTITUTIONAL PLANNING

Siyaphumelela Bonus Project – Conclusion & Way Forward

1. **Goal and objectives achieved.**
2. **RADAR was successfully rolled out in Faculty of Law & School of Engineering and already used by various other departments.**
3. **Ready to be rolled out throughout University – will be housed in the proposed establishment of the “Learning and Teaching Collaborative for Success” unit with link to ICT. Will be in the Learning Development & Analytics cluster where provision has been made for database management and success coaching/AA.**
4. **Second semester, all lecturers teaching high risk modules will get access. Specific high risk modules will be identified and a multi-disciplinary team of success coaches/AAs, peer learning facilitator drivers, and teaching developers will work with staff & students in these modules.**



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Siyaphumelela Bonus Project – Conclusion & Way Forward

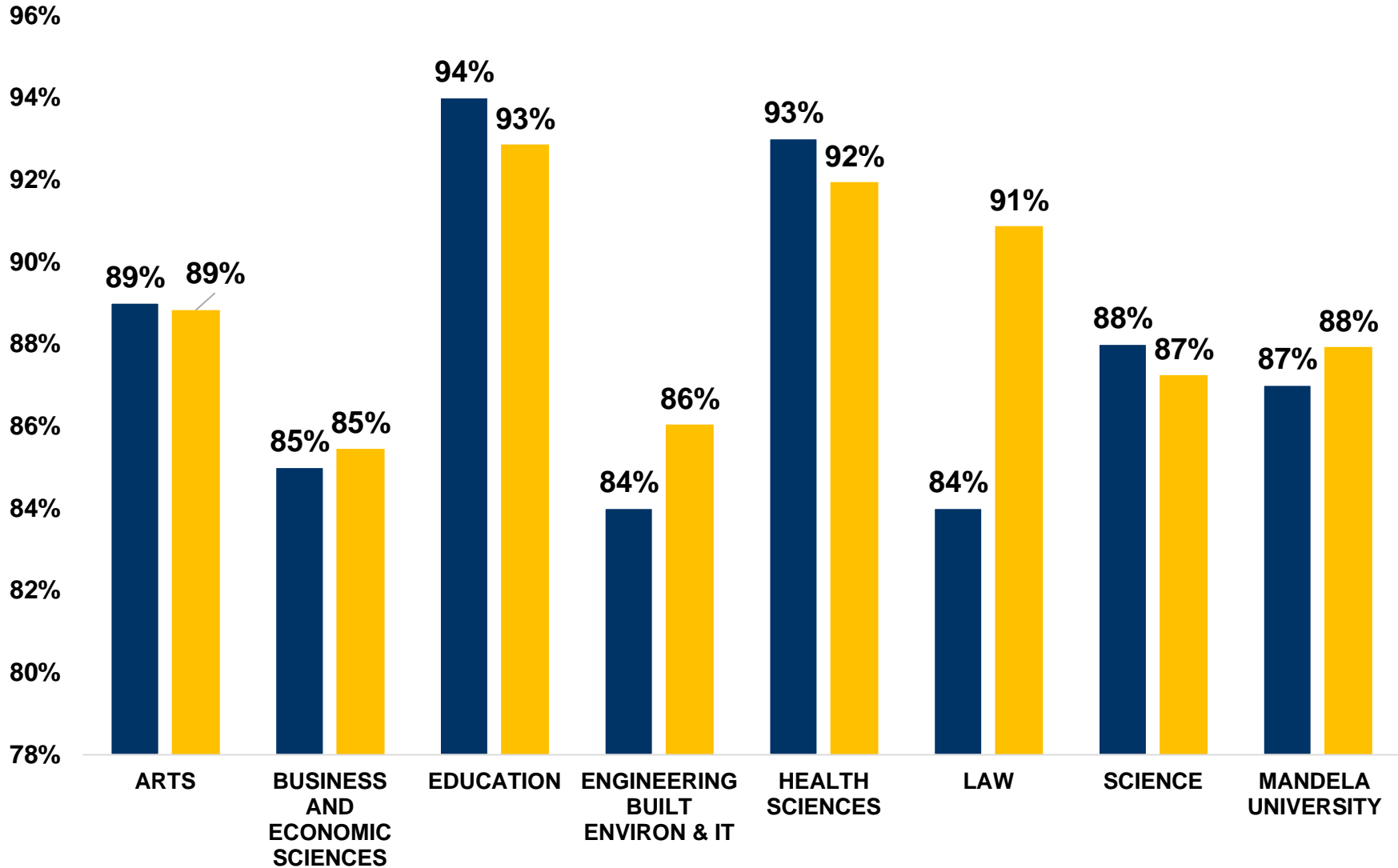
5. Policy needed for capturing/ import of all assessment marks on ITS.
6. RADAR project board/ committee to oversee further developments and enhancements of RADAR.
7. Develop guidelines on the ethical use of data resulting from data analytics work.
8. Develop the predictive analytics capability of RADAR.
9. Piloting of academic advising was a success – there was an upward trend in the retention of first-time entering students in the two faculties where academic advisors were appointed. More appointments in more Faculties.
10. University plans to roll out academic advising/ success coaches to all Faculties.



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Retention of First Time Entering Students

■ 2017 FIRST TIME ENTERING % RETURNING IN 2018 ■ 2018 FIRST TIME ENTERING % RETURNING IN 2019



THANK YOU

