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Abstracts

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Factors Impacting Using the Internet for Learning: The Digital Divide in South African Secondary Schools

6 July
09:15

Kudzai Katsidzira and Lisa F Seymour

Globally governments are providing the Internet to schools to improve the quality of teaching and learning. In South Africa, the Western Cape Education Department recently embarked on an e-learning smart schools project to provide broadband to schools in the province. Yet this project has had challenges and not all schools have embraced e-learning. Through a case study of eight schools, this research explains how relevant factors impact the use of the Internet for teaching and learning in Cape Town schools. The inductively derived model explains how contextual conditions such as the high levels of inequality in South Africa impact usage of the Internet for learning. The actual characteristics of learners and teachers, the facilities being provided by the WCED and the relevant schools and the practices of teachers also have an impact. This study should assist local governmental organisations, schools and teachers trying to increase and reduce inequalities in e-learning in schools. The study should also interest university lecturers who need to be aware of the changing teaching practices in schools and the expectations of students arriving on campus.

Influence of External Factors on the Attitude of Students towards Arduino MDBs

6 July
09:45

Malie Zeeman and Romeo Botes

The fourth industrial revolution has a major impact on the professional skills set of employees. Creativity, critical thinking and problem-solving skills as well as communication and effective teamwork are some of the required skills. The rapid pace of change in technology and consequently new required skills urge educational institutions to create an inspiring and suitable learning environment for the 21st century student. As such, a project-based learning approach was introduced at the School of Computer Science and Information Systems at a higher education institution in South Africa to better prepare students for the current technologically advanced workplace. Students were exposed to hands on hardware programming using Arduino micro development boards. To incorporate Arduino successfully in class it is necessary to determine the student's acceptance of such technology as a teaching tool. For this purpose, the Technology Acceptance Model was used as measuring instrument. The focus of this paper is to report on the influence that external factors such as enjoyment, subjective norms, and focused immersion have on the student's attitude towards the use of the Arduino micro development boards in the computer programming class consisting of 120 students. Statistical analysis was done on collected data to derive relations between the external factors and attitude. The results of this study show that enjoyment, subjective norms, and focused immersion have a significant influence on the attitude of students towards using Arduino micro development boards in class. This serves as evidence that the use of Arduino micro development boards to acquire programming and problems solve skills while engaging with robotics hardware, positively influence computer science students' attitude technologies that are relevant to industry 4.0 skills.

Opening Pandora's Box: An Active Learning Approach to Teaching Project Management

6 July
10:45

Marie Hattingh, Komla Pillay and Sunet Eybers

Given the global skills requirement for competent project managers, Higher Education Institutions are forced to adapt their pedagogical practices in order to deliver "industry-ready" graduates. A number of approaches have been adopted by HEI in preparation for competent graduates such as self-directed learning, problem-based learning, collaborative work or active learning. This paper reports on an active learning approach that was taken to teach second year, information systems design (ISD) students' project management skills. This is in preparation for the capstone project, a collaborative turnkey project for a real-life client, where it was noticed that students struggle with project managing the project, their other academic commitments and life. This study adopted an active learning approach by constructing a project management tutorial in such a way as to simulate challenges students might experience when completing their capstone project. Stu-dents, in groups of five, each received a box of 20 challenges that they first had to prioritise individually, and then as a group. Students were asked to complete three tutorial questions following this activity which were thematically analysed. They were also asked to complete a short survey on the principles of active learning. The findings suggested that an active learning, simulation based approach was valuable to the students and exposed them to real-life project management challenges. Students were able to identify key activities that caused strain in setting up a common schedule. Tools/techniques that were used to compromise in setting up a common schedule are communicated. Lessons learnt by the students and reflection from the lecturers provide recommendations to ISD lecturers on teaching project management.

Factors Determining the Intention of Using Online Learning Videos by Students: A Study from Uzbekistan

6 July
11:15

Anchal Garg and Jean-Paul Van Belle

In recent years, ICTs have been used increasingly in teaching and learning. With the onset of e-learning, m-learning, MOOCs, SPOOCs, ICT is becoming an imperative part of the education domain. Organizations such as Khan Academy, Coursera, edX, and Udacity have produced and made thousands of educational videos available to the masses globally. The number of users using these online platforms have been increasing steeply. Although it is known that the online learning videos are popular among the students, little is known about the drivers of the user's intentions and use of these videos. The paper intends to answer this gap. The purpose of this study is to identify the factors that influence the students' behavioral intentions to adopt online learning videos in an economically developing country like Uzbekistan. Not only does our study inform educators about what motivates student to use educational videos, it is also one of the very rare studies to explore ICT use in Uzbekistan.

Data Collection in an Information Systems Design Science Research Project

6 July
14:45

Alta Van der Merwe, Hanlie Smuts and Aurona Gerber

Design science research (DSR) is a popular research approach used in information systems for the design, development and evaluation of artifacts. There is some guidance in the literature on how to conduct DSR as an approach to find solutions for wicked problems. One of the areas that students struggle with that are involved in DSR is the confirmation of the problem, the design of the artifact and the evaluation of the artifact. Hevner et al. [1] presented their conceptual model for DSR in 2004 and in this paper we use this seminal work as guidance to illustrate where there are potential for inclusion of data collection activities in order to address these three areas of concern. We also indicate the nature of the data collection that can be used during these phases. Lastly, we use some cases studies to map the areas that we have identified to these case studies as illustration.

The Importance of Scaffolding when "Building" Information Systems Specialists

6 July
15:30

Ingrid Sieborger

University students are expected to be able to employ higher levels of cognitive engagement and solve problems. However, as a result of the massification of higher education, there are increasingly more students in university classrooms who tend to adopt surface level learning approaches to their education. The challenge that university teachers face is to find ways to teach which will encourage the students in their classrooms to adopt more deep learning strategies. Consequently, more university teachers are adopting a constructivist approach to teaching and learning in order to encourage greater active participation and deeper approaches to learning from the students However, without instructional support students are still able to adopt surface level approaches to learning and potentially construct misconceptions; thus they are not able to enact their knowledge in a meaningful way in order to solve problems. This paper discusses the use of constructivist teaching together with instructional support (scaffolding) within teaching in Information Systems and notes the importance of including high instructional support verse low instructional support.

The TANKS Coding App – Using Tangible Tokens to Teach Coding without a Computer

6 July
16:00

Jean Greyling and Byron Batteson

Discussion paper – no abstract.

Guidelines for IT Industry Advisory Boards at Higher Education Institutions in Southern Africa

7 July
09:30

Andre Calitz, Estelle Taylor and Margaret Cullen

The use of Industry Advisory Boards (IABs) can ensure programme quality and the compliance with international curriculum standards, such as the ACM curricula recommendations. An IAB can provide a platform to discuss topics such as Information Technology (IT) trends, graduate education standards and industry requirements. Academic literature provides general guidelines on the role and responsibilities, membership and functioning of IABs. Accreditation bodies provide guidelines for the implementation and functioning of IABs at Higher Education Institutions (HEIs). Many theories relate to Advisory Boards, including theories such as resource dependency theory, stakeholder theory, agency theory, institutional theory and board capital theory. Presently, there is insufficient recent literature on the accreditation board requirements for IABs at HEIs in Southern Africa, specifically relating to departments teaching IT. Limited studies on best practices and guidelines for the use of IABs at HEIs in Southern Africa exist. The aim of the study is to propose a set of guidelines and best practices for Computer Science, Information Systems, Information Technology and other related schools and departments at HEIs in Southern Africa, for managing their IABs. An IAB questionnaire was compiled and sent to the Heads of Departments (HODs) of 32 universities in Southern Africa. A total of 35 HODs or representatives at 21 HEIs completed the survey. The data were statistically analysed, and the results of the study can be used to develop guidelines and best practices for departments seeking accreditation with the South African Computing Accreditation Board (SACAB). The data analysis included responses from South African traditional research universities, comprehensive universities and universities of technology. Additionally, S.A. universities' results are compared to other Southern African universities, including Botswana, Mauritius, Namibia and Zambia. A set of guidelines are proposed for the implementation and functioning of IABs. This research study will assist academic departments to maintain IAB best-practices, as required by accreditation body requirements and standards.

Factors Supporting Quality Research Output at Universities

7 July
09:50

Jaco Pretorius, Carina de Villiers, Andre Horn and Awie Leonard

This paper explores research at the tertiary level with the emphasis on the individual researcher and the environment in which research takes place. The academic has the difficult task of balancing the quantity, diversity, and quality of research output in an environment that does not seem to have a balance between teaching and producing research output. We found that the research subsystem should be seen as a service system for the university. We also found that personal commitment is an essential building block in providing high quantity and quality output. By using case study research, interviews were conducted with researchers at a research-driven university in South Africa. We applied the Work System Theory (WST) as the preferred framework to confirm that long-term

sustainable research output is possible. The article concludes with a conceptual framework to better understand how the elements of the research environment interact within the context of a typical tertiary institution.

The Role of Continuous Assessment in Improving Student Engagement and Learning Research Methodology: Case of Information Technology

7 July
10:10

Muthoni Masinde

Apart from the fact that most university students' empirical research foundations are generally very weak, the high levels of unpreparedness (for university education) of students joining South Africa's Universities of technology makes teaching of research methodology very difficult. Research methodology is one of the modules offered in the B. Tech (or Advanced Diploma) in Information Technology course in all of these universities. Despite elaborate effort in teaching this subject, quantitative and qualitative data indicate that dismal research skills are being impacted onto the students. The problem is two-fold: first, information technology is different from other domains and therefore the traditional research methods alone are not adequate; two, despite the obvious need for constructivist approaches to teaching this subject, traditional lecture-based methods are still being practiced. Using eleven-year data from the Central University of Technology, Free State (CUT), results indicating positive effect of applying constructivism (within continuous assessment approaches) on students' ability to carry out research is presented in this paper. The contribution of this paper is a an empirical and practice-supported generic guideline for teaching research methodology to students enrolled for an Information Technology (IT) qualification at institutions of higher learning.

Identifying Relevant Factors for an IT Career Choice Model

7 July
14:00

Malibongwe Twani, Andre Calitz and Margaret Cullen

Research has indicated that scholars choosing a career and specifically Information Technology (IT) related careers are influenced by socialisers, such parents, teachers and role models. Recent research indicates that exposure to new technologies and programming concepts at school level can influence a scholar's IT career choice. Other influencers are knowledge of IT career opportunities, the reputation of IT related fields in society and good career prospects, such as salaries. Theories relating to career choice have focused on the characteristics of individuals and their environment. Career choice models identified factors that influenced a student's career choice. Presently, no IT career choice model have been proposed and evaluated in South Africa. Understanding first year students' academic IT career choices, behaviours and influencers would assist academic departments to improve methods and strategies to recruit first year Computer Science (CS) and Information Systems (IS) students.

Exploring Essential Software Development Skills for the South African Job Market

7 July
14:30

Jacob Greeff and JT Janse van Rensburg

There is growing evidence of the IT skills gap and hard-to-fill IT vacancies. Greater alignment is needed between higher education and the IT industry in order to improve the software development skills of graduates. The purpose of this research is to determine which technical skills related to software development are most sought after in the South African job market. Web scraping and analysis with custom developed tagging and clustering software is used to obtain IT position information from a South African job portal for the Gauteng and North-West provinces. A total of 988 IT positions are ltered to produce a resulting set of 413 positions in software development only. Each record is evaluated and highlights 278 unique technologies. The results from the study include the current prevalent technologies and IT skills sought after in this section of the South African IT market. These results can be used to better align exit-level IT modules with industry needs. Current trends indicate that the greatest need is in areas of database administration and querying in SQL and web development skills in HTML, Cascading Style Sheets (CSS), and JavaScript.

A Proposed Structure for Managing IT Diploma Programmes in South Africa

7 July
15:00

Andre Calitz, Lester Cowley and Sue Petratos

Historically, Technikons offered IT diploma qualifications in South Africa. The Technikon academics formed an academic body called the Technikon Computer Lecturers Association (TECLA) to manage the various IT diploma programmes in South Africa. The members of TECLA, who were Technikon academics, met annually to discuss the IT diploma programmes and curriculum content. TECLA ceased to exist when the South African Government introduced new university structures in 2005 and amalgamated all Technikons and specific universities. These new Comprehensive Universities and Universities of Technology offer various IT diploma and higher IT diploma programmes. There is, however, no academic body which presently coordinates the curriculum content for the different types of IT diploma qualifications offered by the various institutions to ensure standardised curriculum content and quality assurance standards. In this paper, a South African IT Diploma Advisory Board (SAITDAB) is proposed that will be associated with the South African Computing Accreditation Board (SACAB). The purpose of this research study was to obtain the opinion of academics at institutions offering IT diploma programmes on the proposed establishment of SAITDAB and to propose a mechanism to establish an initial Body of Knowledge for South African Universities offering IT diploma and advanced IT diploma programmes.

Using Technology to Teach a New Generation

8 July
09:45

James Connan, Dane Brown and Caro Watkins

Introductory programming courses attract students from diverse backgrounds in terms of ability, motivation and experience. This paper introduces two technological tools, Thonny and Runestone Academy, that can be used to enhance introductory courses. These tools enable instructors to track the progress of individual students. This allows for the early identification of students that are not keeping up with the course and allows for early intervention in such cases. Overall this leads to a better course with higher throughput and better student retention.

Designing Programming Games for Diversity in Teaching Introductory Programming

8 July
10:45

Jecton Anyango and Hussein Suleman

Diverse learners from different backgrounds present both significant instructional design challenges and opportunities. Particularly in programming, most serious games that have been created to aid teachers lack support for diversity. As a result, domain experts who may wish to adopt a Game Based Learning (GBL) approach lack diverse games that are relevant to their local contexts. This paper reports on the design considerations necessary to create diverse programming games for teaching recursion to different novice students. Interviews were conducted with 17 introductory programming (CS1) teachers from Kenya and South Africa. This was followed by qualitative thematic content analysis. Findings were reviewed by a game expert to validate them from a games design perspective. Results suggest that student background, gender, and culture as well as other factors such as local context, game attributes, pedagogy and practical teaching aspects are core to creating diverse programming games targeting different learners in this generation.

A Robust Portable Environment for First-Year Computer Science Students

8 July
11:15

Dane Brown and James Connan

Computer science education in both South African universities and worldwide often aim at making students confident at problem solving by introducing various programming exercises. Standardising a computer environment where students can apply their computational thinking knowledge on a more even playing field – without worrying about software issues – can be beneficial for problem solving in classroom of diverse students. Research shows that having consistent access to this exposes students to core concepts of Computer Science. However, with the diverse student base in South Africa, not everyone has access to a personal computer or expensive software. This paper describes a new approach at first-year level that uses the power of a modified Linux distro on a flash drive to enable access to the same, fully-fledged, free and open-source environment, including the convenience of portability. This is used as a means to even the playing field in a diverse

country like South Africa and address the lack of consistent access to a problem solving environment. Feedback from students and staff at the Institution are effectively heeded and attempted to be measured.

Skills Requirements for Business Intelligence Professionals: A Content Analysis of Job Advertisements in South Africa

8 July
14:00

Adelade Kusena and Irwin Brown

Business intelligence (BI) is a strategic tool for top level management to make informed decisions. The skills required of BI professionals are hence important to examine in order to ensure optimal value is derived from BI. The purpose of this research is to validate a skills typology for BI professionals using online job advertisements as data source. 190 advertisements were collected and analyzed descriptively. The job advertisement profile shows that most BI jobs are being offered in the Gauteng area followed by Western Cape. The applicants are typically required to be holders of a degree in Information Systems, Computer Science or Information Technology. A few jobs require a combination of a qualification and a certification. The preferred certifications are SQL server integrations services, (SSIS) and SQL server reporting services, (SSRS). The key skills were validated as being in the domains of BI Strategy, BI Project Management, Business Analysis, BI Design and Coding, BI Reporting, Business Analytics, Knowledge Management, and Soft Skills. The findings can be used by education and training providers to help shape what ought to be covered in BI curricula to satisfy industry requirements.

A Systematic Literature Review of Data Governance Frameworks for Big Data Implementations

8 July
14:30

Sunet Eybers and Cladia de Carvalho

As the fourth industrial revolution unfolds, emerging data sources, such as data from sensors, from social media and the Internet of Things (IoT), are coming into play that have traditionally not existed. Organizations are now collecting, analyzing, and storing more data than ever before, leading to the phenomenon referred to as Big Data. Big Data provides organizations with new insights and offers opportunities for enhanced strategic decision making. However, the usage of Big Data also brings its own challenges. For the organizations to have trust in their Big Data and for it to prove useful to them, they require assurance that the data being collected and used is prepared on time and that the data is consistent and of superior quality. Big Data requires careful management and defined governance procedures and policies to ensure the reliability of its source and the meaningfulness of its results. Although there are currently Big Data governance frame-works in existence, there are limitations associated with them, and there has not been a consensus between researchers and practitioners on a single Big Data governance framework to be used. By means of a structured literature review, five (5) existing Big Data governance frameworks were identified and analyzed. Based on this analysis, a conceptual structure is proposed that incorporates the critical components that should be adopted when managing Big Data. These components should be included in any data governance framework organizations wish to adopt.

Exploring the Impact of ICT Use Patterns on Postgraduate Student Academic Achievement in a Developing Country

8 July
15:00

Thomas van der Merwe and Ambrose Azeta

A common motivation for the use of ICT in teaching and learning is the central belief that it has the potential to exert a positive effect on student academic achievement. Evidence to support this assertion, however, is contradictory. The current study attempts to address known research gaps by examining the impact of ICT use patterns on postgraduate student academic achievement in a develop-ing country. Specifically, potential student bias in reporting educational achieve-ment was removed by using instructor-assessed class marks as the dependent variable. Data collected from 302 students were analysed in order to test several hypotheses constructed after a literature review of previous studies in the field. Statistical evidence showed constructs of teaching and learning with the aid of ICT, student ICT practices, and behavioural engagement to correlate strongly with student performance, with challenges of ICT use not influential. The cur-rent research findings affirmed the belief that technology-supported education in a developing country can play a significant role in student academic achievement, especially in postgraduate settings.

Answering Student Programming Questions using Domain-Specific Search

9 July
09:00

Kelvin Meyer and Hussein Suleman

Discussion forums are commonly used in online learning environments for teaching programming, to create a platform for students to discuss course content. This platform of interaction is not without its challenges, as students regularly repeat questions that others have asked, both within and across offerings of a particular course. If past answers can be reliably provided to students, it eliminates the need for repetition and provides students with immediate assistance. This study investigates an approach to enable this through the addition of a search feature that indexes and queries discussion forum messages from a previous year to answer student questions. In particular, the paper presents a comparison of different ranking approaches based on the exploitation of domain-specific features of a social discussion forum on a learning management system, in particular, the authority of respondents. Results show that information retrieval can yield relevant answers to students in a programming course within the first 3-5 results, with some improvement in the outcomes when the social notion of authority in exploited.

A Framework for Teaching Secure Coding Practice

9 July
09:20

Vuyolwethu Mdunyelwa, Lynn Futcher and Johan van Niekerk

Cyber-security attacks existing in web applications remain rampant as these application's usage rises. These attacks may cause loss of integrity in an organisation's information, in some cases leading to financial loss or even damage to their reputation. The vulnerabilities which lead to these attacks often result from developer's lack of secure coding knowledge or non-adherence to secure coding practices. This paper presents a framework for teaching secure coding practices to software development students to help ensure an increase in knowledge and an improved adherence to secure coding practices. The proposed framework is based on experiences and lessons learnt at a South African university.

A Cybersecurity Curricular Framework for IT Undergraduates in South Africa

9 July
10:30

Lynn Futcher, Kerry-Lynn Thomson and Apelele Mbuqe

Many organisations have reported a dramatic shortage of cybersecurity skills to counteract cyber-attacks. Academia and industry should be responsible for working together to investigate possibilities in closing this cybersecurity skills gap. The IT curricula of many South African universities are based on the outdated IT2008 curricular guidelines, which make no mention of cybersecurity. In order to address this increasing cybersecurity skills gap, universities offering computer-related qualfications need to adapt their curricula accordingly. This paper proposes a framework for integrating cybersecurity into IT undergraduate curricula in South Africa. As the cybersecurity needs of industry continue to evolve, the proposed framework will provide a structure that aligns IT curricula to the cybersecurity workforce needs by considering the NIST NICE framework, CSEC2017, and IT2017. Furthermore, the proposed framework discussed in this paper will serve as an academic guide for communicating cybersecurity content to address specific industry work roles. The implementation of this IT Cybersecurity Curricular Framework aims to impact the development of the cybersecurity workforce positively and reduce the cybersecurity skills gap between academia and industry.

Teaching Problem Solving to Undergraduate STEM Students: A Systematic Literature Review

9 July
11:00

Nandipha Dilla and Marita Turpin

This systematic literature review aims to explore the field of undergraduate teaching using the Problem Based Learning (PBL) methodology and to discover the ways that researchers have used the PBL methodology as a means to teach problem solving. This is a review of 20 primary studies on teaching problem solving by means of PBL to undergraduate Science, Technology, Engineering and Mathematics (STEM) students. Through a thematic analysis of the 20 papers, four central themes emerged as being significant to PBL regardless of the subject discipline. These themes are: the role of prior knowledge; teamwork and team composition; the role of the instructor; and contextual learning methods. In terms of prior knowledge, it was found that students need to have sufficiently mastered the subject's domain knowledge at an individual level before they can benefit from PBL. The teamwork theme emphasized the importance of teams in problem solving. Small heterogeneous teams appear to be conducive to effective teaching by means of PBL. In terms of the role of the instructor, it was found that teams significantly benefit in their learning experience, from an instructor or tutor who facilitates and motivates the team as opposed to telling them what to do. Lastly, most of the PBL studies employ learning methods that are specific to their domain but will help the students better solve the problem. Based on the insights gained from the literature, the review suggests good practices that can be used by other researchers when trying to implement the PBL methodology in their undergraduate STEM classes.

Goofs in the Class: Students' Errors and Misconceptions when Learning Regular Expressions

9 July
14:00

Olaperi Okuboyejo, Sigrid Ewert and Ian Sanders

The knowledge of students' errors and misconceptions is important because it helps instructors to understand the difficulties students experience when learning. This knowledge is also beneficial during the automation of the teaching process. Although studies on errors and misconceptions have been reported on several computer science courses, there is a gap on Regular Expressions (REs), one of the topics taught in Formal Languages and Automata Theory. REs are a vital part of the computer science curriculum and very useful in the software industry. Students, however, find REs difficult to learn and there is a need to understand the types of errors they make in order to build an intelligent tutoring system. Therefore, this research investigated the errors students make and misconceptions they can have when learning REs. 393 students' solutions to six RE questions were qualitatively analyzed. Errors in students' submissions can be syntax errors, slight errors or logical errors, while misconceptions include misunderstanding of the empty string and confusion of the Kleene star operator with the Kleene plus. The identification of these errors and the associated misconceptions will guide in automatic error detection and feedback generation on e-learning platforms and mobile devices from which students can practice on-the-go and get immediate feedback. The findings can also be used to adjust the teaching process in traditional classrooms to improve learning.

Interactive Learning: Introducing a First-Year Systems' Analysis and Design Course

9 July
14:30

Adriana A Steyn, Dané Coetzee, Marissa de Villiers and Adriana Botha

Education has recognized the need to change its teaching approach. No longer can we only rely on face-to-face classroom interactions, or even PowerPoint slides, to try and get the students to learn. Students entering our campuses do not want to "just" sit and see what information is coming. No, they want to explore, they want to test, they want to experience and, conveniently, using technology they understand. As academics, we need to understand how they learn and perhaps see if technology can be used to enhance the learning process, following the learning science approach. This paper introduced the design of an interactive infographic, which introduces students to the basic system's theory as part of a first-year systems analysis and design course at an urban university. The design of one A4-infographic replaced 91 slides. The infographic, made available through the learning management system of the University, allowed the researchers to track the actual access and usage thereof. A survey distributed to the class of 375 students, resulted in 99 usable responses. A total number of 223 students worked through the infographic spending on average 26.7 minutes viewing the info-graphic. The results revealed the students enjoyed the infographic, but, more importantly, students feel they understand the content better and can apply the acquired knowledge on the test. Students further felt that the infographic could be used in explaining the study material, learning activities and summarising the content. Our study suggests that although students all have smartphones, the majority still preferred to open and work through the infographic using a laptop. Another result indicated that students engage with the content on a much deeper level, in their own terms using familiar technologies. They also had more time to work through the content in their own time. Students feel they understand the material better and are able to apply it in various learning activities. Supplementing the PowerPoint slides through the use of an interactive infographic made students engage far better with the content, thus, creating a more in-depth learning experience.

Evaluation of Visually Impaired Students' Perceptions on Using a Learning Management System (WiseUp) at Walter Sisulu University

9 July
15:00

Nobert Jere, Nosipho Mavuso and Samelisiwe Jacob

Many Universities have adopted using Learning Management Systems (LMSs) to assist in teaching and learning. As technologies become popular, less considerations on learners and lecturers who are Visually Impaired (VI) has been done. Researchers agree that technology is an essential tool to remove existing discrimination against visually impaired people by allowing them to participate fully in education. However, VI people face challenges to access information as result of poor systems' design. In some cases, assistive technology to aid mobility and retain independent lives within the online environment for the VI have been incorporated. We have considered students at Walter Sisulu University at one campus who are using a LMS called WiseUp. The participatory design research using prototyping was used as the research design of the study. 33 students who have different visual impairments and using WiseUp for teaching and learning were considered.

Results show that very few visually impaired students engaged could navigate with less difficulties through the system, whilst majority found it very difficult to navigate. Others have grown accustom in getting academic information through peers. All students agreed they find it difficult to read normal size fonts and the choice of the colors is not in line with their needs. The University did not have assistive technology or a dedicated place for students with visual challenges at the time of the study. The paper presents the perceptions of VI students at WSU when using WiseUp.
