

# Contextualizing the Algorithm of Assessing Students' Learning Vis-à-vis Teachers' Adherence to Assessment Protocols

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## Abstract

This paper aimed to contextualize the algorithm of assessing students' learning in consonance with the adherence of selected teachers of higher education institutions in the Philippines to Assessment Protocols. The research problems addressed to in this investigation were to appraise the teachers' adherence to the protocols of assessment techniques in assessing students' learning through objective test items, namely true-false type, Matching type, Multiple Choice Format, and multiple Response; (a.2) subjective test items: essay tests and short-response items; (a.3) alternative forms of assessment, specifically the problem solving test format, and performance assessment; through presentations, oral defense, dialogues, and audio-visual demonstrations utilized by teachers and (a.4) portfolio assessment that are more focused on the process, product, and showcasing of students' outputs. The research work also delved into which among the assessment schemes are most adhered to by teachers to assess students' learning, and in what areas of the current approach to assessment and evaluation to appraise student progress do teachers need essential information. Adherence of teachers to assessment protocol is very high, this is very commendable, most specifically on the use of objective test formats, multiple choice format, true-false tests, and multiple responses, among others. Teachers' adherence to the subjective test formats such as the use of problem solving test and performance assessment, is also very high. The portfolio assessment measured through Process (journals, reflections, independent work, teacher and self-evaluations), Product (short, more accessible documents at mastery level), and Showcase (documentation, mementos of their favorite learning activities, creative investigation), were the least adhered to by the selected teachers of higher education institutions in the Philippines. Results of this research investigation showed that teachers have a very good content knowledge of the algorithms in designing test items; most specifically in designing traditional objective and subjective testing. To enhance the proficiency of teachers on the construction of more learner-centered test items; enhanced use of more innovative algorithms of test construction be observed to be more reflective of the course learning outcomes, learners' perspectives, the diversity of the learning environment and the appropriateness of the assessment schemes to the specific fields of discipline.

**Keywords:** Adherence to assessment protocols, objective test formats, subjective test formats, alternative test formats, portfolio assessments

## 1. Introduction and Conceptual Framework

*"Teaching and learning will not happen, if there is no assessment"*. This is a popular adage thought of, and observed by teachers, either consciously or unconsciously, as they went about in their vocation as mentors, and as life-long learners themselves.

One of the challenges faced by educators is to be fair in their assessment and evaluation of student performance but the diverse background of students and emerging best practices in assessment of academic work continue to pose daunting problems.

Hoy & Gregg, 1994, pointed out that, "Assessment is an ongoing process which involves the systematic collection, analysis, and integration of information". They further posited that, "Assessment could use qualitative or/and quantitative data, and could be formal (e.g. test) or informal (e.g. observation)".

The researchers, who are teachers for many years, initiated their self-evaluation of the quality of tests they were using to appraise their students' performances in various fields. In their aim to collect feedback on the quality of teacher-designed/constructed assessment instruments, this research work was initiated to gather responses which may generate information on the practices of teachers in item writing of selected assessment techniques.

As pointed out by Lockwood and Mclean: *"If assessment is to be a positive force in education, it must be implemented properly. It cannot be used to merely sort students or to criticize education. Its goals must be to improve education. Rather than 'teach to the test,' we must 'test what we teach.'"*

In a similar note, Grant Wiggins, EdD. President and Director of Programs, Relearning by Design, Ewing, New Jersey, postulated that: *"Assessment should be deliberately designed to improve and educate student performance, not merely to audit as most school tests currently do."*

In all academic settings, assessment is generally viewed as closely related to the delivery of instruction. Assessment tools and procedures, in addition to being essential for evaluating students' progress and achievement, also help in evaluating the suitability and effectiveness of the curriculum, the teaching

methodology, and the instructional materials to be utilized to enhance the teaching-learning process.

Classroom assessment, whether it maybe in the basic education, undergraduate or graduate levels, involves two major types of activities: collecting information about how much knowledge and skill students have learned (measurement) and making judgments about the adequacy or acceptability of each student's level of learning (evaluation). Both the measurement and evaluation aspects of classroom assessment can be accomplished in a number of ways. Teachers require students to take exams, respond to oral questions, do homework exercises, write papers, solve problems, and make oral presentations; to determine how much learning has occurred, to evaluate the scores from those activities by comparing them either to one another or to an absolute standard, for them to illustrate the various ways in which teachers can measure and evaluate student learning.

Measurement, on the other hand, is the assignment of numbers to certain attributes of objects, events, or people according to a rule-governed system. These are referred to attributes of people; to measure someone's level of typing proficiency by counting the number of words the person accurately types per minute or someone's level of mathematical reasoning by counting the number of problems correctly solved.

In a classroom or other group situation, the rules that are used to assign the numbers will ordinarily create a ranking that reflects how much of the attribute different people possess (Linn & Gronlund, 1995).

Evaluation, involves using a rule-governed system to make judgments about the value or worth of a set of measures (Linn & Gronlund, 1995). Depending on the rules that are used, the result of evaluation, could mean that the student has learned that body of knowledge exceedingly well and is ready to progress to the next unit of instruction or, conversely, that the student has significant knowledge gaps and requires additional instruction. Brown and Hudson (1998) identified three types of responses required in most classroom assessment: selected-response (true-false, matching, multiple choice format), constructed response (fill-in, short answer, performance), and personal-response (conferences, portfolios, self and peer assessment).

In this aspect, and in relation to Assessment for learning, this has been termed as a process by which information is used by mentors, coaches, and importantly by teachers to adjust to their teaching strategies, and for the students, or tutees, to adjust to their learning strategies. Assessment for learning, assist teachers to gather information for them to plan and modify teaching and learning templates, either for individual or group of students, or for the whole class. Through assessment of learning, and utilizing varied assessment schemes, teachers may be able to identify strength the strengths and weaknesses of both teachers and students; it is through assessment that students' needs, and the causes of their leaning difficulties can be identified.

In the academic environment, assessment of learning will lead towards the establishment of a classroom culture that encourages interaction and the use of assessment tools; bringing about learning goals and setting directions of individual students' progress toward those goals.

Teachers' adherence to various learning assessment principles and guidelines can assess the individual learning of students through the assessment techniques utilized by teachers.

### **1.1 Objectives of the Research Work**

This research endeavor aimed to revisit teachers' adherence to the protocols of assessment techniques in assessing students' learning in selected higher education institutions in the Philippines.

Specifically, the following research questions were formulated to set direction to this undertaking:

1. What is the teachers' adherence to the protocols of assessment techniques in assessing students' learning in relation to (a.1) Objective test items, namely True-False type, Matching Type, Multiple choice, and Multiple Response; (a.2) Subjective test items, namely Essay tests and Short-response items; (a.3) Alternative forms of assessment, namely Problem Solving Test, and Performance Assessment; and (a.4) portfolio assessment through presentations, oral defense, dialogues, and audio-visual demonstrations utilized by teachers?
2. Which among the assessment schemes are most adhered to by teachers to assess students' learning?
3. In what areas of the current approach to assessment and evaluation to appraise student progress do teachers need essential information?

### **II. Research Methodology**

This research undertaking employed the descriptive-quantitative research design to collect data on the research questions, analyze and interpret the results that yield respondents' responses to the different question items on various test formats, both from the teachers' self-assessment and the assessments made by students who were enrolled in the subjects handed by the former.

The respondents of the study are teachers of selected higher education institutions in the Philippines. These institutions are either private or government managed, and the teachers were teaching varied fields of specialization.

To determine the teachers' adherence to testing principles in constructing the objective, subjective alternative and portfolio forms of assessment, a data-gathering instrument with various question items was constructed by the researchers. The question items were based on documents and manuscripts pertinent to the

research questions. There were items to determine adherence to testing principles in constructing objective test items specifically on True-False, Matching Type, and Multiple Response test formats.

The researchers also focused on evaluating the testing principles in constructing subjective test items, specifically about essay tests and short-response items. There were closed-ended and open –ended questions which were asked to generate the data which are essential to address the research questions on problem solving test formats, performance, and portfolio assessments.

The options used in the research instrument were as following:

5	Always
4	Often
3	Sometimes
2	Seldom
1	Never

The questionnaire with the question items were subjected to content analysis by teachers who have beenteaching for a number of years in different major fields: Languages, Social sciences, Mathematics, Biological and Physical sciences, Physical education, Music and arts, among others. The question items were also shown to graduate school professors to validate further the item formats and other protocols of test construction.

The mean was used, using the scale to determine the adherence of teachers to testing principles in constructing the test formats. To identify which of the test formats were most or least adhered to, ranking was inadvertently used based on the mean scores of each indicator.

Mean Scores	Interpretation
4.21 – 5.00	Very High Adherence
3.41 – 4.20	High Adherence
2.61 – 3.40	Moderate Adherence
1.81 – 2.60	Low/Fair Adherence
1.00 – 1.80	Very Low Adherence

### III. Results and Interpretation of the data

In Table 1, data showed the teachers' adherence to the protocols of assessment techniques in assessing students' learning in relation to the objective test items.

**Table 1. Mean scores and interpretive descriptions of adherence to objective test item formats.**

Objective test items Formats	Mean scores	Interpretative Description
True-False Type	4.34	Very High
Matching Type	4.42	Very High
Multiple Choice Format	4.23	Very High
Multiple Response Format	4.28	Very High
Total Mean score	4.31	Very High

The mean scores of teachers' adherence to testing principles in constructing objective test items as a whole and in terms of the objective tests: True-False Type Type(mean:4.34), Matching Type format (4.42), Multiple Choice format (4.23), and multiple response format (4.28) is Very High. The over-all mean score is 4.31 which is interpreted as a very high adherence to testing principles in constructing the objective test items. The results may imply that the teachers' adherence on the protocols of designing the traditional methods of assessment using the true-false type, matching type, multiple choice format, is Very High; such results may be traced from the fact that these are traditional types of assessments, the formats that were likewise experienced by teachers when they were still students, and were practiced for many decades by academicians in from the secondary and in higher education institutions.

**Table 2. Mean scores and interpretive descriptions of adherence to Subjective test item formats**

Subjective test items formats	Mean scores	Interpretive descriptions
Essay type tests	4.27	Very high
Short response test items	4.12	High
Total Mean score	4.20	Very high

The principles in constructing the subjective test items as a whole and in terms of Essay tests and Short response items, Essay tests and Short-response items is likewise Very High, although the mean score is lower

than the adherence to the Objective test formats.

John M. Stalnaker (1951, p.495) espoused on the meaning of essay to be: "A test item which requires a response composed by the examinee, usually in the form of one or more sentences, of a nature that no single response or pattern of responses can be listed as correct, and the accuracy and quality of which can be judged subjectively only by one skilled or informed in the subject." The comments made by some teachers pointed out that for them, it is easy to prepare essay questions because they agree on the common contentions that essay tests are "generally most suitable to assess students' understanding of subject-matter content, to assess students' abilities to reason with their knowledge of a subject, to determine what type of test item to use", as long as they consider the intended learning outcome or objective that the test item is meant to assess. Teachers may also be using these subjective forms of assessment in order for assessment of student learning to accurately represent the degree to which a student has achieved an intended learning outcome, since it is essential that the kind of test questions used must be suitable to test intended learning outcomes.

**Table 3. Mean scores and interpretive descriptions of adherence to Alternative Forms of assessments**

Alternative Forms of assessments	Mean scores	Interpretative Description
Problem Solving Test	3.39	Moderate Adherence
Performance Assessment	4.16	Very High Adherence
Total Mean score	3.78	High Adherence

The table showed that the teachers' adherence on the alternative forms of assessment, in terms of Problem Solving Test is 3.39, which is only a moderate adherence to this type of assessment while adherence to Performance Assessment, is Very High. Consequently, the teachers' adherence to Alternative Forms of assessments is high. Most specifically, on the Problem Solving Test Items, a subjective type of item may not be adhered to, consistently by teachers, may be attributed to the more complex procedures where teachers can assign full or partial credit to either correct or incorrect solutions depending on the quality and kind of work procedures presented.

From the data shown in the table, adherence to portfolio assessment as a whole yielded a mean score of 3.83 which is interpreted as High, the highest adherence was in the use of showcase where students were evaluated based on the outputs they came up with on documentation, mementos of their favorite learning activities, creative investigation, and other related activities. On Product, where the students' outputs were measured at mastery level, got the lowest mean score.

**Table 4. Mean scores and interpretive descriptions of adherence to Portfolio assessments**

Portfolio assessments	Mean scores	Interpretative Description
Process( <i>journals, reflections, independent work, teacher and self-evaluations</i> )	3.85	High
Product( <i>short, more accessible documents at mastery level</i> )	3.64	High
Showcase ( <i>documentation, mementos of their favorite learning activities, creative investigation</i> )	4.00	High
Total Mean score	3.83	High

#### IV. Conclusion

As the goal of these initiatives to appraise the adherence of teachers of higher education institutions in the Philippines, is, ultimately, to favor learning and to respect students' idiosyncrasies, and their unique ways of learning, results showed that teachers are very knowledgeable of the protocols in designing test items; most specifically on the traditional objective and subjective testing. Findings of the study also yielded the result that teachers' adherence to the protocols of objective test items as assessment techniques in assessing students' learning, is Very High, followed by their adherence to the protocols in the use of subjective test items, most specifically on the Essay format, and the alternative forms of assessment. Among the other m, Problem solving is not frequently utilized.

The least adhered to is portfolio assessment, which are either on the process, product and showcasing of outputs. Teachers may not strongly make use of both product or process assessments to be aligned efficiently with advances in the assessment of learning which are supposed to considerably bring better results in the development of educational environments and may enhance the foundation of tools and environments to further strengthen the protocols of facilitating teaching, learning, and assessment.

Conclusively, teachers need essential information to strengthen their current approach to assessment and evaluation in appraising students' progress; integrate their testing and evaluation processes, put value into the total instructional programs for the purpose of guiding and enhancing the students' learning that must be properly anchored on the learning outcomes of the subjects or courses.

## V. Recommendations

The following are put forth as recommendations for teachers of higher institutions of learning:

- a) Undertake a study on evidence-based assessment with emphasis on standardized tests, portfolio assessment and other alternative forms of assessment in connection with reflections, work samples or exemplars, product or process assessment;
- b) Review, evaluate certain testing guidelines to enhance teachers' familiarity with the basic test development protocols, with due attention to the course learning outcomes to diagnose the strengths and areas for improvement;
- c) Strengthen skills on item and distractor analysis, error analysis, feed back of the test results, and directing wash back which are generally frequently left unattended to;
- d) Reflect on the testing process by learning from each test or exam as to whether or not it served its purpose, most specifically on the achievement of CLOs, it's "fitness" with curricular outcomes, the level of students based on the qualifications framework(QF), and its efficiency and effectiveness as assessment schemes;
- e) Consider significant human experiences that are salient segments of students' learning experiences, as one factor to be considered for the possible adaption of more innovative test development protocols, most specifically on problem-based examinations, performance and portfolio assessments.
- f) Teachers are encouraged to create embedded assessments that may come in the form of assignments, activities, or exercises that are done as part of a class. These course-embedded assessments can provide assessment data about a particular learning outcome, which course instructor or evaluators can use to evaluate students' works, using standards or rubrics.

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