International Journal of Learning, Teaching and Educational Research
Vol. 23, No. 1, pp. 186-206, January 2024
https://doi.org/10.26803/ijlter.23.1.10
Received Nov 27, 2023; Revised Jan 15, 2024; Accepted Jan 17, 2024

Modelling Customised Student Support Framework to Enhance University at-risk Students' Study Skills

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Abstract. Poor pass rates are a severe concern for the Department of Higher Education and Training and the universities in South Africa. Throughput rates remain low and programme completion takes much longer. On the other hand, universities suffer high dropouts due to general students' poor academic performance. One feasible intervention is student support. Universities should implement efficient and monitored student support systems (SSS). The paper discussed ways in which students may be supported with their study skills. It explored the attributes that are useful to improving students' pass rates and the general students' academic performance at a selected South African University (SSAU). These attributes can be integrated through planning implementation, monitoring, evaluation and control (PIMEC) processes. Action research benchmarking exercise adopting the theoretical frameworks of constructivism and symbolic interactionalism was conducted. Some successful approaches and benchmarks from international and developed countries' universities were used to formalise and model student support in a modern tertiary institution setting. The boosted PIMEC concept and the improved student support response systems (SSRS) were blended in developing the PIMEC framework that this paper proposed for the SSAU. Besides, the concepts and approaches (such as crowdsourcing and incubation) used in business

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success were used to fortify the model. This resulted in a PIMEC-Enhanced SSRS Blended Model for improving the current SSS, emphasising communication within the system from top management, ICT and academic operation levels. Thus, it recommended the identification of at-risk students early during formative assessments.

Keywords: communication; PIMEC process; student support; student-at-risk; student performance

1. Introduction

Challenges of students in higher learning lead to reduced pass rates and lower graduations despite the institutions having identified great potential in many students capable of graduating. With some interventions, some of the dropouts and failures can be prevented. On the other hand, some study programme completions and graduations can happen when students embark on extraordinary measures apart from normal lectures.

Student support and some innovative learning facilitation can unveil students' potential, resulting in high academic performance. Currently, the pass and throughput rates in South African higher learning institutions (HLIs) are considered suboptimal (Ajoodha et al., 2020; Makibinyane & Khumalo, 2021; Mbuvha et al., 2021), hence , they pose significant concerns. A Selected South African University (SSAU) in Gauteng Province is one of the HLIs that aims to improve these rates and the general students' academic performance. SSAU uses the student support services (SSS) programme, also known as the student support referral system (SSRS). However, these services seem inadequate because of an ineffective framework for coordinating and enforcing the somewhat 'below-par' performance of SSSR, among others.

This paper addressed the inadequacies of the SSS programme by developing a customised, effective SSS framework. The research question addressed by the paper is, "How can international benchmarks and SSS models be incorporated into an SSAU student support framework for optimal effectiveness?" The paper aimed to establish benchmarks for effective student support and implementation framework for the SSAU. The principal objective was to develop an SSAU customised student support framework that determines and integrates best practices for nurturing at-risk students to enhance progress in their studies.

Education, as an investment, is offset by the high failure rate and dropout rates of students. These adverse effects are hindrances to economic and human resources development. This paper was an initiative to manage this problem, culminating in modelling a framework to enhance students' performance.

The rest of the paper is as follows: a review of the literature, student support with its components, PIMEC (planning, implementation, monitoring, evaluation and control), methodology, bias, and ethical considerations. Besides, it included the findings, a discussion that included the role of communication in the PIMEC process, information communication technology (ICT) tools in education, lessons

learnt from Covid-19, and model development. Then, the paper provides the conclusions and recommendations and further research.

2. Literature Review

Tertiary education students from secondary schools sometimes find it difficult to cope with demands such as focusing on their studies, managing the workload, researching, planning assignments, reading texts, and revising for examinations, among others (Ajani & Gamede, 2020; Thomas & Maree, 2022). The transition for students from school to university workloads and study demands is often challenging. Out of anxiety and overconfidence, they would imagine being able to pass without studying mainly because they might have been successful in the past using the same modus operandi. The emerging complacency may lead to poor performance in their studies. These new attitudes are sometimes attributed to academic under-preparedness (McGhie et al., 2020).

Apart from the new tertiary workload demands for the students, there are added complexities in the study dynamics at the tertiary level, such as subject global scale (and complexity), communication language, students' diversity, and inadequate student support. Subjects at the tertiary educational level have a global scale, which every student is expected to match. Communication language is a challenge for many first-year students since the medium of instruction is a second language to the students, and the textbooks use international languages, primarily English (Fomunyam, 2019). Compared to simple school settings, HLI surroundings are infested with new, diverse backgrounds, such as lecture rooms, nationalities, and faculties (Sanger, 2020). In some instances, student support from lecturers is inadequate.

A compounding problem in South Africa is the perceived low quality of education and rates of passes at the matric level (de Clercq, 2020). Fomunyam (2019) concurs that students admitted to tertiary education nowadays and universities are underprepared. Without interventions while maintaining high standards, dropout rates are bound to grow, and increases in throughput rates fail to materialise.

These challenges facing South African tertiary education students can often be overwhelming with specific learning difficulties. A common study challenge is dyslexia, which is described as some students' difficulty with reading and writing (Kunwar & Sapkota, 2022; Tırıl & Okumuş, 2022). Specialist study skills, tuition and support can help students cope with the academic demands of university life, produce work to their ability and enhance skills for life.

The University of Birmingham's intranet highlights managing academic work as one of the main concerns of students beginning university study (Arthur, 2017; Chambers, 2009). As a result, the UK university introduced numerous sources of support for students' academic work. Another university, Cardiff Metropolitan University, also in the UK, has also introduced specialist study skills because of the challenges of students' throughputs not being satisfactory and dropout rates

that continue unending (Cardiff Metropolitan University, 2013). Typical areas covered in 'Specialist Study Skills' sessions are:

- Identifying student's learning style,
- Time management skills,
- Methods for organising student's workload,
- Research skills,
- Critical reading skills,
- Developing writing skills,
- Proofreading skills,
- Revision techniques, and
- Exam strategies.

Study skill refers to a student's proficiency in eliminating learning difficulties when no facilitation occurs in places such as the library, at home or in student residences. Criollo-C et al. (2021) and Ndobe (2018) insinuate that technology in education is highly beneficial to knowledge acquisition outside the classroom mainly because free information is easily accessible online. One advantage is that learning takes place quickly. Study skills could be facilitated anywhere, anytime using resources available, prescribed and recommended study materials, and which can take place at an individual or group level (Haleem et al., 2022; Ndobe, 2018). It also helps students acquire knowledge and prepares them to perform appropriately for examinations. When these skills are lacking, students may struggle to pass examinations. Therefore, relevant study skills enhance high pass rates and throughputs (van Zyl et al., 2020). Moreover, the level of discipline on the side of a student is also of great importance. Ill-disciplined students may find it extremely difficult or even impossible to manage studies at the HLI level.

The methods of student support are sourced from many cradles. Valuable aspects include incubation and mentoring of students. Due to its effectiveness, incubation was also used by the Small Enterprises Development Agency (SEDA, 2020) to groom struggling enterprises in their early stages. Similarly, Assenova (2020) emphasises the importance of incubation because it focuses on the root causes of failure at an early stage. Mentoring is another process for relationship-based communication for knowledge transfer. It is psychosocial support perceived by the recipient (mentee) as relevant to their aspired development during a sustained period. This process occurs between a person perceived to have more excellent relevant knowledge, wisdom, or experience (the mentor) and one with none or less of these attributes (Sutter & Francis, 2022). The relationship is an SSS aiming to contribute to students' success, excellence and continual improvement (Gamage et al., 2021).

The entire SSS needs planning, implementation, monitoring, evaluation, and control (PIMEC) aspects to be included in the model (Johnson et al., 2022; Kaur, 2016). In this paper, these aspects were integrated into a single framework to enhance the effectiveness of students' performance results.

2.1. Student support

2.1.1. Basis and some student support principles

Advanced HLIs, mostly in developed countries, enhance quality learning and high pass and throughput rates by proactively and reactively engaging in aspects of SSS (van Zyl et al., 2020). Some HLIs in developing countries, including South Africa, use SSS at different levels and configurations. A standard and historical SSS is tutorship associated with 'tutorial' and 'tutor'. Tutorial sessions usually take place after lessons so that students can apply the problem-solving theory to revitalise the learning that took place. A tutor is a specialist who teaches one person or a small group in a seminar or lecture, known as a tutorial session (Motaung & Makombe, 2021). A tutorial refers to a teaching session conducted by a tutor. According to Beck (2021), a tutor is a fully qualified instructor specialised in study skills tutoring and supporting students with specific learning differences to realise high performance. According to Grey and Osborne (2020), these instructors specialise in developing strategies and support as they enter professional careers. Experience shows that many graduates and professionals in practice would not have succeeded without the benefit they received from tutorials. At this level alone, therefore, all these initiatives attest to the suggestion that SSS takes various but related forms at different HLIs, and they intend to improve students' performances.

2.1.2. Crowdsourcing in student support

Excellence often emerges because of the diversity of quality support and experiences from the crowds, known as crowdsourcing. Crowdsourcing uses people with different but supplementary skills to enhance and increase the quality of work by leveraging the value that various bits of intelligence add to the work (Karachiwalla & Pinkow, 2021; Nevo & Kotlarsky, 2020). Hence, optimising a student's excellence can be enhanced when a relevant crowd is formal and plans around the student's interests (Seeletse et al., 2016). SSS can, therefore, involve crowds of different skills and experiences to enhance performance quality and continual improvement needed for students' success in their studies.

2.1.3. Incubation

Incubation is a provision targeted at enterprises to provide them with support services at their early stages (SEDA, 2020). It requires experienced and knowledgeable parties, such as experts and successful enterprises, to incubate the new and less experienced ones. The concept emerged as a reaction to focusing on the root causes of early-stage failure. In academia, the incubator can be a mentor and study guardian, therefore, SSS is the platform for incubation. The early stages are the undergraduate level and more at the HLI first entrance. Statistics of student performances at the undergraduate levels, at least in the case of South Africa, show that failure rates of first-year HLI students are higher than those at upper levels (Assenova, 2020). Thus, student incubation may be considered to prevent high failure rates at the entry level, and SSS becomes relevant.

Therefore, student incubation would focus on improving learning for at-risk first-year students in the early stages. Incubation in supporting HLI students with study skills would consequently be a proactive initiative when they enrol at university for the first time. The initiative involves taking them through the

necessary steps of studying, time management, concentration, taking notes and other activities required for learning. Some valuable processes of Specialist Study Skills are presented in section 2.2.

2.1.4. Mentoring

In education, mentorship is an SSS aiming to contribute to success, build confidence, stimulate excellence, and encourage the continual improvement of students (Mullen & Klimaitis, 2021). According to several authors (Law et al., 2020; Raza et al., 2022; Sutter & Francis, 2022), some benefits of mentoring students are academic performance enhancement, morality/ethics, motivation, reduction of mistakes, minimisation of weaknesses, strengths eliciting, and breeding honesty. In augmenting mentorship efforts, there is also blended mentoring (Pollard & Kumar, 2021), a mix of on-site and online events projected to allow career counselling and development services to adopt mentoring in future practice.

2.2. Planning, implementation, monitoring and evaluation, and control

2.2.1. Planning

Concisely, planning is preparation. As described by various studies (Prediger et al., 2023; Russell et al., 2020; Syahrullah, 2022), planning refers to the appropriate selection of strategies and the correct allocation of resources that affect task performance. Through planning, targets are set, strategies are designed before selecting the most useful one(s), and the focus of the task is moulded. Therefore, planning is a vital component in an SSS model of HLIs.

2.2.2. Implementation

Generally, implementation refers to putting into actual practice an application or execution of a(n) algorithm, design, idea, model, plan, policy, specification, or standard (Sucuoğlu, 2018). It is, therefore, the process of actualising the planning made at the earlier stage. In this paper, implementation refers to the realisation of the framework developed. This would entail improving the original model, which has shown some limitations, by making it a more full-time activity with dedicated staff with experience and qualifications who can relate to students and academics.

2.2.3. Monitoring

Monitoring entails checking, recording or testing the progress and progression of activity regularly to evaluate its performance (Fazlul et al., 2022). It also involves awareness of comprehension and task performance. It is important to guard against deviating, therefore, monitoring is used. In the case of SSS, this letdown can potentially render it ineffective if it is unmonitored. Monitoring should then be accompanied by a form of variance assessment or evaluation of conformity with the plan. It should take place throughout the process so that correction occurs at the deviation stage to avoid revising the whole process.

2.2.4. Evaluation

According to Akinla et al. (2018), evaluation refers to appraising a task and the efficiency with which the task was performed. Evaluation requires that after mentorship has commenced, the assigned party should determine if the mentored student demonstrates performance improvement and the extent of the progress.

It is closely connected with monitoring hence, many instances present these two concepts as monitoring and evaluation (M&E), but each has a different role and value in its own right. If an SSS does not produce satisfactory improvement in student performance, it warrants or justifies corrective action to control it to align the SSS implementation to yield desirable results.

2.2.5. Control

Control follows M&E, which refers to taking corrective actions where errors are detected or poor quality is identified to produce the desired planned results (Borkowski & Knop, 2016). It is, therefore, a corrective measure when M&E demonstrate unsatisfactory performance results in student outcomes. Depending on the required corrective action in an SSS model, control can be applied in any planning, monitoring and evaluation (see Figure 1).

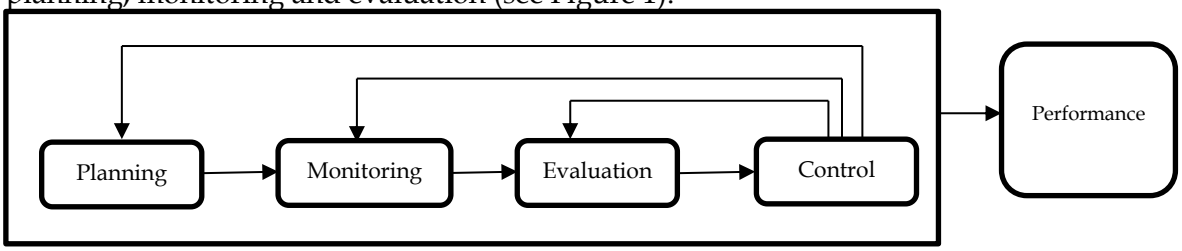

Figure 1: PMEC Model of Student Performance

2.3. ICT tool in education

Several researchers (Criollo-C et al., 2021; Dziubaniuk et al., 2023; Haleem et al., 2022; Seeletse, 2016) have verified that adopting various technologies in education is highly beneficial for students' knowledge acquisition. Although some students lack ICT skills, they may learn to use social media technologies for communal communication when they enter university. An ensuing advantage is that many of these students can quickly learn ICT skills, which can be redirected to education. Also, other researchers (Abedi, 2023; Cabellos et al., 2024; Dandadzi & Seeletse, 2020; Molotsi, 2022; Ndobe, 2018) have demonstrated that ICTs may enhance any aspect of teaching and learning for instructors and students. Consequently, many entering students can still leverage using ICTs to augment their study practices and outcomes. Furthermore, when an SSS model is fitted with ICT applications, it can be automated for mechanical effectiveness.

3. Methodology

This action research study was a literature-based benchmarked application from international HLIs of some developed nations. Action research is a systematic approach to enquiry that entails the identification of a problem, implementation of interventions or changes, collection and analysis of data, and use of the findings to inform decision-making and enterprise positive change (Nolen, 2024). This shows that action research is a process to improve educational practice, which requires action, evaluation, and reflection. In simple terms, action research focuses on solving a problem or informing individual and community-based knowledge in a way that improves teaching, learning, and other related processes. Then, the SSS solutions experienced and applied by the researchers in the past, in which the at-risk students were assisted to improve performance and later graduated, were integrated with the benchmarked ideas. The paper developed a framework with

a system that included ICT support to augment the PMEC model in coining the PIMEC model.

3.1 Design

The paper developed an SSS model. It addressed a modelling problem in which qualitative issues were involved in designing an optimal solution that aims to assist students in succeeding in their studies. Firstly, the key aspects of the envisaged SSS model were identified by searching for relevant and applicable benchmarks. The SSS model was developed using design methodology, which is the development of a system for a unique situation, often applied to information systems design (Pearlson et al., 2024). This design methodology provides structure and consistency to focus on students' underperformance problems and emphasises an iterative, cyclical approach to design. Design methods originated in new approaches to problem-solving developed in the mid-20th century in response to industrialisation and mass production, and they are procedures, techniques, aids, or tools for designing (Fox & Signé, 2021), and they form part of the modernised world. The theoretical frameworks followed were constructivism and symbolic interactionalism. Constructivism, often applied in psychology and education, highlights the active role of students in building knowledge and understanding, which hypothesises that people construct new understandings and knowledge through experience and social discourse, integrating new information with prior knowledge (Hatfield, 2024). Interactionalism, on the other hand, is a theoretical perspective that views social behaviour as an interactive product of the individual and the situation that underscores the importance of social interactions and the meanings that individuals place on those interactions in shaping society and in which individuals shape and are shaped by society through their interactions (Korac et al., 2024).

3.2 The Sample

The study was based on a sample of literature sources on study methods that entailed SSS and contact sessions and the experiences of educators in SSS and lecture facilitation. The target was to amass best practice benchmarks and customise the applicable SSS methods in an SSAU context. The sample of models used consisted of the SSAU's SSRS and PMEC model for student performance adapted under the guidelines of this paper.

3.3 Data Collection

The proposed model was presented for scrutiny in a research session in Pretoria-North on 08 – 11 December 2017, which was used to defend and improve it. That scrutiny still allowed continuity of the existing SSS but with augmentation for the proposed solution. Academics and critics had a chance to scrutinise the model and give advice on model adaptation and improvement.

3.4 Data Analysis

Data analysis entailed amalgamating various facilitation methods with student support, integrating these with the existing SSS practices, and defining applicability in the SSAU context. Comments provided during presentation

sessions were incorporated in the revised model to where they were relevant and value-adding.

3.5 Reliability and Validity

This study checked the reliability of a business model using benchmarking, which is a strategy that involves comparing a company's performance, processes, and practices to those of other companies or industry standards (Kechaou et al., 2024). According to Thomas and Sule (2023), this process assists in identifying best practices, and areas for improvement, and strength that can be leveraged for growth. To assess reliability, this study started with identifying relevant benchmarks, gathering data, and analysing the model even by presenting it in a workshop. In addition to the above steps of reliability, validity also allowed monitoring and adjustment from the feedback of the workshops held. Moreover, the model development ensured that the data used for benchmarking was accurate, reliable, and up-to-date by maintaining data quality and integrity, and compared it to verified standards. Thus, the tools for reliability and validity were benchmarking and workshops. To assess the reliability of the model developed in this study, consideration of the sources used, the process of conducting the review, and the authorities reviewing the process were utilised. A good model should use sources that are credible, authoritative, and valid, based on best practices, publishers, methods, data, results, and arguments (Thiem & Mkrtchyan, 2024). It should also acknowledge and address any biases. This research benefited from these techniques. Validity, on the other hand, was assessed by looking at the study's reliability, whether it covered the construct of interest, its face and content validity, and its criterion validity. Since reliability was verified, then validity was established.

3.6 Bias

Stuckless and Parfrey (2021) define research bias as the manipulation of the research process by the researcher to reach a specific predetermined outcome. Apart from the bias described above, possible bias in this study could result from a lack of customisation to SSAU settings and overlooking the possible changes to the conditions of SSAU students. These may occur when the research is not evidence-based, as Baldwin et al. (2022) cautioned. The model for this study was developed to be generic and adaptable and fashioned around best practices by experienced practitioners in SSAUs to offset or reduce possible bias. However, at the application level, an individual at-risk student may not entirely fit the generic version. The model can be adapted for a student to remove the resulting bias in such a case. In this study, research bias did not happen since the researchers did not skew any part of the research process towards any predetermined outcome and did not introduce any systematic error into the inputs made from feedback or best practices.

3.7 Ethical Considerations

Ethical considerations in research consist of principles that guide the research designs and practices (Zawacki-Richter et al., 2019). The principles are mainly for moral conduct and, according to Leavy (2022) and Yu (2020), they include voluntary participation, informed consent, which entails providing detailed

information to potential respondents, anonymity, confidentiality, the potential for harm, and results in communication. As far as this study was concerned, there was no harm to any life or environment, and all ethical protocols were observed when the study was undertaken. These included presenting the proposal to committees and panels on campus and informing the SMU academic and support groups about the intention to modify the original SSRS model, which was viewed as ineffectual. Ethical clearance was provided by the Sefako Makgatho Health Sciences University Research Ethics Committee (SMUREC) after evidence of adherence to all the SMU prescribed requirements of ethics. The study confirmed that all the sources used in this study were recent, peer-reviewed and fully acknowledged. The study commenced only after the issuance of the SMUREC ethical clearance certificate.

4. Findings

4.1. Case of SSAU SSRS

From a historical viewpoint, SSAU is known to focus more on students from disadvantaged backgrounds. This means that besides having admission requirements for its formal study programmes, it also finds ways to assist students with the potential to perform in these programmes to be included. As a result, there are extended study programmes that allow students who nearly met the admission requirements to start slowly on the programmes and do their studies over extended periods. These students qualify for admission to the university but do not meet the set criteria to fit into study programmes on campus and have missed the requirements by a tiny margin. They are understood to have not performed due to the poor study settings in their high schools, such as a lack of libraries and inadequate teaching. These groups are known as extended study programmes. Students admitted through this route require more assistance to perform. The SSS at SSAU was introduced for students admitted through normal routes. One would then expect students on extended study programmes to be treated with a specialised approach to SSS because they were already struggling for high performance. However, there seemed to be no effort to show that special attention was given to this particular student group, as all students received a similar form of SSS. In fact, for a long time, there was no efficient formal existence of social activism and social responsibility activities at the strategic level of the campus, let alone the academic level.

SSAU has a general SSS consisting of personnel who may service the students admitted through normal routes, albeit with perceived inadequacies. These are the academics, psychologists and counselling experts, social workers, financial assistance staff, food, accommodation, security, and staff for other services that students may need in their studies (see Figure 2).

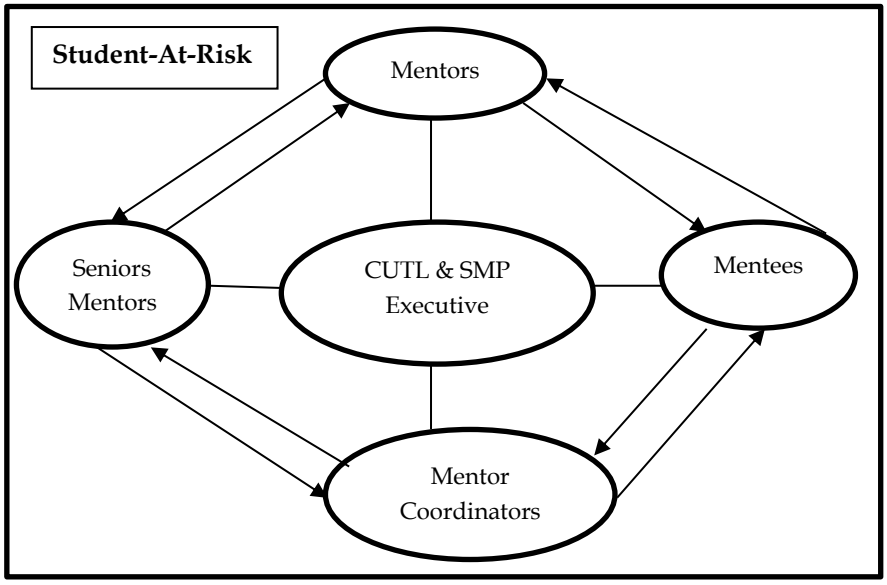

Figure 2: SSRS Model of SSAU

The manuscript authors participated and served in the SSRS in the past years, thus, they can attest to its strengths and weaknesses. The students who admitted to being at risk found solace easily in the system, and many benefitted from it.. Some system weaknesses pointed out are that the crowd members worked in silos, the system was understaffed, and the participating academics were poorly trained in counselling and career guidance, which they were required to undertake as part of the service to the student-at-risk. In addition, some academics involved in these tasks were primarily junior and inexperienced, overloaded with work, and were neither appraised nor rewarded for the extra work. They could even be accused of underperformance when most of their work was to assist students-at-risk. Besides, it was noted that SSRS refers to the at-risk students later in a semester, where at least two major assessments have already been written, possibly with the at-risk student already not qualifying to sit for the examination.

Further, feedback was lacking when a student identified for SSS passed one support stage to the next. Hence, it was difficult to monitor the progress of such students. With feedback lacking, academics got deterred as they did not know if the system worked and where they could help to improve it. Moreover, where students defaulted, academics were not made aware, and academics could still be under the impression that the referred student was improving. Ideally, the system could be more effective if an automated system could be developed in which SSS chain members can track the students on support programmes. The old SSS system lacks progress monitoring and tracking of students' progress once identified as being at risk.

4.1.1. Disadvantaged backgrounds

The students of SSAU come mostly from underprivileged backgrounds with a lack of resources. Though exposed to social media communication technologies, they typically would be exposed to modern education technologies for the first time, including libraries and study methods. Likewise, some could be exposed to diverse masses of people for the first time as they would be from small villages

and/or even informal settlements. Most students could have inferiority complex (Nokes, 2022) and have difficulty adapting (Goudeau & Croizet, 2017) on their own without intervention, among many possible challenges.

4.1.2. Underprepared students and/or academics

There is a tendency to consider students from rural and underdeveloped backgrounds as being underprepared or unprepared. With support from SSS and effective lecturing, many formerly underprepared students become equipped and, therefore, should achieve pass grades (Perin & Holschuh, 2019). Conversely, if most students persistently fail when they reach a grade that a specific lecturer teaches, then, according to Mardiana (2020), the fault could be with the lecturer. Astute lecturers can identify poor-performing students. Cases such as where such identification occurs are signs of strength in both the academic and identified student. A further strength is to allow and enable more experts to pinpoint the exact causes of such poor performances. However, there were cases where lecturers could not identify student problems with their studies. Also, some cases included a high failure rate of students consistently over the years with no plans from lecturers to improve student performance. Many such lecturers blame these poor performers and/or lecturers in prerequisite or earlier courses. This constitutes the unpreparedness of a lecturer (Huggett & Jeffries, 2021). A prepared lecturer can solicit interventions or use remedial tutoring to improve teaching and learning.

4.1.3. Student guardianship

The student guardianship endeavour is a student protection effort used to prevent students from performing poorly and guide them to perform well in their studies (Widodo & Turmudi, 2017). SSAU has a theoretically comprehensive SSRS for students identified as performing poorly. SSRS's secondary staffing was deficient, as members have core jobs, and many of them are untrained in offering professional student support. Correspondingly, the SSRS is generally ineffective due to inadequate budgets for its work, limited time from the academics involved, and, in some cases, not receiving noticeable backing from some management levels.

5. Discussion

5.1. Areas of improvement in the SSAU student guardianship for student support

The SSRS cannot be optimally effective if not pronounced and supported from the top by faculty deans, directors, and heads of departments (HODs). Furthermore, if it takes the time and energy of participants and is not connected to the core and key performance areas, it risks remaining inadequate. In addition, to have incentives for the SSRS, the participants should be trained for their expected roles. The existing system neither communicates nor provides feedback to the SSRS chain members. These members are demoralised by this weakness. Members believe and have proof that their efforts are beneficial (Stern, 2023). Some members are discouraged to participate when no such evidence can be presented.

Therefore, it should be clear that faculty deans embrace and support the system. Incentives are necessary when the system participation is not linked to key

performance areas. Some training of role-players could increase or add value to the SSRS execution. Communication among members is needed in the system. Also, there should be proper and prompt feedback regarding the referred students' progress to improve where necessary and comfort where participants' initiatives are beneficial in the SSRS.

Treadwell (2024) emphasises the importance of communication language in a diverse setting, and its intent is for knowledge transfer. Communication is a tool for sharing messages and information. Verčič et al. (2024) highlight the value of using technologies for the modern educational settings in which ICT becomes significant. The ethical consideration of this paper also hints at the communication that facilitates that there be no harm to the participants during the study and the use of the PIMEC model. Favaretto et al. (2020) and Hodges et al. (2024) insinuate that the model should be effective without negative after-effects highlighted with the 'First, do no harm' and 'ethical applications' phrases from the respective manuscript titles. The transition from social media technologies to modern education technologies is vital for students, especially those from disadvantaged backgrounds. The discussions also emphasised that communication among the users of the PIMEC model is key to the successful use and effectiveness of the model. Consequently, these imply that holistic communication is expected to be entrenched in the model. The PIMEC model is a stage-wise process, with information flowing from one stage to the next, with iterations that become necessary when technology-driven information indicates a need for revision of a stage with improvements. It is this pattern that initiates initial communication. Communication should be enhanced by an end-user workshop to make the users fully aware of the PIMEC requirements.

5.2. Ideal modern student support for a HLI

Openness, being technology-driven, management-backed, resourced, timeliness and feeding back are some vital features necessary in a modern student support system (Tran & Smith, 2020). Therefore, student support should be braced at a strategic level, with necessary support such as staffing with relevant, qualified and dedicated participants who have experienced student life at the tertiary education level. The tasks could be incorporated among key performance areas of the participants, and excellence in the SSS activities could be rewarded. Though it is proper for SSAU to involve academics in the SSRS, the participants should be fully trained to embark on the appropriate tasks, and periodic sharing among them should be endorsed to encourage synergistic relations and eliminate seclusion. Moreover, the academics who participate in the system should be the experienced ones exposed to the problems over the years and maybe even figure out where some resolves could emerge.

5.3. Framework establishment

The proposed student mentorship programme for SSAU is categorised into face-to-face mentoring and e-mentoring modes. The former entails student visits to lecturing staff by appointment, walk-ins, or lecturer invitations. The latter involves email, telephone, and generic, fully-fledged online training, such as webinars. No claim is made that this framework is the best. Rather, it is an improvement on the previous one and should enable improvement for future

models when new developments are realised. The structure of this programme and activities thereof include adapting the existing model, involving the PIMEC model (to be discussed below), and integrating the two as follows:

- Adapted SSAU SSRS
  This adaptation is proposed to enhance the original SSS initiative to improve its effectiveness and yield improved student performances (see Figure 2).
- PIMEC Model
  This model is about planning, implementation (which entails active involvement of role players as depicted in Figure 2), monitoring, evaluation, and control to enhance student performances (see Figure 3).

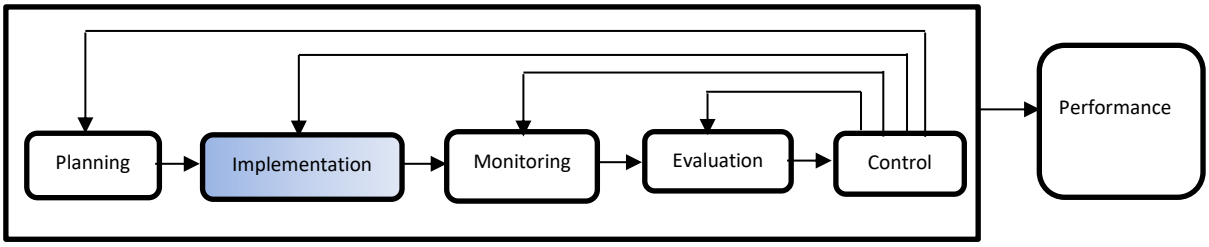

Figure 3: PIMEC for Student Performance

- ICT integration
  Modern trends require speed and accuracy, which only computers and the internet can provide effectively. This means that the improved model should integrate a system that will enable online approaches. This has become even more compelling since Covid-19 has forced multimodal learning approaches in which online lecture facilitation has become the leading facilitation mode. Arshad (2020) points out that disease outbreaks that would keep people isolated should be considered as the new normal and as such, ICT plays a significant role in enabling SSS. ICT platforms provide for recording of tutorials which struggling students could continuously refer to and have one-on-one contacts for students and lecturers beyond the brick-and-mortar classrooms among others. Indeed, ICT has transformed education from traditional to multimodal approaches (Zafar, 2019), and as such filters through to various facets of SSRS.

- Lessons learnt from Covid-19
  The rapid take up and usage of ICTs has been facilitated by the outbreak of Covid-19 in this century. Several lessons have been learnt on education since Covid-19, which has led to changing ways and methods, reshaping of teaching and learning, and provisioning of digital education environments (Arshad, 2020; Choi et al., 2021). Besides, this affected the way SSS evolves. SSS, as part of teaching and learning in emergencies caused by disease pandemics, relies on ICTs and this harmed under-resourced poor communities (Landa et al., 2021). There should be a shift in the provisioning of ICT resources to under-resourced or poor communities despite the competing factors of basic survival. With all these

challenges, the transformative impact of the remodelled PIMEC on SSS cannot be overemphasised.

5.4. Model development

The model developed is the PIMEC model for student performance, incorporating the adapted SSAU SSRS at Implementation (I, in PIMEC) and integrating the ICT component into the model (see Figure 4).

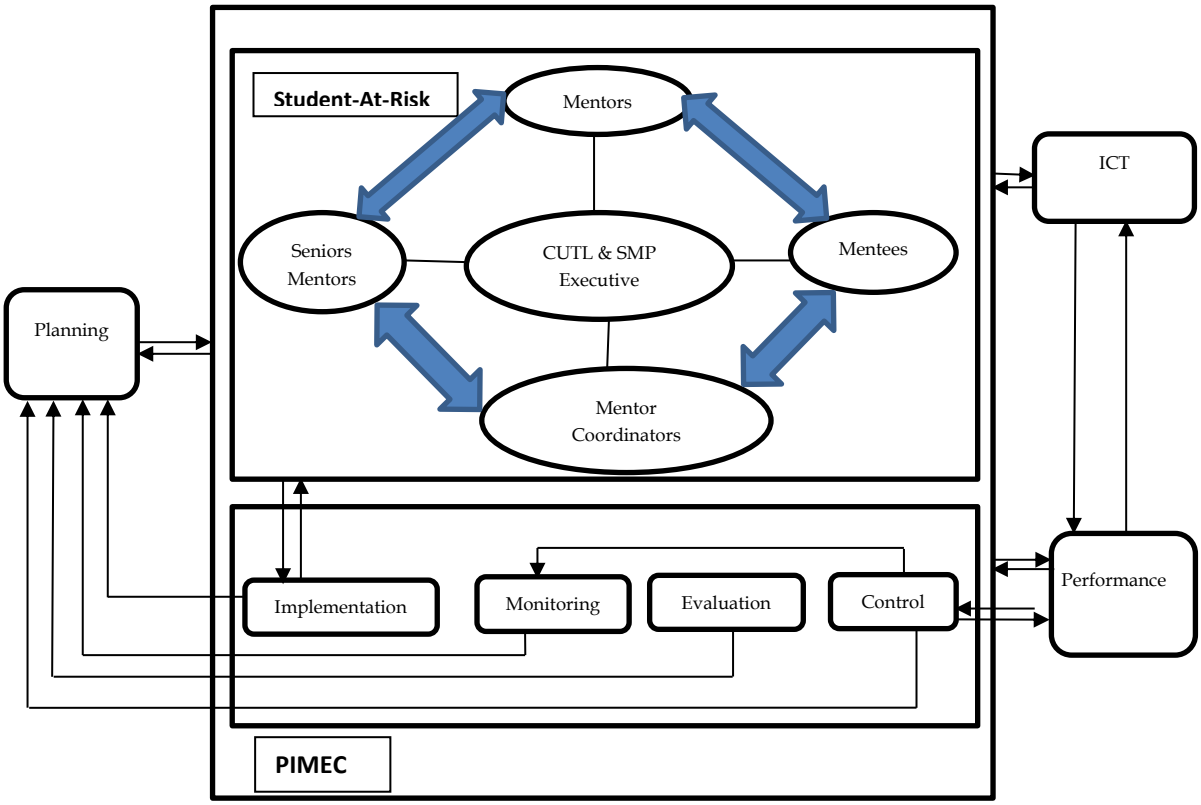

Figure 4: PIMEC-Enhanced SSRS Blended Model

PIMEC Model description:

P*lanning* has to occur before and after the identification of the at-risk student. The 'before' planning requires setting standards for identifying the at-risk students, such as low performance in formative assessments and non-attendance of lectures. At this stage, all stakeholders are updated about the system to assist students with study skills and also with any other necessary help that may deal with or address the hindrances that the students may face. The 'after' planning reflects on the strengths and weaknesses in the model implementation for model improvement. The communication between stages is highly important to sustain the effectiveness and efficiency of the system.

I*mplementation* is also execution, which in this paper entails the execution of the model by extending it to student benefits by making available every relevant role-player for the problems that usually confront students and affect their academic performance. This implementation would also enable the various role-players to assist students effectively, enabling the framework through a learning curve to be improved where it shows limitations.

***M**onitoring* deals with critically reviewing the performance and the behaviour of the students both before and after they were identified as at-risk students. The purpose of using the system is to realise improvement in pass rates.
***E**valuation* looks into and caters for the student needs of both academic (time management, learning skills, reading skills, writing skills and examination strategy) and non-academic (financial, food, accommodation, security and psychosocial) nature. It then communicates challenges and benefits realised through the stages to inform the system continually.

***C**ontrol* entails managing the activities involved to redirect the focus towards the targeted outcomes of the system. This stage only applies where deviations occur, which could happen when evaluation identifies deviations away from the moulded focus, service providers not performing as required, or any other undesirable clues showing during the process.

ICT
The ICT component of the newly developed model keeps the system active by continually communicating the at-risk students' progress within the model. It is a best practice and is also compelled by new developments of multimodal learning coerced by Covid-19.

6. Conclusion
The purpose of the study was to explore the attributes that are useful in improving students' pass rates and the general students' academic performance in the SSAU. The study was an action research benchmarking exercise adopting the theoretical frameworks of constructivism and symbolic interactionalism. The study found student support to be essential in the effort to improve students' performance, in which crowdsourcing, incubation and mentoring can play a useful role. These attributes can be integrated through planning implementation, monitoring, evaluation and control (PIMEC), leading to the PIMEC concept. The study found that PIMEC needs to have the technology push. It also identified ICT as an unavoidable tool to become a component of the PIMEC concept. Communication was also found to be vital in the PIMEC concept. The PIMEC was then integrated into the previously used SSRS, only after modifying the original SSRS by removing undesired attributes, adding communication and ICT, and maintaining the desirable ones. The boosted PIMEC concept and the improved SSRS were blended in developing the PIMEC framework that this paper proposed for the SSAU.

7. Recommendations and further research
The proposed PIMEC is for the entire SSAU where stratification into the various faculties was not outlined. The study recommends obtaining buy-in across the SSAU campus in order to enable change management towards the incorporation of the model. It also recommends that the PIMEC model be piloted in one of the faculties, mainly the smallest of the faculties, before being rolled out to the entire campus. The study also recommends that the flexibility of the PIMEC model should be used in future improvements. To maintain the PIMEC relevance over time, the PIMEC model should be improved gradually when new developments

emerge. This study also recommends that the SSAU educate students, lecture facilitators, student-support role-players and stakeholders about the essence of the PIMEC framework.

The paper recommends that a workshop should be held to explain the use of PIMEC. It also recommends feedback on the possible loopholes during the applications, and that PIMEC information should form part of new academic staff induction. The paper also recommends the appointment of a fulltime, dedicated experienced academic on the role of student support. Such an incumbent would relinquish, and not jointly hold an academic post.

Areas of further research include faculties investigating PIMEC customisation possibilities in their respective faculties by identifying unique and salient features that apply specifically to their settings. Another area of further research is to identify outlying students-at-risk who may possess features that do not apply to the majority of students-at-risk and investigate possibilities of modified PIMEC models.

8. References

Abedi, E. A. (2023). Tensions between technology integration practices of teachers and ICT in education policy expectations: implications for change in teacher knowledge, beliefs and teaching practices. *Journal of Computers in Education*, *0123456789*. https://doi.org/10.1007/s40692-023-00296-6

Ajani, O. A., & Gamede, B. T. (2020). Challenges of High School Learners transition into universities: a case of a South African University. *Gender & Behaviour*, *18*(2), 15803–15812. https://hdl.handle.net/10520/ejc-genbeh-v18-n2-a60

Ajoodha, R., Jadhav, A., & Dukhan, S. (2020). Forecasting Learner Attrition for Student Success at a South African University. *ACM International Conference Proceeding Series*, 19–28. https://doi.org/10.1145/3410886.3410973

Akinla, O., Hagan, P., & Atiomo, W. (2018). A systematic review of the literature describing the outcomes of near-peer mentoring programs for first year medical students. *BMC Medical Education*, *18*(1), 1–10. https://doi.org/10.1186/s12909-018-1195-1

Arshad, M. (2020). COVID-19: It's time to be Thankful to our ICT professionals. *International Journal of Information Technology and Electrical Engineering ITEE*, *9*(2), 23–31.

Arthur, J. (2017). The First Modern University: the University of Birmingham. *British Journal of Educational Studies*, *65*(2), 183–200. https://doi.org/10.1080/00071005.2016.1227426

Assenova, V. A. (2020). Early-stage venture incubation and mentoring promote learning, scaling, and profitability among disadvantaged entrepreneurs. *Organization Science*, *31*(6), 1560–1678. https://doi.org/10.1287/ORSC.2020.1367

Baldwin, J. R., Pingault, J. B., Schoeler, T., Sallis, H. M., & Munafò, M. R. (2022). Protecting against researcher bias in secondary data analysis: challenges and potential solutions. *European Journal of Epidemiology*, *37*(1), 1–10. https://doi.org/10.1007/s10654-021-00839-0

Beck, S. (2021). The role of Specialist Study Skills Tutors in higher education : from bounded identity to Third Space professional? *The Journal of Inclusive Practice in Further and Higher Education*, *124*. https://journals.co.za/doi/epdf/10.10520/ejc-jitl1-v16-n2-a9

Borkowski, S., & Knop, K. (2016). Challenges faced in modern quality inspection.

Management and Production Engineering Review, *7*(3), 11–22. https://doi.org/10.1515/mper-2016-0022

Cabellos, B., Siddiq, F., & Scherer, R. (2024). The moderating role of school facilitating conditions and attitudes towards ICT on teachers' ICT use and emphasis on developing students' digital skills. *Computers in Human Behavior*, *150*(September 2023), 107994. https://doi.org/10.1016/j.chb.2023.107994

Cardiff, U. M. (2013). *Specialist study skills support for students with dyslexia and other specific learning difficulties.*

Chambers, N. N. (2009). Changing times: The role of the curriculum middle manager within colleges of Further Education. In *Education* (Issue March). http://etheses.bham.ac.uk/310/1/chambers09EdD.pdf

Choi, H., Chung, S. Y., & Ko, J. (2021). Rethinking teacher education policy in ICT: Lessons from emergency remote teaching (ERT) the during COVID-19 pandemic period in Korea. *Sustainability (Switzerland)*, *13*(10). https://doi.org/10.3390/su13105480

Criollo-C, S., Guerrero-Arias, A., Jaramillo-Alcázar, Á., & Luján-Mora, S. (2021). Mobile learning technologies for education: Benefits and pending issues. *Applied Sciences (Switzerland)*, *11*(9). https://doi.org/10.3390/app11094111

Dandadzi, T. A., & Seeletse, S. M. (2020). Student e-Admission Solution for a Faculty of the Sciences, University of Limpopo, South Africa: A Medunsa Campus case study. *Journal of Engineering and Applied Sciences*, *7*(2), 2885–2893. https://doi.org/10.36478/jeasci.2020.2885.2893

de Clercq, F. (2020). The persistence of South African educational inequalities: The need for understanding and relying on analytical frameworks. *Education as Change*, *24*. https://doi.org/10.25159/1947-9417/7234

Dziubaniuk, O., Ivanova-Gongne, M., & Nyholm, M. (2023). Learning and teaching sustainable business in the digital era: a connectivism theory approach. *International Journal of Educational Technology in Higher Education*, *20*(20), 1–23. https://doi.org/10.1186/s41239-023-00390-w

Favaretto, M., De Clercq, E., Gaab, J., & Elger, B. S. (2020). First do no harm: An exploration of researchers' ethics of conduct in Big Data behavioral studies. *PloS One*, *15*(11). https://doi.org/10.1371/journal.pone.0241865

Fazlul, I., Koedel, C., & Parsons, E. (2022). A New Framework for Identifying At-Risk Students in Public Schools. Working Paper No. 261-0122. *National Center for Analysis of Longitudinal Data in Education Research (CALDER)*, *October*.

Fomunyam, K. G. (2019). Students and Institutional Preparedness for Educational Encounters: Views of the Margin. In *Education Systems Around the World how* (Issue April, p. 13). IntechOpen. https://doi.org/10.5772/intechopen.82148

Fox, L., & Signé, L. (2021). *The fourth industrial revolution (4IR) and the future of work: Could this bring good jobs to Africa*? Evid. Synth. Pap. Ser, 51.

Gamage, K. A. A., Perera, D. A. S., & Wijewardena, M. A. D. N. (2021). Mentoring and coaching as a learning technique in higher education: The impact of learning context on student engagement in online learning. *Education Sciences*, *11*(10). https://doi.org/10.3390/educsci11100574

Goudeau, S., & Croizet, J. C. (2017). Hidden Advantages and Disadvantages of Social Class: How Classroom Settings Reproduce Social Inequality by Staging Unfair Comparison. *Psychological Science*, *28*(2), 162–170. https://doi.org/10.1177/0956797616676600

Grey, D., & Osborne, C. (2020). Perceptions and principles of personal tutoring. *Journal of Further and Higher Education*, *44*(3), 285–299.

Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, *3*(May),

275–285. https://doi.org/10.1016/j.susoc.2022.05.004

Hatfield, N. (2024). Using Constructivism to Develop an Agenda of Research in Stochastics Education Research. In *Piaget's Genetic Epistemology for Mathematics Education Research* (pp. 605–611). Cham: Springer International Publishing.

Hodges, H. R., Gillespie, S., Cherubini, F. D. S., Ibrahim, S., Gibson, H., Daad, A. M. A., Davis, S. L., Abdi, S. M., Senesathith, V., Hodges, H. R., & Ali Daad, A. (2024). Ethical Applications of Digital Community-Based Research with Black Immigrant and Refugee Youth and Families. *American Psychologist*. https://doi.org/10.1037/amp0001191

Huggett, K. N., & Jeffries, W. B. (2021). Overview of Active Learning Research and Rationale for Active Learning. In *Fornari, A., Poznanski, A. (eds) How-to Guide for Active Learning. IAMSE Manuals*. Springer, Cham. https://doi.org/10.1007/978-3-030-62916-8_1

Johnson, C., Gitay, R., Abdel-Salam, A. S. G., BenSaid, A., Ismail, R., Naji Al-Tameemi, R. A., Romanowski, M. H., Kazem Al Fakih, B. M., & Al Hazaa, K. (2022). Student support in higher education: campus service utilization, impact, and challenges. *Heliyon*, *8*(12), e12559. https://doi.org/10.1016/j.heliyon.2022.e12559

Karachiwalla, R., & Pinkow, F. (2021). Understanding crowdsourcing projects: A review on the key design elements of a crowdsourcing initiative. *Creativity and Innovation Management*, *30*(3), 563–584. https://doi.org/10.1111/caim.12454

Kaur, S. (2016). Student Support Services in Higher Education: A Student Perspective. *International Journal of Indian Psychology*, *3*(3). https://doi.org/10.25215/0303.166

Kechaou, F., Addouche, S. A., & Zolghadri, M. (2024). A comparative study of overall equipment effectiveness measurement systems. *Production Planning & Control*, *35*(1), 1–20.

Korac, S., Moser-Plautz, B., Müller, S., & Saliterer, I. (2024). Predictors of change outcomes in mandated change: unpacking the outcome triangle. *Public Management Review*, 1–30.

Kunwar, R., & Sapkota, H. P. (2022). an Overview of Dyslexia: Some Key Issues and Its Effects on Learning Mathematics. *Turkish International Journal of Special Education and Guidance & Counselling (TIJSEG)*, *11*(2), 82–98. https://www.tijseg.org/index.php/tijseg/article/view/170

Landa, N., Zhou, S., & Marongwe, N. (2021). Education in emergencies: Lessons from COVID-19 in South Africa. *International Review of Education*, *67*(1–2), 167–183. https://doi.org/10.1007/s11159-021-09903-z

Law, D., Hales, K., Empowering, D. B.-J. on, & 2020, U. (2020). Student Success: A Literature Review of Faculty to Student Mentoring. *Journal on Empowering Teaching Excellence*, *4*(1), 22–39. https://digitalcommons.usu.edu/jete/vol4/iss1/6/

Leavy, P. (2022). *Research design: Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. Guilford Publications.

Makibinyane, J. M., & Khumalo, S. S. (2021). Exploring factors that impede student support services and throughput rate: the case of TVET colleges in South Africa. *International Journal of Education Economics and Development*, *12*(4), 397–411. https://doi.org/10.1504/IJEED.2021.118388

Mardiana, H. (2020). Lecturers' Adaptability To Technological Change And Its Impact On The Teaching Process. *JPI (Jurnal Pendidikan Indonesia)*, *9*(2), 275. https://doi.org/10.23887/jpi-undiksha.v9i2.24595

Mbuvha, R., Zondo, P., Mauda, A., & Marwala, T. (2021). Predicting Higher Education Throughput in South Africa Using a Tree-Based Ensemble Technique. *ArXiv*, *2017*(June), 1–16.

McGhie, V., Venter, A., & Reis, K. Dos. (2020). Business Education Learners in the Further

Education and Training Phase: Towards the Development of a South African Readiness Model to Strengthen Learners' Academic Performance. *Journal of Student Affairs in Africa*, *8*(2), 17–29. https://doi.org/10.24085/jsaa.v8i2.4444

Molotsi, A. R. (2022). The use of ICT resources to transform teaching at secondary schools in the Bojanala district, Northwest province. *South African Journal of Education*, *42*(Supplement 1), 1–10. https://doi.org/10.15700/saje.v42ns1a2098

Motaung, L. B., & Makombe, R. (2021). Tutor experiences of online tutoring as a basis for the development of a focused tutor-training programme. *The Independent Journal of Teaching and Learning*, *16*(2), 101–112. https://journals.co.za/doi/epdf/10.10520/ejc-jitl1-v16-n2-a9

Mullen, C. A., & Klimaitis, C. C. (2021). Defining mentoring: a literature review of issues, types, and applications. *Annals of the New York Academy of Sciences*, *1483*(1), 19–35. https://doi.org/10.1111/nyas.14176

Ndobe, T. V. (2018). *Towards a more holistic understanding of lecturers' perspectives of learning management systems at a South African* (Issue August). Witwatersrand.

Nevo, D., & Kotlarsky, J. (2020). Crowdsourcing as a strategic IS sourcing phenomenon: Critical review and insights for future research. *Journal of Strategic Information Systems*, *29*(4), 101593. https://doi.org/10.1016/j.jsis.2020.101593

Nokes, J. D. (2022). *Building students' historical literacies: Learning to read and reason with historical texts and evidence*. Building. Routledge.

Nolen, S. B. (2024). Taking a situative approach to research in educational psychology. In *Handbook of educational psychology* (pp. 119–138). Routledge.

Pearlson, K. E., Saunders, C. S., & Galletta, D. F. (2024). *Managing and using information systems: A strategic approach.* John Wiley & Sons.

Perin, D., & Holschuh, J. P. (2019). Teaching Academically Underprepared Postsecondary Students. *Review of Research in Education*, *43*(1), 363–393. https://doi.org/10.3102/0091732X18821114

Pollard, R., & Kumar, S. (2021). Mentoring graduate students online: Strategies and challenges. *International Review of Research in Open and Distributed Learning*, *22*(2), 267–284. https://doi.org/https://doi.org/10.19173/irrodl.v22i2.5093

Prediger, S., Dröse, J., Stahnke, R., & Ademmer, C. (2023). Teacher expertise for fostering at-risk students' understanding of basic concepts: conceptual model and evidence for growth. *Journal of Mathematics Teacher Education*, *26*(4), 481–508. https://doi.org/10.1007/s10857-022-09538-3

Raza, H., Furqan, M., & Ilham, R. N. (2022). The Effect Of Accounting Study Club And Online-Based Mentoring On Student Academic Achievement With Motivation As An Intervening Variable: An Analysis Of Accounting Student Behavior During The Covid-19 Pandemic. *Journal of Positive School Psychology*, *2022*(8), 3554–3569. http://journalppw.com

Russell, J. E., Smith, A., & Larsen, R. (2020). Elements of Success: Supporting at-risk student resilience through learning analytics. *Computers and Education*, *152*(January 2019), 103890. https://doi.org/10.1016/j.compedu.2020.103890

Sanger, C. S. (2020). Inclusive Pedagogy and Universal Design Approaches for Diverse Learning Environments. In C. S. Sanger & N. W. Gleason (Eds.), *Diversity and Inclusion in Global Higher Education: Lessons from Across Asia* (pp. 31–72). Palgrave Macmillan, Singapore. https://doi.org/10.1007/978-981-15-1628-3_4

SEDA. (2020). *Supplier Development Programme: Implementation process of Seda network Annual Report 2020/21*.

Seeletse, S. M. (2016). Information and communication technology as a primary tool for Sefako Makgatho Health Sciences University's statistics and operations research business. *Problems and Perspectives in Management*, *14*(3), 91–97.

https://doi.org/10.21511/ppm.14(3).2016.12

Stern, S. Z. (2023). *Successful Student Support Interventions and Strategies Needed for Successful Student Service Support Systems*. University, Northeastern ProQuest Dissertations Publishing.

Stuckless, S., & Parfrey, P. S. (2021). Bias in Clinical Research. In *Parfrey, P.S., Barrett, B.J. (eds) Clinical Epidemiology. Methods in Molecular Biology*. Humana, New York, NY. https://doi.org/10.1007/978-1-0716-1138-8_2

Sucuoğlu, H. (2018). Design and implementation of mentoring programs. *Mentorship Strategies in Teacher Education*, *May 2018*, 284–296. https://doi.org/10.4018/978-1-5225-4050-2.ch017

Sutter, T., & Francis, R. (2022). Mentoring in Higher Education. *American Association of Colleges of Teacher Education (AACTE)*, 1–10. www.aging-us.com

Syahrullah, M. (2022). *Student Management Implementation*. *4*(2), 136–147.

Thiem, A., & Mkrtchyan, L. (2024). Case-to-factor Ratios and Model Specification in Qualitative Comparative Analysis. *Field Methods*, *36*(1), 52–68.

Thomas, & Sule, M. J. (2023). A service lens on cybersecurity continuity and management for organizations' subsistence and growth. *Organizational Cybersecurity Journal: Practice, Process and People*, *3*(1), 18–40.

Thomas, T. A., & Maree, D. (2022). Student factors affecting academic success among undergraduate students at two South African higher education institutions. *South African Journal of Psychology*, *52*(1), 99–111. https://doi.org/10.1177/0081246320986287

Tırıl, H., & Okumuş, S. (2022). Difficulties Encountered by a Dyslexic Secondary School Student in Learning Science and Suggestions for Solutions. *Journal of Science Learning*, *5*(3), 520–530. https://doi.org/10.17509/jsl.v5i3.44559

Tran, H., & Smith, D. (2020). The Strategic Support to Thrive Beyond Survival Model: An Administrative Support Framework for Improving Student Outcomes and Addressing Educator Staffing in Rural and Urban High-Needs Schools. *Research in Educational Administration and Leadership*, *5*(3), 870–919. https://doi.org/10.30828/real/2020.3.8

Treadwell, D. (2024). *Introducing communication research: Paths of inquiry*. Sage Publications.

van Zyl, A., Dampier, G., & Ngwenya, N. (2020). Effective Institutional Intervention Where It Makes the Biggest Difference to Student Success: The University of Johannesburg (UJ) Integrated Student Success Initiative (ISSI). *Journal of Student Affairs in Africa*, *8*(2), 59–71. https://doi.org/10.24085/jsaa.v8i2.4448

Verčič, A. T., Verčič, D., Čož, S., & Špoljarić, A. (2024). A systematic review of digital internal communication. *Public Relations Review*, *50*(1). https://doi.org/10.1016/j.pubrev.2023.102400

Widodo, S. A., & Turmudi, T. (2017). Guardian Student Thinking Process in Resolving Issues Divergence. *Journal of Education and Learning (EduLearn)*, *11*(4), 432–438. https://doi.org/10.11591/edulearn.v11i4.5639

Yu, L. (2020). Ethical considerations in case studies. In *2020 1st Workshop on Ethics in Requirements Engineering Research and Practice (REthics)* (pp. 15–21). IEEE. https://doi.org/10.1109/REthics51204.2020.00009

Zafar, T. (2019). Role of Information Communication Technology (ICT) in Education and its Relative Impact. *International Journal of Engineering Research & Technology*, *7*(4), 1–10. www.ijert.org

Zawacki-Richter, O., Kerres, M., Bedenlier, S., Bond, M., & Buntins, K. (2019). Systematic Reviews in Educational Research: Methodology, Perspectives and Application. *Systematic Reviews in Educational Research: Methodology, Perspectives and Application*, 1–161. https://doi.org/10.1007/978-3-658-27602-7