

been assessed, therefore test shows zero representativeness. None of the test items in figure 2.8 have been taken from the taught content domain. Contrary to this look at figure 2.9, the test items effectively sample the full range of taught content.

It implies that the content from which the test item have to be taken should be well defined and structured. With out setting the boundary of knowledge, behaviour, or skills to be measured, the test development task will become difficult and complex. As a result the assessment will produce unreliable results. Therefore a good test represents the taught content up to maximum extent. A test which is representative of the entire content domain is actually is a good test. Therefore it is imperative for a teacher to prepare outline of the content that will be covered during the instruction. The next step is the selection of subject matter and designing of instructional activities. All these steps are guided by the objectives. One must consider objectives of the unit before selection of content domain and subsequently designing of a test. It is clear from above discussion that the outline of the test content should based on the following principles:

1. Purpose of the test (diagnostic test, classification, placement, or job employment)
2. Representative sample of the knowledge, behaviour, or skill domain being measured.
3. Relevancy of the topic with the content of the subject
4. Language of the content should be according to the age and grade level of the students.
5. Developing table of specification.

A test, which meets the criteria stated in above principles, will provide reliable and valid information for correct decision regarding the individual. Now keeping in view these principles go on the following activity.

Activity-2.5:

Visit elementary school of your area and collect question papers/tests of sixth class of any subject developed by the school teachers. Now perform the following:

- (1)
 - a. How many items are related with the content?
 - b. How many items (what percentage) are not related with the content covered for the testing period?
 - c. Is the test representative of the entire content domain?
 - d. Does the test fulfill the criteria of test construction? Explain.
- (2) Share your results electronically with your classmates, and get their opinion on the clarification of concept discussed in unit-2

2.6 Preparation of Table of Specification

It has been discussed earlier that the educational objectives play a significant role in the development of classroom tests. The reason is that the preparation of classroom test is closely related to the curriculum and educational objectives. And we have also explained that a test should measure what was taught. For ensuring that there is similarity between classroom instruction and test content is the development and application of **table of specification**, which is also called **a test blue print**. As the name implies, it specifies the content of a test. It is a two-way framework which ensures the congruence between classroom instruction and test content. This is one of the most popular procedures used by test developers for defining the content-domain. One dimension of the test reflects the content to be covered and other dimension describes the kinds of student cognitive behaviour to be assessed. Table 2.2 Provides the example of table of specification.

Table 2.2 General Table of Specification
Number of Test Items for Each Cognitive Level

| Topics | Knowledge | Comprehension | Application | Analysis | Total |
|---------------|------------------|----------------------|--------------------|-----------------|--------------|
| Topic 1 | 5 | 2 | 2 | 3 | 12 |
| Topic 2 | 3 | 3 | 4 | 2 | 12 |
| Topic 3 | 2 | 2 | 3 | 2 | 9 |
| Topic 4 | 3 | 3 | 1 | 1 | 8 |
| Topic 5 | 1 | 2 | 1 | 1 | 5 |
| Topic 6 | 2 | 2 | 0 | 0 | 4 |
| Total | 16 | 14 | 11 | 9 | 50 |

Look at table 2.2, the top of each column of the table represent the level of cognitive domain, the extreme left column represent the categories of the content (topics) or assessment domains. The numerals in the cells of two way table show the numbers of items to be included in the test. You can readily see that how the fifty items in this table have been allocated to the content topics and the levels of cognitive behaviour. The teacher may add some more dimensions. The table of specification represents four level of cognitive domain. It is not necessary for teacher to develop a test that completely coincides with the content of taught domain. The teacher is required to adequately sample the content of the assessment domain. The important consideration here for teachers is that they must make a careful effort on conceptualizing the assessment domain. An appropriate representativeness must be ensured. Unfortunately, many teachers develop tests without figuring out what domains of knowledge, skills, or attitude should be promoted and consequently, formally be assessed. A classroom test should measure what was taught. In simple words a test must emphasize what was emphasized in the

class. Now look at table 2.3. The table of specification shows the illustration of assessment domain of unit-2 of this book:

Table 2.3 Table of Specification of Unit-2
Number of test Items for Each Cognitive Level

| Topics | Knowledge | Comprehension | Application | Analysis | Total |
|---------------------------------------|------------------|----------------------|--------------------|-----------------|--------------|
| Purpose of a test: | 2 | 1 | 1 | | 4 |
| Objectives and Educational outcomes | 2 | 2 | 2 | 1 | 7 |
| Preparation of content outline | 2 | 2 | 2 | | 6 |
| Preparation of table of Specification | 2 | 3 | 2 | 1 | 8 |
| Total | 8 | 8 | 7 | 2 | 25 |

Table 2.3 is a very simple table of specification. It is possible to add more dimensions of the content. You may further distribute the table in subtopics for each main topic. Lets have another look on a very specific table of the following:

Table 2.4 Specific Table of Specification
Number of Test Items for following Cognitive Level
Knowledge Comprehension Application Analysis

| Level of Cognitive domain | Knows symbols & terms | Knows specific facts | Understands effects of factors | Solves equation | Interprets results | Total | Total |
|------------------------------|-----------------------|----------------------|--------------------------------|-----------------|--------------------|--------------|--------------|
| Topics | | | | | | | |
| Speed & Velocity | 2 | 2 | 2 | 3 | 4 | 13 | 26% |
| Potential Energy and Kinetic | 4 | 2 | 2 | 4 | 4 | 16 | 32% |

| | | | | | | | |
|----------------|-------------|------------|------------|------------|------------|--------------|--------------|
| Energy | | | | | | | |
| Law of Motion | 4 | 4 | 4 | 5 | 4 | 21 | 42% |
| Total | 10 | 8 | 8 | 12 | 12 | 50 | 100 % |
| Total % | 20 % | 16% | 16% | 24% | 24% | 100 % | |

A table of specification helps teachers to review the curriculum content on one hand and on the other hand it helps teachers to be careful in overlooking important concepts or including unimportant and irrelevant concepts. On the similar patterns a teacher can develop table of specification for affective and psychomotor domain.

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| Activity 2.6: Prepare table of specification for unit-2, you have just studied. |
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2.7 Self- Assessment Questions:

- (1) Explain with examples the purpose a classroom test.
- (2) How do you define an objective and a outcome? Differentiate between objectives and outcomes with the help of examples.
- (3) What is your understanding on the importance of learning outcomes?
- (4) What is cognitive domain? Explain all levels with examples.
- (5) Develop two objectives for measuring recall level, two objectives for measuring application level and two for evaluation level for 5th class from English text book,
- (6) Prepare a table of specification of 50 items for General Science subject for 6th class.

2.8 References Suggested Readings:

- Anderson, L.W., Krathwohl, D.R. (Eds.), (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman
- Adam, S., 2004, *Using Learning Outcomes: A Consideration of the Nature, role, Application and Implications for European Education of Employing 'Learning Outcomes' at the Local, National and International Levels*. United Kingdom Bologna
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- Popham, W.J. (2005). *Classroom Assessment: What Teachers Need to Know*. USA: Pearson Education.

Web References

SOLO taxonomy

<http://www.learningandteaching.info/learning/solo.htm#ixzz1nwXTmNn9>

<http://www.nwlink.com/~donclark/hrd/bloom.html>

<http://www.learningandteaching.info/learning/bloomtax.html>

<http://gates.govdl.org/docs/A%20Guide%20to%20Developing%20Cognitive%20Learning%20Objectives.pdf>

<http://www.qualityresearchinternational.com/glossary/learningoutcomes.htm>