

**Individual institutional project report****NAME:** Lizel Hudson**INSTITUTION:** Cape Peninsula University of Technology**PROJECT TITLE:***From First Click to Graduation: an analysis of student registration data to improve student success***AIM:**

The tumultuous higher education landscape is not only a case of concern but could be seen as an opportunity to bring about much needed change. Philosophical views on change include the notion of applying small, incremental changes, consistently over a period. Culminating in major paradigm shifts and world views, which could influence habits, behaviour, and ultimately policies and practices. To bring about change in the higher education sector, one of the current narratives is to expose students to a critically conscious and socially responsive higher education experience (Jacobs et al, 2020). However, at historically disadvantaged higher education institutions before agents of change can start thinking about such curricula and pedagogies, they realistically need to first know the context and associated challenges faced by their students. Other internal and external factors within the environment may also impact on bringing about change through employing a social justice lens (Barnett & Wood, 2021).

**INTRODUCTION:**

As the only University of Technology (UoT) in the Western Cape Province of South Africa, the Cape Peninsula University of Technology (CPUT) opens its doors and welcomes students and staff from all walks of life, within and beyond the African borders. This institution is not spared the challenges faced by all stakeholders in the higher education landscape having to prepare graduates to survive, thrive and contribute to the 21st century world of work (Dean & Campbell, 2020). The increased, yet diverse student profile seeking access to UoTs in particular, calls for varied support offerings and resources for them to succeed. However, challenges in understanding student success lies in the complex and dynamic nature of the undergraduate student profile and landscape.

This project analysed existing student registration data to inform support services and strategies needed for student success.

As CPUT strategically aspires to be 'One smart CPUT' 2030 (CPUT, 2020) the overarching aim of the project is to contribute to 'smart' student engagement and learning experiences. In this vision, university management draw from the work by Uskov et al, 2018 (as quoted in CPUT, 2020:8), who refers to a smart university as both a physical and virtual environment lead by humans coming

together to create more humane, immersive, interactive, and automated experiences for all stakeholders of the university.

### PROCESSES / METHODS:

Ethical approval was obtained from the relevant university structures, which included the Fundani Research Ethics Committee (Reference No: 5/2021). To comply with the Protection of Personal Information Act, no direct identifiers between the data collected and the student were retained, and all data were anonymised.

This project analysed existing student registration data to inform support services and strategies needed for student success. Using retrospective data from academic years 2018 to 2021 the following criteria were used to identify suitable programmes to include in this study:

1. Year of first registration between 2018 and 2021 (both years included);
2. One of each programme type, e.g. certificate, professional degree, mainstream and extended curriculum programme;
3. Many student registrations per programme.

The duration of the programmes meeting these inclusion criteria were: the Higher Certificate one year, the Diploma three years, the Bachelor of Health Sciences (mainstream) four years and the Extended Curriculum Programme five years in duration. A decision tree for each programme was developed through cluster statistical analysis using the registration data points depicted in Figure 1.

## Registration data inputs

School history	Application/Registration data		Registration only	If available
Quintile	Current activity at time of registration	Date of Birth, Gender, Race/Population group	Course cancellation	CPUT Academic results
Province	Financial Aid Status	Home Language	Previous courses	
Year matriculated	(Dis)Ability Status	Nationality	Registration type	
Matric results	First generation applicant (Parents' highest qualification)	Registering for which choice?		
APS Score	Support requested/indicated	Residence status		
	Personal responsible for fee account	Number of dependents		

Figure 1: Registration data points used

This preliminary analysis provided a statistically informed overview of the majority student profile in the faculty. It will serve as a backdrop to develop a framework using the elements from the Cultural-Historical Activity Theory (CHAT) triangle (Engeström, 2015) to look at the different aspects of the registration process that could enable or disable student success.

Figure 2 indicates the decision tree developed from the Diploma data. This graphical representation allowed for preliminary interpretations used to 'pull together' and streamline existing support services and develop complementary holistic services contributing to lifelong learning and student success.

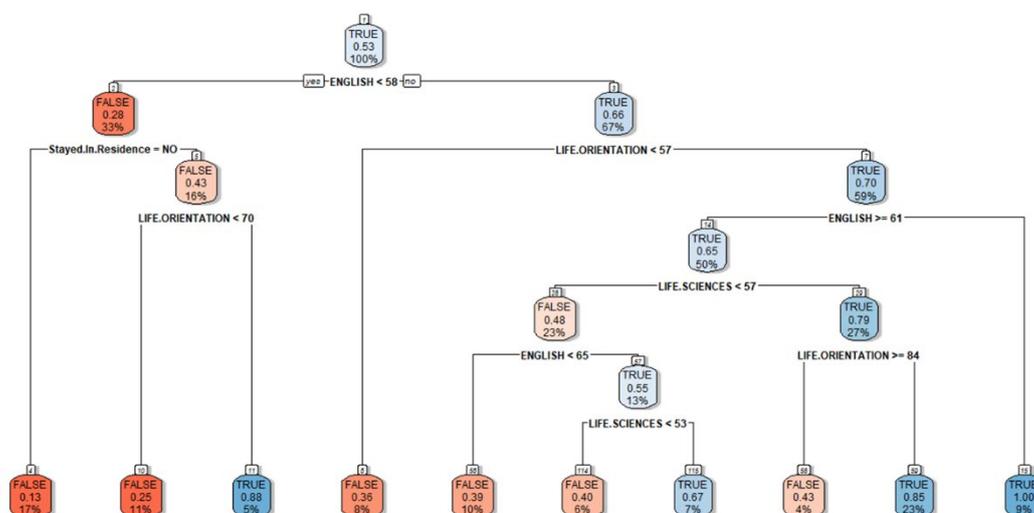


Figure 2: Decision tree representation of the Diploma programme

This decision tree predicts a binary outcome, which is TRUE if the student passed all their first-year modules in the first attempt, and FALSE if the student failed at least one first-year module in the first attempt.

- The most important predictor of passing everything is the matric English mark.
- Among those who achieved below 58% in English, the next most important predictor was whether they stayed in residence.
- An interesting result was that Life Orientation is also being an important predictor, both for those who did well in English and those who did not.

Based on these initial interpretations of this decision tree, recommendations include a focus on:

1. Language support – transitioning between using English for conversational purposes to using the language of instruction for academic purposes;
2. Robust student Orientation – aligning skills mastered during Life Orientation, with the expectations of the First Year Experience programme;
3. University residence – the availability of on-site, resourced residence facilities for most students residing outside the Western Cape Province.

An important question that emerged from these preliminary interpretations was ‘How universities can become responsive to the students’ needs during each step of the lifelong student success journey?’ This question will be further explored when rolling this project out to include all the programmes offered in the faculty, and eventually in the institution.

#### **ACHIEVEMENT AND CHALLENGES:**

During the 12-month period, one iteration of analysis was completed and ‘critical care points’ (Achieving the Dream, 2018; 2021) in the student registration data were identified, which might inform student success indicators, as well as holistic student-centred support (Rajaram, 2021) to all students registered in the faculty.

Dissemination of the various project activities included:

- An institutional event at the Heads of Department (HoDs) Forum – where the project was introduced to the CPUT community. Annual follow up engagement at the same forum is planned to give feedback to HoDs on how registration data could be used to align existing support services to student requirements, and explore complementary services based on student needs;
- A presentation at the Siyaphumelela 2021 Conference in June 2021;
- A critical dialogue was held at the HELTASA (Un)conference in November 2021 – where meaningful debates continued to shape the outcomes of this project.

Challenges hampering the successful execution and implementation of this project included:

- Regular opportunities/events/activities in the faculty to disseminate the project activities as the project unfolded – this will assisted to garner buy-in from various stakeholders and enabled roll out and implementation in all programmes in the faculty;
- One complete iteration in the form of a Change Laboratory using the Cultural-historical Activity Theory triangle, will provide the theoretical depth needed to understand the

interpretations of the data informed statistical analysis. However, including data from all the programmes in the faculty, might provide the oversight needed to better align and offer the university support services needed by the various students registered in the different programmes (e.g. 'just-in-time' services for the year-long programmes, and more developmental services for three-year and longer programmes).

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