Article

Developing a Business Intelligence Strategy to Support Teaching and Learning in Higher Education: The Virtual Business Intelligence Competency Centre (vBICC)

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Abstract

Significant inefficiencies in the higher education system have prompted institutions such as the University of Cape Town (UCT) to consider new strategies for student success, such as the application of business intelligence (BI) to teaching and learning. In 2019, a three-year project called Data Analytics for Student Success (DASS) was launched to develop and implement such a BI strategy. In 2020, the COVID-related shift to Emergency Remote Teaching (ERT) made it more urgent than ever that the institution was able to make evidence-based decisions on how to respond to student needs in real or near-real time. Despite still being an informal structure, the DASS was able to provide this much-needed service to the institution and continues to support the teaching and learning agenda. As a community of data practitioners with differentiated domain expertise, we reflect on the work of the DASS to articulate how this approach is different to existing BI strategies within the institution and how it has contributed to the teaching and learning agenda. We then consider the challenges of sustainability and impact and propose a model of a virtual

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Business Intelligence Competence Centre (vBICC) as a framework that can harness existing strengths within the DASS and will also provide a set of organising principles that can take forward data capacity-building and leadership for evidence-based decision-making at institutions like UCT.

Keywords: student success; higher education; Business Intelligence; teaching and learning; organising frameworks; learning organisation

Introduction

South Africa has one of the highest inequality indices globally (Statista 2022), and although higher education boosts social mobility and employment (Statista 2023), participation rates remain low (OECD 2022). The country also struggles with student retention, as approximately 40% of students who enrolled in three- or four-year degrees in 2015 had dropped out by 2020 (CHE 2022). Additionally, there is a 10% gap in undergraduate course pass rates between "White" and "African" students from 2015 to 2019 (CHE 2022). Higher Education as a lever for social transformation in South Africa is therefore inefficient and it is increasingly important for South African Higher Education Institutions (HEIs) to implement strategies to convert student enrolments into graduations more efficiently. Globally, many institutions use Business Intelligence (BI) to address similar challenges (Peng et al. 2017; Ong 2016; Nur Ain Zulkefli et al. 2015; Kabakchieva 2015; Piedade and Santos 2010).

BI involves collecting, analysing, and presenting data to support decision-making (Muntean et al. 2011), transforming raw data into actionable insights (Pérez-Pérez et al. 2018), and improving organisational performance (Apraxine and Stylianou 2017). In higher education, BI is used to enhance operations, staff and student experiences, student engagement, and performance (Peng et al. 2017; Ong 2016; Nur Ain Zulkefli et al. 2015). It also addresses inequities in experience and outcomes (Kabakchieva 2015; Ong 2016; Piedade and Santos 2010). However, implementing BI strategies in universities is challenging due to funding constraints, limited qualified personnel, and high turnover of technical staff. It, therefore, often becomes both “a prohibitively expensive and long-drawn-out exercise of obtaining funding and developing staff to assemble a competent and highly functioning BI team and implement the necessary BI strategies to support better educational outcomes” (pers comm. A. Conrad, Director Institutional Planning Department, UCT).

At the University of Cape Town (UCT), the teaching and learning strategy aims to improve performance indicators, such as throughput and success rates, and to close the achievement gap (TnLS_2019). The Data Analytics for Student Success (DASS) project was launched to develop a cohesive BI strategy for student success, promoting data-informed approaches at all levels of teaching and learning (DASS_FP19). This requires significant organisational learning and cultural change to prioritise data-driven student success initiatives.

Timeline Leading up to Reflection.

The COVID-19 pandemic and shift to emergency remote teaching (ERT) compelled us to rapidly activate our business intelligence (BI) capabilities to support teaching and learning. As a contact residential university, UCT faced a significant shift in operations when moving students off-campus and onto ERT (STnL 2020). This transition amplified inequitable outcomes, exacerbating the 'achievement gap' through the 'privilege gap,' based on socio-economic status (Hoare and Johnston 2011; Fisher and Begbie 2019). Students with access to technology and stable learning environments adapted to ERT, while those without these advantages struggled academically (Fouche and Andrews 2022; Aristovnik et al. 2020; D Fordjour-Owusu et al. 2020). This disparity was evident at our institution (Marquard et al. 2020) and nationally in the SAULM report (2020), highlighting access differences between financially aided and non-aided students. Early ERT implementation decisions relied on socio-economic data from student admissions, but to ensure equitable access and effective educational design, we needed to identify and understand the specific support requirements of students. The university utilised the DASS to provide real-time, actionable data, revealing privilege gaps and guiding institutional responses (DASS_FP19). Despite being an informal collective of UCT staff, the DASS successfully developed a targeted data strategy for responsive teaching and learning (STnL2020), with examples detailed later in Reflections 1 and 2.

While the functions, scope, and responsibilities of the DASS team were initially shaped by the institutional data needs around ERT, the team continues to support the work of teaching and learning today. Yet the team is still a relatively informal collection of staff from different departments and faculties who have come together as a community of data practitioners with differentiated domain expertise. Most of the team have other full-time positions, and this is unlikely to change in the near future. As the DASS, we have now entered a critical moment in which we need to reflect on the nature and value of our contribution and determine if and how we can continue to do this work sustainably, effectively, and with greater impact.

A Collaborative Model for Organisational Learning in Higher Education

The DASS should ultimately function as an institutional resource to enable student success. It should hold expertise within itself but also function to build data capacity across many levels within the institution (DASS_FP19). Two concepts that hold a lot of promise to help us develop a framework for institutional culture change around data analytics and student success are (i) Senge's criteria for engaging in effective organisational learning (Senge 2006) and (ii) the concept of a Business Intelligence Competence Centre (BICC) (Dehghan et al. 2013).

In his book, "The Fifth Discipline: The Art and Practice of the Learning Organization", Senge proposes that to understand how an initiative can have wider organisational impact, we must apply 'systems thinking' and consider how it is interconnected with

other business processes and strategies. In doing so, we may be able to restructure the way we think (Senge 2006). The second important criterion is having 'personal masters', which highlights the importance of individual skills development and continuous learning to ensure relevant expertise is available within the organisation as organisational needs evolve. Senge's third proposition is to address and challenge existing 'mental models', which are the deeply ingrained assumptions and generalisations that influence how decisions are made (Senge 2006). Some mental models can impede learning while others can enhance it (Jones et al. 2011), and new 'mental models' should encourage questioning of the existing assumptions within the organisation. Senge also asserts that you need to 'build a shared vision' so that goals and strategies align with the broader organisational vision, ensuring cohesive effort and direction. Finally, Senge argues that you need to draw on 'team learning', emphasising the importance of collaboration, communication, and shared learning, which enhances the collective ability to deliver solutions. Following these guiding principles will allow an organisation to develop and engage new capacities more effectively.

In addition to a philosophy, we also need a structure with which to work. Given the constraints related to building BI teams, we need an organising framework for the DASS that leverages existing capacity while expanding institutional capability. This approach must utilise the skills, reputation, and institutional knowledge of current staff and structures, mitigating the challenges of introducing new personnel into the system. For this, we looked to the Business Intelligence Competency Centre (BICC) model (Dehghan et al. 2013; Safeer and Zafar 2011), which is a structure that supports BI adoption at all organisational levels and maintains the overall BI strategy of that organisation (Foster et al. 2015). In practice, a BICC collaborates with various departments to ensure data-driven decision-making, effective performance management, and business process optimisation. It promotes data literacy and BI skills through training programs and support services (Miller et al. 2012). Beyond data analytics and reporting tools, a BICC also fosters a culture of information use among stakeholders. Serving as a hub of BI expertise, the BICC includes roles such as data analysts, data engineers, data scientists, business analysts, data visualisation experts, BI developers, and data governance specialists. It develops and implements a BI strategy aligned with organisational goals, engaging in governance, setting standards, and promoting best practices. The BICC ensures data quality, integrity, accessibility, governance, integration, and security protocols (Safeer and Zafar 2011).

The Reflexive Practice as Method

With this paper, we wanted to articulate what the DASS is, how it works and how it can be both sustained and more effective in meeting its aims. We followed Luescher's (2018) methodology to structure reflective practitioner accounts and asked three questions:

1. How does the DASS as a BI strategy for teaching and learning complement or supplement existing institutional BI strategies?

2. If and how does the DASS contribute to the institutional teaching and learning agenda?

3. How do we move the DASS forward sustainably so that it is both sustainable and more impactful?

Four members of the DASS were asked to write personal, free-form reflective accounts answering only the questions that they felt appropriately placed to answer. These were the questions:

- What is your current portfolio at UCT?
- What do you see as your role in the DASS?
- How is the DASS different to existing UCT data operations?
- What contribution do you think DASS can make to the institutional teaching and learning agenda?
- What, in your view, are some of the challenges of the DASS in its current form?

These reflections are presented in full below.

Reflection 1 (ref#1): Institutional Planner

Before 2020, the university's institutional Business Intelligence (BI) strategy was largely managed across two departments: traditionally, Information and Communication Technology Services (ICTS) oversees the institutional data infrastructure, while the Institutional Planning Department (IPD) utilises this data for research, information, and advice to support reporting, planning and decision-making. Historically, this approach has been inward-facing and focused on future or historical perspectives rather than ongoing operations. Over the past three years, I have been involved with the Data Analytics for Student Success (DASS) initiative, which has played a pivotal role in collecting, integrating, and analysing student data that has informed institutional interventions in near real-time and for ongoing teaching and learning operations. To me, this represents a significantly new approach to data, which has enabled institutional responsiveness in teaching and learning and helps us move from being reactive to more proactive. There are two examples that illustrate this point well. These are summarised below.

The first example is the Student Access Survey (Figure 1), which aims to assess students' ability to engage in ERT. Nearly all undergraduate students (95.6%) completed

this survey, which inquired about access to devices and data, as well as the estimated time students could realistically spend on educational activities given their home circumstances. The second example, the Student Experience Survey (Figure 2), completed by 3,818 students (17% response rate), delved into students' personal circumstances, readiness for online learning, experiences with courses and online content, workload and assessments, social and academic interactions, and use of support services. The objective was to gain insights into the challenges and opportunities of remote teaching and learning to inform course design, enhance student support, and improve educational practices for a more equitable experience (Marquard et al. 2020). While the surveys were collaboratively designed with many institutional stakeholders, the DASS significantly contributed by producing compelling, near-real-time reports, visualisations, and analyses of the survey results, informing multiple campus stakeholders and enabling them to act accordingly.

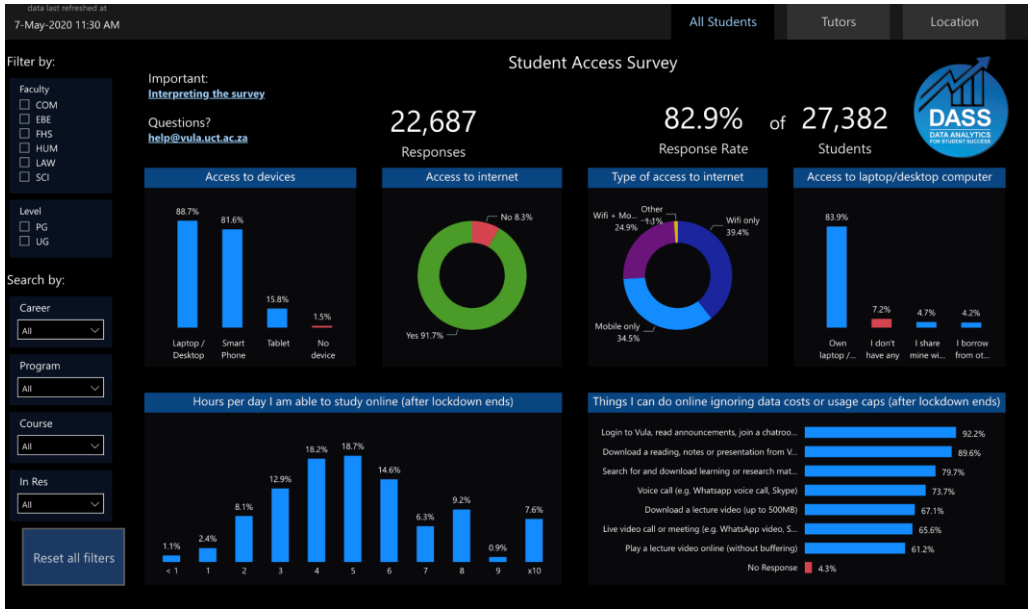

Figure 1: The Access Survey dashboard. The results can be filtered by faculty, level of study, academic career, programme, and course, with tabs for students, tutors, and geo-location data.

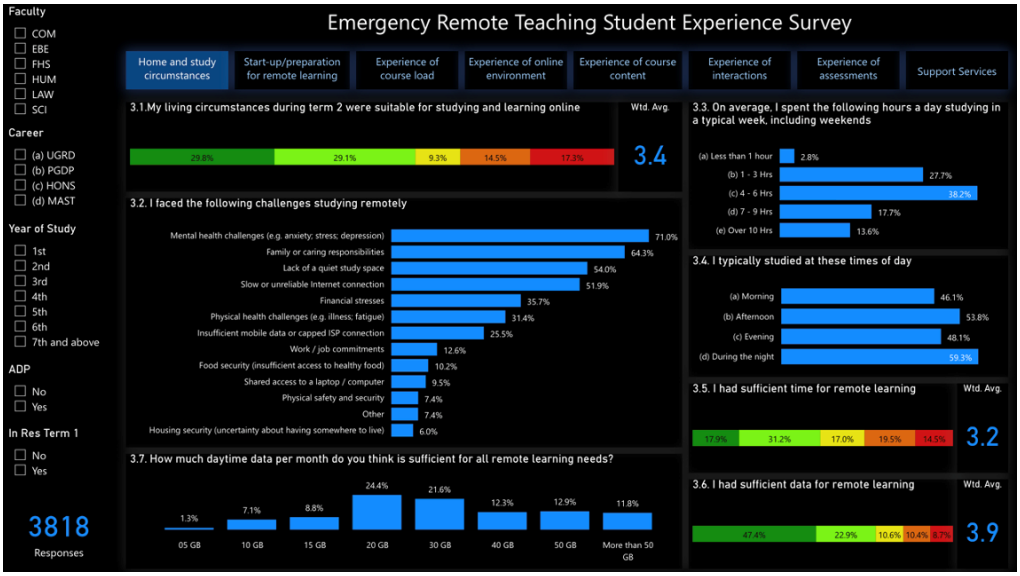

Figure 2: The Student Experience Survey dashboard. The data can be filtered by faculty, level of study, year of study, whether a student is enrolled on an academic development or extended programme, and whether students were in residence or not at the start of the 2020 academic year.

Reflection 2 (ref#2): DASS Data Analyst

Amidst the challenges posed by the COVID-19 pandemic, my role as a Data Analyst in the DASS expanded. This period was personally enlightening and demanding, pushing me to rethink the educational process through the lens of data analytics. The swift transition to ERT required actionable data insights, and I found myself designing and implementing solutions not only to address immediate concerns but also to lay the groundwork for long-term improvements in using data to understand student engagement and success. The collaborative nature of our efforts, characterised by regular interactions with a diverse group of stakeholders, highlighted the interconnectedness of our work. Having shared goals led to mutual learning, where my analytical skills were enriched by the contextual knowledge and insights of academics, support departments, and course convenors. These collaborations were instrumental in shaping the analytical frameworks and solutions we developed.

Reflecting on the impact of our work, knowing that our data-driven approaches contributed to creating a more responsive and supportive institution was immensely fulfilling and reaffirmed for me the critical importance of integrating technical abilities with contextual knowledge within a team setting. It deepened my commitment to leveraging data to address challenges and drive improvement, both for students and the institution. This work did have its challenges. With most staff working out of the office, the informal, on-site interactions, which were once integral for my understanding of the

data, were harder. Also, navigating multiple approval processes resulted in delays in data analysis and decision-making. For me this highlighted the necessity for broader access to institutional data and more literacy on the data, its availability, structure, accessibility and meaning.

Despite these challenges, through the DASS, we were able to deliver some powerful new tools for teaching and learning, such as the Know Your Course and Students Reports (KYCS) (Figure 3). These reports are a collection of visually appealing and insightful charts and graphs that allow lecturers to make data-driven decisions around curriculum and pedagogy to address performance gaps. For example, one section of the report shows the National Senior Certificate (NSC) and National Benchmark Test (NBT) results of the course cohort. Specifically, the NBT subdomains presented allow lecturers to assess competency levels across domains, mapping to curriculum challenges.

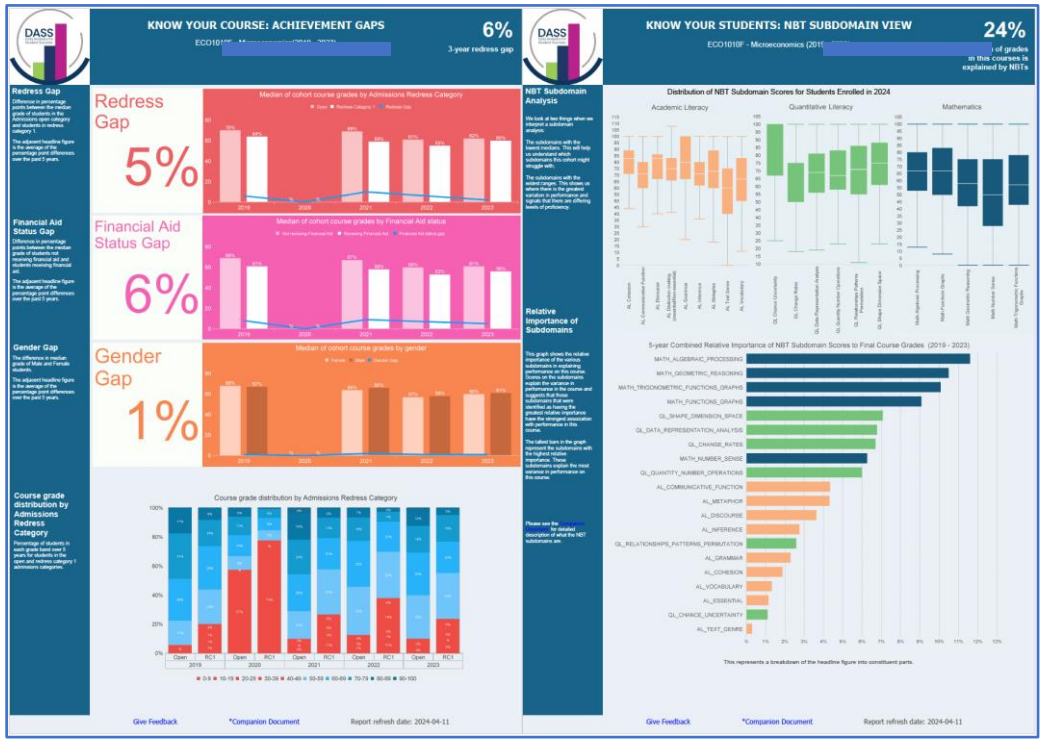

Figure 3: Example of the Achievement Gaps section of the Know Your Course and Students (KYCS) course-level report (left) and the report in the NBT results (right).

Reflection 3 (ref#3): Project Lead for Academic Advising Initiative

In my current position in Academic Development, my role is mainly to design and implement new services and tools in response to emerging student needs for support, and I believe my role in the DASS is to continuously foreground student voice, student

needs and the importance of building more tools for increased institutional responsiveness to these needs. One initiative that I lead is the Academic Advising Initiative (AAI), which in 2020 launched the UCT Central Advising and Referral Service (CARES). This was a response to the need for new channels of communication during ERT. CARES is a good example of the power of real-time, actionable data in supporting student success. By establishing a centralised communication channel, CARES was able to provide students with immediate guidance and support, effectively bridging the gap between student needs and institutional resources in real-time (STnL 2020). Along with direct emails from students, this was made possible due to collaboration with the DASS, which shared student surveys and engagement data with CARES so that students who were potentially at risk could be identified. In this way, the initiative was able to go beyond traditional methods of student support and proactively reach out to students who exhibited signs of disengagement.

The effectiveness of an initiative like CARES and other advising mechanisms hinges on their ability to access relevant data in real or near-real time, making representation on the DASS invaluable. One notable gap in the DASS membership is that, besides me, there are no other advising stakeholders within the core DASS group. The student-facing DASS work would benefit greatly from having more student support staff giving input on their data needs. There may be a concern that the DASS group will become too large for efficient meetings, but we could consider working groups that will feed back to the core group. Another concern is that the quick turnaround times that were supported by certain institutional mechanisms, such as biweekly meetings of support staff from across the institution, have since disappeared, making it more difficult to meet student needs in the same, quick way.

Reflection 4 (ref#4): Chair of the DASS

In my department. I manage the team that runs UCT's learning management system and other platforms and technologies that support the teaching and learning processes. As the chair of the DASS project, which sometimes operates at a very detailed and technical level, I try to foreground the overarching aim, which is to help our institution narrow the achievement gap and improve outcomes for all our students. This mission, as outlined in our internal proposal document, DASS_FP19, has been the primary driving force behind decisions and actions we've taken since our inception in 2020. I convene a weekly meeting to discuss ongoing tasks, address ad hoc requests, and provide updates and feedback, ensuring that our efforts remain coordinated and effective.

The DASS team came together with the goal of driving change towards equity, but no single person can achieve this on their own. DASS has an ensemble cast, with each person bringing their own expertise, perspectives, and experience to the collaboration. Throughout our journey, we've also emphasised the importance of data ethics, capacity building, and visibility across the institution. The common mission of DASS and the focus on practical application have been integral in keeping the team together, even though DASS is a relatively informal structure. Our core team comprises individuals

with expertise spanning information technology, institutional planning and research, teaching and learning, statistics, curriculum, higher education management, data analysis, academic advising, and learning management systems. In this way, the existing structure is a distributed one with a breadth of expertise that members have appreciated as a way of deepening their own understanding. DASS has also attracted new members to the informal working team, and it has grown organically over time. Significantly, the core DASS team is made up of people who have other "full-time jobs", which means that managing project deliverables cannot be a top-down activity. This has slowed down some areas of work where more dedicated capacity might have helped, such as engaging intensively in staff development drive for data literacy.

One of our main foci has been to embed this work into organisational structures so that data-driven decision-making becomes a regular part of institutional academic governance and decision-making cycles. To this end, the Data Analytics for Student Success Committee (DASSC) has been established as a formal governance structure as a subcommittee of the Senate Teaching and Learning Committee. This platform helps to keep data-driven decision-making in teaching and learning visible to key stakeholders, while feedback from Faculties helps keep the work focused on efforts that are both impactful and aligned with short- and long-term institutional goals.

As the project grows and matures, it is becoming increasingly evident that more structure will be essential for the continued success and sustainability of the work. Roles need to be clearly defined so that the capacity we have is better understood, and we can move up the capability maturity ladder for ongoing operations while keeping space for agile innovation. Change is a constant. Over the last few years, the project has had two project leads and four different project managers and has lost a statistician and a BI developer. We, therefore, also need to think about how to build capacity and capabilities that are enduring and resilient and can survive the loss of people in key roles.

Analysis

A larger group of the DASS, which included the original reflectors, then analysed the individual reflections in a series of weekly research meetings. This larger group included a statistician, the DASS project manager and another institutional planner. We first individually familiarised ourselves with the reflections by reading the text, taking notes, and coding (Braun and Clarke 2006). Coding was done using a simple template to identify strengths, weaknesses, and accomplishments. As a group, we then discussed these codes and organised them into themes based on our main questions. In the discussion, we integrate these themes with internal documents and materials (Gerring 2016) to critically respond to our first two questions. Finally, we propose a way forward as a response to our third question. A table of the internal documents referenced in this paper is provided (Table 1).

Table 1: Internal Documents Referenced as Part of the Document Analysis.

Document description	Covering the period	In text Reference
UCT Teaching and Learning Strategy	2019-2025	TnLS_2019
DASS funding proposal document	2019	DASS_FP19
Senate teaching and learning report 2020	2020	STnL2020
DASS annual reports	2021-2023	DASS_AR21, DASS_AR22, DASS_AR23
DASSC Terms of Reference	2023	ToR2023

Discussion

In writing this paper, we wanted to emerge with a strategy for organising ourselves towards greater sustainability and impact. In this discussion, we integrate the themes from our reflections with internal documents (Gerring 2016) to critically respond to our first two questions, and finally, we propose a way forward as a response to our third question.

How does the DASS as a BI strategy for teaching and learning complement or supplement existing institutional BI strategies?

The DASS initiative represents a shift towards collaborative BI, diverging from previous siloed approaches (ref#1) and yielding some important outcomes (ref#1,2). Through cross-departmental collaborations involving CHED, ICTS, IPD, and faculty representatives, the DASS promotes a multidisciplinary understanding of student success data (ref#2,4). Positioned within the teaching and learning sphere, DASS complements existing BI strategies and reports to the DVC for Teaching and Learning through the DASSC (ToR 2023). During ERT, this close relationship facilitated quicker responses, allowing for immediate engagement, strategy co-development, and initiative rollout (STnL 2020). Adopting an operational approach akin to action research (George 2024), the DASS has shown how we can use data to be a more responsive institution.

Our informally structured community of data practitioners, which resembles a community of practice (CoP), came together as a "group of people who share a concern or a passion and a wish to learn how to do it better through regular interaction (Wegner 2009). In our case, the common interest is to develop new ways to leverage data analytics for driving change towards equity in student success (ref#4), particularly in the realm of teaching and learning. This CoP has grown since the beginning with increased participation in DASS weekly meetings. This has created more opportunities for peripheral participation as people choose if, how and when to participate, but this informal approach cannot drive the impact we seek to have on the institutional culture around data analytics for student success.

If and how does the DASS contribute to the institutional teaching and learning agenda?

While it is still unclear what the impact of this has been on student success, the DASS initiative certainly played a pivotal role in enhancing the student experience during ERT by providing a deeper understanding of student needs (STnL 2020, ref#1,3). In addition to the earlier examples described in this paper, DASS also contributed to the success of several other surveys in terms of design, data analysis and reporting (STnL 2020). The DASS conducted focus groups to explore the data needs and concerns of staff (STnL 2020, DASS AR_2021/22) and provided real-time insights on student engagement through analyses of online participation and exam data (STnL Report 2020). These data could then be acted on through advising initiatives like CARES (ref#3).

The DASS has moved beyond the critical moment and, by harvesting lessons from the ERT response, made significant strides in understanding the data archives and how they are structured as well as how to access it efficiently from the institutional data repositories towards supporting teaching and learning (DASS AR 21, ref#2). This has allowed the DASS to set up long-term goals such as the delivery of data dashboards for specific stakeholders and decision-makers in teaching and learning (DASS AR_2023). DASS also actively works towards staff development to build capacity in data literacy through forums like 'Heads of Department' workshops (DASS AR_2021/22), presentations to new academics and transparent reporting initiatives like "Know Your Course and Students". This makes the work accessible to many different users (ref#2). Based on this, we can comfortably claim that DASS has contributed significantly to advancing the institutional teaching and learning agenda (STnL 2020/21).

Moreover, its continued efforts and commitment to enhancing teaching and learning outcomes beyond the critical ERT phase position it as a vital asset for the institution's long-term goals for student success. However, there is limited capacity within the DASS to do the work at scale. There is limited capacity and resources in the system to expand the team significantly, but we must find ways to continue and expand this work.

How do we move the DASS forward so that it is both sustainable and more impactful?

It has become increasingly evident that the DASS must adopt a more formal organising framework to ensure sustainability and drive whole organisation transformation (ref#4). Our reading suggests that establishing a distributed or virtual BICC (vBICC), guided by Senge's principles, could promote a data-driven culture for improving student outcomes at scale. The first step is to use a "systems thinking" approach to ensure alignment with the broader vision of the organisation (Senge 2006). The DASS at UCT emerged from the institutional teaching and learning strategy, and the alignment with this broader institutional vision has yielded substantial benefits by providing clarity and direction to the team's endeavours through reporting to the Senate Teaching and Learning sub-committee, the DASSC (ref#4). To build a more formal BICC, however, we need to be

clearer about our own governance processes and how far our mandate extends in terms of setting standards for best practices for data management, analytics, and reporting. Doing this will provide greater legitimacy to the work and a clear mechanism through which these standards and practices can be disseminated (Safeer and Zafar 2011). We would further argue that building an impactful BICC for an HEI also requires a reflection on institutional culture. For example, higher education is particular in that the aim is not simply to profit. Instead, there are multiple "bottom lines", including meeting transformation objectives, providing a holistic student experience, developing socially responsible citizens, and, of course, producing graduates. This means that any successful BI strategy in an HEI must also account for this.

To effect real organisational change, we need to be able to challenge existing "mental models" or assumptions within the organisation (Senge 2006). This requires a multiplicity of perspectives to engage with the work critically. In the current DASS, it is largely the interests of individuals and their projects that are represented. This means that there is still a lot of work to be done to establish how departmental interests and contributions are better captured in this collaboration (ref#4) and how students themselves might be more strongly represented. Doing this more explicitly will allow for more productive collaboration across departments and allow for deeper penetration of the work of cultural change towards the effective use of data. This is not easy if data literacy levels are lower than needed. One way to "get around this" is to establish data interlocutors, i.e. persons that can translate the vision of data end users like lecturers to the technical specifications required by report writers and then translate technical reports back into visuals and easy-to-access information for teaching and learning specialists. This form of inclusivity has been essential at UCT for relationship building between the DASS and report users and establishing a notion of value added to the teaching and learning enterprise (ref#2). Central to this inclusivity is the inclusion of student voice as a valuable source of insight and feedback. This approach has drawn more "non-data" people into the work who can see more easily how the work will benefit their departments.

Fundamental to Senge's model is the emphasis on both personal mastery and team learning; this means that both individual development and the growth of the team are integral to driving learning, but this is not possible if individual roles and expertise are not clearly articulated. Like a BICC, the DASS serves as a hub of expertise and collaboration for data-related activities within the institution. It facilitates collaboration among departments and promotes a data-driven culture across the organisation. The DASS has the basics of a BI team, including data analysts and quality specialists, data engineers, data visualisation experts, BI developers, etc. (ref#4), but it also draws on staff with diverse institutional backgrounds and expertise, such as teaching and learning specialists and higher education managers (ref#4, ToR2023), the roles of which are less well defined (ref#4). This relative informality presents both advantages and challenges. While it fosters flexibility and adaptability in responding to organisational demands, it

also introduces uncertainties regarding capacity and workflow stability (ref#4), particularly when team members have competing priorities or depart from the team.

Having an explicit BICC organisational framework will force us to define roles, responsibilities and the areas of domain knowledge that make up the DASS. The framework will assist in developing a strategy for growth and development; for example, understanding what targets we are not meeting will give us future areas to focus on and help us put together a professional development strategy for individuals and the team. It also allows us to catalogue expertise so that when team members need to be replaced, this can be done more effectively. Although a BICC is usually a unit, at UCT, the DASS is distributed and functions more like a virtual BICC (vBICC) outside of departmental structures. This has been key to harnessing expertise without adding new staff but has created limitations in accountability and management of workload.

UCT is some way down this path already, but from our analysis, we can extract four main priorities for moving this work forward at scale. These are (i) building a data community, (ii) establishing a formal BI structure, (iii) having a strategy for organisational learning, and (iv) having a strategy for capacity development. These priorities are presented as sets of activities (Figure 4) that an institution may wish to begin with. These should be taken as non-sequential and non-exhaustive and can be engaged iteratively depending on where the institution may be on this journey.

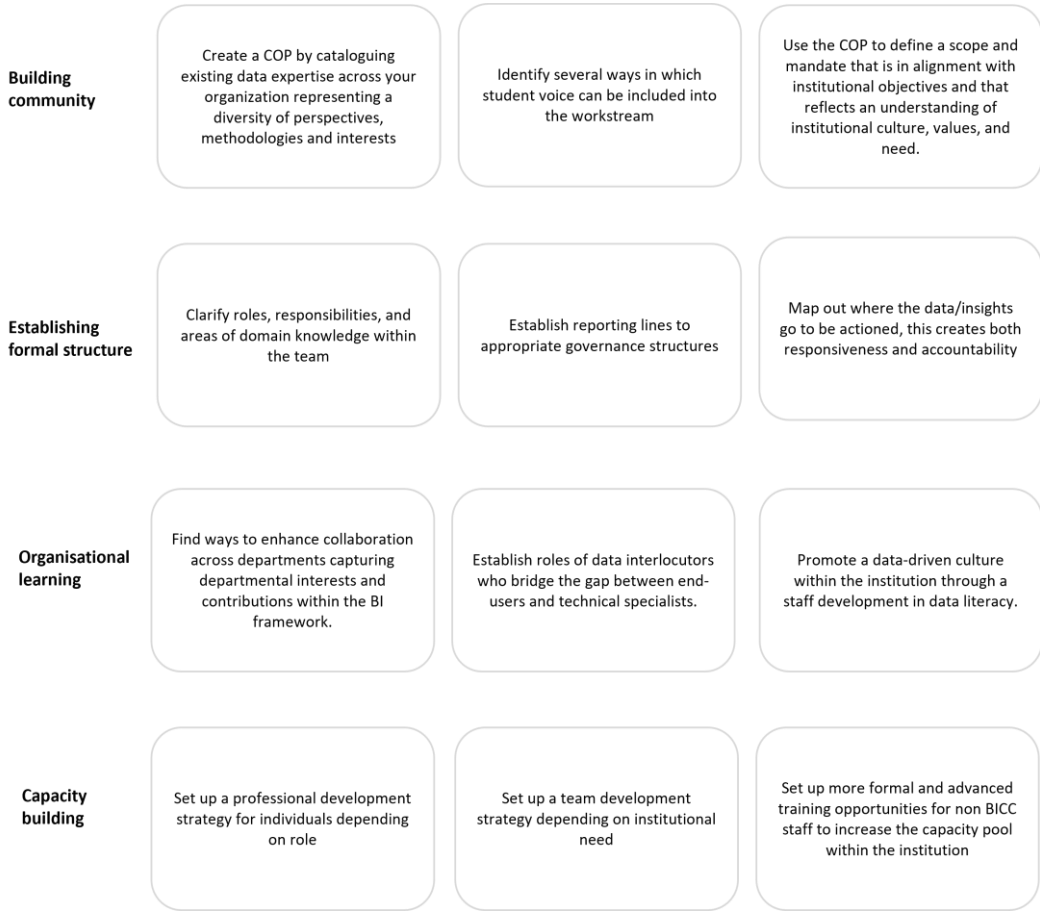

Figure 4: A recommended set of activities for establishing a formal BI strategy for teaching and learning in higher education.

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