



## Impacts of Examination Blueprints on Students' Performance

Uriah S. Dolokelen, Sr<sup>a\*</sup>, Willie W. Getergelleh<sup>b</sup>

<sup>a</sup>. Lecturer, Nursing Department, Bong County Technical College, Gbarnga City, Bong County-Liberia, 1000 Monrovia 10 Liberia [usdolokelen1@gmail.com](mailto:usdolokelen1@gmail.com)

<sup>b</sup>. Lecturer, Nursing Department, Bong County Technical College, Gbarnga City, Bong County-Liberia, 1000 Monrovia 10 Liberia [williegetergelleh@gmail.com](mailto:williegetergelleh@gmail.com).

### ABSTRACT

The Esther Bacon School of Nursing and Midwifery (EBSNM), which is a Lutheran institution and located on the Curran Lutheran Hospital's Compound in Zorzor, Lofa County, Liberia, originated from the School of Nursing, which was established by the Lutheran Missionaries in 1921 in the township of Muhlenburg – near Monrovia, Liberia. In 1946, the School of Nursing was transferred to Zorzor, Lofa County and it served as a cooperate entity between Phebe and Curran Hospitals, and was then called "Phebe – Curran School of Nursing". The school was first named after one of the Lutheran Missionaries, Dr. Joseph Daniel Curran. The hospital (Curran Hospital) is also named after him. Now, Esther Bacon School of Nursing and Midwifery, has two programs: Registered Midwifery and Registered Nursing. The school is located 98 kilometers south of Voinjama City, Lofa County-Liberia and 104 kilometers north of Gbarnga City, Bong County central Liberia.

**Objectives:** The main objective of this study is to find out the impacts of examination blueprint on students' performance at EBSNM. Specific objectives were to find out the impacts of examination blueprint on students' performance, challenges faced with the preparation/presentation on students' performance, and presentation of examination blueprint.

**Methodology:** Descriptive cross-sectional design was used. A self-administered questionnaire was used to collect data.

**Results:** A total of 143 students and 7 instructors filled the questionnaire, (100%). Those that agreed that exam blueprint makes learning easier for students were 38% while 24.7% said there was no definite format for all instructors preparing examination blueprint. 22% said exam blueprints are provided eight days and more prior to the exams. 14% said complicated blueprints are given to students. 39.3% said examination blueprint should be given three to seven days prior to the exam date. 22% said exam blueprint should correspond with the exam given. 12.7% said committee should be constituted to evaluate exam blueprint before presenting to student.

**Conclusion:** The nursing and midwifery students experienced various challenges with examination blueprints that require attention as specified in the study findings.

**Keywords:** Examination blueprint, impacts, performance, evaluation.

## 1. INTRODUCTION

### 1.1 Background of the Study

The study was carried out at Esther Bacon School of Nursing and Midwifery in Zorzor, Lofa County-Liberia. Essentially, examination blueprint is very important in the conduct of educational programs. Al-shahrani, (2019) found out that the impact of examination blueprints on students is associated with number of academic challenges such as poor study behavior (not reading everyday), memorizing for examinations due to blueprint availability, scoring higher grade but not remembering the materials. Others are some students scoring lower grades while others having bad scores due to poor preparation of examination blueprint, uninformed interactions with other students due to poor study habits while awaiting examination blueprints. Examination blueprint is valuable to the examinees and examiners because it tabulates and distinguishes the categories of examination that is available if it is well constructed. Examination blueprint is used to help students focus their study as they prepare for the exams. Students' performance remains a top priority for educators. It is meant for making a difference locally, regionally, nationally and globally. Educators, trainers, and researchers have long been interested in exploring variables contributing effectively for quality of performance of learners through many ways, which one way is providing examination blueprint before the exams.

### **1.2. Internal Classroom Factor (Examination Blueprint)**

On the other hand, (Ali & Ahmad, 2017) found out that these variables are inside and outside the classroom that affect students' quality of academic achievement, but our focus is inside the classroom. However, many researchers have been discussing the different factors that affect the students' academic performance in their researches. There are two types of factors that affect the students' academic performance. There are internal and external classroom factors and these factors strongly affect the students' performance. This study focused on internal classroom factor (examination blueprint). Internal classroom factors include preparation for evaluation (examination) that deals with proper preparation of examination blueprint which clearly indicates how the examination looks like. Nevertheless, (Abdellatif et al., 2024) asserts that Examination systems should have blueprint that help students understand the dynamic and dimensions of the examination. It is in this light this study focuses and deals with the Esther Bacon Students and teachers.

Examination blueprint is an important educational tool that makes learning easy for students. If examination blueprint is not properly prepared, evaluated by committee and presented to the students on time, it negatively affects students' performance on exams. More accredited nursing and midwifery schools in Liberia, one way or the other are affected by improper preparation, presentation time, and lack of examination blueprint evaluation committee. It is against this background that the impacts of examination blueprint on students' performance are investigated at Esther Bacon School of Nursing and Midwifery in Zorzor City, Lofa County-Liberia.

### **1.3. Esther Bacon School**

The Esther Bacon School of Nursing and Midwifery, which is a Lutheran institution and located on the Curran Lutheran Hospital's Compound in Zorzor, Lofa County, Liberia, originated from the School of Nursing, which was established by the Lutheran Missionaries in 1921 in the township of Muhlenburg – near Monrovia, Liberia. In 1946, the School of Nursing was transferred to Zorzor, Lofa County and it served as a cooperate entity between Phebe and Curran Hospitals, and was then called "Phebe – Curran School of Nursing". The school was first named after one of the Lutheran Missionaries, Dr. Joseph Daniel Curran. The hospital (Curran Hospital) is also named after him.

In 1964, Curran School of Midwifery and Practical Nursing was established as a separate institution and accredited by the national board for nursing and midwifery. In 1972, the school was renamed after the late Esther Bacon, a delegated and hardworking missionary nurse who died in 1972 from Lassa fever, which she contracted from a patient when she was providing nursing care for the patient at Curran Hospital. At this time, the school had four faculty members, headed by the then director -Alice Dietz. The school successfully ran and trained practical nurses, laboratory technicians, and certified midwives until 1990 when the civil war disrupted the school's operation. Now, the Esther Bacon School of Nursing and Midwifery has two programs that are Registered Midwifery and Registered Nursing. The school is located 98 kilometers south of Voinjama City, Lofa County-Liberia and 104 kilometers north of Gbarnga City, Bong County central Liberia. The analysis of the impacts of examination blueprint on students' performance is highlighted.

## **2. Review of Related Literature**

### **2.1. The Impacts of Examination Blueprint on Students' Performance**

According to Adom et al., 2020, a test blueprint is an effective test construction tool that ensures a more objective means of judging the students' learning experience or performance. There are two (2) types of test blueprints namely: a test blueprint designed for formative classroom assessment and a test blueprint designed for summative classroom assessment. This paper focuses on the summative form of classroom assessment where evidence of learning is mainly to judge the performance of the students. Using a user-centered approach of development called Interaction Design Model, a simplified test blueprint has been designed using a Spreadsheet of four (4) different interlinked worksheets, namely: the test blueprint, the mapping matrix, the final exam moderation form, and the data store.

The test blueprint comprises of the chapter number and chapter title, the percentage of chapter weight, the weighted mark, the actual allotted mark, and the level of difficulty (LOT/HOT ratio). The data store keeps all the pre-defined data that are necessary to complete the test blueprint such as the pre-defined LOT-HOT ratio of each course according to the nature and the level of the course. Automated values are available that shuns the user from keying the required data manually (Six, 2019).

The mapping matrix, which is prepared only after the test blueprint has been approved, contains the following: the test formats, the number of sections of the exam, the chapter number from where each question item is taken, the Bloom's cognitive level and the total mark of each item. The spreadsheet provides hints, warnings, and comments that may guide the user throughout the preparation of a test blueprint, as a precursor to writing test items. Study conducted by Barbara and Virginia (2010) shows that designed examination blueprint is very important in conducting an educational institution. According to the researchers, an examination blueprint is a high-level plan that guides collaborators through the process of designing and contributing to the development of an open course. Its purpose is to visualize the overall "architecture" of the course to guide the design, development, and cooperation process. But Conference (2016) asserts that an examination blueprint is an effective exam construction tool that ensures a more objective means of judging the students' learning experiences or performances.

It has been observed that it is difficult to trace the inception of blueprint. The improvement of the Written examination presented some arguments that supported objective examination. Examination blueprint, which is sometimes called Table of Specifications, Exam Specifications, Exam Matrix, or Test Plan is a two-way chart that consists of the instructional objectives and its corresponding cognitive level as well as the amount of the test to construct examination more objectively.

On the other hand, Al-Aarifin Ismail et al., (2020) discuss and give various descriptions of an examination blueprint, discussed below: Citing (Balanced & Consortium, (2012) the researchers assert that an examination blueprint is an assessment tool which interlinks what is taught and what is tested. It is also a fundamental block in exam construction which makes use of the Bloom's Taxonomy of Learning framework, which ensures a fair, complete, valid, reliable, and objective set of exam or test questions. Blueprint is a mapping system of all the different topics and sub topics from where the examination is drawn in order to assess learning domain. It also shows which types of tests are available (where the categories of tests are included) and it could be multiple choice, essay, True and False or Matching (the students could cycle the letter of the correct answer). The blueprint maps the way the students understand how the examination looks like and therefore is a great analysis tool to understand the examination dimension. Based on study conducted by Liljedahl, (2018) Sari et al., (2020), they show that the analysis can then be used to improve the existing teaching and learning by seeing where the problems lie, or by innovating new routes. A Blueprint also works as a tool for the students and teachers to help identify possible new ideas, design teaching and learning procedures and deliver high-quality learning and teaching.

According to McLaughlin et al., (2005), an examination blueprint as "an outline of test that lists learning goals that students are to demonstrate." The results reveal if you are testing what you claim is "most important." Still, Fives & Didonato-Barnes, (2013) say that examination blueprinting is important because it serves as "the process of linking exams to learning goals." In short, major importance to examination blueprinting is that it represents the best practice when educators are writing objective exams. Indeed, educators may already track or map exam items to ensure that it effectively and comprehensively test course content. What is more important is that educators may also track the cognitive challenges for individual test items (e.g. demonstration of knowledge compared to the ability to analyze). So if educators are already test blueprinting, making the data available for outcomes assessment, it becomes so much easier.

The Virginia SOL Assessment: End-of-Course Examination Blueprint Program Lee, (2001), reveals that an examination blueprint is a guide for exams construction and use. The SOL test blueprints serve numbers of purposes: (1) they serve as a guide to exams developers as they write examination questions and construct the SOL tests. (2) These blueprints also serve as a guide to educators, parents, and students in that they show clear connection to what the learners is evaluated from (Al-Aarifin Ismail et al., 2020). However, Raymond & Grande (2019), provides the basics of rationalism for the designing of test blueprint for the fact that it provides an effective guide for item writing, which is central to any discussion on test construction in ensuring that examinations are psychometrically sound.

## **2.2 The Structure of Examination Blueprint**

According to Guideline, (2021), examination blueprint presents the examination specifications that identify the objectives and skills which are to be tested and the relative weight on the exam given to each learner. This statement necessarily precedes any development of an exam. These specifications provide a "blueprint" for test construction. In the absence of such a blueprint, examination development can potentially proceed with little clear direction. The development of such asset of specifications is the crucial first step in the exam development process.

An examination blueprint shows the structure of an exam. It usually includes the content areas along the left side of the table and the cognitive levels are shown on the right side, across the first row of the table Siddiqui & Ware, (2015). Baird et al., (2014) sees a resemblance between an examination "blueprint and a travel guide". A blueprint consists of characteristics pertaining to the structure, or over all generalization of examination, along with examination task specifications for each test type to be included as part of examination blueprint. A blueprint describes how actual examination tasks are to be constructed, and how these tasks are to be arranged to form the blueprints or exams." Ibrahim, (2018) provided a clearer definition where he stated that " An exam blueprint defines and precisely outlines the number (or proportion) of examination questions to be allocated to each major and minor content area and how many (what proportion) of these questions is designed to assess specific cognitive knowledge levels. Examination blueprint helps teachers move students towards the mastery of standards. The process of making the blueprint starts by grounding the entire course life cycle by putting all the different stages of the course into the blueprint.

The Blueprint helps in problem solving and creative thinking by giving opportunities to students' perceptions of the examination (Polaine *et al.*, 2013). When the different stages are put into the blueprint, all the different users can be put into place, for example students and students learning. After that it is possible to add all the different touch points in the right places with users and stages, this process is called mapping. From there the routing for the blueprint stages begins (Polaine *et al.*, 2013).

Exam blueprint is a guide for examination construction and utilization. The Clark & Croock, (2014), Examination blueprints serve a number of purposes. They serve as a guide to examination developers as they write exams questions and construct the exams. Blueprints also serve as a guide to educators, parents, and students in that they show: (a) the materials covered by the examination and which, if any, have been excluded; (b) which materials are assigned to each learner; (c) the number of exams' items in each examination category and on the total examination; (d) general information about how the examination questions were constructed; and (e) the materials that students are allowed to use while taking the examination.

## **2.3 Examination Blueprint for Formative Evaluation**

Slingerland et al., (2024) design a sample tabular structure which links formative classroom assessment and instruction. The teacher ensures the inclusion of all the learning targets that measure all the important skills and abilities of the students. A formative classroom assessment provides performance feedback on what students have mastered, how much they have learned and have to learn, how well they are learning, and what needs to happen next.

A classroom assessment designed for formative evaluation purposes looks very differently. It includes items that assess students' knowledge of relevant terms, facts, principles, and procedures, as well as other items that measure their skill in translating information into new forms. It also includes constructed or extended-response items that require students to apply their knowledge in using or interpreting maps. Analysis and synthesis skills are tested for higher levels (Ahsan, 2018).

#### ***2.4 Examination Blueprint for Summative Evaluation***

According to them, classroom summative examinations have a judgmental purpose given during terminating examination, which is sometimes called accountability-oriented classroom examination. Examinations should be valid so that the results and observations could be used to drive planning for corrective instruction and decision-making. Examination measures an adequate sampling of the class content at the cognitive level, the amount of time spent on each topic is mapped, along with the cognitive level at which each learning objective (LO) is taught thereby helping teachers to identify the types of items they need to include on their examinations. Thinking skill which emphasizes recall, memorization, identification, and comprehension is typically considered to be at a lower level. Higher levels of thinking include processes that require learners to apply, analyze, evaluate, and synthesize (Planas Lladó et al., 2014).

(Maslach C, Leiter MP, (2008) believe to the premise that topics that were discussed longer or in greater detail should appear in greater proportion on the examination, giving a direct relation between the amount of class time spent on the topic and the portion of the final examination testing those learning objectives. The information about the 'Day No.', the 'Instructional Objectives', and the 'Time Spent on the Topic' are taken directly from the teacher's lesson plans and reflective notes. The 'Percent of Class Time on Topic' is a percentage calculation which reflects the percent of total class time for the unit of study that was spent on each Learning Objective.

#### ***2.5 Exam Blueprints and the Impacts on Students' Performance***

"Evolution"; Innovative Lesson Plan or Stealthy Advocacy," (2006) educational researchers of Ohio Education Department Learning found out that the foremost thing in understanding test blueprint and their impact of students' performance and growth is setting the following three targets: (1) Understand the definition and purpose of test blueprints (2.) Know how to build a test blueprint and (3) Understand how assessment blueprints connect to other initiatives. According to the researchers, the purpose of test blueprints is to define the parameters of an assessment before beginning the creation process. Blueprint designers are advised to review a locally- or vendor-developed assessment for alignment to learning expectations, instruction, and cognitive complexity.

In order to ensure that blueprint has tremendous impact on students' performance, blueprint designers must confirm in advance the information and knowledge that they are planning to assess, which can guide instructional activities. According to Friedman (2005), designers must share blueprints with students to help make learning targets clearly. Since a blueprint is a TOOL to ensure alignment of assessment to standards - content - depth of knowledge, alignment of assessment to instruction adequate "stretch" in assessment and it follows the steps below: The initial step in blueprinting is to construct a table of specification (TOS), which shows what is tested in relation to what has been taught. This ensures that the assessment has content validity and that the same emphasis on content during instruction is represented in the assessment. Besides, it ensures test item alignment with objectives.

This helps to minimize the possible bias in test construction. The objectives are aligned with the learning domains, which are either cognitive domains (Bloom's cognitive skills) or clinical skills. This creates what is known as a two-dimensional matrix for blueprint design. Cognitive skills can be divided into six levels according to Bloom's Taxonomy. These are knowledge, understanding, application, analysis, synthesis, and evaluation. Application of all these domains in exam construction is relatively difficult, so many institutes use the simplified approach of Ward's (1983) taxonomy who divided cognitive domain into three levels which are recall, application, and problem solving (Banda et al., 2023)

#### ***2.6 The Impacts of Examination Blueprint on Students' Performance***

Black, (2014) points out that "People [students] perform better when they know the goal, see models, know how their performance compares to the standard." The basic purpose of all exams, regardless of the way in which the exam is used and the outcome associated with the examination, is discrimination i.e. to distinguish the level of aptitude, abilities, skills among the exam takers and the examinees used examination blueprint to understand the dimension and diversity of the exam. For professional (employment) and academic interest, the objective would include such discriminators as proficiency, analytical and reasoning skills, technical aptitude, and behavioral traits, among many others.

Reliability: is a measure of an examination's consistency – both over a period of time as well as internal consistency. It measures precision of examination scores or extent of measurement error in the exam. Validity: Validity is an indicator of how well an assessment is measuring what it is supposed to measure. In other words it measures an examination's usefulness (Kolanchery, 2015). Examining is a complex subject area. People spend some time to explain and understand the basics of Scores and Exam Validity to help examiners and educators ensure the exams they are administering provide good evidence of the student's knowledge. But how do we know whether our Exams measure the domains of knowledge we want to evaluate? Examining should never be an afterthought in education. Although a summative or final exam is administered toward the end of a course, it should be used to align the curriculum before the course begins (Wilmot et al., 1996).

Blueprint designer can use a baseline and adjust depending on the purpose of the exam. For quizzes and course exams, keep in mind that the earlier and more frequently a student is exposed to critical thinking items, the better the student is able to understand and perform at the level expected during the

final exam. A final exam should not be the first time a student is exposed to a critical thinking item. By this time, the student should already be familiar with items covering complex topics (Pitch et al., 2012).

Ahmed and Nawaz, Al-shahrani, (2019), research study has shown that the design of blueprints has made tremendous impacts on students' performance. As mentioned earlier in the background, "Research to Evaluate the Fairness, Use, and Predictive Validity of the MCAT ® Exam Introduced in 2015," (2020), conducted a study found out that the impact of examination blueprints on students' performance is associated with numbers of academic challenges such as poor study behavior (not reading everyday), memorizing for examinations due to blueprint availability, scoring higher grade but not remembering the materials. Others are some students scoring lower grades while others having bad scores due to poor preparation of examination blueprint, uninformed interactions with other students due to poor study habits while awaiting examination blueprints. Examination blueprint is valuable to the examinees and examiners because it tabulates and distinguishes the categories of examination that is available if it is well constructed.

Blueprint should be an integral part of all academic assessments. The impact of examination blueprint on students' performance can be measured. Examination blueprints have been used in the preparation of a valid, realistic and measurable exam. Blueprint helps teachers to construct a valid exam that contains all necessary components of an examination while it also helps the learners to understand the dimension and domain or component of the examination which also improves the learners' understanding about the examination thereby allowing a better score in an examination.

### **2.7 Challenges of Examination Blueprint on Students' Performance**

The present cross-sectional survey concerns Technical University in Ankara in Turkey. According to their cumulative grade point average, the students have been categorized as high, average or low achievers. What are the differences between high-and low-achieving students' academic study skills, habits and perceptions as regards the factors affecting their academic performance? Schools and scholars have been concerned with questions related to some ways for improving schools and making their schools innovative in their fields (Amer, 2006).

Previous studies have established that education quality is depended upon the capability, effort as well as the commitment of the instructor. The failures of the teacher in keeping him/herself in pace with the brisk scientific and educational advancements leads him/her to become inefficient and ineffective. In their studies Bietenbeck, (2011) established the lack of a significant correlation linking teacher experience to student academic performance. Gaffas (2016), on the other hand found the presence of a strong positive correlation between students' academic achievement and the experience of the teacher.

A study by (Mahnaz Hassan (2015), compared professionally trained and untrained teachers effectiveness in teaching and the effect of students' gender on achievement in Mathematics. The outcomes of the study confirmed that better results were obtained by students taught by trained teachers as compared to those taught by untrained teachers. In addition, Huba (2000), sought to explain that Teachers' professional distinctiveness, their skillfulness in teaching and the atmosphere they build to teach has significant influence on learners' performance.

Evidently, studies have not been conclusive on how teacher training impacts on the academic performance. Various findings have been put across that contradict each other necessitating the need for further studies in the area. According to Balta et al. (2015), there is no statistically significant effect as far as marginal increases in in-service training is concerned on either reading or math achievement. This suggests that the academic accomplishments of children in elementary schools in extremely poor areas may not be sufficiently increased by modest investments in staff development.

Editorial Office (2022), in their research looked at the effects of various types of education and training on the capability of teachers to advance student attainment of high performance in academics. They discovered that there is no evidence that the ability to increase student achievement is not influenced by either teachers' undergraduate training or their scholastic propensity.

### **2.8 The preparation of examination blueprint to improve student performance**

An exam blueprint describes the key elements of an exam, including the content to be covered, the amount of emphasis allocated to each content area, and other important features (Patterson *et al.*, 2008). Looking at practical guidelines for developing exam blueprints, let's first discuss the role of learning outcomes and behavioral objectives in test blueprinting, and then describe four-stage processes for creating test blueprints.

The steps include identifying the major knowledge and skill domains (i.e. competencies); delineating the specific assessment objectives; determining the method of assessment to address those objectives; and establishing the amount of emphasis to allocate to each knowledge or skill domain (Raymond & Grande, 2020). We are concerned of the role of test blueprinting in test score validation, and some of the other ways that test blueprints support instruction and assessment (Efl, 2023). Assessment plays a major role in the medical school curriculum by providing a way to monitor student progress toward the learning outcomes that we expect them to achieve.

To ensure that assessments are consistent with course objectives and address truly important learning outcomes in a balanced manner, it is important that assessments be developed according to a well thought-out plan (Agboga Okaiwele et al., 2021). We are looking at a systematic approach to planning exams—an approach that documents what students should know and be able to demonstrate on each assessment (Huyen, 2017). These planning documents are typically called test blueprints, although they also are known as test plans, tables of specifications, and test specifications. An exam blueprint describes the key properties of an exam (Raymond & Grande, 2019).

While any test blueprint should specify the content to be covered, many blueprints also describe properties such as the amount of emphasis allocated to each content area, the cognitive demand of the assessment tasks, the assessment format, and other important features (Millman and Greene 1989). In the

text that follows, we discuss the importance of learning outcomes in test blueprinting, introduce the notion of evidence-centered exam design, and review two common taxonomies of learning in medical education (Hadie, 2018). Exam blueprints describe the content to be covered by a test, along with other important features (e.g. emphasis given to each topic; the assessment format).

An exam blueprint is also known as a test plan, table of specifications, or test specifications (Ing et al., 2015). Sources of information for test blueprints include course outlines, lists of learning outcomes and behavioral objectives, lecture notes, textbooks, and other curricular materials. Developing an exam blueprint consists of four stages: (1) identify the major knowledge and skill domains; (2) delineate the objectives or learning outcomes to be assessed within each domain; (3) determine the assessment formats; and (4) specify the weight to be given to each content category (i.e. knowledge and skill domain) (*IDENTIFYING KNOWLEDGE TRANSFER BARRIERS WITHIN A COMPLEX SUPPLY CHAIN ORGANIZATION*. Doctor of Philosophy of The School of Business and Management., 2006). An effective blueprint is touched on all four stages at one point or another; consider the stages that follow as a general guide to assessment planning, not as a formal protocol that requires execution in strict sequential order (In et al., 2021). Identify the major knowledge and skill domains. The first stage involves identifying the broad competency domains to be assessed. They should correspond to the high-level claims to be made about student behaviors. One way to approach this task is to ask, "If I were to partition my course into a few to several units, what would the labels be?" If the intent is to make claims about students' knowledge of immunology, then the framework should include major content categories that define the domain of immunology. If the intent is to make claims about a student's ability to interact with patients, then the framework includes major types of communication skills. Such documentation can be found in course outlines, learning outcomes, lecture notes, textbooks, and other instructional materials (Tety, 2016).

It is widely recognized that an exam blueprint serves as a primary source of content-related evidence (Raymond, 2006). This is because a thoughtfully developed exam blueprint can help ensure that the assessment aligns with content covered during instruction (Ajogbeje, 2023). Response process validity refers to the extent to which the cognitive, psychomotor, and affective processes elicited by the assessment tasks are similar to the processes implied by the claims to be made about student behaviors. For example, an MCQ could support the claim that "the student is able to interpret physical examination and chest X-ray to determine the need for thoracentesis". However, it would take a very clever MCQ to support the claim that a student can actually perform thoracentesis.

Test blueprint is a primary tool for executing that sampling plan by indicating how much content to sample from each domain. Category weights reflect the importance of the topics within a domain (Millman and Greene 1989). Importance might correspond to the instructional time devoted to a topic; how often it is applied in practice; or the criticality of a topic for subsequent learning. Category weights can be derived from national data reporting the incidence of various medical conditions and procedures.

There is no best way to construct a test blueprint. They vary in terms of content, organization, format, and granularity; and they can be adapted to meet various assessment needs. Exam blueprints assure that the content of a test aligns with the curriculum, Papageorgiou et al. (2020) this is a critical aspect of validity. Test blueprints support content validation in other ways, by helping to ensure that scores on a specific test generalize to the larger domain of interest. Test blueprints also provide a framework for evaluating the validity of response processes. For example, performing a thoracentesis is a procedural skill that is located toward the apex of Miller's pyramid and falls into the psychomotor domain of Bloom's taxonomy (Language & Study, 2014).

### **3. Methods and Materials**

**3.1.** The study population comprised instructors and nursing and midwifery students of Esther Bacon School of Nursing and Midwifery. At the time of study, all the students were in school.

#### **3.2. Sampling Technique**

Survey sampling was adopted. The study sample was 143, including 7 instructors.

#### **3.3. Study Design**

A descriptive cross-sectional study was used.

#### **3.4. Data Collection Tools**

The data was collected using a self-administered questionnaire which had been pre-tested and validated before using.

#### **3.5. data Management, Analysis and Presentation**

Data management entailed data cleaning, recording, reduction and storage on hard drives and memory sticks. Data analysis was done using graph, tables, figures and descriptions.

#### **3.6. Elimination of Information Bias**

A standardized questionnaire was developed, pre-tested, studied and validated under the supervisor's guidance. recorded appropriately.

### 3.7. Eligibility Criteria

The nursing and midwifery students and instructors willing to participate in the study.

### 3.8. Ethical Considerations

Permission was sought from Institution, Verbal informed consent from the respondents were obtained. The information collected will be treated with absolute privacy and confidentiality.

## 4. Findings

### Figure 1: Midwifery Students, Nursing students and Instructors

Regarding participant of the research, Midwifery Students, nursing students and Instructors: 36.7% (n=55) nursing students, 58.7% (n=88) midwifery students, 4.7% (n=7) instructors. This shows that the highest number of participants were midwifery students.

### Figure 2: The Impacts of Examination Blueprint

This study shows that 38% (n=57) exam blueprint makes learning easier for students, 30% (n=45) exam blueprint enables learners to obtain high score on exams, 22% (n=33) makes students remember their lesson for future learning, 10% (n=15) students score higher grade and remembering their materials very well.

### Challenges faced with the preparation/presentation of examination

This study shows that 2.7% (n=4) lack of blueprint makes learning difficult for the students, 6% (n=9)

examination blueprint enables students to memorize lesson for exams only, 14% (n=21) examination blueprint provided one or two days prior to the exam date, 22% (n=33) examination blueprint provided eight days or more prior to the exam date, 16.7% (n=25) blueprint not corresponding with the exams given to students, 14% (n=21) complicated blueprint structure that is difficult for students, 24.7% (n=37) no definite format for all instructors preparing blueprint.

### Figure 4: Preparation of Examination Blueprint

This study proves that 39.3% (n=59) examination blueprint three to seven days prior to examination date, 16.7% (n=25) definite format for all instructors preparing examination blueprint, 22% (n=33) providing blueprint that is corresponding with the exam given to students, 12.7% (n=19) committee for evaluation of examination blueprints before presenting to students, 9.3% (n=14) following the necessary steps in the preparation of blueprints.

## 5. Discussion

The current study found that examination blueprint made learning easier for students. This finding is in line with a study conducted by Al-shahrani (2019), who revealed that examination blueprint is important because it serves as “the process of linking exam with learning goals”. Accordingly, 38% of respondents said exam blueprint makes learning easier for students. This finding is consistent with a study conducted by (Friska & Setiawan, 2018), who reported that exam blueprint helps in problem solving and creative thinking by giving opportunities to students’ perception of the examination.

The study indicates the respondents’ view on challenges faced with the preparation or presentation of examination blueprint. Thirty-seven respondents representing 24.7% said there was no definite format for all instructors preparing formative or summative examination blueprints. The study also shows respondents’ view on what could be done in the preparation of examination blueprint to improve students’ performance. About 39.3% of the respondents said providing examination blueprint three to seven days prior to the exams date could help students better prepare; 22.0% asserted that blueprint should correspond with the exam given to students; 9.3% recommended that all necessary steps should be followed in the preparation of examination blueprints. These findings correspond with a study done Greenberg et al. (2001), which illustrate that exam blueprints contribute to educational quality improvement.

Examination blueprint is very important in the conduct of educational programs. The impacts of it on students are associated with number of academic improvement and challenges: poor study behavior (not reading everyday), memorizing lesson for examinations due to blueprint late availability, scoring higher grade but not remembering the materials due to poor preparation of examination blueprint. It also helps to improve students score on exam.

## 6. Conclusion

The Nursing and Midwifery Students experience various challenges such as lack of exam blueprints on time, poor preparation of examination blueprint, no definite format for exam blueprint, not issuing blueprint within three to seven days prior to the examination due date and providing complicated blueprints for students greatly affect students' performance on exam. Additionally, the missteps identified in blueprint preparation were determining factors for students' performance. Ensuring that examination blueprints are prepared and given to students in line with standard assessment and evaluation will boost students' performance.

## 7. Recommendations

The school should find ways and means of addressing these challenges for purposes of improving the nursing and midwifery programs.

The accredited nursing and midwifery school directors/ administrators create committees to monitor and evaluate examination blueprint before giving to students especially EBSNM.

The use of examination blueprint by accredited nursing and midwifery schools is greatly important to students' learning. However, there is a great need for the Liberian Board for Nursing and Midwifery to use the findings to improve the use of exam blueprints in all accredited nursing and midwifery schools in Liberia.

In order to have greater improvement in student learning process, examination blueprint should be presented to students between three to seven days prior to the examination date. In addition, examination blueprint should be clearly illustrating the component of test stems (the content areas), learning objectives/outcomes (the specific skills or knowledge students should demonstrate), cognitive level, questions distribution, the types of questions, weighting (percentages or point value each section or content areas distributed to the total exam score, and time allocation).

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