

The background of the slide is a light gray gradient, decorated with several realistic water droplets of various sizes. The droplets are rendered with soft shadows and highlights, giving them a three-dimensional appearance. They are scattered across the page, with a higher concentration in the top-left and bottom-right corners.

ITEM ANALYSIS: (1)

ITEM DIFFICULTY

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OBJECTIVES

- After going through this presentation learner
- Will be able to describe the concept of item analysis.
- Will be able to describe the concept of item difficulty value
- Will be able to calculate the item difficulty value for their constructed test ,
- Will be able to select or remove the appropriate items of the test

ITEM ANALYSIS : THE CONCEPT

- Item analysis is a process that examines learner responses to individual test items
- in order to assess the quality of those items and of the test as a whole.
- The **difficulty** and
- **discrimination** indices of the items are calculated in this analysis.
- It also includes **distractor analysis**
- It is a technique of selecting or modifying the items or removing the item in the realm of the purpose of the test

THE MAIN OBJECTIVE OF ITEM ANALYSIS ARE:

- Item analysis provides an index of the difficulty value to each item. (Easy to difficult) .
- It also provides the ability of the item to discriminate between inferior and superior . it is also known s item validity
- It indicates the effectiveness of distractors
- In multiple choice item it indicates the extent to which the distractors or the foils are effective in each item
- It sometimes also indicates why a particular item in the test has not functioned effectively and

ITEM DIFFICULTY

Item difficulty is the percentage of learners who answered an item correctly.

It ranges from 0.0 to 1.0.

The closer the difficulty of an item approaches to zero, the more difficult that item is..

for example :

If an item is answered currently by 90% of the respondent it means the item is very easy and its difficulty value will be .90

METHOD OF CALCULATING DIFFICULTY VALUE OF ITEM

- **Judgment method**
- **Empirical method**
- Empirical method is the statistical method and is mostly preferred way.
- It requires the total score of each individual examinee as well as the performance of examinee on each item.
- There are two methods for calculating the difficulty value of items.

METHODS OF CALCULATING DV

- MAKE A TABLE OF THE RESPONSES

Name of the examinee	Item no. 1	2	3	4	5	6	7...	Total total
A	1	0	1	0	0	1	1	4
B	1	1	1	0	1	1	1	6
C	0	1	0	1	0	1	0	3
D	1	1	1	0	1	1	1	6
E	1	0	1	1	0	0	1	4

STEPS

- Calculate the **total score** of each individual
- Arrange the examinees according to their score
- Divide the group in upper half and lower half
- Calculate the number of examinees who answered correctly each item in the upper group and in the lower group.
- APPLY THE FORMULA : $DV = P/N$
- Select the item according to your purpose. *Easy test vs difficult test*
Speed test vs. power test
- *Generally items with .20 to .80 are included in test .*

METHOD 2

- In the another method the group is divided into upper 27%(Ru) and lower 27% (Rl) group.
- The number of examinees passing the item in upper group and the lower group is calculated .
- The formula in this method is $DV = \frac{Ru + Rl}{Nu + Nl}$
- Select the item according to the purpose.

IDEALLY A MULTIPLE CHOICE ITEM SHOULD HAVE THE DIFFICULTY VALUE :---

Format	Ideal Difficulty	
Five-response multiple-choice	70	
Four-response multiple-choice	74	
Three-response multiple-choice	77	
True-false (two-response multiple-choice)	85	

From Lord, F.M: "The Relationship of the Reliability of Multiple-Choice Test to the Distribution of Item Difficulties," *Psychometrika*, 1952, 18, 181-194

ASSIGNMENT

- WHAT IS ITEM ANALYSIS ?
- WHY ITEM ANALYSIS IS NEEDED IN TEST CONSTRUCTION ?
- WHAT IS ITEM DIFFICULTY VALUE ?
- HOW WILL U CALCULATE THE ITEM DIFFICULTY VALUE OF THE TEST ITEMS . ILLUSTRATE WITH EXAMPLE.

REFERENCES

- Conduct the Item Analysis: https://www.proftesting.com/test_topics/steps_9.php
- Understanding Item Analyses: <https://www.washington.edu/assessment/scanning-scoring/scoring/reports/item-analysis/>
- Singh A K: Tests Measurement and Research methods in Behavioural Sciences 3rd ed.(1998)(p38-43)Bharati Bhawan PublisherThakurbari Road,Kadamkoun, Patna.03

Thank
You

