

Chapter # 19

EXPLORING ASSESSMENT TYPES, INSTRUMENTS AND METHODS OF ASSESSING KNOWLEDGE, SKILLS AND VALUES IN HIGHER EDUCATION

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ABSTRACT

This study aimed to explore the assessment types, instruments and methods of assessing knowledge, skills and values in higher education. The challenge was that lecturers could not comprehend, differentiate and apply assessment types, instruments and methods when assessing. The lecturers indicated that this could be attributed to the lack of assessment policy, strategy, awareness campaigns, workshops, orientation and framework that stipulates the use of assessment types, instruments and methods. The researchers have not come across literature that addressed the aforementioned. Participants were 10 lecturers who were purposively sampled and interviewed from seven Faculties at the University of Technology in South Africa. The question was: “To what extent are the assessment types, instruments and methods used by lectures to assess students’ knowledge, skills and values? A qualitative case study method was used to answer this question. Semi-structured interviews and document analysis were used for collection. Atlas. ti. was used for analysis. It was found that examinations, assignments, tests, presentations and discussions were interpreted by lecturers as assessment types and methods. Assessment types were not explicit in the module descriptors. Lecturers must develop assessments that are relevant, progressive and just in time.

Keywords: types, instruments, methods, knowledge, skills, values.

1. INTRODUCTION

Research revealed that higher education's actual use of assessment types, instruments, and methods is not adequate (Medland, 2016). This inadequacy leads to the gap between the knowledge, skills and values learners need to acquire when learning (Ridgway, McCusker, & Pead, 2004). Knowledge, skills and values are needed to succeed in the increasingly global, technology-infused 21st-century workplace. The challenge in this study was that lecturers struggled to comprehend, differentiate and apply assessment types, instruments and methods (aTIMs) when designing assessments. This was raised by lecturers during the short learning programme on the assessment that is conducted two or three times a year at the study university. It was also evident during the interviews that lecturers could distinguish between the types, instruments and methods of assessment as well as when, where and how to apply them. This was also discovered during the analysis of the module descriptor document. A module descriptor is a document used to describe the module plan for transferability, continuity, regulatory and review purposes. This document contains the name, duration, credits, purpose, unit, assessment strategy and assessment criteria of the module as well as issues relating to assessment Types, instruments and methods used to assess the module. It should also indicate the resources needed for students to succeed. Literature indicated that this challenge poses a gap between what has been learned, taught and assessed. For this reason, the researchers proposed aTIMs framework that could be used by lecturers to ease

the problem. In this regard, Ridgway et al. (2004) mentioned that today’s world of work requires a shift in assessment strategies to better measure the skills and values that are highly expected.

Assessment is the process used to identify, gather and interpret information and evidence against the required competencies to make a judgement about a learner’s KSVs (SAQA, 2014, 2022). The assessment indicates what the institution gives priority to in making judgements (Boud & Falchikov, 2007). These authors further stated that assessment has a powerful backwash effect on all teaching and learning activities. In this study, assessment refers to the process that guides the lecturers on what, when, where and how to assess to make a judgement about KSVs that should be acquired by the learners. On the other hand, assessment guides the learners on what, when, where and how to perform academically. Assessment is a general item, which consists of aTIMs used to gather information about learner KSVs (Allan, 1999; Ekbatani & Pierson, 2000; Lambert & Lines, 2000). The purpose of assessment is to help lecturers identify learners’ strengths and weaknesses and assist both the lecturer and learners to monitor the learning progress that motivates learners to improve their performance (Masters, 2022). Sulistyarini (2022), further indicated that the purpose of assessment in education is to measure learners’ progress and reflect an understanding of each learner. Assessments are divided into three categories relating to types, instruments and methods.

2. aTIMs FRAMEWORK

Figure 1 illustrates the proposed assessment types, instruments and methods (aTIMs) framework intended to assist the lecturers with the comprehension, differentiation and application of aTIMs. When assessing the knowledge, skills and values (KSVs), three (3) assessment methods should be employed all the time without fail. When designing assessment tasks for KSVs, relevant and or discipline-specific assessment instruments should be used. It is the responsibility of the discipline-specific stakeholders to decide on the selection of these instruments. When planning assessments for KSVs, it is critical to decide on or a combination of any of the twelve (12) assessment types to indicate the intention of the assessment to be undertaken.

Figure 1.
The proposed assessment types, instruments and methods (TIMs) framework.



3. RELATED LITERATURE

3.1. Types of assessment

Literature reveals that the assessment types are processes or intentions that must be well-constructed and designed as useful tags when planning assessments (Scriven, 1967). Assessment types include diagnostic, formative, summative, informal, non-formal, formal, assessment as, for and of learning, credit accumulation and transfer, recognition of prior learning as well as integrated assessment (SAQA, 2022). It is critical in this study to define the identified assessment types to provide a clear understanding for those who would wish to use these assessment types when planning paper-based, online, oral or practical assessments.

Diagnostic assessment is an assessment conducted before teaching or training starts (SAQA, 2014, 2017). Formative assessment takes place in the context of classroom interaction (Csapó & Molnár, 2019). Summative assessment is an assessment conducted at the end of sections of learning or the end of a whole learning programme (SAQA, 2014). Informal assessment is any judgements made or feedback given in the course of teaching and learning. Informal assessments may be in written form but are not usually recorded (SAQA, 2017). Non-formal assessment means planned educational interventions that are not intended to lead to awarding of qualifications. (SAQA, 2019, 2022). Formal assessment means the assessment for which assessment processes, tools, and results are recorded towards the achievement of a qualification (SAQA, 2014). Assessment as Learning (AAL) creates reflective learners who have the agency to decide on their next learning step (Dann, 2014). Assessment for Learning (AFL) focuses on monitoring the quality of the learning process and on providing continuous feedback to guide learning and teaching, which can positively influence learning processes (Westbroek, Van Rens, Van den Berg, & Janssen, 2020). Assessment of learning (AOL) is usually conducted at the end of a unit of work (Dann, 2014). The Credit accumulation and transfer (CAT) is an arrangement the diverse features of both credit accumulation and credit transfer are combined to facilitate lifelong learning and access to the workplace (SAQA, 2014, 2019). Recognition of Prior Learning (RPL) is a process through which non-formal, informal and formal learning can be measured and mediated against learning outcomes for recognition within and across different contexts (SAQA, 2019). Integrated assessment indicates how the assessment will be undertaken to determine a learner's applied competence and successful completion of learning in the qualification (SAQA, 2022).

3.2. Assessment instruments

Assessment instruments refer to the nature of the assessment task given to the learner to do (SAQA, 2017). For example, alternative response questions, assertion/reason questions, assignments, aural/oral tests, case studies, completion questions, examinations/tests, extended response questions, grid questions, logbooks, matching questions, multiple response questions, oral questions, personal interviews, practical exercises, demonstrations criteria, portfolios, projects, questionnaires, restricted response questions, role plays, simulations, short answer questions, structured questions and many hundred others Likert, rating, semantic differential scales, self-report inventories, self-esteem inventories, Q-Sort instruments, questionnaires, adjective checklists, etc. (Hopkins, 1998; SAQA, 2017). The selection of these assessment instruments should be relevant to learning and teaching whether is for contact, distance or online mode of delivery. In addition, it is critical that the selection should also be discipline-specific.

3.3. Assessment methods

Assessment methods refer to the activities that a lecturer engages in as they assess the learner's work namely questioning, observation and product assessment (SAQA, 2017).

These methods should lead to direct evidence. Questioning refers to asking questions orally, writing employing paper-based or online. These questions are answered orally, on paper or using an electronic device. Observation refers to observing the learner while he/she is carrying out tasks, real or simulated. Product assessment refers to assessing something the learner has produced after the task has been completed (SAQA, 2017). It is critical that methods of assessment should be translated into teaching and learning methods that could also be applied in an online environment to bridge the gap between learning, teaching and assessment. In doing so, it would be conducive for lecturers to assess KSVs in each of the aTIMs and avoid assessing the knowledge/cognitive domain only.

3.4. Assessment of knowledge

Knowledge is a set of organised statements of facts or ideas, presenting a reasoned judgement or an experimental result, which is transmitted to others through some communication medium in some systematic form (Maton, 2014). The assessment of knowledge involves the acquisition of intellect. The knowledge/cognitive domain is one of the three domains (skills/psychomotor and values/affective) that are used in assessing. Literature shows that this domain gets the most attention than others and therefore creates problems between graduates and employers (Sulistyarini, 2022; Krathwohl, 2002). There are normally six major categories, which are in a hierarchy, starting from the simplest intellect to the most complex. The researchers, therefore, argue that the lecturers have to intentionally make the effort to contextualise these steps from the cognitive domain in their respective disciplines to address insufficiencies in the assessment of this area (Chweu, Mji, & Simelane-Mnisi, 2021).

3.5. Assessment of skills

The skills, commonly referred to as manual or physical body skills are normally developed in an intended discipline-specific setting (Baharom, et al., 2016). In such settings, learners can develop and practice both their practical and hands-on skills. It is important to be able to measure and assess these skills. Therefore, the various aTIMs involved in implementing the skills domain must be discussed in detail to ensure that they are effective (Baharom, et al., 2016). Assessing the skills Includes assessment of the physical procedures in execution. Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures, or most complex (Simpson, 1966; Dave, 1970; Harrow, 1972). There are normally seven major categories listed from the simplest to the most complex movement, coordination and use of the motor-skill areas. The researchers contend that to remedy deficiencies in the assessment of this area, lecturers should deliberately attempt to contextualise these steps from the skills domain in their respective fields.

3.6. Assessment of values

Values are as important and lasting beliefs or ideals shared by the members of a culture or stakeholders about what is good or bad and desirable or undesirable and have a major influence on a person's behaviour and attitude as well as serve as broad guidelines in all situations (Popham, 1999). In contrast to intellect and performance assessment, the assessment of values does not measure the content that learners know or the skills they can perform, what it measures instead are learners' dispositions (Popham, 1999). The challenge presented by working with, and in, the values domain must not be ignored simply because it presents difficulties and is more contentious than the intellect or performance domains (Sumsion & Goodfellow, 2004). The skills and values domains are the least applied and least understood of all of Bloom's taxonomy trilogy (Sideeg, 2016). This sentiment is observed in the studies that were conducted in New Zealand, Canada & Poland that showed that the assessment of values was not organised and that others claim to

have integrated them into the teaching and learning programmes, however, none could provide details on the application of assessment of values in the assessment practice (Ananiadou & Claro, 2009). If the teaching purpose is to change values rather than to transmit information, then the instruction should be structured to progress through the levels of the values domain (Micklich, 2012). The researchers concluded that to address deficiencies in the assessment of this area, lecturers should consciously try to contextualise these steps from the values domain in their respective fields i.e., discipline-specific.

4. METHODS

The question posed in this study was: To what extent are the assessment types, instruments and methods used by lectures in various disciplines to assess students' knowledge, skills and values? To answer this question a qualitative case study was used to explore the assessment of aTIMs for assessing KSVs in higher education to provide the aTIMs framework for use by lecturers. The qualitative case study provides a tool for researchers to study complex phenomena within their context (Creswell, 2009) Data were collected using semi-structured interviews and document analysis (module descriptors). The semi-structured interview is conducted using interview questions that predetermine and incorporates open-ended questions so that the lecturers could provide in-depth responses (Guest, Namey, & Mitchell, 2013). The interview questions included three questions such as which assessment types do you use to assess KSVs? Which assessment instruments do you use to assess KSVs? Which assessment methods do you use to assess KSVs? Document analysis is a type of qualitative research in which documents were reviewed to assess an appraisal theme (Frey, 2018).

The document analysed in this study comprised 14 module descriptors from the 7 Faculties of the study university. A module descriptor is a document used to describe the module plan for transferability, continuity, regulatory and review purposes. This document contains the name, duration, credits, purpose, unit, assessment strategy and assessment criteria of the module as well as issues relating to assessment types, instruments and methods used to assess the module. A module descriptor also indicates the resources to be used. Data were analysed using Saldaña's (2021) thematic analysis approach in Atlas. ti. The researchers uploaded 5 interview documents relating to assessment practice, assessment of KSVs and 14 module descriptors. In this case, 103 codes were created, and the computer-generated 370 quotations. From these codes, three themes relating to assessment types, instruments and methods were created. Ethics approval was received from the study university to conduct this research.

4.1. Participants

Participants in this study were 10 lecturers who were purposively sampled and interviewed from seven Faculties in various disciplines at the University of Technology in South Africa. These participants all attended the short learning programme on assessment at the study university. Purposeful sampling wants to discover, understand and gain insight into the phenomena and therefore researchers must select a sample from which the most can be learned (Creswell, 2009). The lecturers were selected from the seven faculties at the study university. These lectures comprised seven females and three males.

4.2. Validity and reliability

This study employed a triangulation technique to validate the findings. It draws its findings from the literature, document analyses and interviews. (Creswell, 2009; Tashakkori & Teddlie, 1998). It may be argued that the purposes of assessment found in this study

corroborate with the literature as well as contributes to the improvement of assessment practices in higher education.

5. FINDINGS AND DISCUSSION

The findings are presented according to themes relating to assessment types, instruments and methods for assessing KSVs.

5.1. Assessment types for assessing KSVs

The findings revealed that lecturers were interpreting types of assessment as tests, examinations, assignments, class tests, presentations, online assessments and discussions. Lecturers indicated the *tests and group discussions*. It was found that most lecturers were reluctant to indicate the assessment they used for assessing the skills because they were not aware that this was expected of them. However, L7, stated that *he usually employs practical assessment, in which the learner sits next to the computer and receives a question paper*. It was also found that none of the lecturers responded to assessing the values. The findings also showed that none of the 14 module descriptors mentioned or differentiated assessment types for measuring KSVs. It was found that assessment types were not explicit in the module descriptors. It may be argued in this study that most of the lecturers used the assessment types mostly to assess knowledge and ignore the skill and values. In this case, Hoque, Chowdhury, Hossen, & Arjumand (2021) emphasised that lecturers should select the assessment types that will support teaching strategies to enhance knowledge (cognitive), skills (psychomotor), and values (affective). It is critical that lecturers used various assessment types also assess skills and values so that they could be able to align what they teach with what is required in the workplace. This in turn will produce future-ready graduates who are competent. The researchers contend that assessment types are time-oriented processes that are meant to direct and inform the lecturer regarding how often and when to assess learning. These types of assessments indicated in figure 1.1, can be used to determine the intent of the lecturer's assessment design and be used to prepare assessments of KSVs.

5.2. Assessment instruments for assessing KSVs

The findings indicated that lecturers used different assessment instruments to assess KSVs, relating to tests, assignments, homework, question papers, online assessments/tools, and rubrics to mark assessments. In terms of the assessment instruments for assessing knowledge, L1 indicated that he used *online assessments*. L2,3,4,6,7,8 9 indicated *tests and assignments*. L5, said *group discussions* while L10 said *rubrics*. Regarding the assessment instrument for assessing the skills, L1 stated that they do not focus on the skills since they do not always have the programs that would allow them to prove that learners have learned the skill. L3 said that *she enjoys practical case studies and presentations*, while L5 and L7 said that they *favour group discussions*. It was also found that all lecturers were unable to provide answers regarding the assessment instrument for assessing the values. However, some indicated that they would be willing to utilise one if one were made available for them. It was found that from 14 module descriptors, the majority did not provide assessment instruments, except for module descriptor 7 from Faculty D, which revealed *exams, assignments, class activities, and semester examinations*. It was also found that this module descriptor made use of assessment tools such as *checklists, rubrics, and notes*. However, no differentiation was made in the module descriptor as to whether the instruments or tools offered were for measuring SKVs. It may be observed in this study that lecturers were using various assessment instruments to test knowledge mostly. It was clear that lecturers struggled to apply assessment instruments that would assist them to ask skills and values. In this case, lecturers were unable to respond to how values were assessed. However, some indicated that they

would be willing to explore the instrument that helps in assessing values. In this regard, SAQA (2017) highlighted that assessment instruments should be crucial to understand and applied adequately as they relate to the nature of the assessment task given to the learner. Furthermore, Medland (2016), argued that the assessment of skills and values should be considered and given more priority than they presently receive. The researchers argue that lecturers should carefully select and makes sense of the instrument indicated in figure 1.1 to figure out which ones are relevant to use for either knowledge, skills or values in the relevant discipline. Furthermore, lecturers should make use of assessment instruments that promote authenticity and real-life experience to harness the skills and values of the graduates in the degree they are pursuing. In this case, the appropriate use of assessment instruments would ensure that future graduates are equipped with 21st-century skills.

5.3. Assessment methods for assessing KSVs

It was found in this study that lecturers made use of different assessment methods relating to tests, online assessments, group discussions, etc. Concerning assessing knowledge, the findings revealed that all lecturers used *examinations* and *assignments*. L8 revealed the use of *examinations*, *assignments* and *practical* methods. Regarding the methods for assessing skills, L1 was adamant that he *does not assess skills but provided the learners with a theory as the programs did not allow the learners to acquire the skills*. Meanwhile, L4 claimed that *the assessment method involved tests and case studies*. The findings revealed that assessment methods for assessing KSVs were described in 14 modules. It was discovered that module descriptor 7, divided assessment methods into formative and summative assessments. Formative assessments consisted of one-on-one crit sessions, group discussions, informal class discussions, oral presentations, assignments and tutorial exercises, self-assessment, oral questions e-test based on an essay, multiple-choice, matching, and short type of questions. Summative assignments involved practical assessment tests and examinations, short online tests, 3-hour examination paper-based on essays, multiple-choice, matching and short types of questions. Furthermore, module descriptor 7 revealed assessment methods as questioning/product, product and questioning/product. It may be argued that module descriptor 7 described types of assessment as assessment methods. This shows the misunderstanding of the use of assessment types and methods in designing module descriptors. SAQA (2017) argues that questioning, observing, and product assessment are the methods that lecturers should use when assessing a learner as a direct primary source of evidence. The findings revealed that all lecturers indicated that their assessment methods were not assessing values. Radwan (2022) foresaw the demand for assessments that place a strong emphasis on the values domain to provide a valid indicator of the effectiveness of learning and to be used in practical assessment procedures. Ridgway et al. (2004) also noted the need for a change in assessment practice to better capture the values and skills that are highly demanded in today's workplace. To satisfy industrial demands, the assessment of values should be considered in all assessment methods and exhibited in the process for questioning, observation, and product assessment. This implies that the education sector would have to adjust the manner they prepare graduates so that they could be qualified for future employment trends. In this case, the industry would believe that fresh graduates are adequately prepared for the modern workplace.

6. CONCLUSION

In an attempt to provide a solution to the challenge identified in this study of lecturers grappling to comprehend, differentiate and apply aTIMs when designing assessments at the study university, it may be seen that assessing KSVs is essential. This is because most of the lecturers at the study university in South Africa used the assessment types mostly to assess

knowledge and ignore the skill and values. Lecturers were using various assessment instruments to test knowledge more than assessing skills and values. In terms of assessment methods, it may be observed from this study that lecturers confused the use of assessment types and methods and did not assess the values. It is for these reasons that this study proposed aTIMs framework. Based on the study results in this chapter, it can be concluded that in ensuring the administration of assessment practice, lecturers should be guided by the proposed aTIMs framework to select the aTIMs. If all these elements are included in the assessment processes, they have the potential to improve the assessment quality standards that are expected by all lecturers at the study university in South Africa.

It is essential that lecturers develop assessments that are relevant and just in time. Lecturers should appropriately select the relevant instrument that assesses what it intended to assess according to what was planned and communicated. It is critical that three assessment methods (questioning, observation and product assessment) provided in the aTIMs framework are utilised in the assessments to close the gap between learning, teaching and assessment in contact, distance or online mode of delivery. Assessment tasks should present sections indicating assessment domains (KSVs) to support the lecturers in demonstrating their assessment goals. A further study could be conducted to investigate the lecturers' perspectives on the aTIMs using the mixed method.

7. RECOMMENDATIONS

It is critical that lecturers develop assessments that are relevant, progressive and just in time. Research is required, to test the practicability of the proposed aTIMs framework for assessing KSVs with a larger sample. Discipline-specific research could be conducted relating to the research question in this chapter. A study is needed on how to offer workshops to lecturers on aTIMs and KSV to see how practices and perspectives evolve through this process. A study on learning more about lecturers' reasons for limiting assessment practices is required. Finally, it is critical to investigate the application of assessment methods to learning, teaching and assessment.

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