The use of the internet in teaching and learning at South Africa's public TVET colleges

Report on a research study conducted
by the South African Broadband Education Networks (SABEN)
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Gratitude

We are grateful to the individuals who have participated in this study for sharing their time, experiences and insights. Many colleges have been forced down the path of e-learning faster than planned by the unforeseen arrival of COVID-19 and are trying to grapple with the immense challenges that this has presented in addition to their existing workload. The evident commitment of so many participants to providing the best possible education and training to their students amidst overwhelming circumstances was inspiring.

EXECUTIVE SUMMARY

CONTEXT AND PURPOSE OF THIS REPORT

For many of the public Technical Vocational Education and Training (TVET) colleges across South Africa, bandwidth poverty has obstructed the use of the internet for teaching and learning purposes in the past. During 2020-2021, the South African Broadband Education Networks (SABEN) rolled out 200 Mbps fibre connections to the campuses/sites of the TVET colleges, boosting their capacity to use the internet for teaching and learning. The arrival of the COVID-19 pandemic in early 2020 created an unforeseen urgency for colleges to employ the internet for teaching and learning as colleges were faced with the constraints of lockdown and social distancing. Most of the colleges responded by fast-tracking existing plans and putting ad hoc arrangements in place to manage the transition to e-learning. In late 2020, SABEN commissioned a study to investigate the perspectives and experiences of key staff members at the 50 TVET colleges with regard to using the internet in teaching and learning; the challenges, initiatives and innovations that have arisen; and their vision for how e-learning could or should be developed. The aims of the study were to inform SABEN's strategy going forward and to share current knowledge, insights and recommendations about the use of the internet for teaching and learning at the colleges with stakeholders across the TVET sector. This report on the study has been prepared for public dissemination.

METHODOLOGY

A background study was conducted to inform the design of the research instruments: interview an interview questionnaire for academic staff and another for IT staff with primarily qualitative questions. Interviews were held from February to May 2021. Most participants opted to meet online. A total of 131 respondents participated in the study, with 53 participating in the IT interview and 78 in the academic interview. The complete data set was analysed per question and per college and a confidential report of findings was made to SABEN.

FINDINGS

Potential benefits and drawbacks of e-learning. Participants identified a range of potential benefits which e-learning could offer the TVET sector at all levels: increased access to teaching and learning and improved quality of teaching and learning experiences for students, as well as benefits for lecturers, colleges and industry. To achieve these benefits adequate technical and institutional capacity needed to be put in place with support for lecturers and students accompanied by key shifts in institutional culture. If e-learning is not properly supported, it could undermine teaching and learning at all of these levels. (Section 1)

Status of e-learning. The development of e-learning has been extremely uneven across the TVET sector; COVID-19, however, has brought rapid forward movement. Before 2020, only a handful of colleges had begun to engage with e-learning; at most of these lecturers were not

engaged across the board. By the time of the interviews, only 10 colleges had functioning e-learning programmes with an LMS and at least 1 HR post dedicated to e-learning, but all but two colleges had begun to take steps to set up e-learning (procuring a learning platform and setting up an interim HR structure). The capacity and engagement of colleges with regard to e-learning varied widely within each province, highlighting the fact that initiative and support for e-learning was coming from the college level (or sometimes individuals within the college who were championing e-learning) rather than at the provincial or national level. This has resulted in an extremely diverse range of approaches and structures. (Section 2)

Leadership of e-learning by DHET. Many participants expressed frustration that DHET had not provided stronger leadership on e-learning during a time of crisis, leaving the colleges to find their way on their own. They indicated a need for stronger engagement by DHET in terms of developing a national strategy and policy in consultation with colleges and providing for staff positions for e-learning (in the context of the Post Provisioning Norms). The need for a coherent strategy for the creation and sharing of digital materials for teaching and learning and alignment of DHET policies with e-learning directives was also raised. Participants expressed a need for a communication channel with DHET to discuss issues such as NSFAS provision of devices, zero-rating and infrastructure in rural areas impacting on-campus and off-campus access to the internet. Many participants noted the absence of a national forum to enable colleges to communicate and collaborate around e-learning. (Section 3)

Support of e-learning by management. The development of e-learning has been extremely uneven across the TVET sector, with some colleges having invested heavily for several years, others trying to fast-track e-learning in response to COVID-19 and a small number still not engaging with e-learning. In some cases, e-learning has been driven by a single champion, with little institutional support; in other cases, colleges have established an e-learning unit with several dedicated staff, but have not always enabled e-learning with the necessary infrastructure, policy development and integration into the vision of the college. At many colleges, the majority of lecturers were resistant or reluctant to engage with e-learning and without the support of an e-learning policy that was enforced by the college e-learning staff could make little headway. Many participants described a culture of 'working in silos' which obstructed collaboration and sharing of expertise by lecturers. (Section 3)

Technical capacity for e-learning. Inadequate bandwidth had made it impossible for many colleges to initiate e-learning in the past, and SABEN'S rollout of 200 Mbps bandwidth to college campuses which was underway at the time of the interviews was an enabler for these colleges to begin to engage with e-learning. Colleges were grappling with how to manage the bandwidth effectively. Inadequate, and sometimes ageing, LAN and Wi-Fi infrastructure at many colleges was the next obstacle to be overcome to bring bandwidth to user. Many colleges were trying to establish and extend Wi-Fi networks with the eventual goal of universal access, while also extending their LAN networks to classrooms and resource centres. Most colleges had made arrangements for laptops for lecturers; few had adequate supporting technologies in classrooms; and very few had any plans to provide devices to students. While NSFAS had promised laptops to bursary students, they had not arrived a year later and some

participants had concerns about the adequacy and sustainability of this initiative. Off-campus access was also a key need for e-learning. Issues to be resolved were data for staff and students, connectivity and power for students who don't have access to these at home, zero-rating of the LMS and website and providing access to YouTube content. (Section 4)

Online platform for teaching and learning. While a few colleges had been using an online Learning Management System (LMS) for quite a few years, many had initiated the process in response to the pressures brought to bear by COVID-19 and half of the colleges had a functional LMS at the time of the interviews. While Moodle-based platforms had been chosen in most cases, both strengths and weaknesses were noted and a number of other platforms were in use. Many colleges were struggling to navigate the territory of selecting and customizing an LMS. (Section 5)

Sourcing and creating digital content. Most colleges had started e-learning using digital copies of existing materials, sourcing digital materials from publishers and the internet posted on their LMS or website. Participants identified a continuum of approaches to content creation: individual lecturers – lecturers working in subject teams – campus/college-level content creation unit or support – regional or national collaboration between colleges – DHET-led – or international collaboration, each with advantages and disadvantages. (Section 6)

Isolation and desire for collaboration. While across the sector colleges were grappling with the same challenges as they took e-learning forward, to a very large extent each college was dealing with this alone. The strongest finding coming out of this study was that there was consensus amongst participants on the need for a network or forum to enable colleges to share best, collaborate on technical solutions, training, and content creation, and engage as a sector with DHET around e-learning. Ideas were put forward for how a forum could be structured and facilitated. Ideas were put forward for how a forum could be structured and facilitated. (Section 7)

CONCLUSIONS AND RECOMMENDATIONS

E-learning offers many benefits if potential drawbacks are overcome.

E-learning has the potential to substantially improve access to teaching and learning and the quality of teaching and learning, bringing benefits to students, staff, colleges and industry – if implemented effectively.

Colleges need to carefully examine the impact of migrating aspects of teaching and learning to an online mode for students, lecturers, the college and industry. Interventions may be necessary to ensure that particular students are not disadvantaged by e-learning, that lecturers are equipped with effective pedagogies and the technical skills to engage, that e-learning provides for social learning for students and professional support for lecturers, that lecturers are not overloaded, that colleges are able to monitor teaching and learning and that the development of key competences needed for the workplace are not neglected.

Colleges need stronger leadership from DHET on e-learning.

Many colleges have found themselves trying to launch, or expand, e-learning during the crisis conditions of COVID-19 on their own, without the guidance and support of a national strategy, plan and policy or a mechanism to enable colleges to support each other.

A national strategy for e-learning, developed in consultation with the colleges, is needed to guide the implementation of e-learning. This needs to address adequate staff provisioning for e-learning at multiple levels, policy alignment, professional development and the creation and sharing of digital content. A communication channel is needed to enable e-learning managers to engage with DHET on current concerns. A national forum is needed to enable e-learning staff across colleges to communicate and collaborate on the various dimensions of e-learning.

E-learning needs to be championed and supported by top management.

E-learning is a major undertaking and is unlikely to succeed on a broad level unless it is championed and supported by top management.

A strong change management strategy, infrastructure investment, allocation of dedicated staff for e-learning and the development and enforcement of policies to guide lecturers and support e-learning staff to build a culture of collaboration are crucial.

Investment in infrastructure and devices is needed for users to access e-learning.

Improved bandwidth has opened up possibilities for e-learning, but LAN and Wi-Fi networks need to be extended to access points for users. Users need devices to access e-learning. Obstacles to off-campus access for lecturers and students need to be addressed.

Colleges need to prioritize the upgrading of LAN and Wi-Fi networks and address the need for personal and classroom-level devices to ensure all staff and students can access e-learning. Network design, problem-solving and procurement could be aided by sharing of best practice and collaboration amongst colleges through workshops, forums and focus groups. Engagement with DHET and other relevant departments is needed to address off-campus access issues.

Colleges need support in the selection and implementation of an LMS.

While across the 50 colleges there was, collectively, significant knowledge of the LMS terrain, as well as a common sense of what was needed in an LMS, there were few opportunities for colleges to share this knowledge and for those in the process of finding or setting up an LMS, the territory was fraught with the challenges of trying to procure a platform, integrate it with existing databases, register lecturers and students, and train staff on how to use it before launching e-learning.

Sharing of experience and expertise across colleges with regard to selecting and developing an LMS and utilizing its functions optimally would be of great benefit to many colleges. A committee of experts from across the colleges could serve as a resource to the colleges if their time could be freed up and/or compensated.

Creating digital content at multiple levels facilitates both quality and flexibility.

Participants identified a continuum of approaches to sourcing and creating teaching and learning materials for e-learning, ranging from the individual lecturers who teach students – and the students themselves – to national and international institutions. While there are benefits to creating content for the whole sector, lecturers need to mediate, scaffold and work with prior knowledge and context and thus need to be able to adapt and create materials as they see fit. By promoting the creation and sharing of content at all of these levels, quality materials can be made available to the whole sector while allowing responsiveness and pedagogical choice at the level of the college and the lecturer – the 'fulcrum' of teaching and learning.

A broad strategy for content creation is needed for the sector, developed through dialogue between DHET and those responsible for e-learning at all of the colleges. This should include: a training strategy and content development guidelines for individual lecturers; a strategy for resourcing campuses to support more advanced content creation (e.g. through 4IR rooms), informed by the experience of the colleges and universities that have already done this; a strategy for the creation of specialized resources (such as animation, simulation, virtual reality) by subject experts from the sector paired with technical experts; and evaluation of the offerings of TVET content producers locally and internationally for their usefulness and appropriateness for South Africa and exploration of ways to leverage affordable access for the whole sector. A strategy is also needed to address the legal issues around the use of YouTube videos and other key resources to overcome prohibitive data charges.

Lecturers and IT staff need theoretical and technical training in digital pedagogies.

Lecturers need both a theoretical understanding of how e-learning could enhance teaching and learning and the technical training to enact it effectively, or they are likely to be inclined to either resist leaving the pedagogies they know to enter unfamiliar and technical terrain or they may 'dump' content onto the LMS which isn't adequately mediated.

Lecturers need training in online pedagogies that engages learning theory as well as technical skill to develop their expertise, professional judgement, and confidence to be able to use online pedagogies (including pedagogies for practical skills) effectively. An online pedagogy course could be developed collaboratively by experts across colleges and offered to all colleges with online delivery and face-to-face support. IT staff may also need training to equip them to support the new technical requirements of e-learning. To assist lecturers, they also need an understanding of sound digital pedagogies.

E-learning could be strengthened substantially through sector-wide collaboration.

Colleges across the country are typically working in isolation as they grapple with the challenges of establishing e-learning and often are unnecessarily 'reinventing the wheel' rather than sharing experience and best practice. There was consensus among participants that an e-learning network or forum is needed to facilitate collaboration on a range of aspects.

A meeting of key staff who are driving e-learning across the colleges should be convened to discuss a way forward. A conference could be planned based on surveyed needs and expertise across the sector with e-learning experts from the colleges as well as outside experts presenting on priority areas. From this, permanent focus groups and resources could be established to provide ongoing support, possibly via an online platform.

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INTRODUCTION

Context and purpose

For many of the public Technical Vocational Education and Training (TVET) colleges across South Africa, bandwidth poverty has obstructed the use of the internet for teaching and learning purposes. During 2020-2021, the South African Broadband Education Networks (SABEN) rolled out 200 Mbps fibre connections to the campuses/sites of the TVET colleges, boosting the capacity of colleges to use the internet for teaching and learning. The arrival of the COVID-19 pandemic in early 2020 created an unforeseen urgency for e-learning to be made available as colleges were faced with the constraints of lockdown and social distancing. Colleges responded by fast-tracking existing plans and putting ad hoc arrangements in place to manage the transition to e-learning. This required both technical and academic staff at many of the colleges to venture into unfamiliar territory with little preparation.

In late 2020, SABEN commissioned a study to investigate the perspectives and experiences of key staff members at the 50 TVET colleges with regard to using the internet in teaching and learning; the challenges, initiatives and innovations that have arisen; and their vision for how e-learning could or should be developed. The primary objective of the study was to inform SABEN's strategy going forward. The aim of this report is to share current information about the status of e-learning at the colleges, insights and recommendations with key stakeholders across the TVET sector.

Design and implementation of the study

SABEN appointed independent researchers Professor Wayne Hugo and Bobbie Louton to design and conduct the study. It was decided to interview at least one academic staff person and one IT staff person at each of the 50 colleges. Separate questionnaires were developed two cover these two perspectives which focussed primarily on qualitative responses. Permission to conduct the study was granted by the Department of Higher Education and Training (DHET). Interviews were conducted from February to May 2021 by the lead researchers along with research assistants Zolile Zungu and Nomcebo Myeza. The majority of the interviews were conducted through audio/visual meetings online; a few were conducted by telephone or in writing. In some cases, several respondents from the same college participated in a meeting. A total of 131 respondents participated in the study: The IT interview was conducted with 53 respondents. As only 12 colleges had e-learning coordinators, the respondents selected for this interview were diverse in terms of their positions at the colleges, reflecting the diverse ad hoc arrangements being made for e-learning. Data from the interviews was captured into spreadsheets for analysis.

Validity, reliability and confidentiality of the data

As a result of the rapid change that was happening at the colleges due to fibre roll-out and initiatives to fast-track e-learning in response to COVID-19, many factors related to e-learning were in transition and sometimes varied widely from campus to campus and even from day to day. As the situation will have continued to change since the interviews, many responses that were true at the time of the interview may no longer accurately reflect the situation on the ground. Because of the ad hoc staff allocations for e-learning, in some cases questions went beyond the expertise and background knowledge of respondents. In terms of SABEN's position as a service provider, it is not impossible that some responses may have been influenced by a desire to be considered for future interventions or, alternatively, by a reluctance to disclose lack of progress publicly. No indication was found that the data was influenced in either of these ways, however.

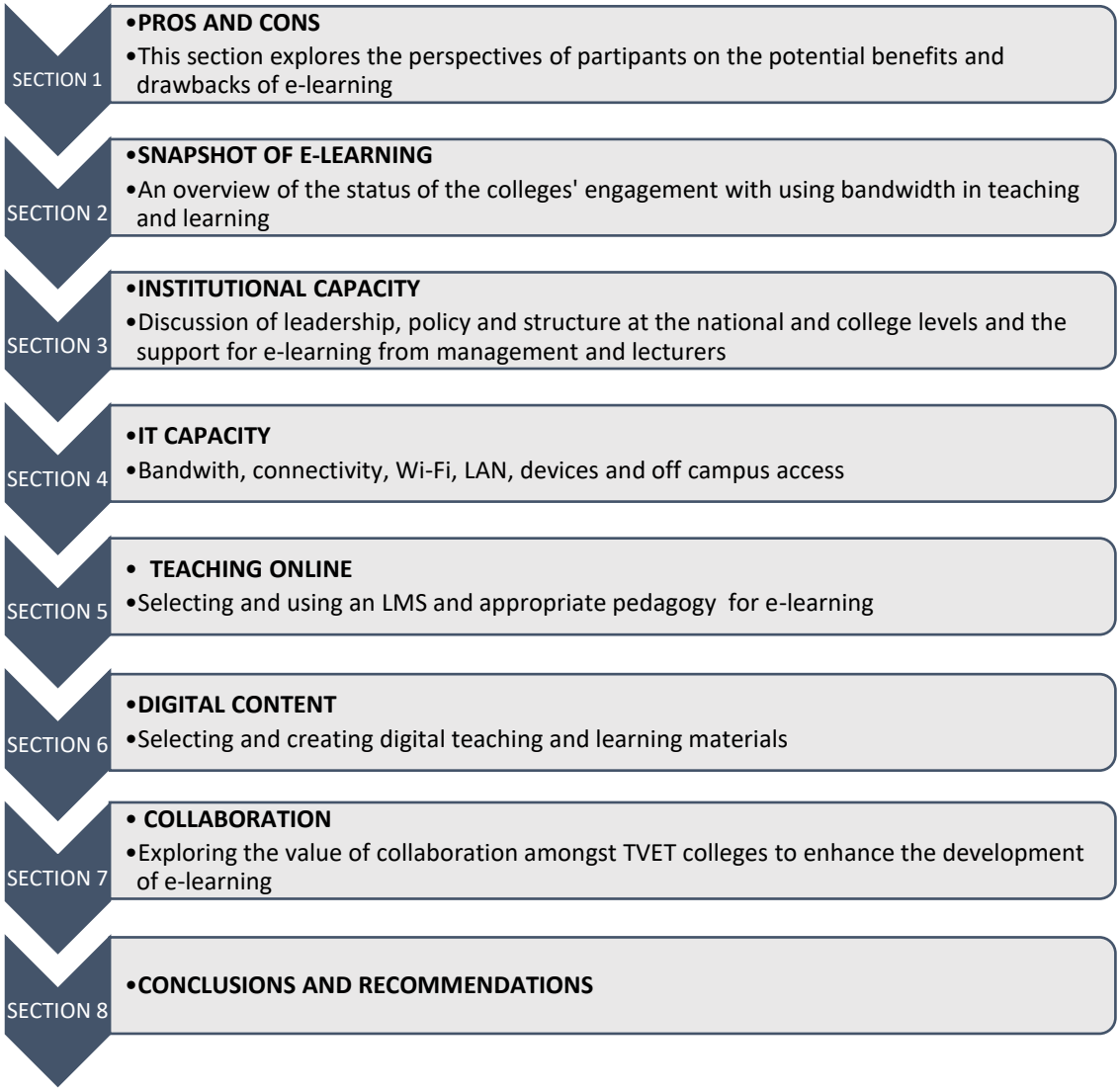
As it was important for participants to be free to share their concerns, they were informed that their names would not be used in any external report without their consent. A confidential report was made to SABEN detailing data from individual participants and colleges. Names of individual participants mentioned in this report have been used with these participants' knowledge and consent.

Use of the term 'e-learning'

In the new and changing terrain of using the internet in teaching and learning, the terms 'e-learning', 'open learning', 'online learning', 'distance learning', 'blended learning', 'using the LMS' or 'Moodle' may technically have important distinctions but are often used interchangeably. In this report the term 'e-learning' refers to blended learning (using both online and face-to-face modes without a complete reliance on one or the other) unless otherwise stated.

Navigating this report

The report is organized into 8 sections as follows:



SECTION ONE

PROS AND CONS

This section explores participants' views on the benefits and possible drawbacks of e-learning. Before getting into the detailed questions in the interviews, we asked academic participants to share their personal views about the place that the internet should play in teaching and learning in the TVET sector. This discussion covered the role – or scope – that they thought the internet, and e-learning, should have in teaching and learning at TVET colleges as well as benefits or drawbacks it could bring – including barriers to teaching and learning which it could help to overcome or new barriers it could create.

Several key themes emerged in this discussion in terms of the ways incorporating the internet could impact teaching and learning as well as the skills sector:

- Students' access to teaching and learning
- Quality of learning experiences and outcomes
- Impact on lecturers' effectiveness and expertise
- Impact on management and the college
- Impact on industry and society

To simplify the discussion, these themes are discussed from the point of view of teaching and learning being either completely face-to-face or completely online to highlight the gains or losses that can result from these different modes. In reality, blended models could be used to optimize gains and minimize losses for different contexts and scenarios.

STUDENTS' ACCESS TO TEACHING AND LEARNING

Students' access to teaching and learning was a key concern of participants as e-learning raises a host of new possibilities and issues. Participants noted that e-learning could help to overcome barriers that students face to accessing teaching and learning but it could also introduce new barriers if key obstacles were not overcome. The key issues around access were: closure of campuses, absenteeism, distance to campus and costs involved for students, travel and access issues for students with disabilities.

Closure of campuses due to COVID or strikes

The complete closure of colleges during Lockdown Level 5 in 2020, accompanied by the directive to use online learning to continue teaching and learning, was foremost in participants' minds. As colleges were required to restrict the number of students in a classroom

for social distancing even once contact learning resumed in 2021 it remained an ongoing challenge to provide teaching and learning to all students. Participants also mentioned the closure of campuses due to strikes as a factor that has affected teaching and learning. In fact, several of the interviews for this study were affected due to a strike by NSFAS recipients.

Benefits and drawbacks. Online learning enables teaching and learning to go ahead with minimal disruption for those who choose not to strike. It is unclear, however, what the impact will be for students who are striking in terms of addressing their demands or finding alternate ways to protest which could impact teaching and learning.

Health issues and other causes of absenteeism

Health reasons such as illness or accident – including those who, in the context of COVID, have to isolate due to co-morbidities or exposure – result in students and lecturers being unable to come to campus for lectures.

Benefit. Students and lecturers can stream from home; students could also stream lectures by other lecturers if their lecturer was incapacitated.

> Lecturer absenteeism is a big issue. Online learning helps to overcome that as you don't need to have someone in front of the class – lecturers can prerecord or stream the lesson.

Physical location/distance

The distance between students' homes and the campus is great in some cases, requiring significant travel. This is a particular barrier to students with disabilities.

Benefit. Online learning can reduce, or even eliminate, the need to travel. Students in rural areas where campuses may struggle to attract lecturers with a high level of expertise could have access to lecturers by the top lecturers in the country.

New barriers. Homes in some areas do not get internet reception at all. Colleges in remote areas cannot access fibre and can pay high costs for internet service and may also struggle to get technical problems addressed quickly, resulting in longer periods of downtime for the internet and online learning.

> "With network coverage, the college is not in control of where that infrastructure is installed. So if one of our lecturers or students is in an area with no signal, then it's tough luck."

Cost

Benefits. Students who can't afford transport fees – or accommodation fees in the case where they live far from the campus – could study from home. Students that would like to take a

course that is not available at the college nearest them could potentially attend another college remotely without incurring the cost of accommodation.

New barriers. E-learning requires access to a suitable device and the internet. Many students cannot afford these. If e-learning requires students to buy devices or data themselves, this would increase their costs or prohibit them from enrolling.

> "A barrier we face is that students from disadvantaged families don't have the resources for online learning. Online learning could thus disadvantage them further."
>
> "Even if you have a good cell phone, good network, and a good signal, if you don't have data that's a barrier."

Disabilities

Benefits. One respondent pointed out that it is a huge effort for students in wheelchairs to come to campus every day and mobility on campus is often a challenge. While TVET colleges are expected to increase their enrolment of students with disabilities, inaccessible infrastructure and other barriers will take time to be transformed so that all buildings are fully accessible for people with disabilities. Digital technology could fast track this transformation: while colleges work on upgrading physical infrastructure, e-learning could enable more people with disabilities to enrol, study at their own pace and get the support they need online. One participant pointed out that lecturers could load audio recordings of lessons onto the LMS and blind students could access these from the convenience of their own home then make audio recordings of their assessments and load these onto the LMS for their lecturers to mark.

New barriers. While online learning offers new possibilities for overcoming barriers related to disabilities, this can require a major shift in the approach of the lecturer, who might also need to develop new technical skills. One participant commented on her experience with this:

> We had a challenge with a student with eyesight problems. As a lecturer, when you develop material, you are not developing material for students who are partially blind. You create generic material and expect students to engage with the content. It's a challenge to create materials for students with disabilities because even the lecturer is not trained to teach such students or develop materials. Studying online was a problem for that student. The student was unable to complete online assessments and was failing to keep up with the class.

Flexibility

Benefits. Online learning supports the open learning principle of enabling students to access learning whenever and wherever they are. This can enable access to education for students who cannot study on campus due to other responsibilities such as work or care of children or family members.

New barrier. Students used to the very structured traditional approach to education may struggle to manage themselves with adequate self-discipline and may fail to follow through with lessons and activities.

QUALITY OF LEARNING EXPERIENCES

A number of colleges said that they had seen improved performance on assessments when students had engaged in online teaching and learning. Others expressed concern about where e-learning could not deliver as well as traditional modes. This speaks to the quality of the teaching and learning that can be provided online.

Range of pedagogies to engage students' learning styles and interests

E-learning opens up a new range of pedagogical approaches which lecturers can use; it also shuts down some traditional pedagogical approaches.

Benefits. Some participants pointed out that traditional 'talk and chalk' teaching and learning supported by textbooks is not the best way for all students to learn. Online learning opens up a new range of pedagogies to engage with diverse learning styles. Several said that today's students are very attuned to devices and respond better to short, interactive and visual engagement with learning rather than working through long texts. Visuals, animation, video, simulation and interaction appeal to students and help them stay interested and engaged. E-learning also facilitates 'just-in-time' learning which helps students more easily absorb content.

> The traditional way of learning – reading a book – caters to only two types of learners. Other learners are not catered for and tend to suffer. The internet unlocks that and allows all students to have a fair chance. Visual learners can go online and get a video on how to replace pistons in an engine and actually observe a person doing this. It also equips other learners who have been learning the traditional way to find innovative ways of doing things.
>
> "If we can marry the traditional with the modern way of teaching then we will probably have improved academic performance – because now we are in a way, but not really, catering to different modes of learning"
>
> In our day we used to read a lot. Students these days are very visual.
>
> "The students that we have here are all born after the year 2000 – can you believe it! And they retain knowledge differently than we did when we were at school."

New barriers. Some of the pedagogies which lecturers use effectively in face-to-face teaching can't be used online.

Practical pedagogies

One of the areas that need the most careful consideration with online learning is the development of students' practical competences. In some cases, theory and practice have already become divorced from each other in teaching and learning. There is a danger that in the way e-learning is taken up this gap widens, or that watching demonstration videos is mistakenly seen by some as an adequate substitution for actual practice in a physical workshop.

Benefits.

Recorded demonstrations and simulations offer a number of benefits:

- **Clearer and more personal demonstrations.** By recording practical demonstrations or sharing simulations, lecturers can provide students with an opportunity to view things more closely and clearly than they might be able to in an overcrowded workshop demonstration. For example, the simulation may show the inside of a machine and each function independently, which is not possible in the workshop.
- **Repeat viewing and practice**. In addition, the student can slow down a video and play it as many times as they need to enable them to grasp the concepts fully, while in a workshop they might have only one opportunity to see the demonstration or may miss it completely if they can't attend.
- Simulations also allow students to manipulate variables and **explore and experiment** with concepts and technologies at their own pace until they master the knowledge or skill.

E-learning can offer virtual exposure to technologies and processes not available at colleges. Colleges often cannot afford to provide the full range of up-to-date equipment relevant to each course for the students to interact with physically. As a result, in traditional teaching and learning, students don't always get exposure to the processes or technologies they will be expected to use in the workplace. Colleges and campuses are also unequally resourced in this regard. Where virtual exposure is effective in one area, the college can save on having to purchase equipment for that content and can focus its budget more strategically on purchasing simulation machines or other equipment which is of value. It's not only students who can benefit from this virtual exposure: many lecturers don't have recent industry experience and can use digital simulations to upgrade their knowledge before they teach their students.

> The materials we currently have in our workshops are not of a high standard. With simulation, at least they will have an idea of how something is designed.
>
> "Some things they won't be able to do, but they will be able to see how it's done, which they haven't always been able to do in the past."

> I don't think online learning is going to cause any barrier for us because the syllabus is being rewritten to be compatible with it. There are simulations and virtual reality for engineering, subjects like computer practice and info processing use a lot of online templates.

New barriers. Some skills practice needs physical presence for safety. Online videos and demonstrations can be used to introduce and reinforce physical learning, but are not a substitute.

> The practical component needs contact with students so that students can be able to practice and be monitored during that period. In terms of practicals, eLearning is not an ideal approach. When it comes to practicals, students must be in front of lecturers and must be under control and guidance so they can practice and be monitored.

Students' role/agency in their own learning

Benefits. Online learning gives students more control over managing and ensuring their learning. They can access their classes and learn at any time that is convenient for them, allowing them greater flexibility if they have other home or work commitments. They can watch lessons before meeting with the lecturer and then ask lecturers for specific support (using the flipped classroom approach). They can also learn at their own pace: if they didn't understand a certain outcome they can go back to watch the recorded lesson again. If they have a gap in their knowledge they can access other materials on the internet. They can also explore areas of interest in more depth. If their lecturer lacks expertise or knowledge in some area they can find other resources on the internet to supplement their learning.

New barriers. Students used to the very structured traditional approach to education may struggle to manage themselves with adequate self-discipline and may fail to follow through with lessons and activities.

> Students who are not self-disciplined might consume much time not focusing on the cognitive level.
>
> Students at TVET colleges aren't the same as students at university. Students at TVETs need to be guided, motivated and monitored.

Development of 21st-century skills

Benefits. By using online platforms and technologies, students will develop some of the skills that are expected in the workplace which they currently may not have the opportunity to learn at colleges. Digital resources also enable them to be exposed to new technologies and processes in industry which the college isn't able to expose the student to through physical

resources. E-learning also cultivates students' self-management and independence as they become less dependent on lecturers.

> Students aren't prepared for the work environment because they have been trained in a pre-internet and ITC environment at the college while the workplace has moved on. By introducing e-learning from the start of a student's education it brings them into the mind-set of the world.
>
> So many people are choosing to work from home. We have to instil work etiquette in the students: being on time, delivering what you said you would deliver.

New barriers. Some workplace skills might be even more difficult for students to develop if teaching and learning are migrated online.

> The skills that are not properly facilitated on campus I don't believe are necessarily going to be facilitated on the platform. I'm thinking of time management, punctuality, attendance, being at work on time, how to behave at work. We get very scary reports from employers where our students go and do internships – not all our students, but there are quite a few the at the manager has to deal with. So things like that, that's not what Moodle is for. But actual work skills – they'll have lots more access to that.

Quality of lecturers and materials

Benefits. Students could access lecturers by top lecturers in the country and around the world. Quality materials can be sourced from anywhere in the world and the best materials created amongst the South African TVET colleges can be shared. Lecturers and colleges can correct, update and enhance materials whenever needed instead of waiting for the next edition of a textbook to come out.

> I was watching the budget speech to create an assignment for my N6 students on the budget and when I checked the textbook in terms of the functions of the budget, the textbook and the budget speech are completely different – meaning that the content has changed but we are still teaching students about social service whereas the budget speech has changed to something else. If we had a content development unit, they would be looking at such things and changing them. That way, everybody across the country has up to date information.

New barriers. Materials made by lecturers without adequate expertise and quality control could result in less effective teaching and learning.

Relevance to industry

Benefits. Videos and simulations from the internet can give students opportunities to see and interact with tools or environments in industry which the college has not been able to provide to them.

> Our stakeholders say we are not relevant: our teaching methods are not preparing learners to do what we say they can do. We still use the same syllabus from 1994 – while the concepts are still the same but implementation in industry has changed completely in terms of automation in manufacturing, and different things coming into all areas.

Virtual tours of the workplace can give students greater WIL exposure than is currently possible.

> "When I was teaching I used to take my students on a factory visit and we would go to SAB or a newspaper publisher to see the whole production line. It was logistically not easy to arrange. With online learning, that kind of thing is going to become commonplace."

Student-lecturer and student-student interaction

Benefits. Students and lecturers can communicate freely and in real-time outside of class. Lecturers can track and give additional attention to underperforming students, while students who didn't understand something clearly in the lecturer, or who don't have the confidence to ask questions in a classroom environment, can contact their lecturer 1:1. Working in groups online gives students the benefit of more collaborative learning than might be possible in traditional face-to-face teaching and learning.

> Some students send lecturers pictures of problem questions and get the help they need.

Support and extension

Benefits. Links and supplementary resources can easily be uploaded for students to access at their convenience for more support, or for extension. Students who are struggling to access content due to language or literacy barriers can be given supplementary content – more videos to aid understanding, for example – and can use translator software to improve understanding. Materials could be designed to speak to the context of students.

> Students with Grade 9 come into college and you find that they can't read properly. With videos, students who can't read properly can see visual examples, making them understand better.

New barriers. Using materials from other sources may limit lecturers' abilities to code-switch between languages to enhance students' understanding; in addition to language, accents and references from other contexts may present barriers to students.

IMPACT ON LECTURERS' EFFECTIVENESS AND EXPERTISE

Skillsets and expertise required for online learning

Benefits. Developing the new technical and pedagogical skills required for online learning can be empowering for lecturers, opening up doors for innovation.

New barriers. Many lecturers do not have the technical skills (and may be resistant to learning them) – or flexibility in their pedagogy – and thus may not be able to engage with online learning effectively. Developing the new technical and pedagogical skills required for online learning can be intimidating for lecturers and they can fear embarrassment or even being made redundant. Some lecturers fear technology.

> Within the TVET sector, we've got the old artisans and we have quite elderly lecturers, I think that will be a barrier of resistance to change. They fear technology.
>
> "This does require a shift of mind-set. We have to be savvier than them."

Research and professional development

Benefits. Access to the internet enables lecturers to do research to improve their courses and engage with others in their field around best practice and skills development. Online learning facilitates reflective practice: Lecturers can record their lectures and watch them in order to identify what they can improve in order to make their lessons more effective and reach the various levels of understanding within the class. As they build up content that can be used again, they can shift their attention from *creating* basic content to *improving* their content.

Assessment and reporting

Benefits. Formative assessment can be done in real-time using a range of digital approaches, enabling the lecturer to immediately know where a concept needs further reinforcement and where the problem areas are. The lecturer can check students' readiness before a practical. Assessment can be integrated into workshops and physical spaces through technologies such

as QR codes. Assessment results can be easily aggregated and analysed across students and classes, facilitating reporting.

New barriers. As DHET doesn't yet accept formal assessments that are done online, exams cannot be integrated into the LMS at present and results and stats cannot be analysed using those functions.

Workload

Benefit. As administrative tasks get moved to the LMS and become lighter, this frees up time. One participant commented that over the 25 years that he had lectured at the colleges, lecturers had begun to have more and more of their teaching time consumed by admin. He thought that using an LMS could help to reverse this:

> It's a sausage machine where you are told what to do, how to do it, and you have to make sure that when someone comes to check up on you all your forms are signed and boxes are ticked and so on. We spend most of our time doing our paperwork. So Moodle, I hope, is going to give students more access to proper learning and academic staff a chance to actually teach again.

New barrier. Lecturers may find themselves overwhelmed if they are required to create content without collaboration with other lecturers. At the same time, many lecturers are resistant to sharing resources.

Flexibility

Benefits. Lecturers can teach and work from home if needed, sourcing and creating material at their convenience.

New barrier. Lecturers may struggle to discipline themselves to work effectively at home and conditions at home may not be conducive to working. Lecturers may suffer from isolation and a lack of sharing of best practice and mentoring which they are used to experiencing face to face; migrating social and professional interaction to online spaces may be necessary.

IMPACT ON MANAGEMENT AND THE COLLEGE

Use of and access to resources

Benefits. Online learning allows college and sector resources to be used more cost-effectively to reach more students. More students can be enrolled to meet DHET's targets without the cost and time factors involved with building more infrastructure. Online learning enables colleges to use human resources more strategically – for example, a single lecturer could teach a large number of students across different campuses. Virtual resources can be accessed to enhance learning where colleges don't have physical resources.

"There's a huge skills shortage in South Africa and obviously the TVETs are supposed to be the people that fix this. But the government doesn't have enough money to build enough colleges so I think they see online learning as maybe a way to broaden this."

You don't need to have the physical classroom and you can have one English teacher teaching all the English lessons across the whole college.

Quality control

Benefit. When lessons and materials are prepared before they are given to students, the college has the opportunity to quality assure them before they are uploaded. This can enable colleges to improve and standardize the quality of teaching and learning.

Assessment

Benefits. Results can be easily aggregated across campuses or colleges and fed easily into reporting on academic progress on these levels. Assessments can be standardized and accessed across these levels as well.

New barrier. DHET doesn't accept formal assessment online at present.

Management of teaching and learning

Benefits. Management can monitor the activity of lecturers and students online, observe lessons online, and the LMS can generate statistics on participation and engagement over time. Lecturers' Portfolios of Assessment (PoAs) can be loaded on the LMS and reviewed online.

New barrier. Traditional campus-based staff management practices can fall away if lecturers are working from home; this is a huge shift in institutional culture. New and effective strategies are needed or performance and compliance issues may arise. Lecturers can suffer from the lack of interpersonal relationships and positive engagement; strategies such as setting up social interactions and communities of practice may be needed.

"You are managing people that are not there. We are used to managing people that are around us: you can track them. As managers of the lecturers, how do we check that actual teaching and learning is taking place?"

Integration and equity for campuses

Campuses have been unequally resourced in the past; some are very rural and don't have community resources and are far from each other.

Benefits.

Staff from rural or less-resourced campuses can access the same digital resources. Staff can attend online meetings and contribute to the college without the time and resource costs of travelling long distances to other campuses or Head Office.

IMPACT ON INDUSTRY AND SOCIETY

A common concern that was raised was that TVET programmes are sometimes poorly aligned to the industries that they are supposed to be preparing graduates for in many cases. One participant explained this:

> One thing we've encountered with stakeholders is that all of them say we are not relevant. Our teaching methods are not preparing learners to do what we say they can do. We still use the same syllabus from 1994; while the concepts are still the same, implementation in industry is totally different – in terms of automation in manufacturing and different things coming into all areas.

Benefits. A greater number of graduates enter the workforce. Courses are better aligned to industry and graduates are more ready to engage with the technologies in today's workplaces. Graduates' competences could be more standardized across the country if e-learning is used to share practices and materials. Opportunities offered by technologies (e.g. simulations and simulators) could enable students to develop more practical competence than they currently do.

New barriers. Some of the skills students learn on campus could fall away. If the quality of online learning is inferior, or if practical subjects are compromised, graduates' competence could be poorer than it is currently.

TO WHAT EXTENT CAN ONLINE LEARNING WORK?

A number of respondents said that the extent to which courses can be moved online depends very much on their individual characteristics. Many felt that e-learning should follow a blended approach and not attempt to migrate courses to a completely online approach; some felt that theoretical subjects – like business – could be offered completely online, but subjects that rely on practical components, like engineering, need to remain blended. One Campus Manager opposed migrating teaching and learning onto the internet completely:

> The college must not go completely online like UNISA. TVETs are different and theory is 40% and practical is 60% – especially in engineering where students have to go to workshops. So we cannot take away the learning in class and physical learning completely.

The Acting DP: Academic at one college felt that only the introductory parts of courses, instructions, and key conceptual information should go online, and the rest should continue on campus. The Academic Manager at another college said that that online platforms should be used by lecturers to provide support, but not for teaching and learning. The DP: Academic at a third college emphasized that colleges have to be prepared for any eventuality:

> Even with a return to contact sessions, we need to be able to do these things off-campus as well.

The LMS Manager at one college also felt that online learning is probably going to be necessary even if it's not always ideal:

> Currently, we have minimal contact with students due to COVID and so are trying to push a lot of content with the limited time we have with them. I think online learning is the future even if we don't like it.

An E-learning Administrator at another college cautioned against being too optimistic about the potential for e-learning:

> E-learning tends to get a big halo effect because a lot of people think technology is going to solve all their problems. But generally you don't really get solutions, you get trade-offs. And you also get a situation where the potential tends to outshine the practical application on the ground.

The benefits of e-learning and the potential drawbacks for different stakeholders mentioned by participants are summarised on the pages that follow.

BENEFITS AND DRAWBACKS OF / OBSTACLES TO ONLINE LEARNING		
Area	**Benefits**	**Drawbacks or obstacles**
ACCESS TO TEACHING AND LEARNING		
CLOSURE OF CAMPUSES	Teaching and learning continues.	Striking students may be penalized.
ABSENTEEISM	Students and lecturers can engage from home; lectures can be pre-recorded.	Access issues if students don't have reception, devices, data
PHYSICAL LOCATION/DISTANCE	Students in poorly resourced areas can access the same quality T&L	Access issues if students don't have reception, devices, data
COST	Can save costs on travel and accommodation	If students are required to buy devices or data costs may be prohibitive
DISABILITIES	More access options for students with disabilities; barriers of transport and physical environment avoided	For some students with disabilities, online learning could introduce new barriers
FLEXIBILITY	Students with work or family responsibilities can learn anywhere, anytime	Students may not have the self-discipline to succeed without structure
QUALITY OF LEARNING EXPERIENCES		
RANGE OF PEDAGOGIES	More interesting and interactive presentation Cater for different learning styles	Some effective traditional pedagogies don't work online.
PRACTICAL PEDAGOGIES	More and better demos Repeat viewing and practice	Lecturers may tend to have students 'watch' instead of 'do' There are limited practicals that can be done at home with online guidance
STUDENTS' ROLE/AGENCY IN THEIR OWN LEARNING	More opportunities for self-management, initiative and extension in learning	Students may not have developed skills to self-manage
21ST C SKILLS	Develop tech-savviness needed for workplace	Some skills currently learnt in face-to-face T&L could fall away
QUALITY OF LECTURERS AND MATERIALS	Lecturers can correct, update or improve materials when needed instead of having to wait for the next edition of the textbook. Exposure to top lecturers in the country and the world becomes possible.	Poor engagement by lectures and poor digital materials could result in poor T&L experiences.
RELEVANCE TO INDUSTRY	Virtual visits to industry possible Improved exposure through simulations and VR	
STUDENT-LECTURER AND STUDENT-STUDENT INTERACTION	More 1:1 interaction and support New ways to collaborate	

BENEFITS AND DRAWBACKS OF / OBSTACLES TO ONLINE LEARNING		
IMPACT ON LECTURERS		
RESEARCH & PROFESSIONAL DEVELOPMENT	Greater access to research, training, COPs; opportunities for new skills and innovation	Many lack tech skills and flexibility in pedagogy and are resistant to change
ASSESSMENT AND REPORTING	Facilitates easy and immediate formative assessment Reporting is easier; can do digital PoA	DHET doesn't recognise online assessment DHET doesn't recognise digital POA
WORKLOAD	Admin tasks reduced Less time spent on lesson prep, more time for teaching	More time is required to be spent on content creation
FLEXIBILITY	More flexibility	Isolation from colleagues and support; may lack self-discipline
IMPACT AT THE COLLEGE LEVEL		
USE OF AND ACCESS TO RESOURCES	More students enrolled with less infrastructure and HR	
QUALITY CONTROL	Can vet lessons and materials before posting	
MONITORING OF TEACHING AND LEARNING	T&L can be observed online	Traditional accountability practices may not work
ASSESSMENT AND REPORTING	LMS can aggregate results and generate reports	
INTEGRATION AND EQUITY FOR CAMPUSES	Overcome travel and time costs of travelling between campuses Allow staff at rural campuses the same resources and level of participation.	
IMPACT AT INDUSTRY LEVEL		
ALIGNMENT	Opportunities for collaboration with industry. E-learning can be a change agent to push for better alignment of curriculum Higher competence among graduates	Lecturers will need to embrace new technologies and change DHET needs processes for updating curriculum Badly done e-learning could result in lower competence

KEY TAKE-AWAYS

Pros and cons of e-learning

E-learning has the potential to substantially improve access to teaching and learning and the quality of teaching and learning, bringing benefits to students, staff, colleges and industry – *if implemented effectively*. If colleges can't ensure access of all students to online learning, then it could become a greater barrier to teaching and learning, rather than removing barriers.

RECOMMENDATIONS

To overcome potential drawbacks of e-learning, lecturers and colleges need to consider each type of stakeholder:

Students

- Consider which aspects of teaching and learning must continue in a face-to-face mode to be effective
- Ensure every student has the means to access e-learning both on- and off-campus
- Consider the impact of e-learning for students with disabilities
- Consider how social learning will be facilitated virtually
- Consider skills that students will need to successfully study online

Lecturers

- Consider need for professional development to expand pedagogical range
- Consider impact on workload and reporting
- Ensure every lecturer has the means to access e-learning both on- and off-campus
- Consider impact on professional support and collaboration with colleagues

College

- Consider monitoring and quality control

Industry

- Consider impact on students' readiness for the work environment

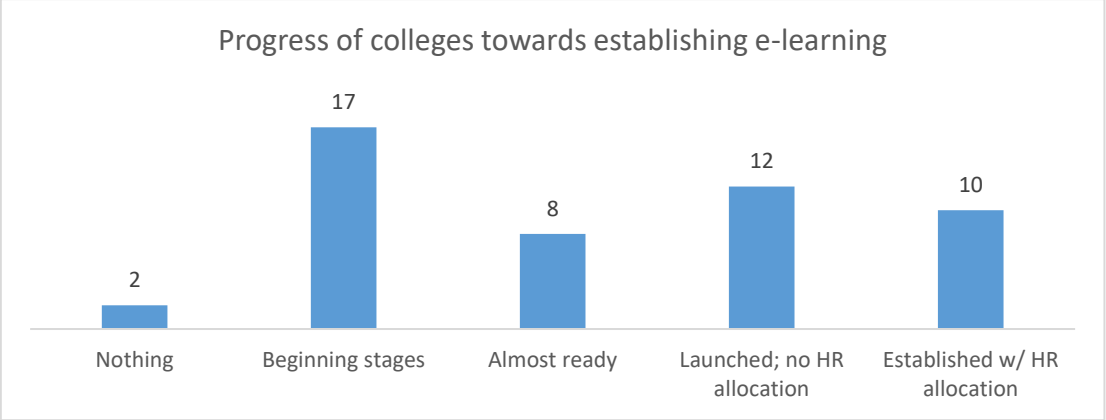
SECTION TWO

SNAPSHOT OF E-LEARNING

This section provides a brief overview of the status of colleges with regard to their capacity for, and implementation of, e-learning.

Progress of colleges toward establishing e-learning

Ten of the colleges had established e-learning programmes with HR post allocations and a functioning LMS at the time of the interviews, while 13 others had launched e-learning with ad hoc structures running it and no allocated posts and another 8 were almost ready to launch e-learning – some of which probably have by the time of this report. The rest were still in the early stages of making plans for e-learning (17) or had not gone further than talking about it (2).



Roughly, then, 40% of the colleges had launched e-learning, 20% were on the cusp of launching and another 40% were in the early stages or had not gone beyond talking about it. As things were moving rapidly, this could be expected to break down roughly to half launched and half not launched at the time of this report. Descriptions of the status of the colleges in these different groupings and some examples of their situations follow.

Colleges with an LMS and dedicated HR posts for e-learning (10 colleges)

Three colleges had e-learning programmes that had been running for 9 to 12 years and had e-learning units with 4 or 5 allocated staff positions; 3 had been running e-learning for 5 to 7 years and had 1 or 2 allocated staff positions; and 4 had been running e-learning for 1 to 2 years and had 1 or 2 allocated staff positions. These colleges were distributed across provinces as follows: Western Cape (4), Gauteng (2), KZN (1), Mpumalanga (1), Free State (1) and Limpopo (1).

FALSE BAY

False Bay started e-learning in 2009 when the Department of Education paid for an LMS (Blackboard) for all of the colleges. Carol Dwyer, who is now the e-learning manager, was the first lecturer to get involved and began to champion e-learning. "I developed my entire syllabus – levels 2, 3 and 4 – for online delivery," she said, "and then I started to realize what value that had. And then I started to do online assessment." Despite the years of investment in online learning, Carol said that it has only really taken off in the last 4 or 5 years – and since April 2020 it has grown exponentially. All registered NCV full-time and NATED full and part-time students were registered on the LMS.

The e-learning unit had 4 staff. The e-learning manager was responsible for the strategic management of the unit and ran the e-bays at the libraries as well. The two e-learning administrators were each responsible for working with 3 of the 6 campuses to support e-learning. That allowed them to build up relationships with the campus managers and staff. They divide up tasks in terms of training, upgrading of technology, and developing online assessments on the basis of their individual expertise. A content developer had recently joined the team.

COLLEGE OF CAPE TOWN (CCT)

The foundation was laid at CCT for e-learning some years ago when they started using the PLATO learning system for maths, language and science. Dilawer Chogle, who is now the e-learning manager, taught English for business at that time. She said that the college showed initiative quite early on and decided to release her from her teaching responsibilities so that she could focus on developing e-learning. This expanded into an e-learning unit, which now has five staff: a manager, a technician and 3 trainers. The initial focus was distance learning courses and supporting students with learning challenges and disabilities. However, as the digital platforms developed, staff grew accustomed to the use of digital resources. Dilawer said that this helps to develop a culture of transition: "whatever I do can be transferred to a digital platform." They migrated to a licensed Moodle platform in 2015 and have set up an infrastructure with a spot for every programme, subject and lecturer. They have tried to integrate e-learning at every level, using blended learning, and encouraging every lecture to have at least one module on the LMS; however, many lecturers had not really engaged with e-learning until COVID-19 arrived. When COVID hit, this changed. "Our shell of a framework suddenly became alive and we were able to develop content quite rapidly", Dilawer said. She estimated about 58% of courses were populated. Programme managers, curriculum advisers and some top management were given access to their area of control and expected to report progress on a central database on Google Drive. They hope to migrate more functions to managers and have committed to the creation of scorm learning packages which enable staff to develop content offline.

GERT SIBANDE

About 12 years ago, Gert Sibande, under the leadership of Principal Dr Nick Balkrishen (now Regional Manager for Mpumalanga and Northwest province) established an online support service to standardize the quality of assessments and overcome the need for staff at rural campuses to travel long distances for meetings. It worked quite well, and evolved into an open learning unit. Engela Franken, who is responsible for the open learning unit, said that Dr Balkrishen was a driver of technology and so 'technology and innovation' was made one of the core values of the college. Engela, who was a lecturer at the time, said that she immediately bought into the whole idea and so became the person who was primarily responsible for the development of their staff portal called Khuphula, built on the Sakai LMS. Engela said it has really been a success: "Maybe because of the length of time that we have been using it, people have completely come to the point that they can't do without it anymore because they really see the value of it. It is 100% fully populated, working 100% and it is vital for every lecturer to be on the system."

They started to develop a student portal called GSC4ME three years ago, also on the Sakai LMS.

The open learning unit had 5 staff: a manager, an education specialist (ES), an office-based lecturer, a content developer and an admin person. The team goes from campus to campus to train and advocate for open learning; they work very closely together with the curriculum team and the education specialists at the campus level.

NORTHLINK

The college started using an LMS in 2014 and trained and registered 2 300 staff and student users. But after uploading content, the platform was not actively used, and when lockdown came there were only a few students registered on the system. The LMS was suddenly revived; 18 000 students and staff were registered and trained and lecturers began loading interactive content for students. They had not yet started using the LMS as a communication platform with students, however, as they planned to launch an upgraded platform in 2022.

The administrator of the Education and Training Unit serves as the LMS administrator and the Unit managers for the ministerial programmes (business and engineering) serve as the Acting Moodle coordinators. They identified a list of lecturers/coordinators on each campus who were tech-savvy and enthusiastic about e-learning and from that list identified a representative per campus who reports to the unit. Colleen Cozett said that this structure created an environment where e-learning could move forward. In every department there was a programme manager; every subject had a subject head. The subject head trained the 3 people that are joining them in that subject.

Colleges that had launched e-learning with an ad hoc structure leading it (12 colleges)

HR posts dedicated to e-learning had not yet been allocated at these colleges.

One college had launched e-learning on a Brightspace platform. E-learning had been identified as a strategic objective at the executive level and operational plans were being put in place to ensure that it happens. E-learning was overseen by a steering committee located at the executive level of the college, which included operations and implementation teams comprised of the various HoDs and campus managers. E-learning activities were undertaken within the academic services function of the college. At the campus level, the college had identified e-learning champions. The HoDs at each campus had created WhatsApp groups consisting of lecturers where they shared classroom content.

This college had procured devices and begun training for e-learning two years ago. At the time of the interview, most of the college's teaching and learning was takes place online, with 60% - 70% of lessons uploaded onto the LMS. E-learning used the same organizational structure (subject HoDs who quality assure materials from lecturers) as contact-based teaching and learning.

At this college, an LMS was developed by the IT department on an open-source Moodle platform and launched in 2018, hosted in a SABEN server. E-learning was operating at 50% but was not fully functional as students did not have devices to access materials. E-learning was run by the IT Manager who was strongly championing e-learning. The IT team was responsible for uploading material onto the LMS.

Colleges that were almost ready to launch e-learning (8 colleges)

Of the 8 colleges that were nearly ready to launch their LMS, one had already appointed an e-learning coordinator while the others had put an interim structure in place.

This college had developed a Moodle-based LMS and was in the process of testing it. They planned to look at other LMSes if they do not feel theirs is successful. Because they felt it would be difficult for one person to manage a fully functioning LMS but it would also be difficult to get funding for more staffing, they had created a number of committees to manage e-learning: a steering committee which included the principal and deputy principals; an academic sub-committee comprised of the campus managers, HODS and some senior lecturers; and an ICT sub-committee for technical aspects.

This college had formulated a remote learning task team in 2020 that was chaired by the Curriculum Manager and comprised the HODs from the campuses, the network controllers, the MIS manager, and learning support. They had developed a business plan for remote learning and were busy finalizing a policy. They had signed on with Student Hub as their LMS provider and begun a mobilization for launching blended learning. Because of the lack of devices, no connectivity at many students' homes and no Wi-Fi on campus with computer labs fully utilized for platooning, they were establishing media centres on campus to prioritize those with no connectivity at home while others attend class.

Colleges that had just begun to do the groundwork for e-learning (17 colleges)

These colleges had just procured an LMS or were in the process of procuring; some had set up ad hoc structures to manage e-learning while others had identified a point person. Two had taken steps to try to create a dedicated post for e-learning; one was looking at setting up an e-learning unit. Despite the fact that some of these colleges were lagging far behind others with regard to the development of e-learning, some of them showed the potential to progress quickly with a strong strategy for e-learning and/or a person or group that was willing to champion e-learning.

One college was procuring an LMS from a service provider. A committee had been established in 2020 to take e-learning forward with a formal TOR, comprising the DP Academic, Campus Managers, the Risk Manager, the ICT Manager, the MIS Manager, the Research and Innovation Manager, the Student Support Services Manager, the Office Manager, the Marketing Officer, an ITC Lecturer and five e-earning champions selected from each of the 5 campuses based on their interest. The committee was mandated to meet monthly. For the interim, the MIS Manager and the Research and Innovation Manager were playing the lead role in supporting the rolling out of e-learning but a recommendation that a position be created for a permanent e-learning manager had been taken to the college council.

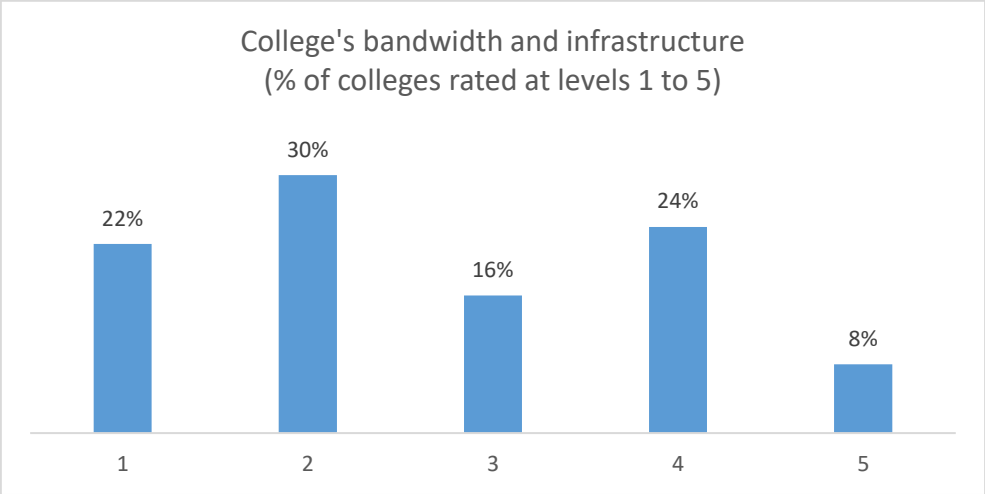
Colleges that had taken no steps towards e-learning yet (2)

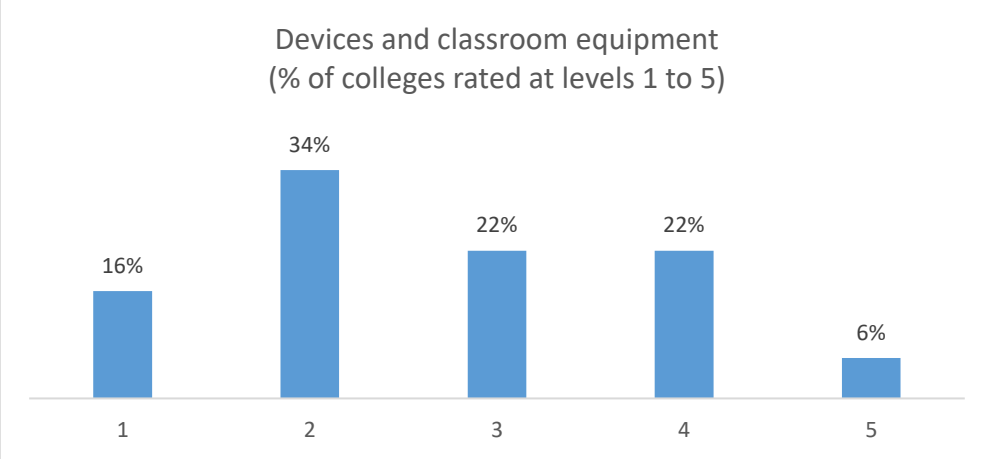
One college indicated that supply chain was the primary culprit for the college not having an LMS yet. The other said that e-learning was seen as falling within the college's greater curriculum renewal process, which was also under discussion by management.

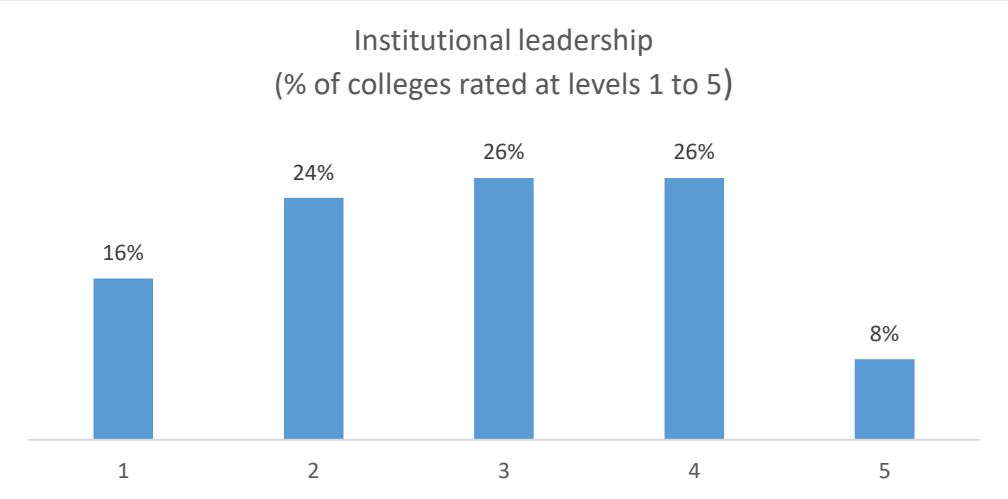
Status of readiness for and engagement with e-learning by category

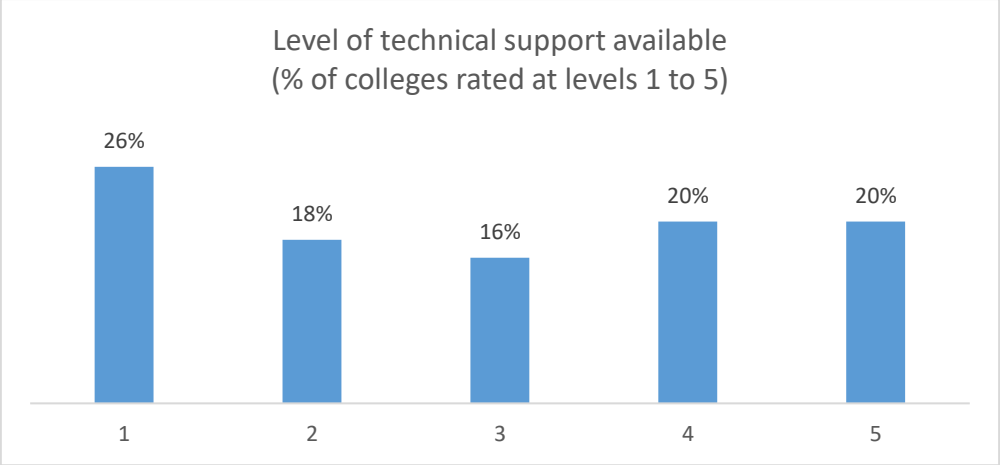
After reviewing the complete data set for each college, the research team rated each college on a scale of 1 to 5 for six different categories (with a total possible score of 30). Because different aspects within a category could have been given vastly different ratings and the rapid

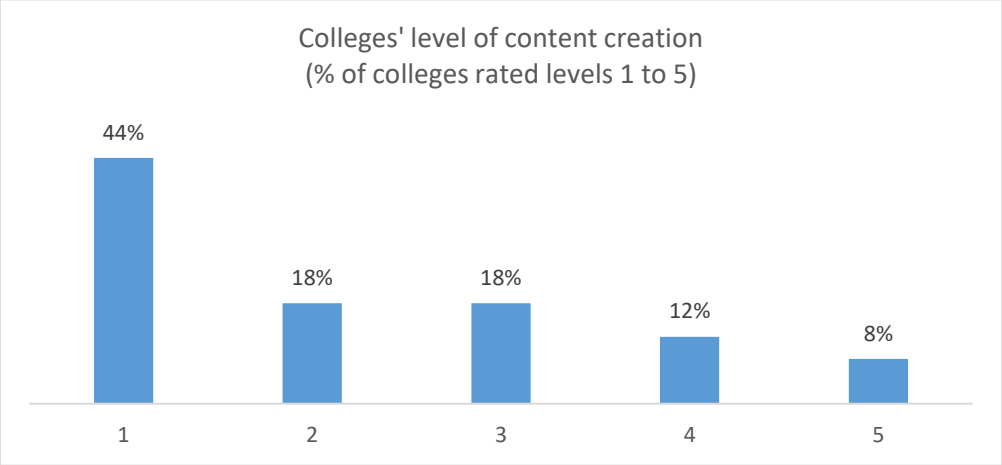
change that was happening across these categories, the ratings are not able to provide a detailed and accurate picture of the situation at the time of this report but rather provide a rough sense of the general situation during a period of rapid development in early 2021.

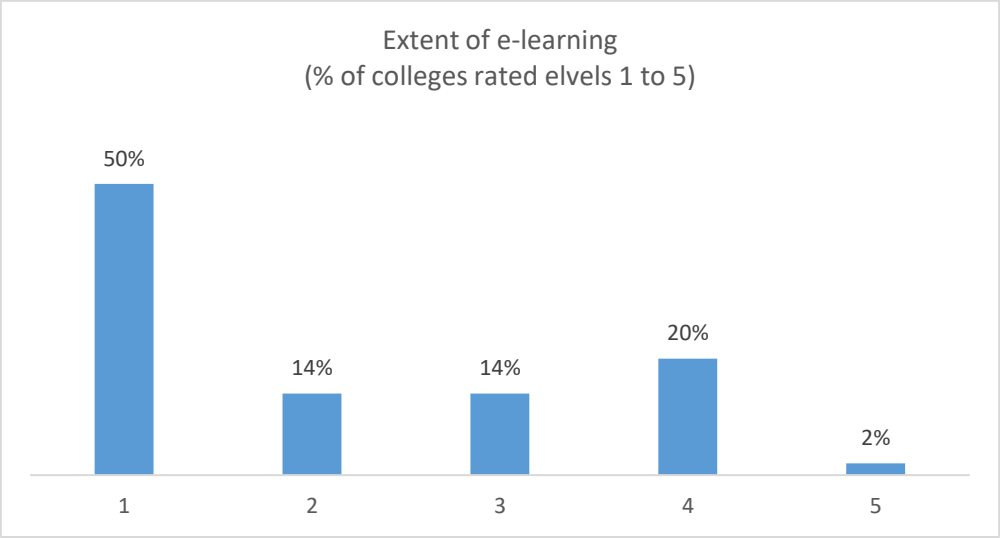







Level of technical support available
(% of colleges rated at levels 1 to 5)
26%
18%
16%
20%
20%
1
2
3
4
5


Colleges' level of content creation
(% of colleges rated levels 1 to 5)
44%
18%
18%
12%
8%
1
2
3
4
5


Extent of e-learning
(% of colleges rated elvels 1 to 5)
50%
14%
14%
20%
2%
1
2
3
4
5

Comparison within and across provinces

When the ratings for all categories were added up for a college and compared against other colleges, there was a significant range between the average scores of the provinces – with the province with the highest average score (21,8 out of 30) nearly doubling that of the lowest (12,3 out of 30). But the range of scores between colleges in the same province was more striking, with the scores of the highest scoring colleges in each province ranging by 8 points, and the scores among the lowest scoring colleges only by 4 points, in contrast to ranges of 7 to 18 points within provinces. These high scores, alongside low scores in the same province, tend to reflect the decision of individual colleges to invest in e-learning while others have not – at least, until COVID-19 arrived – and the absence of sector-wide coordination of e-learning.

RANGE OF RATING SCORES BETWEEN AND WITHIN PROVINCES

AVERAGE	LOW	HIGH	RANGE
12,3	7	19	12
13,1	6	19	13
13,5	9	19	10
13,5	10	17	7
13,7	10	20	10
14,3	6	24	18
15,0	7	25	18
18,1	9	25	16
21,8	11	27	16

The ratings for all categories could be added up allowing the colleges to be ranked overall, or per category. This proves a single 'snapshot' of e-learning, with the darkest green representing the greatest progress (a level 5 rating) and the darkest red the least progress (a level 1 rating):

RATING OF COLLEGES BY RESEARCH TEAM

RATING TOTAL	RANKING	Bandwidth & infrastructur	Devices & classroom tech	Institutional leadership	Technical support	Extent of e-learning	Content creation
27	1	5	4	5	5	4	4
26	2	4	3	4	5	5	5
25	3	4	5	4	5	3	4
25	4	2	5	5	4	4	5
24	5	4	3	4	5	4	4
24	6	4	5	4	4	4	3
23	7	3	3	5	3	4	5
23	8	2	2	5	5	4	5
23	9	3	4	3	5	4	4
23	10	4	4	3	4	4	4
21	11	2	3	4	4	4	4
20	12	4	4	3	3	3	3
19	13	2	2	4	4	4	3
19	14	2	2	4	5	3	3
19	15	2	4	3	5	3	2
19	16	5	2	4	5	1	2
18	17	5	4	2	2	2	3
18	18	4	3	1	5	3	2
18	19	4	4	4	2	1	3
17	20	5	2	3	4	2	1
17	21	3	2	4	4	1	3
17	22	4	4	4	3	1	1
17	23	4	4	3	4	1	1
16	24	1	4	3	3	2	3
15	25	4	3	3	3	1	1
15	26	1	2	4	4	2	2
15	27	3	4	3	1	2	2
14	28	3	1	2	3	3	2
13	29	2	2	4	2	1	2
13	30	4	3	2	2	1	1
12	31	1	3	3	3	1	1
12	32	3	2	2	2	2	1
11	33	2	2	3	2	1	1
11	34	1	1	2	4	1	2
11	35	2	2	1	2	1	3
11	37	1	3	2	3	1	1
11	38	2	2	3	2	1	1
10	39	2	2	2	1	2	1
10	40	3	3	1	1	1	1
10	41	2	2	2	2	1	1
10	42	3	2	2	1	1	1
9	43	2	3	1	1	1	1
9	44	2	2	2	1	1	1
9	45	2	1	3	1	1	1
9	47	1	1	1	1	3	2
7	48	1	2	1	1	1	1
7	49	1	1	2	1	1	1
7	50	1	1	2	1	1	1
6	36	1	1	1	1	1	1
6	46	1	1	1	1	1	1

Poorest	1	2	3	4	5	Strongest

KEY TAKE-AWAYS

Snapshot of e-learning

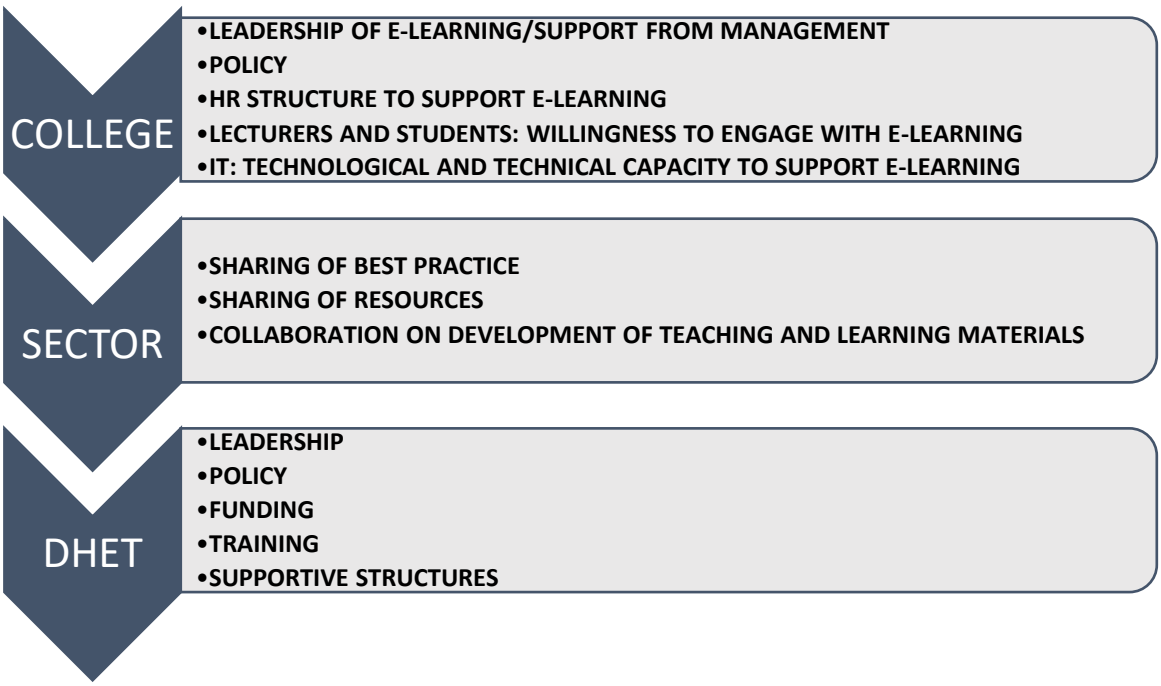
The development of e-learning has been extremely uneven across the TVET sector; COVID-19, however, has brought rapid forward movement. Before 2020, only a handful of colleges had begun to engage with e-learning; at most of these lecturers were not engaged across the board. By the time of the interviews, only 10 colleges had functioning e-learning programmes with an LMS and at least 1 HR post dedicated to e-learning, but all but two colleges had begun to take steps to set up e-learning (procuring a learning platform and setting up an interim HR structure). The capacity and engagement of colleges with regard to e-learning varied widely within each province, highlighting the fact that initiative and support for e-learning was coming from the college level (or sometimes individuals within the college who were championing e-learning) rather than at the provincial or national level. This has resulted in an extremely diverse range of approaches and structures. To a great extent, colleges were tackling the enormous challenge of transitioning to e-learning alone – forcing them each, in many cases, to reinvent the wheel.

If sharing of best practice and collaboration on common needs could be facilitated, the vibrant range of ideas and innovation that are being produced by colleges in isolation from each other could be shared to the benefit of all colleges.

SECTION THREE

INSTITUTIONAL SUPPORT

For a shift to e-learning to succeed in the context of South African TVET colleges it needs to be supported at every level. At the college level, management needs to understand and commit to e-learning and move forward decisively with a clear vision for how e-learning should unfold. This needs to be backed up by policy and by the creation of dedicated structures with adequate HR post allocations. The bottom line of e-learning is what happens in the process of teaching and learning, and so it is critical that lecturers and students support the move to e-learning and are willing to engage fully. IT expertise is needed to equip the college at all levels with the technical infrastructure, equipment and devices that effectively facilitate e-learning. While launching e-learning requires each of the 50 colleges to engage with, and support, all these aspects, in their unique contexts, stepping back to look at the sector as a whole there are common challenges, needs and expectations of e-learning across the colleges. Support on a provincial, regional or sectoral level thus can play an important role in terms of the sharing of best practice and resources that it could facilitate. On the national level, the 50 colleges all fall under the Department of Higher Education and Training (DHET), which thus also has a responsibility to provide leadership, guidance, resources, and support of different kinds in order to capacitate the colleges to be able to succeed with the move to e-learning. This chain of support is represented in the diagram below.



This section looks at institutional support at the college and departmental levels. The need for greater sector-wide support is addressed in Section 7: Collaboration.