THE TAXONOMY OF THE FOUR TERMINAL EXAMINATIONS OF GUIMARAS STATE COLLEGE: BASIS FOR POLICY FORMULATION

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Abstract

This study was conducted to identify the taxonomy of the four terminal examinations with two-way table of specifications of the Guimaras State College teachers for Academic Year 2011-2015. A descriptive-survey research design was used to determine the four terminal examinations of Guimaras State College teachers and the source of data are the teachers' test questions with table of specification. Mean, frequency distribution, t-test and ANOVA were the statistical tools used. Majority of the test questions items fell under knowledge level in the general subject areas. This was followed by comprehension level in the professional subject areas. Both the application and synthesis levels were under specialization/major subject areas, and the evaluation level in professional subject areas. There was a significant difference existed among subject areas in items that were under comprehension, application, analysis, and evaluation. However, no significant difference existed among subject areas with items that fell under knowledge and synthesis levels.

Keywords: taxonomy, terminal examinations, GSC

Introduction

"One of the beauties of teaching is that there is no limit to one's growth as a teacher, just as there is no knowing beforehand how much your students can learn." (Herbert Kohl)

Teaching is more than a set of methods. Teaching well means addressing a set of objectives, for a particular group of students, at a certain point in the school year, with certain resources, within a particular time frame, in a particular school and community setting. It means finding a balance between direct instructions and orchestrating the activities of individuals and groups of students. It means developing students' skills and strategies for learning, at the same time they learn the content of the curriculum.

Artful teachers approach the subject matter not as static knowledge or inert ideas, but as ways of knowing. Using ways of knowing—thinking within a discipline—means to command a set of concepts and a set of strategies for asking questions and creating knowledge. To think across disciplines means to identify problems, to ask the right questions, to bring the right knowledge to bear, to find the right solutions, and to apply the right measure of one's success.

It is not uncommon situation in most classroom that the teachers heard complaint from the students because the test they studied for was completely or partially unrelated to the class activities they has experienced. Frequently there is both a real and perceived mismatch between content examined in class and the material assessed on at the end of chapter/unit test. This lack of coherence leads to a test that fails to provide evidence from which teachers can make valid judgments about students' progress. One strategy teacher can used to mitigate this problem is to develop a table of specification.

Table of specification, sometimes referred to as test blue print, is a table that helps teachers align objectives, instruction and assessment. This strategy can be used for a variety of assessment methods but is not commonly associated with constructing traditional summative tests. It is clearly defined as possible scope which laid emphasis of the test and relates other objectives to the content in order to ensure a balanced test items. Table of specification may be referred to as content of a course or curriculum that can be broadly defined to include both subject matter content and instructional objectives. This simply means the performance of students is expected to demonstrate. Both of these aspects are concerned with content validation; Table of specification as "test blue print" master chart; matrix of content and behavior" prescription; recipe; roadmap" test specification.

Akem and Agbe (2003) revealed that table of specification is an outline relating behavior to topics. By it, teacher can determine what topics are being stressed and also assist in the preparation of test that reflect what students have learned and also the limit the amount of time spent on each unit. Ughamadu (2000) stated that a table of specification or test blue print is a device that enables the teacher to arrive at a representative sample of the instructional objectives and the subject matter treated in the class. Thus, once the instructional objectives and the subject matter have been clearly identified, a table of specification is then prepared to link both and also indicate the number of test items to be written for each level of the objective and each subject matter area. He concluded by instructing us how to prepare a table of specifications.

The classroom teacher will decide first on the number of test items or questions he intends to write. Once a decision has been taken on this, the teacher will proceed to preparing the table of specifications by listing the instructional objectives across the top of the table. Then a list of the major subject matter (topics) is written down the left side of the table with the list written, the teacher then indicates number of test items that would be set for each level of objective and each subject matter area. At the bottom and right end of the table, the total number of questions for each subject matter and objective are indicated. But cautioned that, the teacher should note that the relative emphasis that the objectives and subject matter will receive depend on the emphasis given to each of the objectives and each of the subject matter during the period of teaching and learning.

One of the most popular and always found useful models nowadays, especially in an inclusive setting, was Bloom's Taxonomy of Educational Objectives. Developed by Benjamin Bloom in the 1950s the model provides a structure that allows teachers to present a lesson to a group of students who have varied needs and abilities. This model supports the need to differentiate the curriculum so all students are able to participate in the same content area during a lesson. The structure allows the teacher to accommodate a variety of students' needs by applying the appropriate questions and activities for children so that they may equally participate in the lesson. The purpose of this study is to investigate how teachers develop a table of specification and utilize the Blooms' taxonomy of educational objectives during the conduct of four terminal examinations specifically in all general education subjects.

Theoretical Framework

Summative assessment provides information on the achievement of students at the end of a period of learning. State examinations are a form of high-stakes, summative assessment and a formal method of measuring performance. Miniature, informal, low-stakes summative assessment often mirrors high-stakes assessment and this type of assessment features strongly in the Irish classroom. The main focus is on the assessment of learning.

In contrast, assessment for learning is an approach that uses classroom assessment to broaden learning, promote achievement and provide opportunities for developing self-regulated learners, initiative and reflective practice. A quantitative improvement in learning gains is possible when using this approach. The phrase assessment for learning is a common substitute for formative assessment. Assessment of learning is a key formative and developmental assessment purpose. Formative assessment provides information to teachers on where individual students are in their learning, enabling teachers to meet the needs of students. The assessment information acquired informally in most cases influences how the students are taught and consequently assists in improving learning. 'For assessment to function formatively, the results have to be used to adjust teaching and learning (Black, P. & Wiliam, D. 1998:5).' Assessment for learning is not viewed as a stand-alone theory, but it is based on an amalgam of key research conducted into active learning, learning objectives/outcomes, learner autonomy and self-assessment. There is a misconception that assessment for learning is 'a theoretical' and entails a series of practical teaching and learning strategies that have few explicit theoretical underpinnings. In fact, the assessment for learning process is 'an active, social process, in which the individual makes meaning and which is best done by building on what is already known (Stobart, 2008:150)'. The process brings together different schools of thought including the neo-behaviorist model of mastery learning developed by Bloom et al (1971) and included the use of small units of learning followed by formative assessment. 'Social constructivist' learning theory views learning as a social

process in which the individual develops meaning. The use of the term social constructivist is contentious because it borrows elements from different schools of thought including 'the constructivist camp, with its emphasis on individual meaning-making, or the situated learning camp, in which learning is seen as the result of participation in a community of practice', where the social and cultural basis of learning and contextual relevance is important (Stobart, 2008:151). An interactive learning environment that can form, shape and guide the next steps in learning will enhance the assessment for learning process.

The efficacy of assessment for learning in supporting learning has been backed by many organizations and key researchers in the field. An assessment for learning developmental initiative led by the National Council for Curriculum and Assessment (NCCA) arose from the consultative process undertaken as part of the review of Junior Cycle. Pilot schools in Sligo and Cork were supported in the use of formative assessment and the 2005 'Interim Report on the Developmental Initiative in assessment for learning in Junior Cycle' outlined that the assessment for learning approaches used enhanced student motivation and performance. The enhancement of teacher/student relationships was also reported. During Phase II of the project (2005-2006), web-based support for the initiative was developed.

Research Objectives

This study aims to identify the taxonomy of the four terminal examinations with two-way Table of Specifications of the Guimaras State College teachers for SY 2011-15.

1. What is the percentage of test items allocated to each of the level of cognitive domain of Bloom's Taxonomy?
2. Is there a significant difference in the distribution of items allocated to each level of cognitive do main when grouped according to subject areas, terminal exams, course, semester, and school year?

REVIEW OF RELATED LITERATURE

"Taxonomy" simply means "classification", so the well-known taxonomy of learning objectives is an attempt to classify forms and levels of learning. It identifies three "domains" of learning each of which is organized as a series of levels or pre-requisites. It is suggested that one cannot effectively address higher levels until those below them have been covered. As well as providing a basic sequential model for dealing with topics in the curriculum, it also suggests a way of categorizing levels of learning, in terms of the expected ceiling for a given program. Thus in the Cognitive domain, training for technicians may cover knowledge, comprehension and application, but not concern itself with analysis and above, whereas full professional training may be expected to include this and synthesis and evaluation as well (Murphy, 1997).

The major purpose in constructing taxonomy of educational objectives is to facilitate communication. In our original consideration of the project we conceived of it as a method of improving the exchange of ideas and materials among test workers, as well as other persons concerned with educational research and curriculum development. For instance, the use of the taxonomy as an aid in developing a precise definition and classification of such vaguely defined terms as "thinking" and "problem solving" would enable a group of schools to discern the similarities and differences among the goals of their different instruction programs. They could compare and exchange tests and other evaluative devices intended to determine the effectiveness of these programs. They could, therefore, begin to understand more completely the relation between the learning experiences provided by these various programs and the changes which take place in their students (Benjamin, 1998).

The major task in setting up any kind of taxonomy is that of selecting appropriate symbols, giving them precise and usable definitions, and securing the consensus of the group which is to use them. Similarly, developing a classification of educational objectives requires the selection of an appropriate list of symbols to represent the major types of educational outcomes. Next, there the task of defining these symbols with sufficient precision to permit and facilitate communication about these phenomena among teachers, administrators, curriculum workers, testers, educational research workers and others who are likely to use the

taxonomy. Finally, there is the task of trying the classification and securing the consensus of the educational workers who wish to use the taxonomy (Harrow, 1972).

It is recognized that the actual behaviors of the students after they have completed the unit of instruction may differ in degree as well as in kind from the intended behaviors specified by the objectives. That is, the effects of instruction may be such that the students do not learn a given skill to the desired level of perfection; or, for that matter and they may not develop the intended skill to any degree.

This is a matter of grading or evaluating the goodness of the performance. The emphasis is on obtaining evidence on the extent to which desired and, intended behaviors have been learned by the student. It is outside the scope of the task we set ourselves to properly treat the matter of determining the appropriate value to be placed on the different degrees of achievement of the objectives of instruction ((Leydens and Thompson, 1997).

It should also be noted that the intended behaviors specified by educational objectives do not include many of the behaviors which psychologists are interested in classifying and studying. One reason is that the intended behaviors represent the social goals imposed upon youngsters by their society or culture. Thus, the intended or desired behaviors included in educational objectives usually do not include undesirable or abnormal behaviors which are socially disapproved. Similarly, certain natural or unsocial behaviors which might be of interest to psychologists may fall outside the categories of the taxonomy (Kilen, 2003).

Since the determination of classes and their titles is in some ways arbitrary, there could be an almost infinite number of ways of dividing and naming the domains of educational outcomes. To guide us in our selection of a single classification system and to make the product more readily understood and used, we established certain guiding principles. First, since the taxonomy is to be used in regard to existing educational units and programs, we are of the opinion that the major distinctions between classes should reflect, in large part, the distinctions teachers make among student behaviors. These distinctions are revealed in the ways teachers state educational objectives. They are also found in their curricular plans, their instructional material and their instructional methods. To the extent it was possible, the subdivisions of the taxonomy are intended to recognize these distinctions(Anderson and Spady, 1999).

A second principle is that the taxonomy should be logically developed and internally consistent. Thus, each term should be defined and used in a consistent way throughout the taxonomy. In addition, each category should permit logical subdivisions which can be clearly defined and further subdivided to the extent that appears necessary and useful.

A third Principle is that the taxonomy should be consistent with our present understanding of psychological phenomena. Those distinctions which are psychologically untenable, even though regularly made by teachers, would be avoided. Further, distinctions which seem psychologically important, even though not frequently made in educational objectives, would be favorably considered for inclusion. Perhaps it ‘should be reiterated that, since the taxonomy deals only with educationally intended behavior, it falls considerably short of being a classification scheme for all psychological phenomena(Arennds, 2001).

A fourth principle is that the classification should be a purely descriptive scheme in which every type of educational goal can be represented in a relatively neutral fashion. Thus, the Dewey decimal classification system or libraries describes all the classes of books. It does not indicate the value or quality of one class as compared with another, nor does it specify the number and kind of books any particular library ‘should possess. Similarly, to avoid partiality to one-view of education as opposed to another, we have attempted to make the taxonomy neutral by avoiding terms which implicitly convey value judgments and by making the taxonomy as inclusive as possible. This means that the kinds of behavioral changes emphasized by any institution, educational unit or educational philosophy can be represented in the classification. Another way of saying this is that any objective which describes an intended behavior should be classifiable in this system. On the other hand, the taxonomy will probably include a greater variety of behaviors than those emphasized by anyone school, course or educational philosophy. Thus, one course might have objectives classifiable in

four of the categories, another in only three of the categories, and so on (Haladyna, 1999).As the taxonomy is now organized, it contains six major classes such as knowledge, comprehension, application, analysis, synthesis, and evaluation.

Although it is possible to conceive these major classes. In several different arrangements, the present one appears to us to represent something of the hierarchical order of the different classes of objectives. As we have defined them, the objectives in one class are likely to make use of and be built on the behaviors found in the preceding classes in this list.

The arrangement of behaviors from simple to complex and the differentiation of behaviors into three domains cognitive, psychomotor and affective were made primarily from an educational viewpoint. That is, these are the distinctions which teachers make in the development of curriculum and teaching procedures. Educational testers will also make similar distinctions. As they examine the classification system so far developed, however, they note an additional dimension not usually considered in educational and teaching procedures.

One of the major threads running through all the taxonomy appears to be a scale of consciousness or awareness. Thus, the behaviors in the cognitive domain are largely characterized by a rather high degree of consciousness on the part of the individual exhibiting the behavior, while the behaviors in the affective domain are much more frequently exhibited with a low level of awareness on the part of the individual. Further, in the cognitive domain especially, it appears that as the behaviors become more complex, the individual is more aware of their existence. We are of the opinion that this applies to the other domains as well.

Clearly there is no precise scale of consciousness which may be used to test these speculations. However, some of our research on the thought processes involved in problem solving indicates that students are able to give more complete reports of their attack one problem as the problem becomes more complex, that is, as the problem is classified in the more complex classes of intellectual abilities and skills (Kubiszyn, 2003).

Bloom's Taxonomy organizes the goals of education into three domains. The cognitive domain relates to the intellectual part of education that is knowledge based. The affective domain refers to the attitudinal changes that education can 85bring about. The psychomotor domain involves the development of mastery in motor skills. Showing a student how to factor a given polynomial focuses on the cognitive domain, while motivating him or her to be open to trying out a new method of solving a differential equation addresses the affective domain. Using a meter stick or blocks to describe the concept of addition engages the psychomotor domain. In this article I focus on the cognitive domain. Bloom et. al develop a six-tiered scheme to describe educational goals in this domain. These are, in order of increasing sophistication: Knowledge,

Comprehension, Application, Analysis, Synthesis, and Evaluation. In the following it is briefly describe these six levels. In Bloom's Taxonomy, Knowledge includes knowledge of terminology, specific facts, and methods of dealing with these specific facts, and the universals and abstractions of a given field. The main cognitive process involved is information retrieval; the kind of information involved may be simply factual or substantially deep. Comprehension requires the skills needed to translate, interpret, and extrapolate from knowledge. It denotes a basic and simplistic level of understanding. Standard examples involve situations where students are expected to rephrase a definition, or summarize a paragraph in their own words.

Application refers to implementing a relevant technique or method learned as an abstraction to a given concrete problem. In order for this activity to rank at a higher level than comprehension, the learner should be able to discern independently which abstraction, among several, is suitable for the given problem, and not be instructed to use a specific one.

Analysis, typically considered a critical thinking task, may be viewed as one of the higher-level objectives. It mainly involves the process of decomposing given information into its elementary parts in order to study and understand it.

Another higher-level objective, Synthesis, relates to tasks that require creativity and original thinking. More explicitly, synthesis is the putting together of parts of known facts, methods, and ideas to create a new whole. The end product of such activity could be a unique piece of communication, an action plan, or a recognized relation between the various components of the problem under study.

Evaluation is the highest level objective of the cognitive domain in Bloom's Taxonomy, and refers to tasks that involve making value judgments. Evaluators may be required to apply internal or external criteria in their evaluation.

Methodology

Research Design. This study used the descriptive-survey research design to determine the taxonomy of the four terminal examinations of Guimaras State College teachers. According to Best (1970), this research design was appropriate for the study that would interpret conditions or situations that existed: its prevailing practices, point of view or attitudes that were being felt or trends that were developing. It was often directed towards combining with comparison or contrast involving measurement and interpretation.

Materials Used. The materials used were the teachers' Table of Specifications during the conduct of the four terminal examinations of Guimaras State College. The sample size was determined using the Slovin's equation (1960) as reflected below because the population was too large to be managed by the researcher.

$$n = \frac{N}{1 + N\,(e)^2}$$

where:

n = sample size
N = population size
e = desired margin of error (0.05)

Data Gathering Procedures. Secondary data were used in this study. The data are the two-way table of specifications submitted by the teachers during the conduct of four terminal examinations for SY 2011-15. These were examined and classified according to subject area and tallied according to each category/level of cognitive domain of Bloom's Taxonomy.

Statistical Tools. Mean and frequency distribution were used to determine the allocation of the taxonomy used by the teachers. Inferential statistics such as T-test and ANOVA were also used. The data were tabulated and analyzed through Microsoft Excel and SPSS program.

Results and Discussion

This study aims to identify the taxonomy of the four terminal examinations of the Guimaras State College teachers for SY 2011-15. Specifically, this study sought answers to the following questions;

1. What is the items percentage allocated to each of the level of cognitive domain of Bloom's Taxonomy?

2. Is there a significant difference in the distribution of items allocated to each level of cognitive domain when grouped according to subject areas, terminal exams, course, semester, and school year?

The findings are as follows:

Figure 1 presents the distributions of the questions according to categories in the cognitive domain of Bloom's taxonomy. The 488 test questionnaires containing of at least 50 test items were performed using document analysis method. Results revealed that out of the 50-item test, General Subject in the knowledge level has a mean of 30.41; Specialization/Major Subject has 30.15 and; professional Subject has 28.72. In terms of comprehension level, General Subjects has a mean of 11.91; Specialization/Major has 10.60 and; Professional Subject has 14.91. As to application level, General Subject has 10.85; Specialization/Major Subject has 12.21 and; Professional Subject has 7.0. In the analysis level, General subjects has a mean of 12.61, Specialization/major subject has a mean of 9.85 while Professional subjects has a mean of 10.03. For synthesis level, General Subject has a mean of 7.10; Specialization/Major Subject has 9.76 and; Professional Subject has 9.30. In evaluation level, General Subject obtained a mean of 4.57; Specialization/Major Subject has 5.29 and; Professional Subject has 7.92.

This reveals that the majority of the test questions are apportioned to knowledge level in all subject areas. Moreover, it is seen that almost similar number of test items are assigned to comprehension, application and analysis levels and only limited test items are assigned to synthesis and evaluation. This implies that the number of lower-level questions were quite high compared to higher-level questions.

Figure 1
Item Distribution in Bloom's Taxonomy Cognitive Domain as to Subject Areas

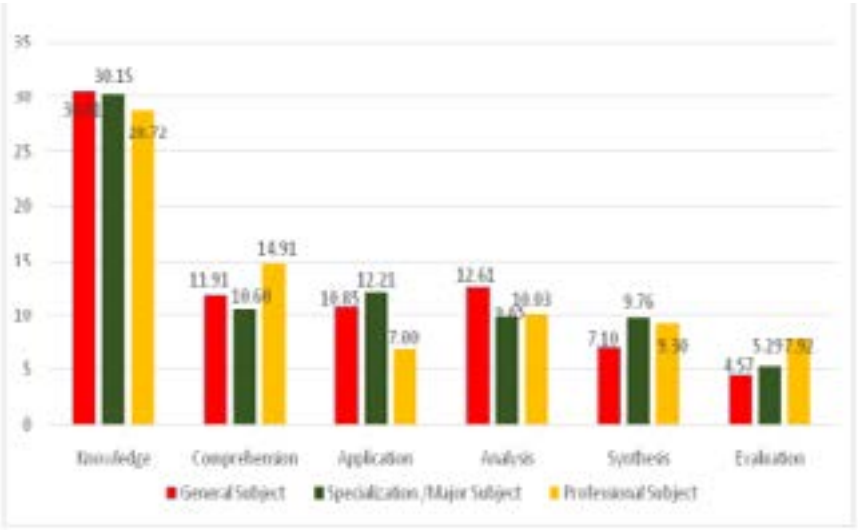

Figure 2 shows the distribution of items in four terminal exams. The means for knowledge level are: Prelim (28.88); Midterm (31.01); Pre-final (27.18) and; Final (30.59). As to comprehension level, Prelim (10.54); Midterm (12.70); Pre-final 8.72 and; Final (15.34).In the application level, Prelim (10.29); Midterm (10.75); Pre-final (9.57) and; Final (12.45).As to analysis level, Prelim (9.42); Midterm (11.17); Pre-final (8.13) and; Final (11.98).For synthesis level, Prelim (5.66); Midterm (10.63); Pre-final (6.25) and; Final (10.50).For evaluation level, Prelim (4.42); Midterm (7.07); Pre-final (4.57) and; Final (6.59). This reveals that majority of the test items fall under knowledge level and the least number of items fall under evaluation level. It was found out that test items in comprehension, application and analysis levels were almost the same in number.

Furthermore, it was also revealed that the means in midterm and final exams were higher compared to Prelim and Pre-final exam in all levels. This implies that the teachers' made test questions were more on measuring their remembering skills, a portion for understanding, applying and analyzing, and less for evaluation.

Figure 2
Item Distribution in Bloom's Taxonomy Cognitive Domain as to Terminal Exams

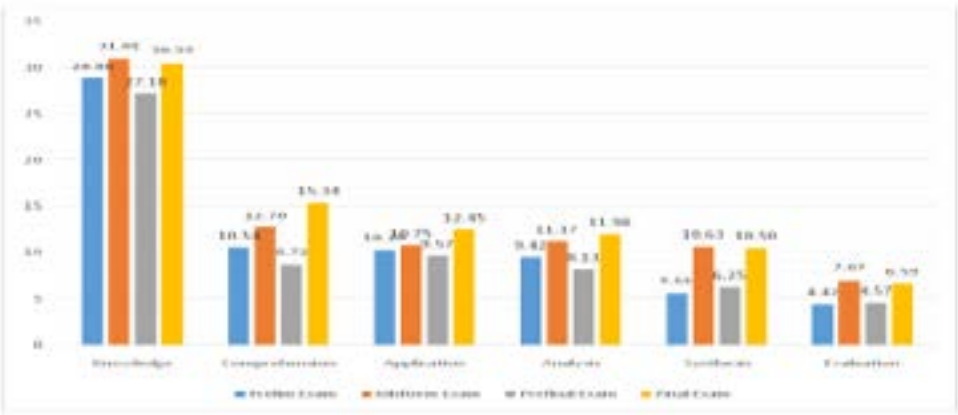

Figure 3 explains data in terms of course taken. The means for Knowledge Level were: Teacher Education (30.24); BSBA (24.22); BIT (32.60); BS Crim (19.00); BSHRM (33.86) and; BSIT (21.00). As to Comprehension Level, Teacher Education (13.45); BSBA (8.69); BIT (5.52); BS Criminology (10.00); BSHRM (8.09) and; BS InfoTech (16.67).As to Application Level, Teacher Education (11.83); BSBA (5.00); BIT (9.07); BS Criminology (4.00); BSHRM (3.67) and; BS InfoTech (8.00).As to Analysis Level, Teacher Education (11.22); BSBA (8.45); BIT (7.38); BS Crim (11.00); BSHRM (4.70) and; BS InfoTech (12.86).As to synthesis level, Teacher Education (10.46); BSBA (5.84); BIT (5.18); BS Crim (5.00); BSHRM (13.00) and; BS InfoTech (2.67).As to Evaluation Level, Teacher Education (6.08); BSBA (5.64); BIT (1.33); BS Crim (5.50); BSHRM (5.40) and; BS InfoTech (6.75). This distribution of test items reveals that majority of the test questions fall under knowledge level in all courses and the least number of items fall under Evaluation Level.

Figure 3
Item Distribution in Bloom's Taxonomy Cognitive Domain as to Courses

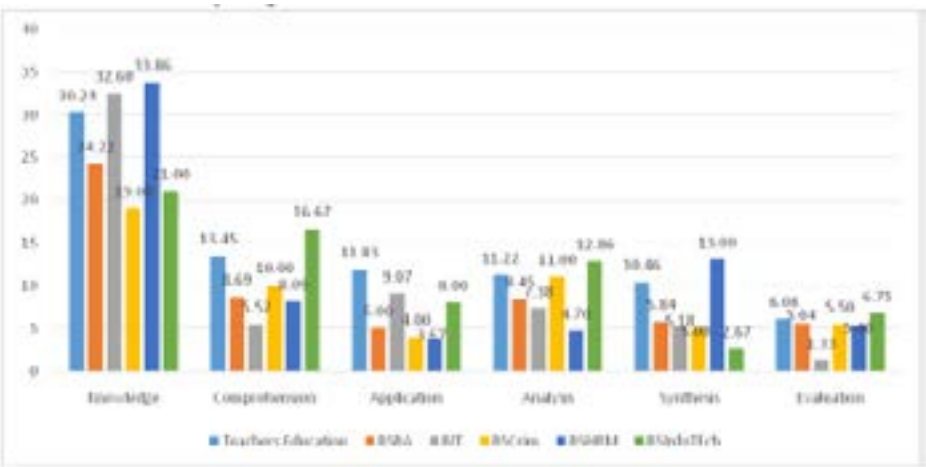

Figure 4 presents the distribution of items as to semester. It shows that knowledge level has the highest items apportioned with means: 1st Semester (30.46); 2nd Semester (28.98). In Comprehension Level: 1st Semester (12.51); 2nd Semester (11.87). Application Level: 1st Semester (10.49); 2nd Semester (11.28). Analysis Level: 1st Semester (10.79); 2nd Semester (10.14). Synthesis Level: 1st Semester (9.28); 2nd Semester (8.59). Evaluation Level: 1st Semester (5.59); 2nd Semester (6.25) with the least apportioned items. It was observed that the means of Comprehension, Application and Analysis were almost the same which reveal that between 10-12 items were allocated in these levels. This implies that although Knowledge, Comprehension, and Application Levels measure lower-order thinking skills as they were dominantly revealed, a proportion of Analysis, Synthesis and Evaluation Levels belonged to higher-order thinking skills and were also given importance.

Figure 4
Item Distribution in Bloom's Taxonomy Cognitive Domain as to Semester

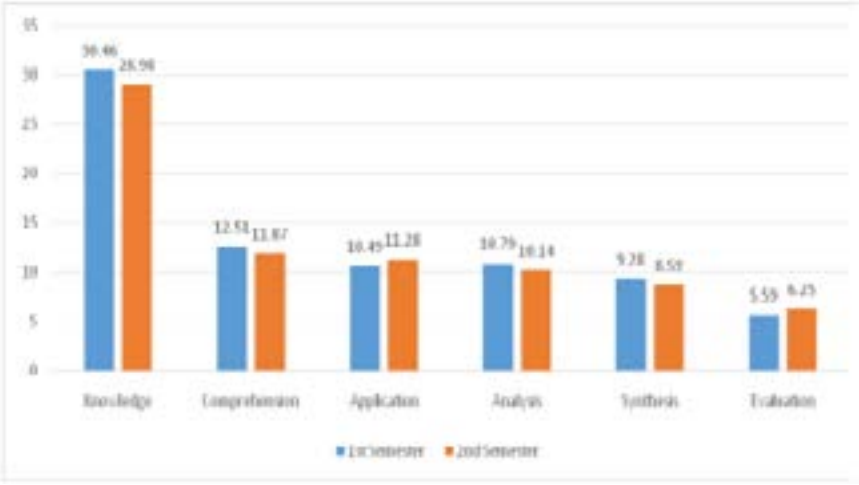

Figure 5 presents the distribution of test items as to School Year. Results show that items apportioned to Knowledge Level was: SY 2011-2012 (37.28); SY 2012-2013 (28.69) SY 2013-2014 (29.41), SY 2014-2015 (25.37). Comprehension Level: SY 2011-2012 (22.25), SY 2012-2013 (10.37), SY 2013-2014 (9.30), SY 2014-2015 (11.42). Application Level SY 2011-2012 (20.00), SY 2012-2013 (8.01), SY 2013-2014 (10.49), SY 2014-2015 (11.09). Analysis Level: SY 2011-2012 (15.17), SY 2012-2013 (8.51), SY 2013-2014 (9.68), SY 2014-2015 (11.91). Synthesis Level SY 2011-2012 (16.86), SY 2012-2013 (4.95), SY 2013-2014 (7.17), SY 2014-2015 (9.38). Evaluation Level SY 2011-2012 (9.13), SY 2012-2013 (4.47), SY 2013-2014 (5.66), SY 2014-2015 (6.14). It was found out that the consistently most number of items were in Knowledge Level and least number of items were in Evaluation Level all throughout the years from SY 2011-15.

Figure 5
Item Distribution in Bloom's Taxonomy Cognitive Domain as to School Year

Data in table 1 present the difference of Bloom's Taxonomy Cognitive Domain as to subject areas. ANOVA results show that there is no significant difference existed among subject areas on the items that were under knowledge level (F=.459, sig. = .632), and synthesis level (F=.784, sig. = .459)set at .05 level of significance. However, there is a significant difference existed among subject areas under comprehension (F=6.150, sig. = .002), application (F=4.371, sig. = .014), analysis (F = 4.417, sig.=.013), and evaluation level (F=7.823, sig. =.001)set at .05 level of significance. This means that the subject areas with items under knowledge and synthesis do not differ to each other. Further, using the post hoc analysis; those under comprehension and application levels, the specialization/major subjects and professional subjects differ to each other but do not differ to general subjects. In analysis level, all subject areas differ to each other. Lastly for synthesis level, only general subjects and professional subjects differ to each other but they do not differ in specialization/major subjects.

Table 1
Difference of Subject Areas in Bloom's Taxonomy Cognitive Domain

		Sum of Squares	df	Mean Square	F	Sig	Interpretation
	Between groups	220.05	2	110.02	.459	.632	Not Significant
Knowledge	within groups	110644.13	462	239.49			
	total	110864.18	464				
	Between groups	1407.29	2	703.65	6.150*	.002	Significant
Comprehension	within groups	44507.64	389	114.42			
	total	45914.94	391				
	Between groups	1059.08	2	529.54	4.371*	.014	Significant
Application	within groups	31982.99	264	121.15			
	total	33042.08	266				
	Between groups	494.96	2	247.48	4.417*	.013	Significant
Analysis	within groups	22299.29	398	56.03			
	total	22794.24	400				
	Between groups	146.42	2	73.21	.784	.459	Not Significant
Synthesis	within groups	12040.39	129	93.34			
	total	12186.81	131				
	Between groups	318.70	2	159.35	7.823*	.001	Significant
Evaluation	within groups	3646.30	179	20.37			
	total	3965.00	181				

*p<.05 level of significance

Table 2 shows the data in terms of terminal examinations. ANOVA results show that there is no significant difference that existed among terminal examinations from those items which belonged to knowledge (F=1.171, sig. = .320), application (F=.638, sig. = .591), and synthesis (F=2.436, sig. = .068) level set at .05 level of significance. However, those items under comprehension (F = 5.397, sig. = .001), analysis (F = 4.246, sig. = .006) and evaluation (F = 4.145, sig. = .007) showed significant difference among terminal examinations set at .05 level of significance. This means that there is no evidence to prove that terminal examinations vary with each other when items were under knowledge, application and synthesis levels. Further, it was seen that terminal examinations with items under comprehension and analysis levels vary, specifically, in the midterm, pre-final, and final examinations but prelim exams do not vary among them. On the other hand, those items which belonged to evaluation level, the terminal examinations that vary were prelim, midterm and final but the pre-final exam does not vary with the rest of them.

Table 2
Difference of Terminal Examinations in Bloom's Taxonomy Cognitive Domain

		Sum of Squares	df	Mean Square	F	Sig	Interpretation
	Between groups	838.47	3	279.49	1.171	0.320	Not Significant
Knowledge	within groups	110025.71	461	238.67			
	total	110864.18	464				
	Between groups	1839.26	3	613.09	5.397*	0.001	Significant
Comprehension	within groups	44075.68	388	113.60			
	total	45914.94	391				
	Between groups	238.66	3	79.55	0.638	0.591	Not Significant
Application	within groups	32803.42	263	124.73			
	total	33042.08	266				
	Between groups	708.69	3	236.23	4.246*	0.006	Significant
Analysis	within groups	22085.56	397	55.63			
	total	22794.24	400				
	Between groups	658.25	3	219.42	2.436	0.068	Not Significant
Synthesis	within groups	11528.56	128	90.07			
	total	12186.81	131				
	Between groups	258.91	3	86.31	4.145*	0.007	Significant
Evaluation	within groups	3706.08	178	20.82			
	total	3965.00	181				

*p<.05 level of significance

Data in table 3 present the difference of the test items when categorized according to courses. Results revealed that there is a no significant difference existed among courses with which their test items were under application (F=2.117 sig. = .064), synthesis (F=1.697, sig. =.140) and evaluation levels (F=1.244, sig. = .291), while those under knowledge (F=2.382, sig. = .038), comprehension (F=4.637, sig. = .000), and analysis (3.694, sig. = .003) showed significant difference set at .05 level of significance. This means that all test items of all courses that were interpreted are similar as to application, synthesis and evaluation levels. However, the items vary in knowledge, comprehension and analysis levels, in which BSBA course varies only in BIT, HRM, and Teachers education courses and the rest of courses have no variations that occurred specifically in knowledge levels.

In comprehension level, the BIT course varies with BSInfo Tech and BSBA courses. Likewise, Teacher education course varies with BSHRM. The rest of courses were the same. In application level, BIT course varies with Teacher Education and BSBA course while HRM varies with InfoTech and BSCrim varies with Teacher Education course, but other courses not mentioned did not vary at all.

Table 3
Difference of Courses in Bloom's Taxonomy Cognitive Domain

		Sum of Squares	df	Mean Square	F	Sig	Interpreta-tion
	Between groups	2803.40	5	560.68	2.382*	0.038	Significant
Knowledge	within groups	108060.78	459	235.43			
	total	110864.18	464				
	Between groups	2601.63	5	520.33	4.637*	0.000	Significant
Compre-hension	within groups	43313.31	386	112.21			
	total	45914.94	391				
	Between groups	1287.67	5	257.53	2.117	0.064	Not Significant
Application	within groups	31754.41	261	121.66			
	total	33042.08	266				
	Between groups	1018.25	5	203.65	3.694*	0.003	Significant
Analysis	within groups	21776.00	395	55.13			
	total	22794.24	400				
	Between groups	768.83	5	153.77	1.697	0.140	Not Significant
Synthesis	within groups	11417.99	126	90.62			
	total	12186.81	131				
	Between groups	135.32	5	27.06	1.244	0.291	Not Significant
Evaluation	within groups	3829.68	176	21.76			
	total	3965.00	181				

*p<.05 level of significance

Data in table 4 present the difference as to semesters in Bloom's taxonomy cognitive domain. Results showed that there is no significant difference that existed among the semesters as to all levels of items. This means that their test items under knowledge (F=1.062, sig. = .303), comprehension (F=.335, sig. = .563), application (F=.330, sig. = .566), analysis, (F=.742, sig. = .389), synthesis (F = .168, sig. = .683) and evaluation (F=.862, sig.=.354) were the same no matter if their test questions belonged to first or second semesters. In addition, the number of items apportioned in each level from first semester to second semester were the same.

Table 4
Difference of Semesters in Bloom's Taxonomy Cognitive Domain

		Sum of Squares	df	Mean Square	F	Sig	Interpretation
	Between groups	253.69	1	253.691	253.69	.303	Not Significant
Knowledge	within groups	110610.49	463	238.900	238.90		
	total	110864.18	464				
	Between groups	39.37	1	39.370	39.37	.563	Not Significant
Comprehension	within groups	45875.57	390	117.630	117.63		
	total	45914.94	391				
	Between groups	41.07	1	41.069	41.07	.566	Not Significant
Application	within groups	33001.01	265	124.532	124.53		
	total	33042.08	266				
	Between groups	42.34	1	42.335	42.34	.389	Not Significant
Analysis	within groups	22751.91	399	57.022	57.02		
	total	22794.24	400				
	Between groups	15.69	1	15.690	15.69	.683	Not Significant
Synthesis	within groups	12171.12	130	93.624			
	total	12186.81	131				
	Between groups	18.90	1	18.904	.862	.354	Not Significant
Evaluation	within groups	3946.09	180	21.923			
	total	3965.00	181				

*p<.05 level of significance

In table 5, as to the difference of the school year category, results revealed that there is a high significant difference existed among school year all throughout in all levels of items. This means in knowledge (F=8.973, sig. = .000), comprehension (F=28.472, sig. = .000), application (F=10.512, sig. = .000), analysis, (F=13.951, sig. = .000), synthesis (F = 11.758 sig. = .000) and evaluation (F=5.684, sig. = .001) levels vary every school year.

Likewise, the number of items distributed in each level in every semester varies. The evidence was enough to prove that teachers' preparation of exams as to item categorization using Blooms taxonomy cognitive domain varies every year. This implies that although it is seen that most items measured lower-order thinking skills, yet they gradually generated items that measure higher-order skills.

Table 5
Difference of School Year in Bloom's Taxonomy Cognitive Domain

		Sum of Squares	df	Mean Square	F	Sig	Interpretation
	Between groups	6126.37	3	2042.12	8.973*	.000	Significant
Knowledge	within groups	104691.56	460	227.59			
	total	110817.93	463				
	Between groups	8296.70	3	2765.57	28.472*	.000	Significant
Comprehension	within groups	37590.74	387	97.13			
	total	45887.44	390				
	Between groups	3541.51	3	1180.50	10.512*	.000	Significant
Application	within groups	29422.15	262	112.30			
	total	32963.65	265				
	Between groups	2171.95	3	723.98	13.951*	.000	Significant
Analysis	within groups	20549.80	396	51.89			
	total	22721.75	399				
	Between groups	2632.86	3	877.62	11.758*	.000	Significant
Synthesis	within groups	9553.95	128	74.64			
	total	12186.81	131				
	Between groups	346.36	3	115.45	5.684*	.001	Significant
Evaluation	within groups	3594.97	177	20.31			
	total	3941.33	180				

*p<.05 level of significance

Conclusions

Based on the results of the findings of the study, the following conclusions were drawn:

1. By subject areas, majority of the test questions items fall under knowledge level in the general subject areas. This is followed by comprehension level in the professional subject areas. Both the application and synthesis levels were under specialization/major subject areas, and finally the evaluation level in professional subject areas. As to terminal examinations, majority of items were on knowledge level as a whole during midterm examination and also questions under synthesis and evaluation levels were on midterm examination but with few items. This was followed by comprehension, application and analysis levels on final examination. As to course, majority of items were on knowledge level with the BSHRM course. They were also higher in items under synthesis. The items for comprehension, analysis and evaluation are from BS Information Technology course. Finally, the application level is from Teacher Education Course. In terms of semester, majority of the items were under knowledge level on first semester. The same with comprehension, analysis, and synthesis test items were given in first semester but lesser items compared to knowledge. The application and evaluation appeared more during second semester. As to school year, majority of the items were found under knowledge level during school year 2011-2012. Likewise, same school year had higher items in levels of comprehension, application, analysis, synthesis and evaluation compared to other school years.

2. That there is a significant difference existed among subject areas in items that were under comprehension, application, analysis, and evaluation. However, no significant difference existed among subject areas with items that were under knowledge and synthesis levels. As to terminal examination, there is a significant difference existed among terminal examinations in the comprehension, analysis, and evaluation level, but no significant difference in knowledge, application and synthesis. In terms of course, there is a significant difference existed among courses in knowledge, comprehension, and analysis levels, but no significant difference in application, synthesis and evaluation. As to semesters, there is no significant difference existed between two semesters in all levels. However, when it comes to school year, results show that there is a significant difference existed among the school year in all levels of test item.

Recommendations

Based on the foregoing conclusions, the following are recommended:

1. Review and revisit test items to determine the extent of what level should the student demonstrate competence and considering to apply lower and higher order thinking skills type of questions appropriately.
2. Conduct seminar workshop for the faculty on updated topics with regard to the learning objectives and should rigorously check the items/questions if it emplace properly.
3. In student-teachers' undergraduate programs, theoretical and practical training should be provided that will make students capable of planning and executing specific lessons, as well as preparing ap propriate questions for various cognitive levels.
4. Colleges/universities may train examination/testing specialists and should give seminars and in-service courses on preparing test questions.
5. Conduct a follow up study on the correlations between Items analysis and the taxonomy of the four terminal examinations of the college.

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