

# Knowledge and Utilization of Authentic Assessment Techniques by Lecturers in Botswana College of Agriculture

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## Abstract

This paper examined knowledge and use of authentic assessment techniques (a performance based assessment requiring learners to utilize their knowledge in a meaningful context) among lecturers in Botswana College of Agriculture. A simple random sampling technique was used to select 40 lecturers from 96. The results show that in terms of use, 47.5% of lecturers use authentic assessment while 52.3% do not. Lecturers were more knowledgeable on items such as authentic assessment requires students to apply skills and abilities as they would in real life (100%); and authentic assessment involves direct examination of student's ability to use knowledge to perform a task that is encountered in real life (100%). The most prominent constraint to the use of authentic assessment is that it is time consuming (90%). Significant determinants were teaching experience ( $t = 3.61$ ), educational level ( $t = 4.36$ ), holding administrative positions ( $t = -4.71$ ) and knowledge of authentic assessments ( $t = -3.90$ ). It is important therefore that the use of authentic assessment is popularized among lecturers.

## Introduction

The interchangeable use of tests and assessments can lead to confusion because the two may be involved in a single process. According to Linn and Miller (2005), assessment is a general term that includes a full range of procedures used to gain information about students learning and the formation of judgments concerning student learning. French (2003) defines assessment as the gathering, interpretation, and use of information to aid teachers' decisions making. Assessment also has a diagnostic purpose, for teachers to identify areas of weakness with a view to remediate action. According to Chan and Gurnam (2010), assessment provides feedback that facilitates learning provided it is integrated into instructional purposes. Assessment can be used to provide a student with qualification which signifies that they have reached a certain level of competence or knowledge. Palm (2008) noted that assessment is used for selection to different institutions within the education system.

According to Race (2001), placement assessment is the determination of learners' performance at the

beginning of instruction to obtain an idea of the abilities and interest of learners while diagnostic assessment is concerned with the persistent learning difficulties that are left unresolved by the standard corrective prescriptions (Linn and Miller, 2005). Formative assessment is used to monitor learning progress during instructions in order to provide feedback to both students and teachers concerning learning successes and failures. Summative assessment determines achievement at the end of instructions in order to document learner performance after instructions have been completed (Race et al., 2005).

Alternative assessment is usually designed by teachers to gauge students understanding of material. This can be open-ended questions, written compositions, oral presentations, projects, experiments, and portfolios of students work. Alternative assessments are designed so that contents of assessment match that of instruction. According to Leach et al. (2001a), authentic assessments are criterion-referenced measures designed to promote the integration of factual knowledge; high-order understanding and relevant skills. Authentic assessments are often based on performance, requiring students to utilize their knowledge in a meaningful context. In authentic assessment, performance expectations guide learning activities and are made clear to students prior to instructions (Leach et al., 2001b).

According to Airasian (2005) teachers use two primary methods to gather information about learners, namely paper and pencil technique and observation. Taras (2002) noted that when students carry out an activity, it is best to use the observation procedure rather than paper and pencil technique. This was based on the assertion that learning outcomes in skill areas and behavioral changes in personal-social development are especially difficult with paper and pencil tests.

In the past, assessment in schools was mainly done through paper and pencil exercise. However, assessment has gone well beyond paper and pencil exercise to observations of performances or development of portfolios (Woolf, 2004). Also, the demand for greater accountability in education by donors, government and public, has led to a move away from traditional standardized tests (Hall, 2004). Authentic assessment requires learners to perform a task

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rather than selecting an answer from a readymade list. Authentic assessments are adaptable, flexible, ongoing, and cumulative, depicting learners' growth over time. However to implement authentic assessment techniques requires abandoning traditional notions about testing and evaluation of performance on tasks, because performance on one task provides little information on other tasks.

Agriculture is a practical subject and its assessment should reflect this context. The acquisition of skills and competence in agriculture would therefore be improved through the use of authentic assessment technique. Anecdotal evidences suggest that the assessment of learners in agricultural courses in most cases have been limited to pen and paper, thus limiting the students to recall alone. For the application of authentic assessment technique to bring about the desired impact on agriculture, it is important that teachers are knowledgeable and adopt this assessment technique. The objective of this study was to determine knowledge and utilization of authentic assessment technique by lecturers in Botswana College of Agriculture Lecturers. Specifically, demographic characteristics were identified, knowledge and use of authentic assessment technique ascertained and constraints to use of authentic assessment technique determined.

## Materials and Methods

A descriptive survey method using a questionnaire technique was employed in the study carried out at Botswana College of Agriculture. This college is the only citadel of learning in the country that has the mandate on training and development of manpower in agriculture. It is organized into Departments of agricultural economics, education and extension, animal production, agricultural engineering and land use, crop production, food technology and basic sciences. The population of the study was 96 lecturers at Botswana College of Agriculture. A simple random sampling technique

was used to select 40 out of 96 and data were collected through a structured questionnaire that was designed based on literature review and study objectives. The questionnaire consisted of open-ended questions on demographic and a knowledge test scale consisting of 23 items (True or False). The use of authentic assessment technique was measured by asking respondents to state Yes or No, the reasons and frequency of use. The definition of authentic assessment was stated on the questionnaire in order to have a convergence of meaning between the researcher and the respondents on the concept. Questions on constraints on the use of authentic assessment technique were open-ended to which lecturers provided their responses. Validity was ensured through expert panel among measurement and evaluation specialists in University of Botswana and a split-half technique generated a reliability coefficient value of 0.90 for the questionnaire. Data collected were analyzed using Statistical Package for Social Sciences (SPSS), with frequency counts,

**Table 1. Personal Characteristics of Respondents**

PERSONAL CHARACTERISTICS	FREQUENCY	PERCENTAGE
Gender	30	75
Male	10	25
Female		
Age		
Less than 30 years	1	2.5
30 – 40 years	8	22.5
41 – 50 years	19	42.5
Above 50 years	8	20
Teaching experience		
Less than 10years	3	7.5
10 – 20 years	22	45
21-30 years	11	37.5
Above 30 years	4	10
Educational level		
MSc	10	25
PhD	30	75
Job designation		
Lecturer	19	37.5
Senior Lecturer	14	35
Associate Professor	1	2.5
Professor	5	12.5
Department		
Basic Science	10	25
Agricultural Economics, Education and Extension	10	25
Agricultural Engineering and Land use	8	20
Crop Production	6	15
Animal Production	6	15
Marital status		
Single	5	12.5
Married	32	80.5
Divorced	3	7.5
Household Size		
Less than 3 persons	8	20
3-4 persons	28	75
Above 4 persons	4	10
Number of committees membership		
1-5	36	92.5
Above 5	4	7.5
Administrative position holders		
Yes	4	10
No	36	90

percentages, means, standard deviation, and multiple regression analysis.

### Results and Discussion

The personal characteristics of lecturers show that that 75% of respondents were male and 25% were female (Table 1). This reveals that there were more male lecturers at Botswana College of Agriculture. This may be attributed to the age-long perception that agriculture is a male dominated career. In terms of age, Table 1 shows that 62% of the lectures were above 40 years with 93% having at least 10 years of teaching experience at tertiary level (Table 1). Most of the lecturers (75%) were PhD holders, a trend that is expected in tertiary level of education. Also, 72% of the respondents were Senior lecturers and above according to university academic staff designations. This shows that the respondents are experienced teachers in their respective discipline. The distribution of respondents across academic departments shows that 25% were from basic science; 25% from agricultural economics, education and extension; 20% from agricultural engineering and land use; and crop production and animal production had 15% each. The household size of respondents was examined based on the expectations that the degree of interference with job may be correlated with household size. In this study, 75% of lecturers have household size of three to four and 92.5% belong to a number of committees ranging from one to five. Most of the lecturers (90%) do not hold any administrative positions. Only 10% of the respondents hold administrative position such as head of department, coordinator of graduate studies, and farm practical training coordination.

From a list of 23 items on knowledge of authentic assessment technique, lecturers were more knowledgeable on items such as authentic assessment requires students to

apply skills and abilities as they would in real life (100%); authentic assessment involves the direct examination of student's ability to use knowledge to perform a task that is encountered in real life (100%); there are more opportunities to observe the process students use to arrive at their answer or response in authentic assessment (95%); students who do not perform well in paper and pencil technique have an opportunity to show their learning in a different way (95%); authentic assessment is a measurement of important abilities that stimulate the application of activities to real life (95%); and authentic assessment is used on difficult subjects (90%) (Table 2). Woolfolk (2004) reported that authentic assessment involves the ability to use knowledge to perform tasks that are encountered in real life.

**Table 2. Knowledge of Using Authentic Assessment by Lecturers\***

Items	True	False
Authentic assessment requires students to apply skills and abilities as they would in real life.	40(100)	0(0)
Authentic assessment means presenting students with tasks that are directly educational instead of indirectly meaningful.	35(87.5)	5(12.5)
Authentic assessment involves the direct examination of student's ability to use knowledge to perform a task that is encountered in real life.	40(100)	0(0)
Authentic assessment is measurement of important abilities that stimulate the application of activities to real life.	38(95)	2(5)
Authentic assessments assess the ability to do.	37(92.5)	3(7.5)
Students are more engaged in active learning.	38(95)	2(5)
There are more opportunities to observe the process students use to arrive at their answer or response in authentic assessment.	38(95)	2(5)
Students who do not do well in paper and pencil technique have an opportunity to show their learning in a different way.	38(95)	2(2)
Authentic assessment contributes to lecturer's empowerment by expanding their role in developing assessment and their active participation in actual scoring.	38(95)	(2)
Authentic assessment force lecturers to identify multiple, specific criteria for judging success.	32(80)	8(20)
In authentic assessment consistency is hard to achieve.	34(85)	6(15)
Authentic assessment leads to unreliability of ratings of performance across teachers or across time for the same teacher.	21(52.5)	19(47.5)
Authentic assessment requires time and effort to use.	22(55)	18(45)
Authentic assessment may lead to biasness.	30(75)	10(25)
Authentic assessment requires retraining or in servicing of lecturers since they may require using new approaches to teaching.	26(65)	14(35)
Authentic assessment creates more work for the lecturers.	28(70)	12(30)
Authentic assessment is used on practical subjects only.	22(55)	18(45)
Students should be observed while performing a task.	15(37.5)	25(62.5)
Only the products should be assessed.	29(72.5)	11(27.5)
Authentic assessment motivates students.	19(47.5)	21(52.8)
Students find authentic assessment boring.	13(32.5)	27(67.5)
Authentic assessment is used on difficult subjects.	4(10)	36(90)
Authentic assessment should be used in all the topics	9(25)	30(75)

\*Figures represent frequency and those in parenthesis are percentages

**Table 3. Use of Authentic Assessment**

	Frequency	Percentage
Use of authentic assessment		
Yes	19	47.5
No	21	52.5
Reasons for use		
To be fair and accurate	4	10
Need time for individual student to be assessed	9	22.5
Course is very practical	8	20
To stimulate students	8	20
It has high reliability	2	5
To expose students to real life situation	9	22.5

## Knowledge and Utilization

Approximately 47.5% of lecturers use authentic assessment while 52.3% do not use authentic assessment. The reasons for this trend as indicated by lecturers in decreasing order of importance are (1) need time for individual student to be assessed (22.5%); (2) to expose students to real life situation (22.5%); (3) courses are very practical (20%); (4) to stimulate students (20%); (5) to be fair and accurate (10%) and (6) it has high reliability (5%). This will have implications on competence acquisition by students in their different areas of specializations (French, 2003).

Most of the lecturers (90%) indicated that authentic assessment is time consuming; 80% showed that authentic assessment creates more work for the lecturers and about 68% reported that authentic assessment technique leads to biasness if fewer items are used (Table 4). Other constraints listed by the lecturers are unreliability of ratings (62.5%) and the difficulty in formulation of assessment criteria (62.5%). The use of authentic assessment requires substantial amount of time to allow students to have adequate opportunity to perform each task. Linn and Miller (2005) reported that authentic assessment is time consuming for teacher to prepare and implement, and it can also lead to biasness (Race et al., 2005). Students' performance on one tasks provide little information about performance on another tasks (Ntiko, 2001).

The result of multiple regressions on the determinants of the use of authentic assessments by lecturers shows that the independent variables were significantly related to use of authentic assessments with F value of 4.67,  $p < 0.05$  (Table 5). Also, R value of 0.84 showed that there was a strong correlation between independent variables and use of authentic assessments. The result further predicted 71% of the variation in use of authentic assessments by lecturers. Significant determinants were teaching experience ( $t = 3.61$ ), educational level ( $t = 4.36$ ), holding administrative positions ( $t = -4.71$ ) and knowledge of authentic assessments ( $t = -3.90$ ). It implies that the more years of teaching experience and the higher the

educational level, the more the use of authentic assessments (Table 5). Also, knowledge is a predictor of use of authentic assessment technique; and thus, the higher the knowledge the more the use of the technique. However as lecturers hold more administrative positions; the use of authentic assessments would decrease.

**Table 4. Constraints to Use of Authentic Assessment**

CONSTRAINTS	Yes	No
Time consuming	36(90)	4(10)
Creates more work for the lecturer	32(80)	8(20)
Lead to biasness if fewer items are used	27(67.5)	13(32.5)
Lead to unreliable of ratings	23(62.5)	15(37.5)
It is difficult to formulate assessment criteria that will cater for a range of ways of giving a performance	25(62.5)	15(37.5)
Judgment and scoring is subjective	23(57.5)	17(42.5)
Students find authentic assessment boring	16(40)	24(60)
Abilities, attitudes and skills are not easy to assess through authentic assessment	9(22.5)	31(77.5)
Lecturers do not have time to use authentic assessment	14(35)	26(65)
Students are not engaged in active learning	6(15)	34(85)

**Table 5. Determinants of Use of Authentic Assessment Techniques among Lecturers**

Variables	Regression coefficients	SE	t*
Intercept	-7.92	1.91	-4.15
Gender	-1.04	2.75	0.37
Age	0.24	0.23	1.04
Teaching experience	5.13	1.42	3.61*
Educational level	7.36	1.69	4.36*
Job designation	-5.13	5.66	-0.91
Household size	0.76	4.53	0.16
No of committees	3.06	2.53	1.21
Holders of administrative positions	-6.74	1.43	-4.71*
Knowledge of authentic assessments	-6.44	1.65	-3.90*
F	4.67		
P	0.00		
R	0.84		
R Square	0.71		

\*Significant at P = 0.05

## Summary

The findings of the study have revealed that most lecturers at the Botswana College of Agriculture are male, having PhD as educational qualification, with long years of teaching experience and belong to several committees in the College. More than half of the lectures do not use authentic assessment technique. The study also reveals that knowledge influences the use of authentic assessment technique. Lecturers are knowledgeable on items of assessment such as authentic assessment require students to apply skills and abilities as they would in real life; authentic assessment involves the direct examination of student's ability to use knowledge to perform a task that is encountered in real life; in authentic assessment there are more opportunities to observe the process students use to arrive at their answer or response in authentic assessment; students who do

not do well in paper and pencil technique have an opportunity to show their learning in a different way; authentic assessment is measurement of important abilities that stimulate the application of activities to real life; and authentic assessment is used on difficult subjects. The most prominent constraint to the use of authentic assessment technique is that it is time consuming. This study recommends that the use of authentic assessment technique should be popularized among lecturers since it will improve skill acquisition and develop critical thinking ability among the graduates of the College.

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