TEACHER GOAL BELIEFS AND CHARACTERISTICS AS PREDICTORS OF TEACHERS' USE OF CRITERION-REFERENCED TESTING PRACTICES

Setlhomo Koloi-Keaikitse* and **Kamogelo A. Matebekwane**
Department of Educational Foundations
University of Botswana
kolois@mopipi.ub.bw

Abstract

Teachers are considered as cornerstones for bringing change and preparing students for future endeavours. It is therefore very essential to understand their teaching practices, particularly how they assess and evaluate student learning outcomes. This study investigated the extent to which teachers' goal orientations, beliefs, and the characteristics predict the frequency with which they used criterion-referenced testing practices as they evaluate student learning in classroom settings. A survey questionnaire was administered and completed by (N=691) primary, junior, and senior secondary teachers selected from government schools in Botswana. Results from hierarchical sequential regression showed that teachers' mastery goal beliefs were the strongest and the most important predictor of the frequency with which teachers used criterion referenced testing practices. Recommendations, implications and suggestions for policy and practice are discussed.

Keywords: teacher beliefs, mastery goal beliefs, performance goal beliefs, criterion-referenced testing practices, teacher characteristics

1.0 Introduction

For every government, education continues to be an important national priority. Teachers, students, and what takes place within classroom settings play pivotal roles for learning to take place. For classroom environment to contribute to meaningful results towards students learning, teacher competencies and beliefs about assessment remain essential. Assessment is not just about collecting data, but a processes used to appraise students' knowledge, understanding, abilities or skills, and it is inextricably linked to a course or program's intended learning outcomes (Marriot & Lau, 2008). Assessments, particularly at classroom level, have been found to play a pivotal role in helping educators gauge the quality of their teaching methods and remain critical as an effective basis for decision making, and are based, to some extent, on the ability of teachers to understand their students and to match their teaching methods with accurate assessments (McMillan, 2008). Teachers control classroom assessment environments by choosing how they assess their students, the frequency of these assessments, how and when they give feedback. Without classroom assessments teachers may not be able to make informed decisions. In fact, Stiggings (2008) suggests that for assessment to support improvements in student learning, results from such assessments must inform students how to do better next time.

For this reason, teachers as assessors need time to reflect on the beliefs they have about what assessment is, and the assessment practices they use to gauge student learning.

To help reflect on what assessment is, Rowntree (1977) presented five questions which may guide the scope of assessment in schools, particularly at classroom level. First, he asked *why assess?* This is a critical question as teachers need to know why assessment is to be carried out and what outcomes the assessment is expected to produce. Second, he asked *what to assess?* This may help teachers as they explore what they are looking for in their students. The next question was *how to assess*? This question can help teachers as they select from among available means the assessments they may regard as most truthful and fair for various sorts of valued knowledge. Then the *how to interpret* question which can guide teachers as they make sense of the outcomes of the observations they gather through different assessment methods they employ. The next question was *how to respond*? The question may guide teachers in finding appropriate ways of expressing their response to whatever has been assessed and communicating it to those concerned. These dimensions make an important contribution to the framework in which classroom assessment practices should be viewed.

2.0 Statement of the problem

The specific objectives of Botswana education system are to improve the quality of education, to ensure higher standards of learning, and to improve the quality of instruction for all those who attend school (Revised National Policy on Education (RNPE), (1994). One of the pillars of Botswana's long-term vision, Vision 2016, was to have "an educated and informed nation" by 2016 (Botswana Long Term Vision, 1997). In Botswana, the Ministry of Education has a major mandate to manage all educational structures, except the University of Botswana. Based on the RNPE (1994) and Nitko (1994), recommendations were made for Botswana to adopt and use criterion referenced testing practices in schools. Through these recommendations, a series of training efforts for teachers on criterion referenced testing practices lead to an improved adoption and use of criterion referenced testing practices in the school system. However, there is little research that examines teachers' beliefs and the influence they might have on the teachers' use of criterion-referenced testing practices in classroom environments in Botswana. Tabulawa (1998) argued that the curriculum in which teachers operate both at primary and secondary level in Botswana is examination driven. This is a serious concern as emphasis on teaching and learning is more likely to focus on student performance in national examinations rather than on what they are able to do or not do with the skills imparted during formal schooling period.

3.0 Purpose of the study

The purpose of this study was to determine the extent to which teacher goal-orientations beliefs and teacher characteristics predict the frequency with which they used criterion-referenced testing practices. The use of criterion reference testing practices in this study includes (a) making sure the test adequately covers the material taught in class, (b) fairly assigning grades to all students, (c) developing rubrics (marking keys) for objectively grading students' assignments and (d) assessing specific course objectives (Koloi-Keaikitse, 2012).

4.0 Study hypotheses

Specifically, the following hypothesis (H) was tested. H1: Over and above their characteristics, teachers' goal orientation beliefs are associated with their use of criterion assessment testing practices. We expected positive association between teachers who hold mastery goal orientation beliefs about classroom assessment practices and their use of criterion-referenced testing practices. This is based on the argument raised by Dresel, et al. (2013, p. 574) who argue that "Teachers who endorse learning goals for themselves, i.e., who aim to develop their own professional competences, are expected to apply a learning focus for their students too, i.e., are expected to emphasize learning goals and use mastery oriented instructional practices."

We also hypothesize that teachers who hold performance beliefs about student assessment are most likely than other teachers to adopt criterion assessment testing practices in their classroom teaching practices, as emphasized by Dresel, et al. (2013, p. 574) who argues that; "It was expected that teachers who pursue performance goals for themselves, i.e., aim to demonstrate superior teaching competences or aim to avoid demonstrating inferior teaching competences, also exercise a performance focus in their classrooms."

Over and above their goal orientation beliefs, we expect associations between teachers' characteristics and the extent to which they use classroom practices (Maxwell, et al., 2001). The two variables used for teacher beliefs were mastery and performance goal beliefs. These were included in the prediction model as previous research has shown positive effects of changing teachers' beliefs in assessment and the contributions such changes bring in the overall use of assessment practices. For instance, in their study, Stipek, Givvin, Salmon and MacGyvers (2001) found some associations between teachers' beliefs and their classroom practices were all in the predicted directions; those who held traditional beliefs were more inclined to engage in some traditional practices. That is, the higher the teachers scored on the traditional beliefs, the more they emphasized students' performance (e.g. getting correct answers, good grades, etc.).

Teacher characteristics, particularly their teaching experience, were included in the prediction model because past research has shown that new teachers may not necessarily implement what they have just learned in assessment classes, making it difficult to know whether having just received training on assessment can be of any value on how new teachers use assessment techniques that they have just attained in their recent training. A good example is provided in Campbell and Evans (2000); a study conducted with pre-service teachers who had just completed a course in assessment. Pre-service teachers were attached to schools to see how they implement what they have just learned during pre-service training as they assess students. The main assumption was that if there were problems in teachers' education programs that contribute to teachers' assessments practices, it can then be argued that teachers who have just completed an assessment course would display some comparable knowledge of recommended assessment practices than teachers who received training a long time ago. To the researchers' dismay, such an assumption was not met as teachers did not follow many of the assessment practices recommended in their coursework, making it difficult to know how teachers could best be made to appreciate the value of adhering to required assessment principles (Campbell & Evans, 2000).

5.0 Related literature

5.1 Teacher beliefs

Teacher 'beliefs' is a term that has been viewed with differing perspectives because of its complexity. For instance, more than two decades ago Oliver and Koballa (1992) conducted a study where they asked teachers to give a definition of 'teacher beliefs'. The responses were varied. Some teachers associated beliefs with other psychological constructs such as knowledge, values and attitudes. Others viewed beliefs as a process that influences their behaviours, attitudes and practices. Some researchers simply concluded that because of its complexity, the term 'teacher beliefs' could not be defined easily (Cantu, 2001). Because of its multi-dimensionality, to study the construct 'teacher beliefs' has not been an easy task. However, even with its complexity, the term 'teacher beliefs' has been found to add some value in the classroom context as teachers use their beliefs as a magnifying glass to clarify what may remain ambiguous to their teaching practices. It serves as teachers' foundation for setting teaching goals. Teacher beliefs are also related with the style of teaching and assessment that various teachers are likely to adopt. They help teachers make sense of what they experience in the classroom; hence they create meaning for them (Davis & Andrzejewski, 2009).

5.2 Teacher goal beliefs

Title (1994) is of the view that teachers hold different types of beliefs about assessment. For Title, teachers are likely to hold beliefs about assessment on students before, during and after assessment. Teachers may also have beliefs about the effects of assessment on teachers themselves, such as requiring instructions on particular topics or problems or providing or not providing useful information for instruction. Understanding the beliefs teachers hold particularly about classroom assessment can help open avenues for policy makers and teacher educators in their attempt to address the needs that teachers have in their day-to-day classroom assessment practices.

While it remains important to understand the beliefs teachers bring to classroom settings, and how such beliefs can impact on the teaching practices teachers adopt, it also remain integral to study teachers goal orientation beliefs and how they inform teachers classroom environments. Achievement Goal Theory is a framework that has been adopted to describe motivation in learning context and its implications for cognition and behaviour particularly for students (Elliot, 2005). Over and above using Achievement Goal Theory to ascertain students' motivation to learn, the same theory has been found to be applicable to assess teacher motivation to teach and measure their achievements in other classroom practices (Butler, 2007); and the Theory has been applied to determine teaching experiences (Malmberg, 2008; Nitsche, Dickhauser, Fasching & Dresel, 2011).

Research on achievement goal made recommendations to treat mastery and performance goal beliefs as similar constructs based on their level of overlap (Pintrich & Schunk, 2002). There are however, contrasting arguments on how these constructs should be viewed. For instance, Ames (1992, p. 262) argued that "mastery and performance goals represent different conceptions of success and different reasons for approaching and engaging in achievement activities." Mastery goal should be viewed as an individual's ability to master new skills, attempt to accomplish something new and challenging and understand the content being taught. Success under mastery goal is evaluated in terms of self-improvement and the quality of work that students present (Meece, Anderman & Anderman, 2006). One the one hand, students whose teachers hold mastery goal beliefs are mainly orientated towards developing new skills, understanding their work and improving their level of competence on the task they are engaged in. It increases the amount of time students remain engaged in their work (Ames, 1992). On the other hand, teachers with performance goal beliefs gauge students' ability and competencies relative to the ability of others. Ability to out-perform others is encouraged. Success is evaluated on the basis of doing better than others (Meece, et al., 2006; Ames, 1992). Although there are contradicting views in the way these constructs are defined, there is some level of consensus in their relational definition. Mastery goals are meant to focus on the development of competence, while performance goals are meant to indicate the demonstration of such competencies (Elliot, 1999). Multiple goal beliefs that teachers bring within classrooms, including assessment, can inform classroom assessment practices that teachers adopt and ultimately lead to an improved quality of students' academic performance; hence the need to study teacher goal beliefs on continuous basis.

5.3 Teacher characteristics

Teacher's characteristics, and mainly their experience, have been found to have an impact on their classroom practices in general, particularly how they use assessment practices. The direction of the relationship remains arguable. On the one hand, one may expect teachers with less experience to implement more developmentally appropriate classroom practices due to recent training. On the other hand, teachers who have been in the field for a longer time are more likely to use their experience to adopt more developmentally appropriate assessment practices (Maxwell, McWilliam, Hemmeter, Ault & Schuster, 2002).The main argument is, if

teachers' beliefs about assessment add any value to the prediction of the observed classroom assessment practices than their characteristics, then it may be important to change these practices by changing teacher beliefs.

Rubie-Davies, et al. (2011) conducted a study to explore relationships between teacher characteristics of gender and teaching experience, school contextual variables (socio-economic level of school and class level) and three teacher socio-psychological variables. These variables were class level teacher expectations, teacher efficacy and teacher goal orientation. The study was conducted with a sample of teachers from rural and urban areas in New Zealand. The results of the study revealed that mastery orientation was a predictor of teacher efficacy for student engagement and classroom management. Also, teacher characteristics were related to school contexts. Gender, particularly the males, was related to performance orientations. Rubie-Davies, et al. (2011) study shows the effects that teacher goal orientated beliefs can have on their classroom practices over and above teacher characteristics, and how these can particularly impact on students' learning**.**

5.4 Criterion-referenced testing practices

Criterion referenced testing practices entail processes of interpreting a student score by comparing it to a domain of performances that the student is expected to learn as a result of instruction in a given curriculum (Gronlund & Waugh, 2009; McMillan, 2008; Popham, 2008). Criterion-referenced measures are measures which are used to ascertain an individual's status with respect to some criterion or performance standard. The student's performance is compared to some established criterion rather than other students. The meaningfulness of an individual score is not dependent on comparison with other students. The main emphasis of using criterion referenced testing practices is for teachers to ensure that individual students, regardless of their differences, attain the set objectives. When students are evaluated, focus is placed on the extent to which each individual student was able to attain the set objectives. Students' performances are not compared to others but rather compared to the set standard or criterion with a view to determine how they were able to achieve the set standard (Popham & Popham, 2005).

Criterion-referenced assessment can contribute to student motivation as students recognize that their grades are based on their own individual performance with reference to a set standard rather than on the performance of other students as in norm-referenced assessment practices. This level of motivation may mean that if a student performs well on a particular subject, they are more likely to get motivated to put more effort in studying that subject or possibly take a career path that is informed by the same subject. Even though there is a general perspective that criterion-referenced testing practices differ from norm-referenced testing practices based on the type of interpretation made, Popham and Husek (1969) argued that distinction between criterion referenced testing practices and norm-referenced testing practices should not just be based on face validity. For Popham and Husek, the distinction should be made by examining: (a) the purpose for which the assessment task was constructed, (b) the extent to which the assessment task information can be generalized to the domain measured, (c) how information obtained from the assessment domain will be used and (d) to assess how the assessment task was constructed. Popham and Popham (2005) argue that if teachers want to use information to determine what students are able to do or not able to do, if they want to measure which students have attained set standards, or if they want to align assessment tasks to the instructional objectives upon which to measure students learning, then such teachers are basing their assessment on criterion referenced testing practices.

6.0 Methodology

6.1 *Research design*

A survey design was adopted to gather descriptive data for the purpose of determining the extent to which teachers goal orientations beliefs, their experiences and their educational background predict the frequency with which they use criterion-referenced testing assessment practices. A survey can be a powerful and useful tool for collecting data on human characteristics such as their beliefs, attitudes, thoughts and behaviour (Dillman, Smtyth & Christian, 2009; Gay, Mills & Airasian, 2009; Mertens, 2010), hence the survey design fits very well within the framework of this study.

6.2 *Population of the study*

The subject population for this study was Primary School teachers, Junior Secondary School teachers And Senior Secondary School teachers. The teachers who teach in these schools have different levels of teacher training. Those who teach at the primary school level may have a Certificate in primary education, a Diploma in primary education and or a Degree in primary education. Those who teach at the Junior Secondary School level have a Diploma or a Degree in secondary education; some may have a Master's Degree in education. Those who teach at the Senior Secondary School level have degree in an area of specialization such as Humanities, Science and Social Sciences and a Post Graduate Diploma in secondary education; some may have Master's degree in education. Primary school teachers in Botswana teach one standard (grade) in a given year, and they teach all the subjects. Those who teach in Junior Secondary and Senior Secondary Schools teach specialized subjects.

7.0 Sampling

To ensure that teachers who participated in the study represented all relevant subgroups, the sample of teachers based on their training, grade level, subject taught, years of experience and school level was selected.

7.1 *School sample*

There are ten (N =10) educational regions in Botswana. Sampling for schools from educational regions in this study was two-fold. First, convenience sampling method used to select research setting accessible to the researcher Mertens (2010) was used to select schools that are accessible to the researcher in terms of distance. In this case, four of the ten educational regions not accessible to the researchers were excluded in the study. One region was used for pilot testing of the data collection instrument. Only five educational regions were therefore used, making a representative sample of 50% of the total number of educational regions. Simple random sampling was used to select schools within regions. According to Mertens (2010), simple random sampling means that each school in an educational region has an equal and independent chance of being selected. Simple random sampling was conducted by first obtaining a list of all schools in the selected regions. These schools were then assigned random numbers to ensure that each school has equal and independent chance of being selected. Numbers were then randomly picked from each region, leading to a pool of selected schools. From each region, a random sample of 20% schools was selected. The reason for selecting this sample size allowed the researchers to draw a small and manageable number of schools from each region basing on time and financial constraints. Some educational regions have more schools than others. For this reason different sample sizes were drawn with 18% drawn from areas with more schools and 20% drawn from inspectoral areas with lesser schools. Based on this sampling criteria, a total of (n = 265), 38% primary schools were sampled, while (n = 243), 35% junior secondary schools were sampled and (n = 183), 27% senior secondary schools were sampled.

7.2 *Teacher sample*

Determining sample size is concerned with how much data is required to make appropriate decisions on a particular study. If there is enough data, the amount of error is more likely to be reduced (Abraham & Russell, 2008). To ensure that teachers who participated in the study represented all relevant subgroups, the sample of teachers based on their training, teaching level, subject taught, years of experience and school level was selected. Convenience sampling method was used to sample teachers in selected school. According to Mertens (2010, p. 235), convenience sampling "means that the persons participating in the study are chosen because they are readily available." All teachers who were readily available in the schools were asked to participate in the study, and 691 agreed to participate. The sample of teachers was fairly well representative of the country.

8.0 Instrument

The Classroom Assessment Practices and Skills (CAPS, Koloi-Keaikitse, 2012) questionnaire was used as the data collection instrument to assess teachers' perceived skills in classroom assessment practices. The data collection instrument used in this study has three sections. In section one, teachers provided their demographic information. Section two has 18 items generated by researchers to collect teachers' views and beliefs regarding classroom assessment practices. The initial set of items in section three was adopted from Assessment Practices Inventory (API, Zhang & Burry-Stock, 2003). This instrument was created and used in the United States of America to measure teachers' perceived skills and use of classroom assessment practices across teaching levels, content areas, and teachers self-perceived assessment skills as a function of teaching experience. The Zhang & Burry-Stock *skill* scale consists of 67 items measured on a 5 point Likert scale that ranged from 1 (*not at all skilled) to* 5(*very skilled*). The API scale also consists of 67 items measured on a 5 point Likert scale that ranged from 1 (*not at all used)* to 5 (*used very often*). Items were scored so that higher numbers indicated higher perceived skill and use of classroom assessment practices. Reliability estimate of teachers' use of classroom assessment practices in the API scale was ($\alpha = 0.95$).

In order to ensure that items adopted from API instruments were content and context relevant for teachers in Botswana based on the language, content and curriculum, the API questionnaire was given content experts in classroom assessment and teacher training in Botswana. They were asked to review the items for clarity and completeness in covering most, if not all, assessment and grading practices used by teachers in classroom settings, as well as to establish face and content validity of the instrument and items. Based on expert reviews and comments 37 of Zhang & Burry-Stock items some of these items include those that asked about teachers perceived skill to interpret standardized test results, determine if a standardized achievement test is valid for classroom assessment, selecting textbook-provided test items for classroom assessment, Obtain diagnostic information from standardized tests were found to be irrelevant and not appropriate for Botswana teachers in terms of teachers classroom practices and content hence not used. Of the original remaining items, 21 were without modification and 8 items were modified by changing some of the words to make them context and content relevant to the population of teachers in Botswana. These revised items were used to generate a final set of 29 items and used to measure teachers' perceived skills and 29 similar items were used to measure teachers' use of classroom assessment practices in Botswana.

The draft questionnaire with 29 items that measured teachers perceived skill in classroom assessment and 29 items that measured teachers use of classroom assessment practices was pilot tested with a total sample of 88 teachers selected from Primary Schools (n =29), Junior Secondary Schools (n = 30), and Senior Secondary Schools (n = 29). The pilot process was meant to assess the strengths and weaknesses of the questionnaire, in terms of question format, wording and order of items. It was also meant to help in the identification of question

variation, meaning, item difficulty, and participants' interest and attention in responding to individual items, as well as to establish relationships among items and item responses, and to check item response reliability (Mertens, 2010; Gay, Mills, & Airasian, 2009). Internal reliability estimate of teachers views and beliefs about classroom assessment was estimated using Cronbach's Alpha ($\alpha = 0.72$), an indication of moderate internal consistency in item responses**.** Reliability estimates of teachers' use of classroom assessment practices items was estimated using Cronbach's Alpha ($\alpha = 0.90$) this showed high levels of internal consistency in teacher responses to items in this scale.

9.0 Data collection procedures

Obtaining informed consent from participants is a vital process in ethical research practice. The researcher acknowledged the moral obligation to protect the interests of the respondents and gave them sufficient information about the nature of the research so that they could make an informed judgment about whether they wished to participate in the study. Ethical clearance was sorted through Ball State University Internal Review Board. Consent to use teachers in schools was solicited from the Ministry of Education Skills and Development. Informed consent was solicited by giving teachers introductory letters to read before they completed the questionnaire. Letters that described the study, highlighted its benefits and solicited for consent to participate were given to teachers. Those who agreed to participate were given the questionnaire to complete.

10.0 Data analysis

10.1 *Factor analysis*

Exploratory Factor Analysis (EFA) was used to analyse the data. Tabachnick and Fidell (2008, p. 609) argue that in "Exploratory Factor Analysis, seeks to describe and summarize data by grouping together variables that are correlated." Exploratory Factor Analysis was therefore computed to reduce a large number of items in order to generate factors that could be analysed and interpreted with ease, as well as to determine the underlying factor structure of the items in the questionnaire (Field, 2009; Thomson, 2005). Data were therefore factor-analysed with principal factoring used to maximize variance extracted by orthogonal factors. The major feature of principal factoring is to estimate communalities with a view to eliminate error variance from variables (Tabachnick & Fidell, 2008). The 18 items in section two (CAPS) measure were factor-analyzed with principal components for ease of interpretation and generation of working factors. Based on the scree plot and (eigenvalues >1), and a cut-off of 0.30, the 18 items converged into four factors that explained 49% total variance. These factors are Mastery goal beliefs (α =.62), Performance goal beliefs (α =.67), Grading Practices (α =.36) and Training (α =.46) (Koloi-Keaikitse, 2012).Only Mastery and Performance goal beliefs factors were used in this study. The 29 items in the frequency of using classroom assessment practices were also factor analysed and they converged into six factors that accounted for 45% variance. These factors were Use of Criterion Reference Testing (α =.80). Criterion Reference Testing (α =.80), Grading Practices (α =.77), Statistical Application (α =.78), Assessment Application (α =.80), Essay Items (α =.76) and Objective Items (α =.68) (Koloi-Keaikitse, 2012). Only Criterion reference testing practices factor was used in this study.

10.2 *Hierarchical regression analysis*

Field (2005) argues that when researchers are interested in constructing complex models using several predictors as is the case with this study, they must indicate the way in which they entered such predictor variables in their model. One such model is hierarchical regression (or block wise entry) analysis. In this analysis, Field indicates that predictors are selected based on past work. In predicting the outcome, predictors from past research are

entered first in the model in order of importance. Therefore hierarchical regression analysis was used to examine how teachers' goal beliefs and teacher characteristics predict teachers' use of criterion-referenced assessment practices. The main purpose was to examine the extent to which teachers' mastery and performance goal beliefs added value to the prediction of the frequency of their use of criterion reference assessment practices in their classroom assessment practices over and above their demographic characteristics. Teachers' goal beliefs (Mastery and Performance) were therefore entered first as a block in the regression model; teachers' characteristics (Teaching Experience) was entered in the second model and teachers' educational level (Certificate and Diploma) were entered in the last model (see Dresel et al., 2013; Maxwell et al., 2001). Categorical demographic variable educational level had three values (Certificate, Diploma and Degree). These values were dummy coded to change their original arbitrary coding to make them true categorical for ease of interpretation. These dummy coded educational level (Certificate, Diploma and Degree) variables together with other predictor variables were correlated to check any presence of multicollinearity between them. Diploma and Degree were highly correlated $r = -.852$ (see Table 1). Degree was therefore excluded from the analysis and only Diploma and Certificate were used because they were not strongly correlated. Other variables did not show any strong inter-correlations.

11.0 Results

Hierarchical regression analysis was computed in order to assess the extent to which teachers' goal beliefs add value to the prediction of the frequency with which teachers use criterion-reference testing practices in their classroom assessment practices over and above teachers' demographic characteristics. Preliminary analyses were conducted to ensure no violation of assumptions of multiple regressions. Initially, the correlation coefficients of predictor variables were computed to determine the degree of liner relationship and to check any presence of multicollinearity (inter-correlations between predictor variables). There were weak inter-correlations between predictor variables and the dependent variables (see Table 1). Tolerance values for the predictor variables were also assessed, all these values ranged between (.797-, 989); these are closer to .1; all these showed absence of multicollinearity (Mansfield & Helms, 1982). Linearity between variables was checked using a matrix-scatter plot. There was some liner relationship between the outcome variable (Use of Criterion Referenced Testing Practices) and predictors variables, a good sign of non- multicollinearity between variables used in this study. The three predictor variables including the predicted variable were continuous. Categorical variable (education background) was dummy coded to make it true categorical for ease of interpretations. Multiple regression assumptions normality, homoscedasticity and independence of errors were assessed by using residual plot. All the assumptions were met satisfactorily, making it possible to run a hierarchical regression analysis.

To compute Hierarchical regression analysis, teachers' goal orientation beliefs (Mastery and Performance) were entered first as a block (Model 1) in the regression model; teachers' characteristics (Teaching Experience) was entered in (Model 2) and teachers' educational level (Certificate and Diploma) were entered in (Model 3). The results showed that Model 1 (Mastery and Performance) explained only 11% of total variance of teachers' use of criterion-reference assessment practices. By adding a second variable teachers experience to Model 2 there was no additional variance that was accounted, thus R^2 of Model 1 remained at .011 (11%) an indication that teachers experience did not explain any variance to the frequency with which teachers used criterion-referenced testing practices.

After adding teachers' educational background (Certificate and Diploma) in Model 3, total variance explained by the model as a whole was 13%, an indication that educational background explained only 2 % of total variance of teachers' use of criterion reference assessment practices. Overall variance accounted for increased significantly from Model 1 to Model 2 and from Model 2 to model 3.

Table 1: Pearson correlations of teachers goal beliefs and teacher characteristics and use of CRT

	Use of CRT	Mastery	Performance	Experience	Certificate	Diploma	Degree
Use of CRT	-						
Mastery	.327**	-					
Performance	.159**	.515**	-				
Experience	.003**	.031	.047	-			
Certificate	-.128**	-.044	.083*	.336**	-		
Diploma	-.042	.023	.042	-.012	-.283**	-	
Degree	.112**	.001	-.088**	-.171**	-.261**	-.852**	

Note: ** $p < .05$; CRT= Criterion Referenced Testing

Furthermore, the results showed that teachers' mastery-goal orientation beliefs was the strongest and the most important predictor of the frequency with which teachers used criterion referenced testing practices as it was statistically significant in all the three models. Model 1 (β =.333, p = 001), Model 2 (β =. 333, p = 001) and Model 3 (β =. 315, p = 001). Mastery-goal orientation beliefs had positive slopes in all the three models, an indication that high levels of teachers' mastery orientation beliefs are associated with high frequent use of criterion-assessment practices. Teachers' performance goal orientation beliefs was not significant in all the three models, and was therefore not a good predictor of the frequency with which teachers used criterion-referenced testing practices. Teaching experience was not significant in all the two models and was therefore less important in the prediction of teachers' use of criterion-referenced testing practices: Model 2 (β = -.002) and Model 3 (β =. 044). Teachers' educational level, whether they had certificate or diploma in teaching were both significant: Certificate (β = -.156, p = 001) and Diploma (β = -.098, p = 001), and had negative slopes, an indication that high levels of teachers' educational level was associated with less frequent use of criterion assessment practices. For a summary of hierarchical sequential regression results (see Table 2).

Table 2: Summary of hierarchical sequential regression analysis (N= 691)

Predictors	R^2	R^2_{change}	*B(SE)*	β
1. Mastery	11**	.011**	.491(.062)	.333**
Performance			-.014(.047)	-.013(ns)
2. Mastery	11**	.000**	.491(.062)	.333**
Performance			.014(.047)	-.012(ns)
Experience			.000(.003)	.006(ns)
3. Mastery	13**	.022**	.464 (.062)	.315**
Performance			.013 (.047)	.012(ns)
Experience			.004(.004)	.044(ns)
Certificate			.420(.108)	-.156**
Diploma			.136(.005)	-.098**

Note: ** $p < .05$, n.s. = Not Significant; Dependent variable *Use of Criterion Referenced Testing Practices*

12.0 Discussion

Teacher classroom assessment practices and beliefs are recognized by policy makers as integral to the instructional process, and central ingredients for helping students learn. Understanding teacher beliefs and practices in classroom assessment can provide insights into how such beliefs and practices may influence policy recommendations. This study made an attempt to examine the extent to which teacher goal orientation beliefs added value to the prediction of the frequency at which they used criterion-reference assessment practices in their classroom assessment practices over and above teachers' demographic characteristics. The main research question was to establish whether goal orientation beliefs are better predictors of the frequency with which teachers used criterion-referenced testing practices than teachers' characteristics.

Three primary findings emerged from this study. First, teachers with mastery-goal beliefs are more likely to use criterion-referenced assessment practices. Second, teachers with performance-goal beliefs are less likely to adopt criterion-referenced assessment practices. Third, teaching experience does not play an important role in the prediction of teachers' use of criterion assessment practices. Lastly, the more educated the teachers are, the more the possibility for them to use criterion-referenced assessment practices. Taken together, these results point to the value teacher beliefs and their characteristics can have on assessment practices they are likely to adopt in their classrooms. Generally, the findings in this study support the arguments by Rimm-Kaufman and Sawyer (2004) as well as Stipek et al., (2001) that teacher beliefs, attitudes and priorities have some relational linkage to the classroom practices they are likely to adopt.

12.1 *Teacher goal beliefs*

The results of this study show that teachers' mastery-goal beliefs added value in the prediction of how teachers used criterion-referenced testing practices in their classroom assessment practices. These findings are consistent with arguments raised by Dresel et al. (2013), that teachers who hold mastery-beliefs about student learning are most likely to adopt mastery-instructional practices. The results support Popham and Popham (2005) who opine that teachers who determine what students are able to do or not able to do, and align assessment tasks to the instructional objectives, base their assessment on criterion-referenced testing practices. Classic work, for example Meece, Anderman & Anderman (2006) shows that success under mastery goal is evaluated in terms of self-improvement and the quality of work that students present.

Consistent with these sentiments and findings are those of Rimm-Kaufman and Swayer (2004) who observed an association between teachers' practices and self-efficacy beliefs. The results support previous research; for instance, Stipek et al. (2001) found that some associations between teachers' beliefs and their classroom practices were all in the predicted directions. The relationship between teachers' mastery-goal beliefs and the frequency with which they used criterion practices was also consistent with arguments made by Block (1971) who reported that many education systems face a lot of pressure to produce more and better educated students. This pressure has placed more demands on schools and teachers to take major responsibility and accountability for students' learning by adopting teaching methods that promote competency than just performance.

Academic performance of students at school level plays an important role because it forms the foundation and sets standards needed to help stakeholders make informed decisions such as selecting, admitting and placing students in appropriate educational settings and programs. The findings of the current study show that performance-goal beliefs are not associated with teachers' use of criterion-referenced testing practices. These results are logical considering that teachers with performance-goal beliefs gauge students' competencies relative

to the ability of others (Meece, et al., 2006; Ames, 1992), whereas criterion-referenced testing practices emphasize individual students' content mastery irrespective of the performance of others. Interestingly, the beliefs that teachers hold about mastery and performance orientations are logical as they can be seen as reflecting both policy goals, teaching practice and the beliefs that teachers may bring into the educational systems (Koloi-Keaikitse, 2012). At school level, the examination and curriculum both emphasize mastery orientations as they stress the need for students to develop understanding and application of higher order thinking skills, such as decision making, reasoning, creativity, problem solving, process skills as well as acquisition of hands on experiences.

However, it can be said that both curriculum and examinations at these levels also instil a sense of both mastery and performance orientations. This is based on the fact that examinations at these school levels are criterion-based as they emphasize individual student mastery of content. They are similarly performance-based because they are used to select students for higher educational levels. Although students may need something more or different from mastery goals to help them mobilize to succeed in certain achievement situations, concerns about peer comparisons or competition are likely to distract them from a focus on doing what is necessary to get ready for the test.

12.2 *Teacher characteristics*

The findings in this study show that teaching experience did not play any important role in predicting teachers' frequent use of criterion-referenced testing practices. Surprisingly, these results do not concur with the findings of past research (Maxwell et al, 2001), which found some associations between teaching experience and teachers' classroom practices. Noted in other research work is the view that teachers with additional years of experience showed some level of confidence in employing classroom assessment practices that would benefit students with learning difficulties (Wolters & Daugherty, 2007).

The results of this study show some negative association between teachers' educational background and the likelihood of using criterion assessment practices and indication that with an improved teacher training, there is likelihood for teachers to adopt acceptable assessment practices. Consistent with our findings in this present study are (Black & William, 2010; Campbell & Avens, 2000; Gotch & French, 2014; Koloi-Keaikitse, 2016); all these studies taken together emphasize the need for teacher development for the advancement of teaching and assessment practices.

Overall, the findings in the current study and other research work highlight the need to pay attention to the beliefs that teachers bring in classroom environments, as well as their improved training, and the integral role these have on teaching and classroom assessments. For failure to do this, the teaching and learning process, as well as policy makers may continue to have limited knowledge about the challenges teachers face as they use essential classroom assessment practices.

12.3 *Study limitations*

The sample size of (N=691) teachers was relatively large enough for our regression model that only accounted for only 11% for teacher goal-orientation beliefs and teaching experience and 13% for their educational level. Based on this sample size, the regression model accounted for small amount of variance; this has implications on the stability of using this regression model results. That is, even though teacher characteristics predicted the frequency with which teachers' use of criterion-referenced assessment practices, these findings cannot be generalized to the entire population of teachers in Botswana. However, the results can be used as a pointer that there could be problems regarding the rate with which teachers use criterion-referenced testing in their classroom assessment practices. Though it also accounted for small amount of variance

(13%) and added only (2%) to teachers beliefs and teaching experience, hierarchical regression results presented in this study showed that adding teacher characteristics (their educational level) to teacher goal orientation beliefs and teaching experience models improved the amount of variance accounted for in the prediction of the frequency with which teachers use criterion-referenced testing practices. Even though educational background accounted for higher amount of variance, it was not a very good predictor of the frequency with which teachers use criterion assessment practices. Based on these results, it can be recommended that teachers be given more training and be encouraged to use assessment practices such as criterion-referenced testing that can promote skill attainment for students.

13.0 Conclusion

Assessment has become a driving force for educational practices around the world. The Botswana education system regards student assessment as a critical component of education reform and improvement. This study was conducted as a way of magnifying the beliefs teachers hold about classroom assessment practices as well as the demographic characteristics that define teachers in schools and how these are related to assessment practices needed to drive teaching and learning in schools. Findings in this study and arguments raised by measurement specialists about the need to adopt better assessment practices are in line with the recommendation made in the Botswana Revised National Policy in Education (RNPE, 1994). The RNPE recommends that educators should develop and implement criterion- referenced testing practices in schools to replace norm-referenced testing practices as a way of improving students learning outcomes. What can be implied in these results is that teachers' beliefs, particularly their beliefs about student mastery, can play an important role in informing policy and practice. This should not come as a surprise because, as teachers strive for mastery, they are more likely to use assessment practices such as criterion- referenced testing practices that can promote both mastery and improve the general performance of students.

The Botswana Revised National Policy on Education (RNPE, 1994) emphasizes the need to have the kind of education system that can help individual learners to acquire essential national principles, such as democracy, *botho* (humaneness), self-development, unity and self-reliance. Based on this, it recognizes primary education as a critical stage in the student's education because it provides the foundation of all future learning. Similarly, the policy views secondary education as a preparatory stage for students' tertiary education or future employment. The Botswana Ministry of Education and Skills Development set strategic goals meant to guide its plan of action towards meeting and achieving policy principles and expectations. Of recent, the country enacted the Education and Training Sector Strategic Plan (ETSSP 2015-2020); a five-year sector strategic plan meant to guide the decision making and have an effect in the performance improvement of all education sectors of the country.

However, simply making some policy recommendations and strategic goals that are not in line with the beliefs and perceptions about assessment practices that teachers bring to the classroom may have major implications on the quality of student learning that Botswana aspires to achieve. With the current statistical reports showing continuous signs of decline in students' academic performance at both junior and senior secondary school levels in Botswana, there is need for more research that may highlight salient factors that lead to the decline and ultimately inform both policy and practice. One area that needs to be addressed is teachers' self-efficacy in classroom assessment related skills.

This study brought to light some of the beliefs teachers hold about classroom assessment and the implications such beliefs have on classroom practices teachers are likely to adopt. The implications for these findings are important for school administrators and essential for policy makers. Teacher beliefs about mastery could be used as a framework that can inform assessment practices teachers adopt as they monitor students learning. These

may influence the choice of assessment tasks that teachers are more likely to adopt to assess students learning outcomes. For instance, teachers with mastery goal beliefs are more likely to choose assessment methods that determine if students have mastered skills and may therefore assign remedial activities for students who have failed to master a set of learning content. This may address the problem of the current worrisome decline in academic performance of students in Botswana Government schools. For this reason, this study can be relevant for educational policy and practice particularly for Botswana at the time when the country is making tremendous efforts to ensure that all learners are given quality education. Studies that can convey clearer understanding of teacher beliefs should be conducted on regular basis as they can add value in informing policy and practice in education and ultimately improve student academic performance in schools.

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