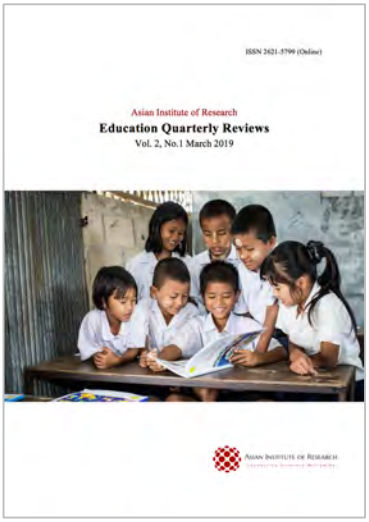

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Designing Assessment for Technical Writing and Academic Literacy: Structuring and Wording Questions using Bloom's Taxonomy: A Case Study

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Abstract
This study investigated how lecturers of Technical Writing and Academic Literacy assessed their students at a science and technology university in Botswana. The data for the study were obtained from the past test, assignment and examination papers administered to year one, year two and year three students enrolled in various programmes under the College of Sciences (including the Department of Information Communication and Technology), and the College of Engineering and Technology at the said university. In addition, a focus group of six teaching staff was interviewed to triangulate the data and to get in-depth information on how they set the assessment pieces. The data obtained from the assessment pieces were analysed qualitatively to determine the nature and the level of questions used. The data from the interview held with the teaching staff were also analysed qualitatively to determine what informed the way they set questions. The results from the study showed that the students were mainly tested for knowledge application; and many of the questions were from the low-level category as per Bloom's Taxonomy (1956) revised for the 21st Century Learners (The University of Utah's Centre for Teaching and Learning Excellence, 2001). The results also showed that lecturers did not take into account the level at which the students were studying. University students should be required to analyse, synthesise and evaluate information before them in order to demonstrate deeper understanding. It is recommended that lecturers should apply Bloom's Taxonomy when setting assessment tasks, taking into consideration the level at which the students were studying. It is hoped that the results from the study will sensitise the teaching staff at this university and other tertiary institutions on the importance of applying Bloom's Taxonomy when assessing their students.

Keywords: Assessment, Evaluation, Academic Literacy, Technical Writing, Bloom's Taxonomy, Tertiary

1.0 Introduction

Assessment is an interactive process between students and academic staff members to inform the latter on how well their students are learning what they are teaching them (Angelo and Cross, 1993; Rust et al. (2003). It

focuses on three main areas - learning, teaching, and outcomes – to provide information that will assist to improve each one of them (Rust et al., 2003). Assessment is classified as either formative or summative (Harvard Graduate School of Education‘s Teaching and Learning Laboratory (TLL), 2016; The University of Utah's Centre for Teaching and Learning Excellence, 2001). It is done in three stages, namely; initial assessment, mid-way assessment and terminal-stage assessment (Dawe, 2010). The initial assessment is done by assessing students before the instruction to get a baseline of pre-existing Knowledge (Gomez, 2018). This could be in the form of a quiz or a short write-up to inform the lecturer about what a student already knows Lewis, 2016). The results from this type of assessment help to inform the lecturer on what approach to use to maximize learning. The second stage assessment is the mid-way assessment, normally administered while learning is on-going. It is used to determine the effectiveness of teaching and if learning is taking place; that is, what students are learning, how they are learning and if there is need to adjust teaching. An example of a mid-way assessment is a test, a quiz or an assignment. These first two forms of assessment – initial and mid-way assessment – are categorized as formative assessment. The third category is the terminal-stage assessment used to determine the learning outcomes; it is classified as summative (Dawe, 2019). It is normally done at the end of the year or at the end of the instruction; such as at the end of a semester. A suitable example here is an examination. A final examination usually tests the entire syllabus followed for a particular course. Its results would normally indicate if learning of new knowledge took place in a course (TLL, 2016). Depending on the level of education, an examination can be used as a single indicator of learning effectiveness or ineffectiveness. A summative assessment can also indicate whether the course or programme needs to be revised or not. An examination is usually used at primary and secondary school levels as a single summative assessment. However, in a university set up, examination results and student's continuous assessment determine whether a student progresses to the next level or not. They both contribute to the final grade a student obtains. Hence this paper discusses how teachers of Technical Writing and Academic Literacy set the different types of assessment; namely, tests, assignments, and examinations.

2.0 Study Background

This study was motivated by a workshop on assessment and evaluation that the Department of Technical Writing and Academic Literacy (now Department of Academic Literacy and Social Sciences) organised for its staff members and the staff from the Library services. The purpose of the workshop was for the teaching staff of Technical Writing and Academic Literacy course (TWAL) to share their expertise on how to assess and evaluate students' performance with their colleagues from the Library. The Department found this necessary because the Library staff are involved in the teaching, assessment, and evaluation of a module on Information and Library Skills (ILS) to first-year students, which is part of the TWAL course.

The Library staff teach Information and Library Skills (ILS) module, which teaches students how to use resources in the library effectively. The module is meant to assist the students to understand what information literacy is to them as students. It involves coaching them on how to conduct research effectively using different sources of data, such as books, the world wide web, journals, to name but a few (Department of TWAL Course Guide for Year 2, 2015). The module exposes students to the university library catalogue – Online Public Access Catalogue (OPAC). It helps them to understand how it is organized, how to locate resources from databases and the library’s website. The students are exposed to different types of searching strategies and web search tools, such as Boolean Operators and Periodical Indexes.

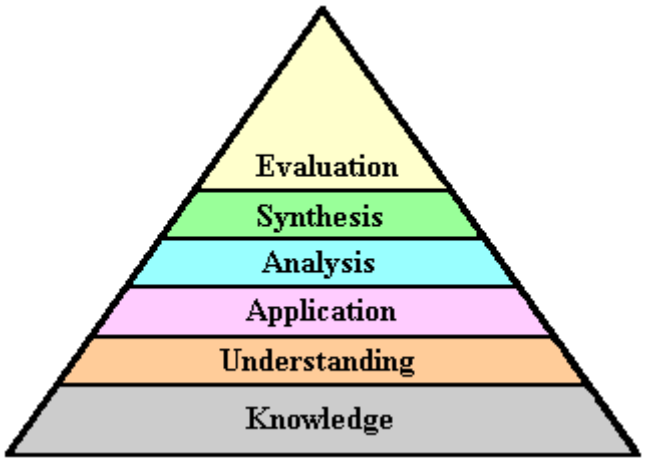
It is also in this module that students are taught about the importance of Academic Integrity. This involves ethical use of sources, copyright and intellectual property issues, how to avoid plagiarism when writing academic work. This is done by acknowledging and citing sources correctly, using the recommended referencing styles in Engineering, Science, and Information Communication Technology (ICT). The module also creates awareness among students about the types, formats, and uses of information sources. This is done by classifying information into factual vs. analytical, subjective vs. objective, current vs. historical, scholarly vs. popular and primary vs. secondary. Thereafter, the students are taught how to evaluate information sources for quality. The evaluation criteria are: currency – how recent is the information source, relevance – is the information relevant to the topic being researched, authority – is the authority of the information source credible, accuracy – how accurate is the information on the topic, and purpose – what is the use of the information being researched.

The workshop was attended by a teaching staff of TWAL and the library staff. The TWAL teaching staff are teachers by profession who have a teaching qualification in addition to their main degrees (Masters or Ph.D.). Therefore, while all TWAL teaching staff had teaching qualifications and experiences, this was not the case with the library staff. They taught the ILS module as experts but were not trained in designing and grading assessment. The workshop was, therefore, seen as a bridging gap for this deficiency. Furthermore, the workshop was also seen as a platform for the TWAL teaching staff to share among themselves their classroom experiences so as to find out whether the assessment tasks they give their students are appropriate for tertiary level teaching and learning. The workshop was also an opportunity to standardise the evaluation of students' assessment as part of quality assurance in their course. The authors of this paper presented on "Structuring and Wording of Questions Using Bloom's Taxonomy when Designing an Assessment Tool" such as a test, assignment or an examination. From the workshop, it emerged that teaching staff did not necessarily take Bloom's Taxonomy into account when setting different types of assessment pieces. Consequently, the authors decided to conduct an in-depth study on the same with the view to corroborate or refute results from their initial study.

Theoretical Framework

The study derived its theoretical framework from Bloom's Taxonomy (Ziff, 2001; Anderson & Krathwohl, 2001), named after its founder Dr. Benjamin Bloom who was an educational psychologist. The theory provides a structure that addresses students' varied needs and abilities (Ziff,2001). It was created to promote higher forms of thinking in education, such as analysing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts. According to this model, both lower-functioning students and higher-functioning students can respond to different sets of questions and activities on the same topic. This is because the model has educational objectives that are structured in a hierarchical order of six levels. To simplify the hierarchy, corresponding verbs are used at each level to assist the students to understand what is expected of them (See Table 1.0 below). Level One, which is the lowest level, requires the student to know isolated information. Level Two is the level of comprehension; it requires making connections to demonstrate understanding. Level three is the application level and requires using the knowledge in a variety of ways. Level Four involves analysis of information by comparing and contrasting. Level Five deals with the synthesis of information; and students are required to develop new information. The last level (Level Six) is the highest and requires an evaluation of information by expressing personal values. This hierarchical order is reproduced diagrammatically in Figure 1 below. The corresponding verbs used at each level of Bloom's Taxonomy are also presented in Table 1.0 below.

Figure 1: Bloom's Taxonomy



Obtained from: Lewis, B. (2016)

Table 1.0 Verbs used to formulate questions at each level of Bloom's Taxonomy.

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Know	Discuss	Display	Compare	Develop	Infer
List	Describe	Simulate	Contrast	Construct	Conclude
Recall	Explain	Compute	Investigate	Create	Recommend
Define	Review	Demonstrate	Analyse	Role-play	Consider
Memorise	Report	Apply	Examine	Compose	Evaluate

Obtained from: Ziff, R. M. 2001.

The researchers found this theory appropriate for this paper because it addresses assessment which involves the application of one's mind rather than mere recall of facts. By assessing the assessment tasks that students were given against Bloom's Taxonomy, the researchers would find out if teaching staff took into account the students' level of study when setting assessment pieces. That is, do the type of questions they ask to differentiate between first, second or third-year students? Do the assessment pieces take into cognisance the fact that the students were studying at a tertiary institution where higher order thinking is required?

3.0 Methodology

The data for the study were the various assessments pieces previously administered to the students in both colleges from 2014 to 2017. The data were collected by selecting randomly test, assignment and examination papers. For each assessment piece, two samples were selected at each level of study in each college. The sample comprised of 12 assessment pieces for the College of Science, 12 assessment pieces for ICT and 18 assessment pieces for the College of Engineering. Thus a total of 42 assessment pieces were used in the study, and the distribution is shown below in Table 2.0:

Table 2.0: Number of Assessment pieces sampled for each college

	College of Sciences & ICT				College of Engineering and Technology		
Assessment	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 3
Test	2	2	2	2	2	2	2
Assignment	2	2	2	2	2	2	2
Examination	2	2	2	2	2	2	2
Total	6	6	6	6	6	6	6
Total for each College	24				18		

In order to corroborate the results from the analysis of the questions in the assessment pieces, a questionnaire was administered to six teaching staff members (one Senior Lecturer and five Teaching Instructors) out of a total of nine. In BIUST, a Lecturer is a Ph.D. holder, and a Teaching Instructor is a holder of a Master's degree. The in-depth interview was meant to probe further what informed the way they set questions for assessment. The researchers would have liked to include all teaching staff in the study; however, this was not possible because two of them (one senior lecturer and one teaching instructor) are the researchers. The seventh Teaching Instructor was not available for an interview. Furthermore, the four Teaching Assistants were not included in the study since they are not categorised as teaching staff. The interview was also meant to find out from the interviewees the extent to which they applied Bloom's Taxonomy when setting assessment pieces.

In order to address the topic of the study, the following research questions were used:

1. Do TWAL teaching staff take into account Bloom’s Taxonomy when designing an assessment?
2. Do the assessment items reflect the level of students being assessed?
3. What can be done to improve the assessment of TWAL?

4.0 Data Analysis

The data from the assessment pieces and the data obtained from the teaching staff's responses were analysed qualitatively. For the assessment pieces, the questions were analysed to determine which verbs were used in asking the question. Then the verbs were classified according to the hierarchy on Bloom's Taxonomy to determine the level of questions used. The analysed data are presented below in Table 3.0 for the COS including ICT Department and Table 4.0 for CET:

Table 3.0: Frequency of Bloom's Levels of Taxonomy (BLT) used in Assessment papers for Sciences & ICT

College of Sciences					ICT Department			
Assessment	Year 1	BLT	Year 2	BLT	Year 1	BLT	Year 2	BLT
Test	2	1,2	2	3,5,	2	1,2,3	2	3,5
Assignment	2	1,2,5	2	3,5,	2	1,2,3	2	1,2
Examination	2	1,2,3	2	1,2,3,5,	2	1,2,3	2	1,2,5
Total	6		6		6			

Table 3.1 Summary of Bloom's Taxonomy applied in assessing Sciences and ICT students.

Bloom's Taxonomy	Frequency of use		
	Year 1	Year 2	Total
Level 1 (Knowledge recall)	6	3	9
Level 2 (Comprehension)	6	3	9
Level 3 (Application)	4	3	7
Level 4 (Analysis)	0	0	0
Level 5 (Synthesis)	1	5	6
Level 6 (Evaluation)	0	0	0

Table 4.0: Frequency of Bloom's Levels of Taxonomy used in Assessment papers for the College of Engineering and Technology

College of Engineering and Technology						
Assessment	Year 1	Levels on Bloom's	Year 2	Levels on Bloom's	Year 3	Levels on Bloom's
Test	2	1,2,3,4,6	2	2,	2	1 & 2, 5
Assignment	2	1,2,4,6	2	1 & 2	2	2 & 5
Examination	2	1,2,4,5	2	1, 2, 3,5	2	2, 5, 6,
Total	6		6		6	

Table 4.1 Summary of Bloom's Taxonomy applied in assessing the College of Engineering and Technology students

Bloom's Taxonomy		Frequency of use		
	Year 1	Year 2	Year 3	Total
Level 1 (Knowledge recall)	3	2	1	6
Level 2 (Comprehension)	3	3	3	9
Level 3 (Application)	1	1	0	2
Level 4 (Analysis)	3	0	0	3
Level 5 (Synthesis)	1	1	3	5
Level 6 (Evaluation)	2	0	1	3

In analysing the data obtained through the questionnaire administered to the teaching staff, the data were classified according to the themes of the research questions. This was to establish if the results confirm or refute results from the assessment pieces.

5.0 Results discussion

The results of the study were discussed under the three research questions; and the first one was: Do TWAL teaching staff take into account Bloom's Taxonomy when designing an assessment? The results from the analysis of the question papers show that the majority of the questions in the assessment pieces set for the College of Sciences' students, including the ICT Department are at Levels one and two (9 each), which test knowledge recall and comprehension of information respectively. This is followed by Level three (7), which tests the application of knowledge; and Level 5 (6), which tests the synthesis of information (See Table 3.1 above). According to the results, it appears the teaching staff test elementary information which does not require much application of one's mind. The assessment in the COS and ICT Department seems to be an inverted Bloom's Taxonomy. At the university level, it is expected that the majority of the assessment items should be from Level Three - knowledge application; Level Four (information analysis), Level Five (information synthesis) and Level Six (information evaluation). In Knowledge application, students should be able to use acquired knowledge to solve problems. Therefore, questions should be asked such that students will be able to apply what they have been taught to identify connections and relationships, and give meanings. For information analysis, students are expected to break down information so as to identify relationships, motivate them and derive meaning from such relationships with supported evidence. In Information synthesis, students are expected to apply their minds at the information at their disposal to build a coherent idea. Then in information evaluation, students are expected to review the information presented to them with the view to scrutinising its validity and quality (Anderson and Krathwohl, 2001). However, the results show that, in this college, none of the questions fell under the category of information analysis and information evaluation.

Concerning the College of Engineering and Technology, the results show that the questions were spread throughout all the six levels of Bloom's Taxonomy, but not according to Bloom's order. The majority of the questions (9) tested understanding of information (Level Two), followed by questions at Level One that tested knowledge recall (6). The third highest was information synthesis (5) at Level five. Next were Level four and leveled six – (3 each) and the least questions used were those that tested knowledge application (2) at Level three (See Table 4.1 above). It appears the teaching staff who taught students in CET were more aware of Bloom's Taxonomy than those teaching TWAL to COS and ICT students.

The results above show that teaching staff does not seem to pay much attention to Bloom's Taxonomy when they set questions to assess their students. For instance, in the College of Sciences and ICT Department, the questions are spread out in four levels only –information recall, comprehension, application, and synthesis. There were no questions under information analysis and evaluation. Similarly, in the College of Engineering and Technology, more questions were concentrated at Levels One and Two (15) which deal with information recall and comprehension. Then they were followed by Level 5 (Information synthesis) with five questions. The next was Levels Four and Six with three questions each. The Last level was Level Three (knowledge application) with the least number of questions (2). However, it should be noted that in the latter College, even though more questions were concentrated at Levels One and Two (15), to some extent, teaching staff seemed to be mindful of Bloom's Taxonomy in that the rest of the questions (13) were spread throughout the remaining four levels. Therefore, the least application of Bloom's Taxonomy was more apparent in the College of Sciences and ICT Department than in the College of Engineering and Technology.

Concerning the questionnaire responses from the teaching staff, the results showed that all six teaching staff said that they were aware of Bloom’s Taxonomy, and they applied it. For instance, whenever they set an assessment piece, they move from the simple to the complex questions; or from the known to the unknown, following Bloom’s Taxonomy. Furthermore, they all use direction words such as analyse, outline, differentiate compare, explain, elaborate, list, describe, discuss when setting questions– which reflect the level of a question’s difficulty

and complexity according to Bloom's Taxonomy. They also used the direction words to reflect the intended outcome. The chosen direction words depended on the nature of the assessment item and the level of the students being assessed. However, their responses did not corroborate the information from the assessment questions. Bloom's Taxonomy was partially applied as the majority of the questions were spread between Levels One and Three.

This brings us to the second research question: Do the assessment items reflect the level of students being assessed? In response to this question, the results from analysis of the assessment pieces show that in the COS and ICT, to some extent, the teachers took into account the level of students being assessed. That is, whether they are in year One or year Two because for the former (Year One) the majority of the questions were spread between the first three levels of knowledge recall, comprehension, and application (16 out of 17). However, in Year Two, most of the questions (5) were at Level Five (information synthesis) even though nine were spread in the first three levels, with three at each level. Notwithstanding the above, one would have expected to find more questions at Level Four and Level Six for Second-year students. Unfortunately, this was not the case. Thus it can be deduced that teaching staff did not sufficiently take into account the level of study when setting assessment pieces in the COS and the ICT Department.

Concerning the CET, the results show that in year One, teaching staff took into account the level of study because there were more questions (10) in the first four levels of Bloom's Taxonomy than in the last two levels (3). This implies that teaching staff was mindful that in the first year of study, students could not handle well more complex questions that required information synthesis and evaluation. However, in the second year of study, the results show that teachers did not seem to pay much attention to the students' level of study. This is because six out of seven questions were from Level One to Level Three; only one question was at Level Five. There were no questions that could be categorised under Level Four (analysis) and Level Six (Evaluation). If they paid attention to students' level of study, there would have been more questions from Level Three to Level Six. In fact, there was only one question under Level Five (synthesis), while Levels Four and Six had no questions. Ideally, in the second year of study, there should have been more questions in the middle of Bloom's Taxonomy, and perhaps a few more questions in the latter levels of the Taxonomy (Ziff, 2001). Furthermore, in the third year of study, the results show that four out of eight questions were at Levels One and Two and another four at Levels Five and Six. There were no questions that could be categorised under Levels Three and Four. Therefore, the results show that in setting questions, the level of study of the students was not taken into account because the scenarios for years Two and Three were almost identical. Assessment items fell under the first two levels and the last two levels on Bloom's Taxonomy.

Looking at the information for both colleges, one can then deduce that in setting the assessment pieces, teachers did not fully take into account the students' level of study. Hence concentration of questions at the first three levels for COS, including the ICT Department and at the first two levels for CET. However, looking at the spread of the total number of questions under each college, it is observed that the CET had questions at all six levels while COS and ICT Department used only four levels and had no questions at Levels Four and Six. The reason for this slight difference could be that in the CET, the TWAL course is taught up to year three. In year three, students are introduced to basic research skills, and then they are given a research project, which demands analysis, synthesis, and evaluation more than what they covered in the first two years (Anderson, and Krathwohl, 2001). However, in the COS and ICT Department, the course is only taught in years One and Two.

Concerning the teachers' questionnaire responses, the results showed that five out of six teachers indicated that the assessment items reflected the level of students being assessed because:

- The assessment was based on material studied in a particular year,
- They try as much as possible to match assessment with the requirements of the university,
- The teaching was based on departmental-approved course outlines,
- Assessment addressed course objectives,
- When setting questions, they moved from the simple to the complex and from the least difficult to the more difficult - following Bloom's taxonomy, and

- They followed previous examination paper format.

The assumption here is that assessment pieces for year Two should be more difficult than those for year One Miller and Leskes, 2005). However, from the analysis of the question papers, there was not much difference between the levels of difficulty of questions between the two years. The comments by the sixth teacher corroborated the observation made above. He differed with the other teachers and said some items in the assessment pieces did not match the year of study. Therefore, the assessment pieces did not really reflect the level of study because there was not much difference in the level of questions asked in year One and in Year Two. Notwithstanding the above, a visible difference was noted in the questions contained in the examinations for Year Three CET students which were mainly under categories Two, Five and Six on Bloom's Taxonomy. Concerning following the format of a previous examination, a setback for this one is that some previous question papers, such as the ones used in this study, did not appear to have taken Bloom's taxonomy into account. Therefore, by following them, the examiner will also be ignoring Bloom's Taxonomy.

This brings us to the third research question: What can be done to improve the assessment of TWAL? This question is answered by looking at the distribution of questions by level of study. The results showed that for both colleges, irrespective of the level of study, the majority of the questions for tests fell under Levels one and two. The explanation here could be that, for tests, students were required to recall information and to demonstrate an understanding of the information provided due to limited time normally accorded a test (50 minutes) (Kaufmann, 2011). Concerning assignments, the questions mainly tested knowledge application for the two colleges, including the ICT Department. In assignments, students were expected to apply new knowledge they had acquired (Level 3); they required more time – on the average two weeks (Newcastle, University, 2012). Such questions could be report-writing or portfolio production, and students were also free to consult various sources. However, for the CET, assignment questions also fell under Levels Four to Six; and they required analysis, synthesis, and evaluation. This shows that the level of complexity for assignment questions for CET students was higher than that for the COS and ICT students.

Concerning examination questions, the results show that for the COS and the ICT Department, there was not much difference in levels of questions asked in Year One and Year Two. For instance, in both years, questions were categorised under Levels One to Three, which required information recall, comprehension, and application. In addition, in year Two of both COS and ICT Department, some questions required information synthesis. Concerning the CET, the scenario for year One and year Two were almost similar in that examination questions was spread between Level One and Level Five. However, in Year Three, the scenario was rather different since the questions were spread between Level Two, then Five and Six. These levels show that the examinations required the students to demonstrate that they understood the information, and could synthesise and evaluate it. This according to Bloom is higher order thinking (Ziff, 2001). It can be noted from the results that there was more spread of questions throughout Bloom's Taxonomy in the examinations administered to CET students than to examinations administered to COS and ICT students. Examination questions needed to demonstrate different levels of difficulty since it is the final assessment for students (Dawe, 2019; Miller and Leskes, 2005). The logic behind this form of setting an assessment is that if all questions fell under Levels One and Two only, the examination may be considered too simple. Therefore, it would not reliably assess the students. Similarly, if an examination has questions that fall under Level five only or even level four or six, it may unfairly discriminate against students who were considered weak (Lewis, 2016). Such an assessment piece lacks validity. An examination which is a mix of all levels of Bloom's Taxonomy caters for students of all levels (Angelo and Cross, 1993). Students who may not score good marks under questions from Levels four to six may be advantaged by questions that are at Levels one to three.

It could, however, be reasoned that each type of assessment (test, assignment, and examination) had questions from Levels One and Two because the TWAL course was fairly new to the students (Department of Technical Writing and Academic Literacy, 2015). When students enter university, they only have a general English background; but in the university, they are expected to learn how to write specifically for their disciplines. Hence certain concepts may be new, and teachers need to test if students have internalised them. Furthermore, the

assessment pieces for the CET appear to be spread out throughout the six levels of Bloom's Taxonomy because, by year three, students are expected to have internalised information recall, comprehension, and application. They are, therefore, introduced to basic research – which is an entirely new course. While there may be questions which require new knowledge recall, comprehension, and application, questions should also assess analysis, synthesis, and evaluation. A major assessment such as carrying out practical research and writing its report requires knowledge application, information analysis and synthesis (for example, statistical analysis of research data), as well as evaluation of information, gathered – when discussing findings, coming up with conclusions and recommendations. Therefore, to improve the assessment of TWAL(research question three), each assessment type should clearly distinguish between each level of study. It should also take cognisance of the fact that students are of differing levels of ability; therefore an assessment piece should not unfairly discriminate against any student.
Using the teachers' responses to answer the third research question, the question was addressed at three levels. First, the strengths of the current assessment of TWAL course, second, its weaknesses, and third, what can be done to improve how TWAL courses are assessed.

The teachers indicated a number of strengths in the way the TWAL course is assessed. Some of the strengths are that there is more emphasis on knowledge application than on requiring students to recall information (Behniwaal, 2016). Assessment is based on students' capability; that is the level of study is considered when setting an assessment piece. Thus an assessment's level of difficulty or complexity is determined by what level of study the students are at. Furthermore, assessment is set in teams; for instance, teaching staff for first-year students in each college set assessment pieces together, irrespective of whether it is a test, or assignment or an examination. This practice is the same at each year of study.

As a result, all students in each year take the same assessment, irrespective of who teaches them and what programme they follow in their college. For example, in the CET, all first-year students are assessed through two tests and an assignment as their continuous assessment; all second-year students are assessed through a test, an individual assignment, and a group assignment as continuous assessment. In the third year, all students are assessed through a test, group research-based project, and individual presentations. In addition, there is one examination paper for each level of study at the end of each semester. This ensures uniformity and standardization. Because students are assessed through the same assessment pieces in each year, there is validity in the outcome of the assessment (Anderson, and Krathwohl,2001). This style of assessment reflects the performance of students in that year in each college. Furthermore, the Department has an internal examination moderation system whereby teaching teams from the CET moderates the examination papers for the COS and ICT teams, and vice versa.

Notwithstanding the strengths articulated above, the teachers identified a number of weaknesses about the TWAL course assessment system. Some of the identified weaknesses are: In some cases, the level of difficulty of a task given to the students was not taken into consideration. This is consistent with the results of the analysis of the assessment questions, which showed that most of them were concentrated between Levels One to Three. This refutes the statements by teachers that they take Bloom's Taxonomy into account when setting assessments. Another observation was that some assessment pieces do not seem to address the objectives of the course. This reveals that in some cases, teachers set assessment independent of the course outlines they followed when teaching the course. This is more likely with tests and assignments than with examinations because examinations are moderated while tests and assignments are not. Furthermore, items in the assessment paper, such as a test or an examination, are not arranged according to the level of difficulty. This implies that questions in an assessment piece may not progress from the simple to the complex. The disadvantage with such an assessment is that it may demotivate the students if the first question may be considered to be very difficult.

The teachers also cited the lack of a central assessment bank in the Department as another weakness. If such a bank existed, it would be easier to refer to what already exists than to come up with new assessment items all the time. According to the SA study, Studying past papers is a valuable part of preparing for an assessment in that it keeps revision focused on important themes whilst practising how to answer the assessment questions.

(http://www.thecareersportal.co.za/news/1150-benefits-of-studying-past-exam-papers.html). Another weakness identified is the lack of consistency in setting some examination papers. For instance, although the course outlines followed by students of COS and ICT are identical, teachers observed that the examination question papers were distinctly different. There was also a marked difference between the examination papers for COS and CET students. The argument here is that if the students are following the same course, why should their assessment be different? Some teachers further observed that in some cases, students are assessed through essays, however, students who are following science, engineering and technology programmes dislike essay-writing. They do not see its immediate relevance to their studies and to what they will eventually do upon completion of their studies. One of the worrisome weaknesses was that of lack of external moderation. This is not peculiar to the TWAL course only because the University did not have an arrangement for the external moderation of its courses until recently. The teachers were of the view that while there is internal moderation of the courses in the Department, external moderation will go a long way in improving the quality of the course, including its teaching. The use of experts from other universities would enrich the courses. According to Squire (2013), external moderation of a course or programme is important because it ensures that two or more lecturers teaching the same course are assessing in a well-designed manner, are consistent and maintain a specific standard.

Having discussed the strengths and weaknesses of the assessment of the TWAL course, the teachers made a number of suggestions on what could be done to improve the assessment of the TWAL course. The first suggestion was that when setting an assessment piece, it should be ensured that questions are well-spread and cover the course outline. This will ensure that the purpose of the assessment is met. It should also be ensured that the students' level of study determines the complexity of the assessment. By so doing, there will be a clear difference between assessment for first years and second years, and between the second year and the third year (in the case of CET). One way of achieving this could be by piloting an assessment piece before it is administered, then using students' feedback to set the main assessment piece. The researchers' observation is that while this is a noble idea, its practicality is doubtful due to time constraints and lack of resources. Furthermore, to address the problem of lack of uniformity in assessing the TWAL course, the teachers suggested that the Department should agree on the assessment style, and ensure compliance to it. To ensure that everyone complies to set the standard, there should be a monitoring mechanism in place. In addition, it was suggested that external moderators should be engaged to improve the quality of assessment as well as the quality of the course and its teaching.

6.0 Study Limitations

The study’s limitations are that the results are relevant to the Technical Writing and Academic Literacy Course taught at the Botswana International University of Science and Technology only. They cannot be generalised to a similar course taught elsewhere, unless a similar study is conducted. Furthermore, the results cannot apply to other courses that the students do at the same university. A similar study will have to be conducted that encompasses other courses to see if its results will confirm the results of the present study.

7.0 Conclusions and Recommendations

A number of conclusions can be made from the discussions above. First, although teachers appeared to be aware of Bloom's Taxonomy, they did not pay much attention to it when setting assessments pieces. This was more apparent in the COS and ICT Department than in the CET because, in COS and ICT, questions fell under only four categories of Bloom's Taxonomy, but in CET questions covered all the six levels of Bloom's Taxonomy even though not systematically. Further, assessment in TWAL did not take into account the level of study of the students. There is an arrangement in place for internal moderation to standardise assessment in TWAL. However, this is limited to examination papers only; tests and assignments are not moderated. Furthermore, there was no provision for external moderation of TWAL assessment until recently. Therefore, its outcome is yet to be realised.

On the foregoing, a number of recommendations are made to improve assessment in TWAL. Teachers should take into account Bloom's Taxonomy when setting an assessment item, irrespective of whether it is a test, an assignment or an examination. Secondly, the assessment piece should address the course objectives (Angelo and Cross, 1993). Thirdly, the student's level of study should be taken into account when setting assessment items (Miller and Leskes, 2002). Furthermore, the Department should agree on the style of assessment to be implemented by teaching teams to ensure standardised assessment across the two colleges, including the ICT Department (Crean and Prunty, 2011). Most importantly, the recently introduced external moderation of examination papers should become a permanent arrangement to improve the quality of the course and its assessment (Biggs, 1999).

In conclusion, the study has revealed that although the teachers were aware of Bloom's Taxonomy, they did not strictly adhere to it when setting assessment pieces. However, if Bloom's Taxonomy was taken into account, the assessment in TWAL will match the students' level of study – years One, Two and Three. Consequently, the quality of assessment will be consistent with what is expected at the university level.

References

Anderson, L.W. & Krathwohl, D.R. (2001). A taxonomy for teaching, learning, and assessing: A revision of Bloom's taxonomy of educational objectives. New York, NY: Longman.

Angelo, T. A., & Cross, K. P. (1993). Classroom assessment techniques: A handbook for college teachers. San Francisco: Jossey-Bass Publishers.

Behniwaal, R. (2016). Improving the Learning Process Using Bloom's Taxonomy. www.alpinepublicschool.co.in Accessed: 10th July 2017.

Biggs, J. (1999). Teaching for Quality Learning at University. PP. 165-203. Buckingham, U.K. SRHE and Open University Press.

Crean, M. and Prunty, C. (2011). Formative Assessment Structures to Enhance Student Learning Despite Resource Limitations. Dublin: Dublin Institute of Technology.

Dawe, T. (2019).(Ed.) What is a Summative Assessment? : http://classroom.synonym.com/summative-assessment-8659314.html?ref=Track2&utm_source=IACB2B. Accessed on 20th January 2019.

Department of Technical Writing and Academic Literacy (2015). Course Guide for Technical Writing and Academic Literacy for Science and Engineering. Palapye: Botswana International University of Science and Technology.

Gomez, E. (2018). The Five Levels of Assessment in Higher Education. https://www.capsim.com/blog/the-five-levels-of-assessment-in-higher-education/ Accessed on 29th January, 2019.

Harvard Graduate School of Education's Teaching and Learning Laboratory (TLL) (2016) Design Thinking in Education https://tll.gse.harvard.edu/ *Accessed 5th June 2018.*

Kaufmann, S. (2011). The Ideal Length of a Language Lesson. https://blog.thelinguist.com/the-ideal-length-of-a-language-lesson Accessed on 27th January 2019.

Lewis, B. (2016). Bloom's Taxonomy - The Incredible Teaching Tool: How Asking The Right Questions Ensures Effective Learning. https://www.thoughtco.com/blooms-taxonomy-the-incredible-teaching-tool-2081869 *Accessed on 13th July 2018.*

Miller, R. & Leskes, A. (2005). Levels of Assessment: From the Student to the Institution. Washington DC: Association of American Colleges & Universities' Greater Expectations Series.

Rust, C., Price, M. & O'Donovan, B. (2003). Improving Students' Learning by Developing

their Understanding of Assessment Criteria and Processes. In *Assessment & Evaluation in Higher Education,* Vol. 28(2), PP. 147-164.

SAStudy. Benefits of Studying Past Exam papers. https://www.docsity.com/en/news/exams-and-study/advantage-exampapers/. Accessed on 20th January 2019.

Squire, D. (2013). Reading Room in Understanding Moderation. https://www.skills-universe.com/2013/08/21/understanding-moderation/ accessed on the 10th January 2019.

University of Newcastle's (2012). Long-term Assignment Policy. http://www.ncl.ac.uk/hr/assets/documents/international-assignments-long-term_reb.pdf. *Accessed on 14th July 2018.*

University of Utah's Centre for Teaching and Learning Excellence (2001). https://ctle.utah.edu/resources/Blooms-Taxonomy.php accessed on 30th January 2019.

Ziff, R. M. (2001). Assessment as a Classroom Teaching Technique. New York: Pearson.