

BELONGING, WELLBEING AND STRESS WITH ONLINE LEARNING DURING COVID-19

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ABSTRACT

Sense of belonging, perceived stress and wellbeing are reported factors that influence students' university experience and learning. The COVID-19 pandemic and shift to online emergency remote teaching were likely to exacerbate these affective dimensions of student experience. This article employed a quantitative survey research design to determine how students' sense of belonging, perceived stress and wellbeing were influenced during the pandemic. An online questionnaire was administered to 537 South African students at one residential university. Data analysis was performed using multiple regression analysis. The results indicated that platform pedagogy was a significant predictor of belonging, perceived stress, and wellbeing, while lecturers' pedagogical competence was not. Lived learning experience of online learning was a significant predictor of perceived stress, and communication was a significant predictor of belonging. The importance of the learning environment in student belonging and wellbeing is key to student success and this study provides insights for developing targeted interventions.

Keywords: university students, sense of belonging, perceived stress, wellbeing, platform pedagogy

INTRODUCTION

Like other higher education institutions worldwide, South African universities have had to rapidly reconfigure programme delivery, given the restrictions on social and physical proximity that the COVID-19 pandemic presented. Isolation likely resulted from this alteration, especially for students whose predominant study experience had been onsite (face-to-face). A recent study on belonging in the South African higher education context suggests that “higher education institution governors and academics ... consider reconceptualising notions of student support, beyond the narrow, technical, and basic curriculum support for degree completion, towards the affective and social as it relates to creating conditions for students to identify with and experience a profound sense of belonging” (Blignaut et al. 2021, 1). The mental health and wellbeing of students have also become a focus of attention with calls for interventions that might foster student self-efficacy, consanguinity, and deep connection to the social context in which learning happens (Eloff and Graham 2020). It is not unreasonable to expect that curriculum completion within predetermined timeframes remains a preoccupation of university academics, who must comply with such prescriptions, and that high-level awareness of factors that might influence student wellbeing is likely to be backgrounded (Henning et al. 2018). Calls for pedagogies of care (Crawford, Kift, and Jarvis 2019) that enable student success are salient, especially in a South African higher education context in which socio-cultural and economic factors (Heymann and Carolissen 2011) are likely to affect the teaching and learning experience of students and their sense of belonging.

The current study draws on social identity theory (SIT) as the theoretical lens (Tajfel et al. 1979; Haslam et al. 2009). SIT suggests that an individual’s sense of belonging to a group or community through shared resources and developed relationships, does have a direct effect on learning (Bliuc et al. 2011). An SIT approach proposes that there are positive outcomes for individuals who have a sense of identification and belonging with salient groups (Ellemers and Haslam 2012). Therefore, it is suggested that students with a stronger identification with peers, family and the institution will have more positive outcomes such as enhanced self-esteem and reduced levels of stress (Bliuc et al. 2011). Extant scholarship on what may affect social identity and student belonging has shown that positive student-lecturer relationships through active participation are likely to impact students’ sense of belonging (Levett-Jones et al. 2009). Attachment and affiliation also influence belonging and social identification (Crisp et al. 2009). Similarly, socially inclusive university environments and experiences as these relate to gender and minority groups, also have an impact on one’s sense of belonging (Sax et al. 2018).

Given the crucial role of belonging (social identification) and learning, especially because of the potential for isolation that has occurred during COVID-19, further research on how to better support student belonging is required in higher education contexts. Scholarship on the shift to online learning due to COVID-19 (Markel and Guo 2020) indicates that often online learning environments do not adequately replicate crucial aspects of physical delivery and have caused hindrances to learning. As found by Levett-Jones et al. (2009), the perceptions of the learning community play a central role in student social identity and learning. Bliuc et al. (2011) and Haslam et al. (2009) also suggest the need for further research on the aspects of student learning that impact key educational outcomes.

The current research builds on this work and unpacks the impact of the COVID-19 pandemic on the sense of belonging, perceived stress and wellbeing of university students enrolled at a South African residential university. We investigate what impact lecturers' pedagogical competence, platform pedagogy, lived experience and communication could have on students' belonging, stress and wellbeing. The article commences with literature insights from which our research hypotheses are derived. Thereafter, we provide a detailed account of the research methods and results. A discussion is then provided to critically engage with the findings, followed by concluding comments.

Lecturers' pedagogical competence, belonging, perceived stress and wellbeing

The pandemic has accelerated the digitalisation and e-learning in universities, even in the more current (post)pandemic era. Different ways of designing, presenting, and assessing pedagogy remain central to what could or should be apposite lecturer competencies. For Tice et al. (2021, 10), this involves a different type of lecturer, one that is cognisant of the importance of relatedness and presence. Relatedness is fostered through lecturers who “build student-instructor relationships” and have a heightened awareness of students' sense of belonging and overall wellbeing (Tice et al. 2021, 10). Although they found that students succeed best when online pedagogy is delivered through pedagogical strategies like shortened lectures, “online presence” was pivotal to students' maintaining interest and attention (Tice et al. 2021, 10). They also suggest that lecturers need to make time to connect with their students in online learning spaces.

Lecturers who are critical of the effects of “rapid-fire” staff development for online teaching will recognise that focusing exclusively on measurable student performance will be at the expense of the affective (Maistry 2022, 175). For Felten and Lambert (2020), the affective should not be seen as lecturers' opting for a “soft” or less academically rigorous approach to teaching. Instead, it is central to a relationship-rich education that can invigorate a learning environment

that could foster and sustain a sense of belonging in students. Belonging ignites a heightened sense of relatedness with others and their academic learning in ways that could promote wellbeing and reduce study-related stressors (Tice et al. 2021; Kirby and Thomas 2022; Zamora et al. 2022).

What has become clear is that failure to give due attention to the affective (social) dimensions of the student's higher education experience is likely to be costly (Abu et al. 2021). Brodie and Osowska (2021) note that there is still a dearth of understanding as to what a sense of belonging might entail in the online space and contend that intentional curriculum design and delivery that foregrounds this affective dimension is crucial. A key issue that appears central to the notion of student belonging is the extent to which online programme design and delivery factors in the idea of community in the online space, through meaningful interaction between students and between students and lecturers (Zamora et al. 2022). When interactions are meaningful, students develop webs of significant relationships and are inspired to learn (Felten and Lambert 2020). The neoliberal higher education space has little patience for the social and non-measurable. As such, it (un)wittingly devalues university lecturers' attempts to expend energy on the aspect of student belonging (Desierto and De Maio 2020). Yet, active "social-emotional intervention" programmes that consider "scaffolding" pedagogy has enormous potential for creating teaching and learning environments that consciously focus on belongingness (Costello et al. 2022, 70). "[C]aring and supportive teacher behaviour ... professional competency and communication" proficiency of "high-impact" teaching is central to fostering a sense of belonging and reducing stress (Kirby and Thomas 2022, 368).

In an online learning space, access to learning cannot simply imply using digital technologies to supplement teaching and make knowledge available to students (Daumiller et al. 2021). Students thrive on "access to sources of emotional, academic and practical support" so that they can navigate the varying demands being placed on them in a higher education environment (Kirby and Thomas 2022, 375). Classroom-level belonging is crucial, if not essential, to optimal learning and is highly dependent on lecturers who regard it their "responsibility to cultivate healthy [learning] communities and climates" wherein they are accessible and approachable to learn with (or alongside) their students and initiate authentic ways to help students learn (Kirby and Thomas 2022, 376). Pedagogic competence is thus likely to have implications for students' sense of belonging, stress and wellbeing. The following hypotheses were tested on the relationship between lecturers' pedagogical competence and the three variables.

- Hypothesis 1a: There is a positive relationship between lecturers' pedagogical competence and belonging.
- Hypothesis 1b: There is a positive relationship between lecturers' pedagogical competence and perceived stress.
- Hypothesis 1c: There is a positive relationship between lecturers' pedagogical competence and wellbeing.

Platform pedagogy, belonging, perceived stress and wellbeing

Online learning is not new, and e-learning has been around for almost three decades. However, during the COVID-19 pandemic, online learning became widely used as schools and universities migrated to Emergency Remote Teaching, Learning and Assessment (ERTLA) during hard lockdown periods. What was different about online learning during the COVID-19 pandemic (and likely to be so post the pandemic) is that an amalgam of online platforms came to be used – traditional learning management systems (LMS) such as Moodle-based platforms have been used in combination with social media platforms (Facebook and WhatsApp) and new platforms such as Google Meet, Microsoft Teams and Zoom. Given that social media companies as well as Microsoft, Zoom and Google are integral to a new form of capitalism, which Srnicek (2017) has called “platform capitalism”, Le Grange (2020) has termed the new amalgam of online platforms used for the purpose of teaching, learning and assessment as “platform pedagogy”. Platform pedagogy thus refers to the affordances of the amalgam of platforms in relation to teaching and learning – what the amalgam enables and constrains. The focus of hypotheses 2a, 2b and 2c are on the influence of platform pedagogy on, respectively, students' sense of belonging, stress and wellbeing during the COVID-19 pandemic.

There is an emerging body of knowledge on the effects of the COVID-19 pandemic on students' sense of belonging, wellbeing and stress. We shall focus on insights from a few of these studies. It is sobering to note that more than 1 billion and 575 million students in about 188 countries worldwide were impacted by the closure of schools and universities when governments implemented hard lockdown measures to curtail the spread of the COVID-19 pandemic (Duraku and Hoxha 2020). Online learning and the use of information and communication technologies (ICTs) in education is, of course, not new and have been beneficial in making learning more open, teaching methods more flexible, and have made learners more independent and self-determined (Duraku and Hoxha 2020). However, it was the sudden transition to online learning and the need to navigate an array of technological platforms that impacted students' levels of stress and wellbeing (Burns, Dagnall, and Holt 2020). Burns et al. (2020) point out that an

individual's sense of personal competence can result in suboptimal levels of wellbeing when a student feels a loss of capability with respect to their studies. It also results in anxiety and, consequently stress. Importantly, online learning depends on students assuming agency in the learning process "through initiating and sustaining multimodal communications and developing conceptual and epistemic understanding through active engagement with digital resources" (Chiu, Lin, and Lonka 2021).

In general, online learning can be a potentially alienating environment and being separated physically from peers could elicit a need for a sense of belonging (Peacock et al. 2020). This sense of belonging may have been exacerbated during the COVID-19 pandemic, particularly during hard lockdown periods. Studies on a sense of belonging in online learning predate the COVID-19 pandemic. An Australian qualitative study by Thomas, Herbert, and Teras (2014), using 50 semi-structured interviews and six focus group interviews showed that incorporating a sense of belonging in online learning resulted in enhanced participation, success and retention. The authors report that where academics were able to foster a sense of community, collaboration and personal engagement in learning, students had a more enjoyable experience and were less reticent to communicate. In a more recent study, Peacock and Cowan (2019) explored the possibilities of nurturing a sense of belonging through a tutor system. They found that students' self-confidence, self-efficacy, and self-esteem increased when they had meaningful, trusting relationships with tutors and peers. They report that their sample might limit the feasibility of their study and therefore further exploration on the topic is required. Exploring a sense of belonging in online learning during the COVID-19 pandemic is not only apposite but significant, and therefore the attention given to the topic in this study. The following hypotheses were tested on the relationship between platform pedagogy and the three variables.

- Hypothesis 2a: There is a positive relationship between platform pedagogy and belonging.
- Hypothesis 2b: There is a positive relationship between platform pedagogy and perceived stress.
- Hypothesis 2c: There is a positive relationship between platform pedagogy and wellbeing.

Lived learning experience of online learning, belonging, perceived stress and wellbeing

The concept of lived learning experience within higher education as it relates to students' experience discourse is not a new discourse. Challenges of student retention within the discourses of student throughput, retention, dropout, and graduation rates have highlighted student experiences as a critical component (Tinto 1975; Ramrathan 2013). Tinto (1975), in his

student integration model responding to student retention issues, advocated for both social and academic integration as the responsibility of institutions. It is therefore not surprising that students' experience of teaching, learning and assessment has come to the fore during university closures and migration into the digital terrain during COVID-19 and that institutions have the responsibility of providing positive learning experiences during the times of COVID-19 when they (students) had to continue with their studies remotely. Olson et al. (2021) and many other global scholars alerted us to the indirect mental health issues that COVID-19 could potentially have on students' lives and academic outcomes.

Zhou and Zhang (2021) explored college students' learning experience one year after the onset of COVID-19 and found that with time their mental health improved and their sense of belonging to a learning community improved, resulting in positive learning experiences. This finding suggests that students' learning experiences were impacted by isolation because of COVID-19 and with adequate interventions in building a learning community, it is possible to achieve positive learning experiences. Possible explanations for the initial feelings of isolation could be attributed to both students and staff paying attention to getting familiar with the new technologies of teaching and learning and to migrating their teaching and learning activities onto the digital platforms rather than paying attention to social and academic learning experiences. Adaptability to changing situations is what Besser, Flett, and Zeigler-Hill (2022) argue on what might explain the shift from initial negative students' experience of teaching and learning in the early periods of COVID-19 to more positive experiences over time. How could universities, then, improve the learning experiences of students across COVID-19?

The multiplicity of facets associated with COVID-19 and the convergence of these facets on students were considered to be a significant factor on student wellbeing (Burns et al. 2020). While it may not be possible to enumerate the facets of COVID-19 on students, the convergence of these facets is what impacts how the student responds to his or her learning experiences. Loss of social connections, Burns et al. (2020) argue, can lead to periods of loneliness or feelings of disconnectedness, which ultimately has an impact on students' wellbeing. Based on a theoretical model on roles of instructors in higher education online learning environments in the 21st century, Gómez-Rey, Fernández-Navarro, and Vázquez-De Francisco (2021) found that the best performing role of an academic is to provide technical support followed by taking a managerial role with taking on social roles being the hardest on an on-line platform, suggesting that addressing students' wellbeing is a huge challenge to academics within a remote teaching and learning environment. The technical and managerial roles of academics during the migration period and beyond were possible due to the extensive support that was provided to academics in

migrating their teaching, learning and assessments onto the digital and remote platforms.

Despite the significant challenges that students experienced, belonging (a sense of being included) and mattering (a sense of being important) were found to improve students' experiences (Besser et al. 2022). In the context of South African higher education, both constructs are crucial for the survival of higher education institutions, especially in terms of financial viability and academic credibility. As such, every effort needs to be made to not only include students, but to also make them feel a sense of being important to the institution. Hence, students learning experience, both, in terms of belonging and mattering should then be the focus of conception and intervention by academics to perform their social roles in times of disruption. The following hypotheses were tested on the relationship between lived learning experience and the three variables.

- Hypothesis 3a: There is a positive relationship between lived learning experience of online learning and belonging.
- Hypothesis 3b: There is a positive relationship between lived learning experience of online learning and perceived stress.
- Hypothesis 3c: There is a positive relationship between lived learning experience of online learning and wellbeing.

Communication, belonging, perceived stress and wellbeing

Educational institutions are social systems in which stakeholders communicate, based on specific rules and values, and have attracted the interest of researchers and academics over time (Brinia et al. 2022). Communication can be referred to as an unending dynamic process by which individuals create, transmit, and interpret messages. It is fundamental to students' life journey (Barida and Muarifah 2018, 479; Brinia et al. 2022). Students' social profile, solidarity and professional abilities are a communication function (Raja 2013, 154). Human communication is complicated and involves the interplay of psychological and linguistic components (Lifei 2018, 94). Students' challenges within the school environment (and by implication in a university context) stem from their understanding of self, belonging, wellbeing, ability and tendency to communicate with others (Dvořáková, Greenberg, and Roeser 2019, 147). A learning environment where effective communication is permitted, promotes students' belonging.

Belonging is a feeling of adequacy, self-worth, and academic performance, which is inherent in students' power of communication and is essential for their psychological functioning (Šeboková and Uhláriková 2017). Studies conducted in schools revealed that communication enhances students' belonging through feelings of security, identity, and community, which in

turn, supports their psychological, social, academic engagements and outcomes (Karaman and Tarim 2018; OECD 2017; Museus, Yi, and Saelua 2017). Whilst not many similar studies exist in higher education, one could infer that this finding will be similar for higher education students. Belonging is connected to students' need for order, structure, security, predictability and the absence of uncertainty (Arends and Visser 2019, 2), and when students' need for belonging is unfulfilled, they begin to feel the pain of rejection, loneliness, intolerance, and exclusion (Karaman and Tarim 2018, 781). Schools and the classroom context present possibilities that enhance students' belonging, and these transform and impact their social and thinking skills, emotional being, life satisfaction and stress (Šeboková and Uhláriková 2017, 8143).

Stress is a potent factor affecting higher education students and is necessitated by the challenging school environment and communication climate (Conley et al. 2014, 202). Students' inability to freely express themselves on matters affecting their learning outputs and interactions, could lead to stress amongst them while affecting their general wellbeing. Students' wellbeing encompasses their social, emotional, physical and mental development and quality of life. In the context of learning, students' psychological wellbeing would include emotional reactions to events around the school and cognitive perceptions of school life (Agrawal and Krishna 2021). Evidence abound that report a positive relationship between students' communication and belonging (McIntyre et al. 2018; Šeboková and Uhláriková 2017; Tholen et al. 2022), stress (Bye, Muller, and Oprescu 2019; Tholen et al. 2022), and wellbeing (Brinia et al. 2022; Ramadan and Yakout 2017). The following hypotheses were testing the relationship between communication and the three variables.

- Hypothesis 4a: There is a positive relationship between communication and belonging.
- Hypothesis 4b: There is a positive relationship between communication and perceived stress.
- Hypothesis 4c: There is a positive relationship between communication and wellbeing.

METHOD

Study participants and procedure

This study is part of a larger international study that explored the influence of the COVID-19 pandemic on student wellbeing in eight countries (Blignaut et al. 2021; Plakhotnik et al. 2021, 12). This article reports on data from a South African university, ethical clearance number H20-EDUERE-024 and conformed to the requirements of the Research Ethics Committee where clearance was obtained. Other general ethical procedures were adhered to. The respondents were

recruited by receiving an email with a link to the survey set up using Qualtrics XM software. This survey opened on 18 May and closed on 10 June 2020 and was available for three weeks. Table 1 provides contextual information about the participants.

Table 1: Participants' contextual information

Description		Percentage
Residing	Home	78.6
	Still on campus	0.7
	With friends	1.5
	With family	15.8
	Other	3.4
Study mode	Full time	92.9
	Part-time	7.1
Study year	Undergraduate year 1	31.5
	Undergraduate year 2	28.1
	Undergraduate year 3 (placement/study abroad)	5.2
	Undergraduate year 3 (final year)	16
	Undergraduate year 4 (final year)	7.3
	Postgraduate year 1	8.8
	Postgraduate year 2	1.7
Study area	Postgraduate other	1.5
	Astronomy, physics, maths	17.7
	Business	33.3
	Computer science	10.8
	Education	13.8
	Health and social work	11.9
	Humanities	1.5
Health and medical sciences	11	

A total of 2 100 students initially started the survey but only 537 students completed the survey. The mean age of the respondents was 23 years old. The youngest participant was 17 and the oldest participant was 52 years old. When completing the survey, 78.6 per cent of the respondents lived at home and 0.7 per cent on campus.

MEASURES

The self-reported questionnaire consisted of demographic details such as gender, age, study mode and study year. All the measures used a one to five Likert rating scale. For this study, students' pedagogical experience was explored by four factors (lecturers' pedagogical competence, platform pedagogy, lived learning experience of online learning, and communication specifically designed for the study). Given the unique nature of the crisis, new items and measures were urgently needed. The factors for students' pedagogical experience

during COVID-19 were developed from a literature review on current research around student reactions to COVID-19 in their studies and key pedagogical themes related to this using subject matter experts (SME) to develop the items (Sireci and Kurt 1995; Zhang and Wang 2021). SMEs agreed to the specific items that were developed for these four factors. These items were subjected to a factor analysis to confirm the structure of each of the four dimensions. This was conducted using a Varimax orthogonal rotation with Kaiser normalisation, and factors with an eigenvalue greater than 1, were utilised and no coefficients smaller than 0.5 were found (Field 2009). This was followed by Cronbach alpha analysis.

Lecturers' pedagogical competence

This was a measure of the student's perceptions of accessing learning, their perceptions of lecturers and the lecturers' pedagogical competence. This was measured with 8 items. Some of the sample items as examples were: "The lecturers are unavailable to give feedback to students in a timely manner" and "Lecturers are using new ways to help me learn". The alpha for this scale for this measure was 0.80.

Platform pedagogy

This was a measure of the online platforms, technology, online learning activities and their perceptions of how the university helped them to change to an online learning environment. This was measured with 9 items. Some of the sample items as examples were: "My University has provided quality online learning as a result of the Coronavirus (COVID-19) crisis" and "The course online is engaging". The alpha for this scale for this measure was 0.90.

Lived learning experience of online learning

This measure was of students' experiences and skills to study online, their experiences in virtual online classrooms, and how they feel about using online learning tools. This was measured with 13 items. Some of the sample items as examples were: "I have knowledge of what is now expected to complete my studies" and "I can contribute in the virtual classroom". The alpha for this scale for this measure was 0.90.

Communication

This was a measure of students' perceptions of the nature and quality of the communication from the university. This was measured with 6 items. Sample items were "I have received clear information from my University" and "I trust the communication I receive from my University".

The alpha for this scale for this measure was 0.91.

The measures that were used to calculate the outcome variables for this study were belonging, perceived stress, and wellbeing.

Belonging (Identification)

The concept of belonging was measured by an adaption of Postmes, Haslam, and Jans (2013) single-item social identification measure that involves rating one's agreement with the statement "I identify with my group (or category)". To capture identification and belonging with a university, friendship group and being a student, these three items were combined to provide an overall belonging score. There is a broad body of interdisciplinary research that details that similar constructs can be reliably and validly assessed with a single item or shorted scales (Matthews, Pineault, and Hong 2022; Wanous, Reichers, and Hudy 1997). There is also a need for shorter survey length and the desirability of these shorter scales as issues such as length and time of survey impact on response rates, and these shorter scales are more suitable for large-scale surveys (Findlay, Hofmeyr, and Louw 2014). The items in this study were "As a result of the crisis: I still feel part of the University, I still feel part of my friendship group, and I still feel like a student". These three items measured an overall sense of belonging with an acceptable Cronbach alpha ($\alpha = 0.73$).

Perceived Stress Scale

The short form of the Perceived Stress Scale (PSS) (Warttig et al. 2013) was adapted from the original scale developed by Cohen, Kamarck, Mermelstein (1983) and was used to measure students' experience of stress. The PSS assess stress levels and the degree to which an individual has perceived life as unpredictable, uncontrollable and overloading or as the extent to which persons perceive their demands exceed their ability to cope (Cohen et al. 1983). The scale has four items, and an example is "In the last month, how often have you felt that you were unable to control the important things in your life?" This measured an overall sense of perceived stress ($\alpha = 0.70$).

Wellbeing

General positive wellbeing was measured with the WHO scale (World Health Organization 1998). This scale was used to assess student mood-based affect. A sample item is "I have felt cheerful and in good spirits and I have felt calm and relaxed". Good internal consistency was found ($\alpha = 0.90$).

STATISTICAL DATA ANALYSIS

The data were analysed using Statistical Package for Social Sciences (SPSS) version 27. The hypotheses were tested by means of multiple linear regression, which is used when two or more independent variables are used to predict a single dependent variable and assumptions tested (Pietersen and Maree 2020). The assumptions for multiple regression were tested (Osborne and Waters 2002). The model tested the predictors (independent variables) which were lecturers' pedagogical competence, platform pedagogy, lived experience, and communication on the outcome (dependent) variables, a sense of belonging, wellbeing, and perceived stress, to explore if these relationships were positive. The results were examined for statistical significance by using the t-test in the regression slope. Where the p-value of t is $p \leq 0.05$ it is interpreted as a statistically significant relationship between the predictor (independent) variable and the outcome (dependent) variable (Field 2013). Regressions were performed separately for each of the dependent variables with these predictors. These relationships help to understand positive and negative correlations (Leedy and Ormrod 2015) that may be significant for higher education.

RESULTS

The results section is presented in three subsections. First, we present the results of the hypotheses (H1a, H2a, H3a, and H4a) with the students' pedagogical experience factors as predictors and with belonging as the outcome variable. Secondly, we present the results of the hypotheses (H1b, H2b, H3b, and H4b) with the students' pedagogical experience factors as predictors and with perceived stress as the outcome variable. Lastly, we present the results of hypotheses (H1c, H2c, H3c, and H4c) with the students' pedagogical experience factors as predictors and with wellbeing as the outcome variable.

Belonging

The individual predictors for belonging were explored and indicated platform pedagogy ($t = 7.395$, $p = .000$) and communication ($t = 2.528$, $p = .012$) were significant predictors for belonging. Lecturers' pedagogical competence ($t = -.104$, $p = .917$) and lived learning experience ($t = -.192$, $p = .848$) of online learning were not significant predictors of belonging. The overall model explained 26 per cent of the variance ($\text{adj } R^2 = 0.26$, $F(4,493)$, $F = 44.641$, $p = .000$).

The hypotheses that there is a positive relationship between platform pedagogy (H2a), communication (H4a), and belonging were supported by the results. However, the hypothesis

that there is a positive relationship between lecturers' pedagogical competence (H1a), lived learning experience of online learning (H3a), and belonging was not supported. In other words, platform pedagogy and communication had an impact on belonging whereas lecturers' pedagogical competence and lived experience of online learning had no significant impact on belonging.

Perceived stress

The individual predictors for perceived stress were explored and indicated that platform pedagogy ($t = 4.784$, $p = .000$) and lived learning experience of online learning ($t = -3.085$, $p = .002$) were significant predictors. Lecturers' pedagogical competence ($t = 1.750$, $p = .081$) and communication ($t = .780$, $p = .436$) were not significant predictors of perceived stress. The overall model explained 21 per cent of the variance ($\text{adj } R^2 = 0.214$, $F(4,334)$, $F = 24.042$, $p = .000$).

The hypothesis that there is a positive relationship between platform pedagogy (H2b), lived learning experience of online learning (H3b), and perceived stress was supported by the results. However, the hypothesis that there is a positive relationship between lecturers' pedagogical competence (H1b), communication (H4b), and perceived stress was not supported. This means that platform pedagogy and lived learning experience had an impact on perceived stress, whereas lecturers' pedagogical competence and communication had no impact.

Wellbeing

The individual predictors for wellbeing were explored and indicated that only platform pedagogy ($t = 9.669$, $p = .000$) was a significant predictor. Lecturers' pedagogical competence ($t = .233$, $p = .816$), lived learning experience of online learning ($t = -1.905$, $p = .057$) and communication ($t = -.567$, $p = .571$) were not significant predictors of wellbeing. The overall model explained 27 per cent of the variance ($\text{adj } R^2 = 0.27$, $F(4,488)$, $F = 46.537$, $p = .000$).

The hypothesis that there is a positive relationship between platform pedagogy (H2c) and wellbeing was supported by the results. However, the hypothesis that there is a positive relationship between lecturers' pedagogical competence (H1c), lived learning experience (H3c), communication (H4c), and wellbeing was not supported. Therefore, only platform pedagogy had an impact on wellbeing.

DISCUSSION

This study found that lecturers' pedagogical competence did not have a significant correlation

with any of the outcome variables (belonging, perceived stress, and wellbeing). Platform pedagogy was a significant predictor for all three of the outcome variables. Platform pedagogy had the strongest correlation with wellbeing, then belonging and lastly, with perceived stress. Lived learning experience of online learning was a significant predictor only for perceived stress. Communication was a significant predictor only for belonging and did not have a strong correlation with perceived stress and wellbeing. These baseline quantitative results suggest the need for further qualitative inquiry that might yield richer nuances into students' sense of belonging, stress and wellbeing.

Lecturers' pedagogical competence

The reaction to the state-imposed, unprecedented hard lockdown (the period of data collection for this study), was a knee-jerk move by higher education institutions to a variant of online teaching and learning, aptly coined "emergency remote teaching and learning" (Blignaut et al. 2021). It was clear that the online space at that point was simply used as a repository of the information uploaded by university academics (many of who were novices to teaching in the online space). Authentic online learning experiences that contribute to epistemic access might well have been compromised (Kirby and Thomas 2022, 376). Lecturer online pedagogical presence (and competence) appeared not to be significantly correlated with students' sense of belonging, perceived stress or wellbeing. That the lecturer might have become temporarily "irrelevant" at the time is a moot point, given that much pedagogical labour is expended in prior course design and materials development as well as ongoing assessments. While this finding appears somewhat confounding given the literature to the contrary, it does suggest that these affective dimensions of the student experience might well have been addressed in other "social" spaces and by other social agents (such as fellow students) at the time. It might also suggest that students might well have sought out other "grey" knowledge sources like YouTube videos for example. Non-synchronous teaching using video recorded lectures continues to be a common practice given the challenges that students particularly in developing contexts have with internet data and accessibility. For such students who "tune in" only when it is financially and logistically possible, lecturer's online presence is likely to have minimal effect on the affective dimensions of their experience.

Platform pedagogy

The literature reviewed suggests that online learning generally, and during the COVID-19 pandemic more specifically, presents challenges for both lecturers and students. Moreover, the sudden migration to online learning at the onset of the pandemic, contributed to students' levels

of stress and wellbeing and was exacerbated by the need to navigate new platforms such as Google Meet, Microsoft Teams and Zoom (Burns et al. 2020). Remote learning during hard lockdown periods meant that students were isolated from their peers resulting in a loss of a sense of community and therefore belonging (Peacock et al. 2020). It is therefore surprising that in this study, platform pedagogy was a significant predictor for all three of the outcome variables.

One reason why students might have perceived platform pedagogy positively in relation to wellbeing and stress, was that the information (from which data were produced) was collected during the first hard lockdown period. This is significant because, during this period, platform pedagogy (whether poorly performed or not) was the most reliable source of information because ERTLA was implemented and not authentic online learning. There was confusion and disarray in the first lockdown period and in many instances, information was simply loaded on LMSs, and Zoom and Microsoft Teams provided opportunities to engage with lecturers and fellow students – platform pedagogy became the salvation in this early period of the pandemic. In relation to belonging, our lived experience as academics has taught us that students easily set up WhatsApp groups and use online chatrooms to connect with one another and this does engender a sense of belonging with peers.

Lived learning experience

The finding that lived learning experience is a significant predictor of perceived stress may not be an unusual finding within the context of COVID-19 where the student would have been faced with a convergence (Burns et al. 2020) of a multiplicity of issues impacting their studies. Their isolation from their usual place of learning (campus), their friends and fellow students and from their lecturers, meant that they needed to find ways of dealing with and managing this perceived isolation. Dealing with high levels of fear about the disease (COVID-19) on themselves, their families and those that they interact with, brought about by the heightened sensitivity to new regulations, surveillance, media coverage and WHO warnings, would influence levels of stress within themselves. Learning loss, fear of failure, programmatic demands through ERTLA processes and progress within the programme of study is another group of stress factors for students. The convergence of these stresses on students would certainly have an impact on their lived learning experience as suggested by Burns et al. (2020). It must also be re-iterated that the data for this study was generated in the early parts of the COVID-19 pandemic and that these were the initial responses of students to the pandemic and their study programme and as such the findings of lived learning experience being a significant predictor of perceived stress could potentially change over time as was suggested by Zhou and Zhang (2021).

A correlation between lived learning experience and wellbeing (though not significant), can

be explained by the extensive support that was provided to students through the migration onto the digital terrain. Students could be seen in the same light as academics, chartering unknown territories. Knowing that teaching and learning were taking on new forms in student engagement could explain the strong correlations between lived learning experience and wellbeing, but not significant as multiple opportunities were being provided to students to manage their learnings.

Communication

A key finding of this study has revealed that communication had a positive relationship and was a significant predictor of belonging. Students feel at ease and connect to their peers when they can communicate freely with them. It is also possible to infer that a sense of belonging was enhanced by social media platforms such as WhatsApp and others despite the physical isolation students experienced during COVID-19 and the hard lockdown during 2020. This conclusion is also congruent with an age-old insight in the literature that students learn better from their peers (Williamson and Paulsen-Becejac 2018). This is corroborated by the findings that are amply demonstrated in the literature (Karaman and Tarim 2018; Museus et al. 2017; Šeboková and Uhláriková 2017; Tholen et al. 2022) that there is a positive relationship between effective communication and a sense of belonging amongst students. The findings also revealed that communication was not positively related and does not significantly predict students' stress levels. Stress is a psychological construct and may be influenced by other factors that are not communication oriented. This contrasts with the findings of Bye et al. (2019) and Tholen et al. (2022) that reported a positive relationship between stress and communication in their studies. Similarly, the study findings also revealed that students' communication was not positively related nor significantly predicted their wellbeing. Students' wellbeing could likely be a function of their socioeconomic status, and not related to communication. This contradicts the findings of Brinia et al. (2022) and Ramadan and Yakout (2017) whose studies showed a positive and significant relationship between communication and wellbeing.

This finding/insight has important implications for organising teaching and learning in institutions of learning for university management and instructors. Clearly more peer interactions and peer learning and even self and peer assessment need to be promoted and thus further enhancing a sense of belonging among students during and beyond the COVID-19 pandemic.

STRENGTHS AND LIMITATIONS

COVID-19 was a unique crisis, and this crisis situation illuminated, through statistical processes, new items and measures that could be used in further insightful research on student learning, more specifically on how a sense of belonging could be influenced within higher education

teaching and learning. For example, platform pedagogy ($t = 7.395$, $p = .000$) was found to be a significant predictor for belonging. Some of the limitations of this study included data being generated at the initial phase of the pandemic and this phase was characterized by the uncertainty of both the health issues related to COVID-19 as well as that of the study programme. Such uncertainties may have had an influence on the responses of the participants. A second limitation relates to the substantial drop in the number of participants from the initial start of the survey to the completion of the survey. This is further compounded by the intended sampling strategy which attempted to get the total population of students to participate but the final cohort of participants who completed the survey was based on volunteerism. Hence the validity of the hypothesis testing process may be compromised by the sampling process.

Given the cross-sectional design of the study, tentative insights could not be corroborated empirically because follow-up qualitative interviews had not been conducted. This was challenging to do in this instance, but it is recommended that further studies on similar topics follow sequential mixed methods designs.

We note that ERTLA was the status quo at the time of data collection and that much has changed in the higher education teaching and learning space since. We do, however, contend that there is much to infer from the findings of this study.

CONCLUSION

In this article, we focussed on key affective phenomena, namely university student sense of belonging, wellbeing and stress at a time of unprecedented uncertainty triggered by COVID-19. Traditional face-to-face teaching quickly morphed into ERTLA. Extant scholarship on online teaching and learning however, could offer only limited insights as it relates to belonging, wellbeing and stress, as much of this body of knowledge had been developed during so-called “normal” times.

Lecturer pedagogical competence did not predict any of the outcome variables, due to the “invisibility” of the lecturer during ERTLA. This was a time when courses on learning management systems simply took on a repository-like form. One might well expect that more than two years later, students, given their much greater exposure to the online teaching and learning space, are likely to have become more discerning. As such, they are likely to have become more critical of the quality of online instruction and the competence of their teachers. Platform pedagogy appeared to be a good predictor of the affective and is likely to continue to be so. As such, it draws attention to the need for institutional recognition of the amalgam of various platforms that present, and for integration of these resources in the design and delivery of online programmes.

The peculiarity of students' (negative) lived learning experiences at that particular time, was bound to adversely affect belonging, stress and wellbeing. It can be argued though that current familiarity with a "new normal" for higher education (online) learning, is likely to ease uncertainty and may encourage greater acceptance by students. Lived learning experience, thus is less likely to significantly predict the outcome variables investigated in this study.

Communication in its multiple forms and between different actors (including student-student, lecturer-student, university-student) continues to be a key factor that predicts sense of belonging, stress and wellbeing. As such, due attention needs to be paid to establishing "new" principles of communication given the opportunities (and challenges) that the online teaching and learning space now presents. While higher education institutions (including lecturers) have certainly ramped up communication (protocols), there is still some concern about the quality (and quantity) of information as well as the rapid frequency thereof. Online teaching appears to have become an integral mode of instruction in higher education. Student sense of belonging, stress and wellbeing remain germane areas for research given the diversity of students and contexts that currently prevail.

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