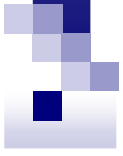




ITEM ANALYSIS

Dr Ashwini Karve



MCQ = Item

VALIDATION OF MCQs

✓ Pre-validation

✓ **Post-validation**

Evaluation of MCQs after
they are attempted by the students





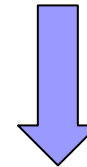
WHY SHOULD ITEM ANALYSIS BE DONE?

1. Did most students attempt the question?
2. Was the question of appropriate difficulty?
3. Was the key chosen by the better students?
4. Were the distractors plausible but not misleading?

HOW IS ITEM ANALYSIS DONE?



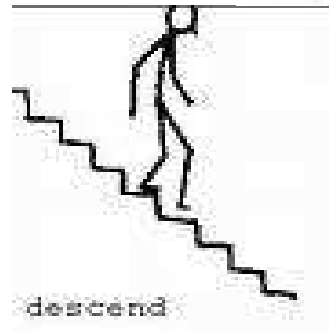
Correct MCQ papers



Arrange papers in descending order



high achiever group & low achiever group



1/3rd

1/3rd





Prepare frequency table

Item No. _____

Stem of MCQ

Alternatives	No.of Responses	
	High achiever group	Low achiever group
A		
B		
C*		
D		
E		
No response		
Total responses (T)		

* C=Key

Example :

Item No. _____

Stem of MCQ

Alternatives	No.of Responses	
	High achiever group	Low achiever group
A		
B	 	
C*	 	
D		
E	 	
No response		
Total responses (T)	50	50

* C=Key



WHY SHOULD ITEM ANALYSIS BE DONE?

1. *Did most students attempt the question?*
2. Was the question of appropriate difficulty?
3. Was the key chosen by the better students?
4. Were the distractors plausible but not misleading?

Example :

Item No. _____

Stem of MCQ

Alternatives	No. of Responses	
	High achiever group	Low achiever group
A		
B	 	
C*	 	
D		
E	 	
No response		
Total responses (T)	50	50

* C=Key



Should be attempted by at least 95%

Look at “ No responses”

- question at the end of the paper & too long a paper
- topic outside the syllabus
- topic within the syllabus, but not taught
- question too long/confusing/error in construction
- question too difficult



WHY SHOULD ITEM ANALYSIS BE DONE?

1. Did most students attempt the question?
2. *Was the question of appropriate difficulty?*
3. Was the key chosen by the better students?
4. Were the distractors plausible but not misleading?



Difficulty Index

$$p = \frac{H + L}{T} \times 100$$

H = No. of correct responses in the high achiever group

L = No. of correct responses in the low achiever group

T = Total number

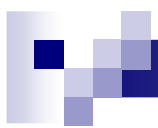
Example :

Item No. _____

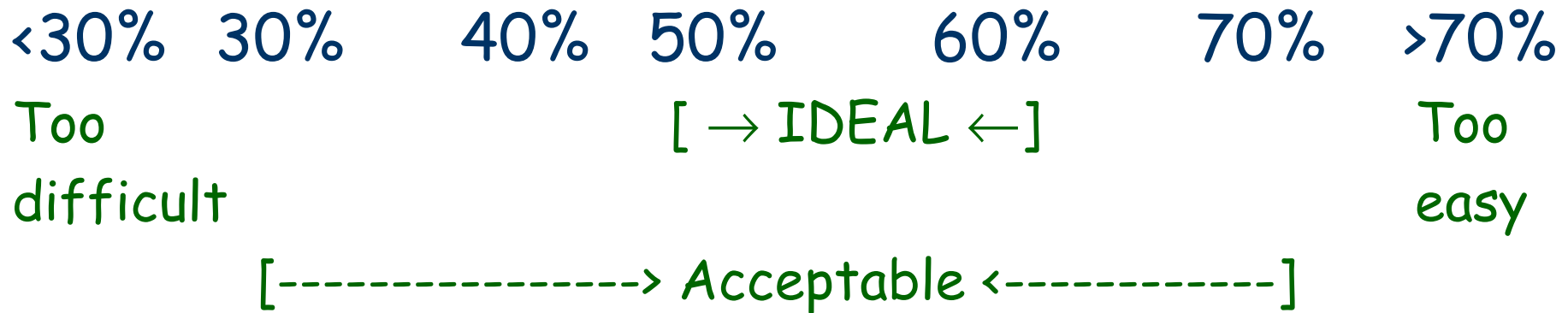
Stem of MCQ

Alternatives	No.of Responses	
	High achiever group	Low achiever group
A		
B	 	
C*	 	
D		
E	 	
No response		
Total responses (T)	50	50

* C=Key



$$\text{Difficulty Index (p)} = \frac{25+8}{100} \times 100 = 33\%$$





WHY SHOULD ITEM ANALYSIS BE DONE?

1. Did most students attempt the question?
2. Was the question of appropriate difficulty?
3. Was the key chosen by the better students?
4. Were the distractors plausible but not misleading?



Discrimination Index

$$d = \frac{H - L}{T} \times 2$$

H = No.of correct responses in the high achiever group

L = No.of correct responses in the low achiever group

T = Total number

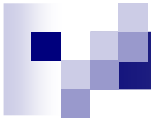
Example :

Item No. _____

Stem of MCQ

Alternatives	No.of Responses	
	High achiever group	Low achiever group
A		
B	 	
C*	 	
D		
E	 	
No response		
Total responses (T)	50	50

* C=Key



$$\text{Discrimination Index} = \frac{25-8}{100} \times 2 = 0.34$$

Poor

Acceptable

Good

Excellent

<----- 0.20 <-----> 0.25 <-----> 0.35 ----->



WHY SHOULD ITEM ANALYSIS BE DONE?

1. Did most students attempt the question?
2. Was the question of appropriate difficulty?
3. Was the key chosen by the better students?
4. **Were the distractors plausible but not misleading?**



Effectiveness of the distractor

If not responded by even 5% of the total students :

poor/ineffective distractor

Example :

Item No. _____

Stem of MCQ

Alternatives	No.of Responses	
	High achiever group	Low achiever group
A		
B	 	
C*	 	
D		
E	 	
No response		
Total responses (T)	50	50

* C=Key



Difficulty Index

$$p = \frac{H + L}{T} \times 100$$

Discrimination Index

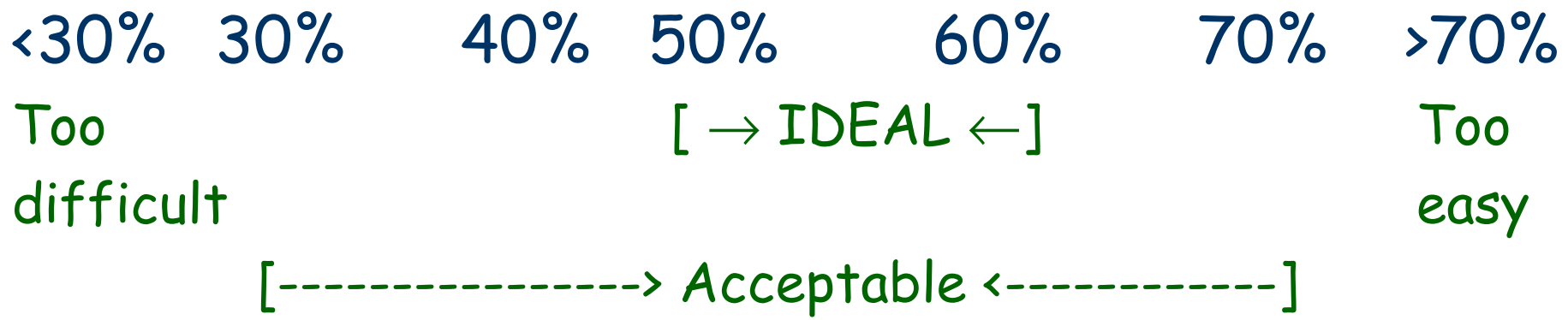
$$d = \frac{H - L}{T} \times 2$$

Effectiveness of the distractor

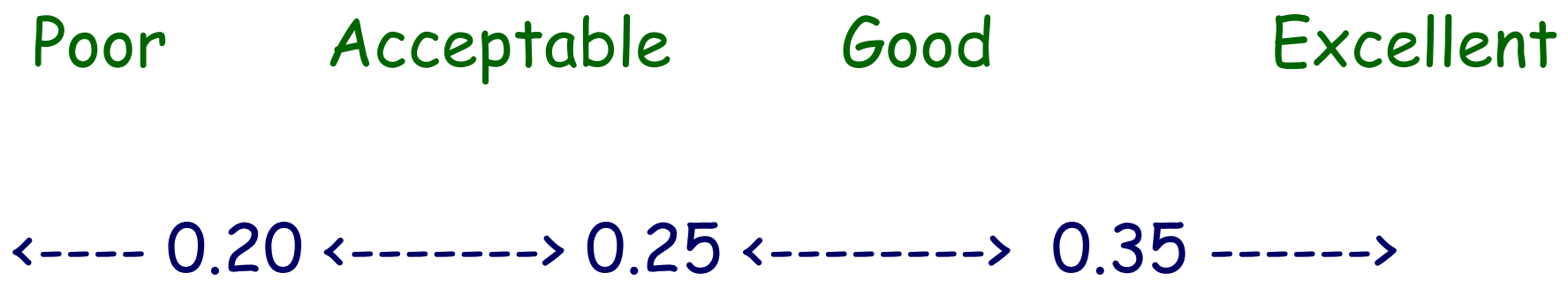
Whether responded by 5%
of the total students



Difficulty index (p)



Discrimination index (d)





p = acceptable/ideal

d = acceptable/good/excellent

Store

p = easy/difficult

d = acceptable/good/excellent

Store

d = poor

Revise/Discard

POOR DISCRIMINATION INDEX

- outside the syllabus
- confusing wording
- wrong key
- no correct answer
- several correct answers
- too easy / too difficult





Alternatives	High achiever	Low achiever
A	2	1
B	1	1
C *	15	10
D	30	37
No response	2	1
Total	50	50

* key

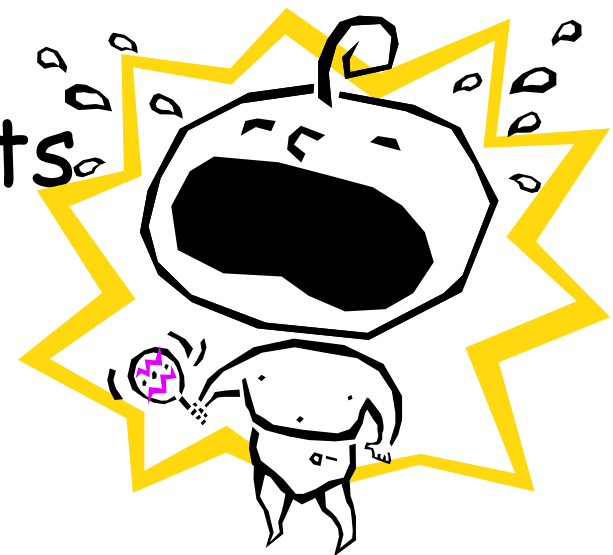


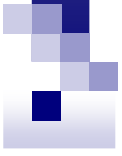
ADVANTAGES OF ITEM ANALYSIS

- ✓ Detects technical flaws in the item.
- ✓ Provides feedback to teachers
- ✓ Provides feedback to students
- ✓ Aids selection of **Marker MCQs**.
- ✓ Provides insights & skills to prepare better tests in future.

ITEM ANALYSIS

- ✓ Tedious
- ✓ Time consuming
- ✓ Hard work
- ✓ Cooperative efforts





Thank You