Exploring the social aspects of assessment practices in an engineering context

Teresa Hattingh
ORCID: 0000-0001-5930-2546

Faculty of Engineering and the Built Environment, University of Johannesburg, Johannesburg, South Africa

teresah@uj.ac.za

ABSTRACT

Assessment is a powerful mechanism to leverage student learning and develop skills and practices that prepare students for the world of work. By extension, assessment can also play a critical role in creating learning contexts that are inclusive, responsive, and transformative. This paper draws on findings from a student survey, lecturer interviews, and student focus groups, conducted in an engineering school in South Africa, that provide a rich picture of the interaction between lecturer intentions, assessment practices, student experiences, and how these influence student intentions, actions, and ultimately learning. The findings presented in this paper focus on the social themes that emerged, highlighting the social nature of assessment practices and the role that these play in student identity, confidence, and engagement. The importance of a purposeful and holistically aligned assessment strategy is highlighted through several social themes, including the fairness and relevance of assessment tasks, feedback and relationships between lecturers and students, group work, the formation of social networks and community, and opportunities for including students as partners in assessment practices. The study reveals that a more collaborative and collectivist approach to assessment is needed. This is a significant finding that provides valuable insights that can be used to transform assessment practices, enhance student success, and facilitate social justice.

Introduction

There is a pressing need to make higher education more accessible and inclusive. Since assessment drives what and how students learn (Boud, 2007), assessment practices have the potential to influence the transformation of higher education institutions and their impact on social justice (McArthur, 2016). Part of this requires rethinking how assessment affects students on a personal and social level. Assessment practices can potentially exclude students entirely or create learning experiences that are not ideal. Idealistically, assessment could also be an important key to unlocking learning spaces that enable a diverse range of students to participate more actively, drawing on past and present contextual experiences and seeing each student as a valuable stakeholder in the learning process.

Concurrently, there are substantial and sometimes conflicting demands placed on assessment in higher education spaces. These include accreditation and certification and preparing students adequately for the workplace while still fostering student learning (Tai, Ajjawi & Umarova, 2021). Assessment decisions are often taken to address one or many of these demands but is the impact on the individual student, the collective student, and the broader social-learning context fully understood? To fully appreciate the influencing role of assessment practices, a balanced view from all stakeholders is required. This study is framed in a theoretical learning-oriented assessment paradigm (Carless, 2007) that not only sees assessment as integral to the learning process but considers assessment as the driving force behind what and how students learn. Assessment is therefore viewed as a delicate relationship between the assessment tasks and the intentions and practices of both students and lecturers.

This paper brings together the ideas of learning-oriented and inclusive assessment to explore how assessment influences learning and the associated personal and social experiences of students, to understand how assessment practices can and could influence inclusivity and social justice in higher education. The specific purpose of this paper is to explore the personal and social aspects of assessment practices in an engineering context and to consider if this can enable us to move closer to inclusive assessment practices.

Literature

Hockings (2010) defines inclusive assessment practices as those that are fair and effective and enable all students to demonstrate their full potential. Nieminen (2022) argues that for students from diverse backgrounds to be included in higher education, assessment requires change. There are generally two approaches – an approach that redesigns what is currently happening and an approach that makes accommodations for students that are different or do not 'fit' (Nieminen, 2022). Morina, Sandoval & Carnerero (2020) argue that truly inclusive education should aim for a solution that embraces diversity and moves away from a deficit model, allowing flexibility and choice (Tai et al., 2021). This suggests that inclusive assessment should not target specific groups of students but should move towards being more inclusive for all students. This also has the potential to give students space to experiment and grow as they try out different things and explore in the learning space.

Assessment is socially constructed in terms of the social practices that take place and the product that is produced (Filer, 2000). As a result, it is important to engage with the wider social and political context in which assessment practices take place (Leathwood, 2005) to understand what students bring to assessments, how they engage with and respond to assessments, and what they will take from assessments into the world of work. Due to the power that assessment has concerning learning and how students respond and interact with tasks and activities, the identity of students can also be shaped through these processes (Leathwood, 2005). As a result, one could argue that assessment has great potential and responsibility. Assessment should not merely be seen as a means of assessing competence or even facilitating learning. Assessment is what shapes our students and our learning contexts - communicating what is valued and who is included.

Study context

This case study was conducted in the School of Mechanical, Industrial, and Aeronautical engineering at the University of the Witwatersrand in Johannesburg, South Africa (the School). The University is a research-intensive institution which has been offering undergraduate degrees in engineering for decades. Engineering degrees in the School are four-year degrees with a fixed programme of modules. The degrees, which require the development and assessment at exit-level of eleven graduate attributes, are accredited by the Engineering Council of South Africa (ECSA). These graduate attributes align to those of the International Engineering Alliance (IEA) and include,

amongst others, complex problem-solving, the application of engineering knowledge, techniques and skills, engineering design problem investigation and analysis, professionalism and ethics, team and multi-disciplinary work, professional communication, the impact of engineering activities on society and the environment, and engineering management (IEA, 2021). The predominant assessment types used by the School are tests and examinations. Tutorials are also used in some courses as a formative assessment mechanism. For courses that develop and assess a combination of professional and technical competencies, for example, laboratory, design, and capstone courses, assignments and projects are the main types of assessment. The assessment policy of the University is flexible and although there are specific rules and guidelines for assessment, it is rare that these constrain assessment practices. Sometimes, however, there can be perceptions that certain assessment rules exist which can make lecturers hesitant to change or experiment with new approaches.

Methodology

This study used an exploratory approach that aimed to incorporate the voices of lecturers and students. Extensive findings were collected from a student survey conducted with 263 students, semi-structured lecturer interviews with 10 lecturers, and four student focus groups with a total of 24 students. This study does not report on the detail of each of these data sources but rather focuses on specific themes that relate to the personal and social aspects of an assessment context that could affect the inclusivity of assessment practices. The data is triangulated, bringing together these voices to understand the interplay between the different role players. Further details of the method for the different data sources can be found here: student surveys (Hattingh, Dison & Woollacott, 2019), lecturer interviews (Hattingh & Dison, 2019) and student focus groups (Hattingh & Dison, 2021). When reporting on the findings, quotes will be referenced to the original data source with SS referring to the student survey, L# to the number of the lecturer interviewed, and FG# the number of the focus group.

Findings

The findings show that there are many touchpoints in assessment practices that relate to personal and social learning and experiences. This section is structured according to five emergent themes that include:

- fairness and relevance of assessment tasks

-      feedback, communication, and developing relationships between students and lecturers
-      group work and the development of social and interpersonal skills
-      formation of learning networks and communities
-      being partners in the learning process.

In all these themes, the importance of understanding how assessment links to the social aspects of a student's learning journey is shown.

Fairness and relevance of assessment tasks

The fairness and relevance of assessment tasks were emergent themes from both the student survey and the student focus groups. Students' perceived lack of fairness can result in many emotions and stress. It was also interesting to see how these concepts related to the relevance of assessment tasks. It appears that relevance can be linked to the value that students place on assessment tasks with more relevant tasks being seen as less stressful, fairer, and potentially more valuable. The relevance of assessment tasks also highlights that students find it important to be able to identify with the content and purpose of tasks. This includes bringing in their own contextual knowledge and feeling that their learning aligns with their values and motivation for studying engineering (Savage, Birch & Noussi, 2011). The impact that assessment has on identity development starts to emerge (Leathwood, 2005).

The following extracts from the data elaborate on perceived fairness and the ability of assessments to establish competence and how these relate to stress and relevance:

> Weighting for tests and exams are extremely unfair – 70% for a final exam is a recipe for disaster. (SS)

> Personally, I have always despised exams. The idea of a person's competence being based on 3 hours-worth of work in a hall, writing on a piece of paper doesn't sit too well with me…I think that assignments are a great way to truly test students' competencies and evaluate their learning, provided the assignments are structured appropriately and made relevant to real-world problems/situations/scenarios where the subject matter can be applied. (SS)

> I feel that very often marks for tests and exams do not reflect the student's knowledge accurately as they are stressed under exam conditions and may forget information or do silly mistakes as a result of this stress. I feel that an assignment reflects a person's understanding more accurately as they do not have the stress related to exams. I understand the need for tests and exams as they force people to answer questions on their own and not be allowed to consult with fellow students which is possible for assignments. However, in the real world, people are always able to consult on things they do not understand and ask for help or advice. In the end, they still have to do their own

work and understand the work in order to answer it. This is why I feel that assignments should have the highest weighting. Test and exam conditions do not reflect the real world. (SS)

Participants generally indicated a preference for assignments. One of the main reasons for this is that they are perceived as less stressful as the time available to work on them is longer. Participants also explained that, as a result, they can gain a better understanding of concepts. Students appear to have a good understanding of the essence of assessment practices and their role in preparing them for the workplace. As a result, participants tend to prefer more authentic assessment tasks which enable them to see beyond the content in class and allow them to understand their role as an engineer. Authentic assessment tasks also enable students to interact with their social context and bring their knowledge and experiences to the learning process. Since these tasks enable students to relate what they are doing to their broader purpose or sense of identity in the world, they can lead to students being more engaged and motivated (Savage et al., 2011). These extracts illustrate this thinking:

> I think they (assignments) expose you and then like encourage you to also be able to try to find out some things even those you are not studying what they are... so I think it's exposure. (FG3)

> I think assignments are better because they help you apply and you get to see, okay, how does what we're learning apply to the everyday world. …real world examples, so how will this help me when I'm an actual engineer? What is this going to apply to? Because there's no point in learning something that you'll never use again. Everything we learn should be relevant to us. (FG2)

Several lecturers also reported on their observations when using assignment-based assessment tasks:

> Their assignments, their group assignments, and their more or less practical field related, these are the best marks they get, generally. ...they do so well when it's got that practical aspect to it and when they're sort of working in groups. (L6)

> …they enjoyed doing it, so they spent an unbelievable amount of time on the project. So the enjoyment was important…they really saw purpose in what they did. They really discovered that what they do is meaningful…..they saw it's usefulness and applicability… they displayed their underlying curiosity, their willingness to explore, their…their creative open-ended, open-minded approach to solving problems. And their…their kind of innovative nature in solving a problem in a different way. (L10)

Students also value the opportunity to bring their own experience and identity to the learning space as shown by this student:

> And we all come from different spheres so we don't all have…and some of us do have a lot of interest in this stuff but it's just not related to their interest. (FG3)

The theme of fairness and relevance shows how assessment can be a personal experience that influences students' emotions and stress levels and draws on and shapes their identity. It was also revealed how assessment tasks can build on students' past experiences and their interests as their understanding of and orientation into the world of engineering is shaped. The inclusion of assessment tasks that explicitly require students to relate concepts and knowledge to their context or their particular area of interest is one means of addressing this. More choice and flexibility when designing open-ended assessment tasks is another approach. Although these concepts relate to the student as an individual, through the development of identity and confidence, this affects how they negotiate the social learning spaces around them.

Feedback, communication, and developing relationships between students and lecturers

The communication of expectations and criteria, as well as the resultant feedback, are essential elements of effective assessment practices. These practices are by their nature, social, since they involve a 'conversation' between students and lecturers. These conversations are not always one-on-one interactions but can involve other formats that do not include personal contact or occur in a personal way. Notwithstanding this, these activities provide an opportunity to build and reinforce positive (or negative) experiences that can affect learning and identity. The inherent power relationships between students and lecturers also come into play in these interactions.

In this case study, lecturers see assessments used during the semester, including tutorials and tests, as a way of communicating expectations to students by providing them with typical questions that exemplify what will be expected in the course. Many lecturers see it as the responsibility of students to clarify the expectations for assessments and require students to exercise their agency. Lecturers pointed out that students use many ways to explore these expectations, including face-to-face consultation that is arranged privately or in formal tutorial sessions. Other ways include resources – past papers and textbooks, or finding out from other students. Feedback is often generic, provided to the class as a whole and not individually to students. These factors affect the extent to which students can access and use lecturer expectations and feedback to reflect, learn, and self-evaluate (Boud & Molloy, 2013).

Students try to make use of consultation sessions, but several lecturers disclosed that there are too many students and insufficient time to do this properly. Many student participants agreed that if they want feedback, they need to consult with a lecturer. However, many students struggle to

approach lecturers, indicating that they either do not know how to relate to lecturers or that they are scared to approach them. These quotes from lecturers highlight this:

> Personally I don't ask the lecturers because I am scared of approaching them, so if I'm curious about something I'll go and research it on my own…you don't even know the lecturer, you don't know what they're doing, like, what are they researching at the School, for example. What their interests are…so you don't know what questions are out of scope from what is actually being taught. (FG1)

> … if the lecturer is actually a nice lecturer and you go and you consult then you're able to understand where you went wrong. But sometimes that's not always the case. (FG1)

For participants who find it challenging to approach lecturers, the tutorial environment seems to break down some of these barriers, making it easier for students to approach lecturers with questions.

> I haven't always been one to consult one-on-one with the lecturer but I've found that in a tutorial environment it's very relaxed. It's easier for me to ask questions from the tutors…even from the lecturers, I don't know why but it's just…I just feel like it's a lot less intense. (FG3)

Assigning marks for tutorials, however, breaks down this process as students are not able to ask for assistance nor are they allowed to discuss problems in groups.

> Some tutorials are more useful, when they are not for marks and actually reinforce the material…and you can get help, it's like a consultation because there is an opportunity if there is something that you don't understand … you are able to ask the lecturer during the tutorial and they will explain to you. But if it's for marks, there's no way that they can give the solution or help you to such an extent that you get the solution. (FG1)

Tutorials can create collaborative spaces that facilitate interaction between students and lecturers (Benwell, 1999; Fry, Ketteridge & Marshall, 2009) where expectations, criteria, and feedback can be discussed. However, the introduction of marks to encourage everyone to attend the sessions has an impact on potential learning spaces that could assist students, particularly those that struggle with pace and workload.

Consulting lecturers is also complicated by students' inherent focus on marks or passing rather than learning for current or future assessment tasks. Consultation sessions can therefore deteriorate into interactions that are centred around mark-hunting rather than understanding and learning. Students in all focus groups made this point:

> …that's why the interactions that you end up kind of having with the lecturers are okay, why are my marks so low…it's not okay, help me understand this concept, it's my mark needs to advance…so at the end of the day, it's all about marks. (FG2)

This case study shows how feedback practices and associated conversations and interactions between students and lecturers can affect the learning environment. Although developing a student–centred culture is sometimes seen as a solution to the challenges of large classes with the imperative to develop independent learning skills (Gibbs, 1995), some students have not developed these skills organically and need support and scaffolding so that these capabilities can mature. The absence of good feedback mechanisms, particularly in large classes, affects those students who have little experience in critically engaging with ideas and often has the biggest impact on underprepared and disadvantaged students (Allais, 2014). The importance of clear expectations and feedback is evident and although more intimate feedback is not necessarily always practical, a 'one-size-fits-all' approach can leave many students stranded, which not only impacts their ability to learn but also affects their confidence and creates a sense of alienation. This quote shows the severe impact that these factors have on individual students:

> We put in the extra effort… when the marks came back they were so, so low. They were so embarrassing, I can't even say the marks, they were so low.   So I was really disappointed because I thought…I considered the effort, the amount of work we put in, the time, I thought that we'd actually get a good mark. So that was really disappointing. (FG1)

Communication surrounding assessment practices provides a unique opportunity to develop relationships between students and lecturers and amongst students if learning activities and assessment tasks are strategically designed and aligned (Biggs & Tang, 2011). Furthermore, it is important that lecturers challenge their assumptions around students and their approaches to learning and reflect on the hidden or implicit "rules" surrounding the discipline, the programme, or engagement with assessment activities that can hold students back (Cornell & Padayachee, 2022). Understanding power relationships is also crucial for the formation of these critical engagements (Ramhurry, 2022).

Group work and the development of social and inter-personal skills

Group work can create social learning spaces and enable students to develop a range of teamwork and interpersonal skills while facilitating a deeper understanding of the material due to increased levels of engagement (Carless, 2015). However, the findings from this case study show that students might struggle with group work interactions which can affect not only the development of these skills but also the learning associated with core content and knowledge.

In this case study, many assignments and projects involve group work. Group assignments involve several individuals, and as a result, this affects the control that students have over time management and scheduling. This was raised by participants as one of the features of group assignments that they found most difficult to manage. More importantly, however, many participants expressed the view that they struggle to work productively in groups. Participants articulated that although they see the development of these skills as essential, they battle with the learning process.

> I think a valuable skill is learning how to work with people, learning how to get information from people and I think that in the university setting, you know, the best way to learn that is through group work. And I think that is, in that sense, assignments are really good in forcing…in giving the students that skill...for a lot of students it's overwhelming....you don't know how to deal with all these different kinds of personalities, and everything is just happening all at once. So I think that it's something that should be like introduced gradually from first year. (FG3)

The importance of scaffolding is highlighted to provide students with the necessary skills and facilitate the process of working in teams.

> With assignments I think the issues with the School is that…they don't introduce you to a lot of group work before you get to the fourth year level……. A lot of the stuff you do on your own, and you don't pick up the skills you need to be able to deal with people when you get to fourth year......there's a lot of clashes.....that sort of aspect of learning to deal with people you only start at a very late stage and it can be critical to your ability to finish the assignments. (FG3)

Some participants described negative experiences with group work that also appears to affect their overall self-confidence and motivation.

> I do value assignments a lot, but I have a problem with a group… whoever is managing the group now, tends to be the boss. He wants to send you there, he wants to send you there, he wants to drag everyone around, he wants to rush everyone, …he wants everything to be according to their own things…Whatever input that you may put in the group, when they type the report… he'll find ways to change your work and put it in his own understanding, or change everything completely. You won't even find your work in there. (FG3)

Although many students recognise group work as an essential part of their development as engineers, due to the lack of structure and scaffolding that is provided for the associated group work skills, they can find these experiences stressful and demotivating. Several students appear to be emotionally affected by dysfunctional group work. Furthermore, the issues around group work hinder their ability to develop effective teamwork skills and affect the potential for assignments to reinforce learning.

Many of the group work tasks are project-based and generate remarkable opportunities for incorporating relevant contextual elements, inter-disciplinary thinking, and authentic features into the assessment process. Project-based assessment tasks can also exploit alternative means of assessing that address some of the issues with traditional test and exam assignment types. The social elements of group work cannot, however, be overlooked and clear alignment with the overall intended learning outcomes and stimulation of the desired learning behaviours is essential (Gibbs, 1995; Biggs & Tang, 2011).

Critical to this is an awareness that evaluation criteria need to consider both the product of the assessment task and the process of arriving at the product. Because participation and performance in group assessment tasks are often product-oriented, high-performing students are frequently rewarded with high marks without having necessarily developed the teamwork and interpersonal skills that would be expected of a graduate engineer. Stronger students are often insensitive to the needs of the group members, questioning whether they are developing appropriate skills for the world of work. The task and performance-driven behaviours of stronger students also affect team dynamics, demotivating students, particularly students who feel unprepared for the high intellectual and practical burdens placed on them through group work. These students can feel that they have not had adequate time to synthesise material before committing openly to their mastery of it in a vulnerable and open setting. These students can believe that ideas and approaches that do not align with the performance-driven approach of other students are not valued, creating conflict both within the group and within the individuals themselves. The social dynamics of group work in assessment tasks, therefore, have the potential to allow the strongest students to thrive and the students that are already struggling to wither. This highlights the need to carefully design and scaffold group assessment tasks that create a learning environment that encourage students to work together effectively and respectfully in teams to the benefit of all students. Careful consideration should also be given to the formation of groups in these social contexts. Although there remains much debate on the best way to form groups and the approach used is highly context-dependent, it has been shown that students can feel that assigning groups can be more inclusive than self-selecting (Sedghi & Rushworth, 2017).

Formation of learning networks and communities

Social learning and the importance of learning networks and communities is an idea that was supported by many of the student participants' comments. Students indicated that they value

15

networks that enable them to understand how things work, reinforce expectations for modules, support the learning process, hold them accountable and open their minds to other possibilities and ways of seeing the world. Ultimately, they see the formation of these networks as essential to nurturing learning communities. Although these networks can form outside of assessment tasks specifically, the importance of initiating social engagements in assessment tasks has been shown in the discussion of previous themes.

When students find it challenging to approach lecturers, they often approach other students who have been through the particular course or programme before them to provide insight into how things work. Students find it important to have a high-level picture of what is expected from them as well as a view of how their studies will unfold over the upcoming semesters. These thoughts are confirmed by these extracts:

> If there was a way to prepare people for the course then I don't know how but let them know how it's going to happen or how it's likely to happen. (FG4)

> Each time that I have had an idea of what to expect it's always been from people that have done the course before. And then sometimes the lecturer will like give you a vague overview of what it's like or, you know, what…but it's very vague. It's a lot more…I felt it's been a lot more insightful coming from someone who's actually done the course. (FG3)

The connections that students form as they find out about how things work extends beyond the details to support and a sense of caring. Students discussed the impact that this had on their own learning experiences and their desire to give back to others.

> So it's also knowing people not just in your year but in other years. So I try to help people in lower years. (FG4)

> People are very helpful because I know…there was a time where I decided I actually don't want to go to like a lecture or a tutorial, and then I spoke to someone and they said to me, look, you should just go because it's going to help you. Like try and write notes, write whatever you can and use that when you actually study for your test. And it helped. (FG4)

The groups that form from these interactions also drive a sense of accountability among students:

> …it also makes you accountable…because some people have like groups of people that they are always with and it kind of forces you to go to class so to…you know if you don't go then you get questions about, why weren't you there. (FG4)

Once students start to engage with others, create networks, and form communities, the value that this has on the learning processes starts to emerge. The social construction (Schunk, 2012) of knowledge and understanding becomes evident as students articulate and challenge thinking. More

16

deeply, students can become aware of multiple ways of engaging with ideas and knowledge and the value that different perspectives and contexts can have.

> I realised that when I studied on my own it's very easy for me to fool myself into thinking that I'm ready for something, or I know or understand something, when actually I don't. Whereas I've found that in a group now there's someone there to challenge your thinking, and then because someone is challenging your thinking now, you're being open to other possibilities, other ways of doing things...so it's made me more open to other people's...it's made me more curious to know how other people see things and how they understand them and how they come to certain conclusions and things. (FG3)

One student specifically related their desire for a learning community as akin to a village. It is implied that there is some responsibility on the school or institution to facilitate ways to make enable students to make these connections from their first exposure to the university.

> I think what I would really like to emphasise is for the School to have a sense of community like a village where especially in first year, we get to know a lot of people, like connections. (FG1)

This theme reveals the circular nature of social interactions and the formation of networks and learning communities. Connections are needed to form the necessary pathways and the pathways are needed to make further networks. What is evident is that assessment practices could be harnessed to develop social interaction and engagement.

Being partners in the learning process

The findings reveal the importance of seeing students as partners in the learning process. This stretches from aspects that highlight caution around manipulating learning behaviours and stifling student agency, through facilitating transparency of the curriculum, to allowing space for student voices to emerge, as well as considering collaborative assessment design. To develop self-directed learning, participatory approaches to assessment that involve collaboration, effective peer feedback, and the intentional development of self-evaluation skills are required (Carless, 2022).

Some lecturers admitted that they intentionally use techniques that draw on students' emotions and influence their behaviours. These are emphasised by the power relationship between lecturers and students. This lecturer indicates how they use assessment in this way:

> In extreme cases, some lecturers indicated that tests or assignments are intentionally used as a 'wake-up call' (L8) or to 'scare' students (L8).

> While lecturers may intend to use these tactics to enhance the learning process, the implications on student emotions, well-being, and identity are possibly not well

understood as expressed by this student, 'I feel like in our School we are driven by fear'. (FG1)

Marks are also sometimes used to encourage particular behaviours or discourage others – resembling a behaviourist approach to motivating students (Hassan, 2011). Students are rewarded for doing work that lecturers want through the awarding of marks and are 'punished' with the removal of marks if students do something that lecturers do not want them to repeat in future. While possibly effective, marks alone are an inadequate form of feedback to change behaviours (Hattie & Timperley, 2007). In this type of environment, students could also change behaviours to obtain more marks rather than gaining the understanding or skills expected of them. This approach to manipulating behaviours also frames assessment as lecturer-centred, where lecturers steer students rather than designing assessments that encourage independent learning and the development of a collaborative relationship between lecturers and students. These practices can also create a divide between students and lecturers, amplified by power relationships, and can evoke emotions that influence student learning and identity and further hamper student agency.

Agency is important and many student participants expressed this by describing how they feel that they do not have a voice. Some participants suggested that this is more prevalent in earlier years, but others countered this by saying that these feelings are present in all years of study.

> But you feel like you're in a cold ice room from first year and you're alone, and when you emerge into second year it's…then you start getting taken sort of seriously, and you only get really taken seriously at third year-ish, and still then there's sort of like a ladder to climb. (FG3)

> Another thing is, I feel like in this School people feel like only certain people will be heard if they speak. So people are reluctant to say, okay, let's do this and raise this issue. It's like…you feel like these people if they speak, they never will be heard. And last year it was helpful because if you were on conditions then you can speak (in at-risk student meetings). But now, we're not repeating (modules)… the problem is, do we have to fail so that we can voice our opinion? (FG4)

The lack of student voices implies that students lack ownership and involvement in their learning context (Carless, 2015). Students expressed dissatisfaction that their ideas for curriculum and assessment development were not heard or recognised which made them feel less inclined to engage on that level. Students long for a sense of self-realisation from being aware that they are contributing to their learning environment which has been shown to improve student motivation (Clark & Redmond, 1982). Ramhurry (2022) have shown that participatory approaches to assessment require open relationships that are based on trust, where lecturers acknowledge and hear student voices.

The topic of lecturer or course evaluations was raised by several student focus groups. Students seem to be frustrated by the apparent lack of action on the feedback that is provided through these evaluations. There is a sense that students focus more on what lecturers should change rather than what they should change, but they express that when they do make suggestions they are not being heard. Evaluations have the potential to make a valuable contribution to course alignment and improvement (Edström, 2008), and to make students feel that they are partners in the assessment process (Gibbs, 1995).

Students also find that there is limited transparency of their curriculum. This appears to result in a sense of being lost, with a strong desire to be able to see how elements fit together. Students expressed the need for visibility of what to expect in a particular year of study. They have a requirement to see beyond tasks and even modules and want a view of what will be expected of them more holistically. It seems as if this information is currently used for planning studying strategies, but it also appears that this foresight gives students a sense of comfort. It makes sense that students are likely to adopt short-term strategies that see tasks in isolation from one another if they do not have the means to see how knowledge and the development of skills fit into a bigger picture of learning over their degree and even their career as an engineer. A sustainable and learning-oriented assessment environment should be cognisant of this need and ensure that expectations and the purpose of assessment and learning are more explicitly communicated.

Since students feel isolated from the academic system and there is a lack of proactive strategies to include students in learning design, there are limited opportunities for collaboration in the design of assessments. Throughout the findings, it emerges that students have a strong desire to engage in their learning and assessment tasks in a way that enables them to extract relevance and exercise control over their learning and development as engineers.

Discussion

Several key themes emerged from the data indicating how personal assessment can be and how it relates to the social aspects of student learning, agency, and identity. These links are inherent in the way that assessment plays out in higher education contexts and awareness of these is crucial to creating inclusive and functional learning spaces.

It is important to understand that assessment is personal and touches students in ways that can lead to stress and strong emotions. Assessment also draws on students' sense of purpose and enables them to feel valued. Undergraduate students are often frustrated by the fact that they cannot bring their individuality or personalise their learning experience (McArthur, 2016). Due to the personal nature of assessment, and considering that each student is different, inclusive assessment design needs to be responsive and flexible so that a diverse range of students can actively participate. The findings show that students can see assessments as relevant and meaningful. Several students, in this broader context, study engineering to make a difference in their communities (Case, 2013), and assessment approaches that align with these aspirations can evoke interest, creativity, and motivation (Bransford, Brown & Cocking, 2000).

A starting point for most assessment discussions, however, is fairness. Fairness is often at the forefront of considerations when designing assessments and, frequently, fairness is where frustration can originate from both lecturers and students. The essence of fairness is based on our conceptualisation of justice (McArthur, 2016) and as a result, mismatched, misaligned, or merely poorly thought-through or executed assessment activities can naturally create tension. To facilitate conversations around fairness, a good starting point is the communication of outcomes and corresponding feedback that matches these informal contracts (McArthur, 2016). Although being fair and transparent is considered best practice in assessment, framing fairness as 'sameness' or trying to find a solution that 'fits' everyone or treats everyone equally can constrain the potential of assessment practices (McArthur, 2016). Recognising students as individuals creates an opportunity to draw on student agency. To exercise agency, students need assessment processes to be transparent and fair. Well-developed relationships between students and lecturers and sufficient and detailed feedback are also required to support the development of agency (Stenalt & Lassesen, 2022).

Assessment is a social practice and students learn, develop, and adapt as they engage with assessment tasks and interact with others (McArthur, 2016). Dysfunctional assessment practices that are not well designed and allow rote, shallow, or procedural approaches to learning can encourage these behaviours and shift student intentions, ultimately resulting in students not acquiring the intended knowledge and skills. This can also discourage the development of lifelong learning skills in all students, even those who are currently successful or 'playing the game' (Broadfoot & Pollard, 2000). The promotion of procedural approaches to learning can, over time, narrow the social construction and norms around ways of knowing and being in the context and,

potentially, the discipline. Social networks should be seen as a valuable means of supporting student learning and ways of developing these types of networks could be a useful way of changing student approaches to learning.

Student-centred learning often focuses on the role of individual students, sometimes without adequate consideration for how these individuals interact with their social environment or their community of learning (McKenna, 2013). Improvements to teaching pedagogy and assessment also frequently centre around students as individuals, fostering an individualistic approach to studying and learning. A more collectivist approach when thinking about how students learn and adapt to their environments can facilitate deeper approaches to learning. Students are intuitively aware of the social nature of learning and desire a stronger, comprehensive learning community that includes lecturers, tutors, and other members of the university community. This raises issues and opportunities related to the creation of supportive learning environments, both online and in person. This could include adapting classroom settings, particularly tutorials, assessment tasks, and specifically group projects, to harness potential opportunities for enabling students to use social networks to develop their confidence and create a sense of belonging in their learning context.

Assessment that is founded on a collective understanding needs to be collaboratively produced (Torrance, 2017). Inclusive assessment practices should therefore consider ways that can involve participation and negotiation from students (Leathwood, 2005). Partnering in the assessment space can lead to effective co-design of assessment practices that lead to assessment that is accessible and provides space for students to exercise their agency in relation to their learning (Nieminen, 2022). Through collaborative design, students can be involved in choosing assessments in terms of formats and topics (Tai et al., 2021), which can enable students to demonstrate their knowledge in diverse ways (Nieminen, 2022).

Conclusion

This study, set in a South African engineering higher education context, has confirmed that assessment practices not only drive learning behaviours but also affect student confidence, engagement, agency, and identity. Furthermore, it is shown that assessment cannot be seen in isolation from the social structures that exist between lecturers and students, between students, and between each student and their societal context. Since assessment can be deeply personal and social, it should be acknowledged that assessment does not take place in isolation from these

factors. Assessment design and practices can also divide, alienate, and exclude students from the learning process. Although designing assessment practices that are fully inclusive, fair, and equitable is difficult, an awareness of the subtleties of how students personally experience assessment is an important first step in moving forward and addressing issues of social justice in higher education.

References

Allais, S. 2014. A critical perspective on large class teaching: The political economy of massification and the sociology of knowledge. *Higher Education*. 67(6): 721-734.

Benwell, B. 1999. The organisation of knowledge in British university tutorial discourse. *Pragmatics*. Quarterly Publication of the International Pragmatics Association (IPrA). 9(4): 535-565.

Biggs, J. & Tang, C. 2011. *Teaching for Quality Learning at University*. London: Open University Press.

Boud, D. 2007. Reframing assessment as if learning were important. In Boud, D., & Falchikov, N. (eds). *Rethinking Assessment in Higher Education: Learning for the Longer Term*. London: Routledge.

Boud, D. & Molloy, E. 2013. *Feedback in Higher and Professional Education: Understanding it and Doing it Well.* Oxon: Routledge.

Bransford, J. D., Brown, A.L. & Cocking, R.R. 2000. *How People Learn: Brain, Mind, Experience, and School.* Washington, DC: National Academy Press.

Broadfoot, P. & Pollard, A. 2000. The changing discourse of assessment policy: the case of English primary education In Filer, A. (ed.) *Assessment: Social Practice and Social Product.* London: Routledge Falmer. 11–26.

Carless, D. 2007. Learning-oriented assessment: Conceptual bases and practical implications. *Innovations in Education and Teaching International*. 44(1): 57-66.

Carless, D. 2015. *Excellence in University Assessment*. Oxon: Routledge.

Carless, D. 2021, 'Foreword' In Mentz, E. & Lubbe, A. (eds.). Learning through Assessment: nAn approach towards Self-Directed Learning (NWU Self-Directed Learning Series Volume 7). Cape Town: AOSIS. Xxv-xxvi.

Case, J. 2013. *Researching Student Learning in Higher Education: A Social Realist Approach*. Oxon: Routledge.

Clark, D. J. & Redmond, M. V. 1982. *Small group instructional diagnosis: Final report for Washington University*, ERIC Document Reproduction Service No. ED217954.

Cornell, A. & Padayachee, K. (2022). Theoretical physicist identity development: A critical account of factors influencing progression from novice to expert. *Critical Studies in Teaching and Learning.* 10(1): 153-164.

Edström, K. 2008. Doing course evaluation as if learning matters most. *Higher Education Research & Development*. 27(2): 95 – 106.

Filer, A. 2000. *Assessment: Social Practice and Social Product.* London: Routledge Falmer.

Fry, H., Ketteridge, S. & Marshall, S. 2009. *A Handbook for Teaching and Learning in Higher Education: Enhancing Academic Practice.* 3rd edition. New York: Routledge.

Gibbs, G. 1995. *Assessing Student Centred Courses*. Oxford: Oxford Centre for Staff Development.

Hassan, O. A. 2011. Learning theories and assessment methodologies – an engineering educational perspective. *European Journal of Engineering Education.* 36 (4): 327–339.

Hattie, J. & Timperley, H. 2007. The power of feedback. *Review of Educational Research*. 77(1): 81-112.

Hattingh, T., Dison, L., & Woollacott, L. (2019). Student learning behaviours around assessments. Australasian Journal of Engineering Education, 24(1), 14-24.

Hattingh, T. S., & Dison, L. (2019). Why lecturers in an engineering School assess the way they do. In Research in Engineering Education Symposium (REES) proceedings, 10-12 July 2019, Cape Town, South Africa.

Hattingh, T. S., & Dison, L. (2021). How assessment shapes learning: A perspective from engineering students. SAIEE Africa Research Journal, 112(4), 161-170.

Hockings, C. 2010. *Inclusive Learning and Teaching in Higher Education: A Synthesis of Research*. York: Higher Education Academy.

International Engineering Alliance (IEA). 2021. Graduate Attributes and Professional Competencies version 4 – 2021.1, available online: https://www.ieagreements.org/assets/Uploads/IEA-Graduate-Attributes-and-Professional-Competencies-2021.1-Sept-2021.pdf

Leathwood, C. 2005. Assessment policy and practice in higher education: Purpose, standards and equity. *Assessment & Evaluation in Higher Education*. 30(3): 307-324.

McArthur, J. 2016. Assessment for social justice: The role of assessment in achieving social justice. *Assessment & Evaluation in Higher Education*. *41*(7): 967-981.

McKenna, S. (2013). The dangers of student-centered learning – a caution about blind spots in the scholarship of teaching and learning. *International Journal for the Scholarship of Teaching and Learning*. 7(2).

23

Moriña, A., Sandoval, M. & Carnerero, F. 2020. Higher education inclusivity: When the disability enriches the university. *Higher Education Research & Development*. *39*(6): 1202-1216.

Nieminen, J. H. 2022. Assessment for inclusion: Rethinking inclusive assessment in higher education. *Teaching in Higher Education*, 1-19.

Ramhurry, C. 2022. Applying Foucault to participatory assessment in higher education: A case study in South Africa. *Education as Change.* 26(1), 1-21.

Savage, N., Birch, R. & Noussi, E. 2011. Motivation of engineering students in higher education. *Engineering Education*. 6(2): 39-46.

Schunk, D. H. 2012. *Learning Theories: An Educational Perspective.* 6th edition. London: Pearson.

Sedghi, G. & Rushworth, E. 2017. The relation between multi-cultural group work and the integration of home and international students. *New Directions in the Teaching of Physical Sciences*. 12(1).

Stenalt, M. H. & Lassesen, B. 2022. Does student agency benefit student learning? A systematic review of higher education research. *Assessment & Evaluation in Higher Education*. 47(5): 653-669.

Tai, J., Ajjawi, R. & Umarova, A. 2021. How do students experience inclusive assessment? A critical review of contemporary literature. *International Journal of Inclusive Education*. 1-18.

Torrance, H. 2017. Blaming the victim: Assessment, examinations, and the responsibilisation of students and teachers in neo-liberal governance. *Discourse: Studies in the Cultural Politics of Education.* 38 (1): 83–96.