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Session 11

C-EDUC5 (3 units)

ASSESSMENT in Learning 1

Fall Semester 2023

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ASSESSMENT
in Learning 1

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2023

Engineering the Test:
The Table of Specifications (TOS)

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P H I L I P P I N E S

Looking back...

Characteristics of a Valid Assessment Tool

Validity

- The test tool is able to consistently and accurately measure its intended construct.

Looking back...

Characteristics of a Valid Assessment Tool

Types of Test Validity

- Content Validity → Subject Matter and Lesson Objectives
- Construct Validity → Performance indicators
- Criterion-Related Validity → Learning Standards and Desired Outcomes
- Face Validity → Physical, visual, and mechanical soundness of the test

Looking back...

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CONCLUSION

The test item is valid when the content is based on the learning outcome being assessed and is proven to measure the learning skill intended in its construction. Besides the content and construct validity, the entire test's physical features and language proficiency make face validity equally essential.

Springboard question to ponder

Image 1: Grade school students in the Philippines are lagging behind counterparts in Southeast Asia in reading, math and writing, a study showed (Source: De Guzman, 2020: Online)

Session 11

Engineering the Test: The Table of Specifications

OBJECTIVES

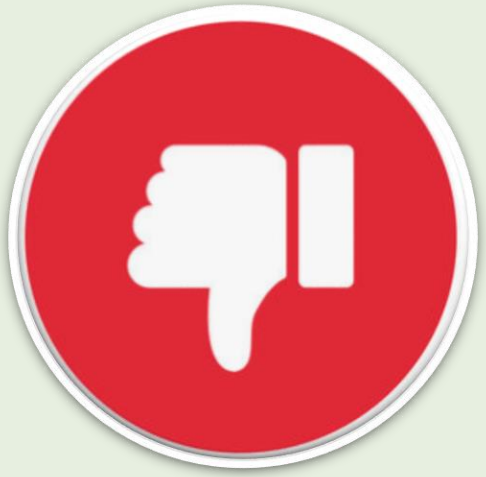
1. To consider the teaching-learning principles in planning for the test
2. To configure the teaching-learning elements into a table of specifications of a summative test

Topic 1

Principles of Planning Assessment

Let's assess our background beliefs...

or



Topic 1

Principles of Planning Assessment

1. A good test is based on the objectives or content areas of the lessons.
2. The number of test items per topic corresponds to the time consumed in class.
3. An efficient test should be very difficult to challenge the students.

Topic 1

Principles of Planning Assessment

4. Items across topics covered should be randomly placed in the test paper of the same test type.

5. Subjective type of tests are planned separately from the objective part of a summative examination.

Topic 1

Principles of Planning Assessment

The Table of Specifications (TOS)

- Lesson objectives or competencies
- Duration and coverage of instruction
- Skills to be assessed
- The type of test
- Instrument design

Topic 1

Principles of Planning Assessment

Lesson objectives or competencies

Lesson objectives, learning outcomes, or competencies are the bases of instruction and assessment.

Topic 1

Principles of Planning Assessment

Duration and coverage of instruction

For fairness and balance, the number of items or the credit score in a test is based on the duration of the teaching-learning experiences.

Topic 1

Principles of Planning Assessment

Skills to be assessed

Test design is according to the various skills measured for the particular learning outcome

Topic 1

Principles of Planning Assessment

The type of test

The type of test is based on how students are evaluated and how they should demonstrate their learning.

Topic 1

Principles of Planning Assessment

Instrument design

The design covers the types and layout and how the items are arranged.

Topic 2

Applying the Principles of Assessment Planning

The Table of Specifications

1 A good test is based on the objectives or content areas of the lessons.

Learning Outcome: ***Discuss the processes involved in the water cycle***

LIST OF TOPICS COVERED

- Water heating and cooling
- Three Major Processes
- By-products of water cycle
- Weather implications
- Humans and the water cycle

Topic 2

Applying the Principles of Assessment Planning

The Table of Specifications

2 The number of test items per topic corresponds to the time consumed in class.

TOPIC	No. of hours	%	No. of Items
Water heating and cooling			
Three Major Processes			
By-products of water cycle			
Weather implications			
Humans and the water cycle			
TOTAL			

Topic 2

Applying the Principles of Assessment Planning

The Table of Specifications

2 The number of test items per topic corresponds to the time consumed in class.

TOPIC	No. of hours	%	No. of Items
Water heating and cooling			
Th			
By			
W			
Humans and the water cycle			
TOTAL			

$$\% = \frac{\text{No. of Hours per topic}}{\text{Total No. of Hours}} \times 100$$

Topic 2

Applying the Principles of Assessment Planning

The Table of Specifications

2 The number of test items per topic corresponds to the time consumed in class.

TOPIC	No. of hours	%	No. of Items
Water heating and cooling	3	16.7	5
Three Major Processes	4.5	25.0	10
By-products of water cycle	1.5	8.3	3
Weather implications	3	16.7	5
Humans and the water cycle	6	33.3	7
TOTAL	18	100	30

Topic 2

The Table of Specifications

All Multiple-Choice Type

3 An efficient test should be challenging enough for students to think critically.

TOPIC	No. of Items	Item Placement				
		REM	UND	APP	ANA	EVA
1	5					
2	10					
3	3					
4	5					
5	7					
TOTAL	30	2	3	5	10	10

Lower order : Higher order

40% 60%
30% 70%
20% 80%

Topic 2

The Table of Specifications

All Multiple-Choice Type

4 Items across topics covered should be randomly placed in the test paper.

TOPIC	No. of Items	Item Placement				
		REM	UND	APP	ANA	EVA
1	5	1		13		9,28,29
2	10	8	2	12,14	15,16,17	25,26,27
3	3			3	30	18
4	5				4,19,20	10, 11
5	7		7, 21	6	22,23,24	5
TOTAL	30	2	3	5	10	10

Topic 2

The Table of Specifications

All Multiple-Choice Type

4 Items across topics covered should be randomly placed in the test paper.

Item No. 1: Remembering

Topic 1: Water Heating and Cooling

1. What process is responsible for the evaporation of water in the water cycle?

   A. Cooling
   B. Falling
   C. Heating
   D. Melting

Topic 2

The Table of Specifications

All Multiple-Choice Type

4 Items across topics covered should be randomly placed in the test paper.

Item No. 2: Understanding

Topic 2: Three Major Processes

2. What takes place when clouds form because the water vapor and dust particles in the air cool down and stick together?

   A. Condensation
   B. Evaporation
   C. Precipitation
   D. Sublimation

Topic 2

The Table of Specifications

All Multiple-Choice Type

4 Items across topics covered should be randomly placed in the test paper.

Item No. 3: Applying

Topic 3: By-products of Water Cycle

3. In what time of the day does fog usually form during a very humid mixing of cold and warm air?

A. Early evening

B. Early morning

C. Late afternoon

D. Late in the night

Topic 2

The Table of Specifications

All Multiple-Choice Type

4 Items across topics covered should be randomly placed in the test paper.

Item No. 4: Analyzing

Topic 4: Weather Implications

4. How do sea breezes form?

A. Cool air over the sea pushes warm air over the land

B. Cool air over the land pushes warm air over the sea

C. Warm air over the sea pushes cool air over the land

D. Warm air over the land pushes cool air over the sea

Topic 2

The Table of Specifications

All Multiple-Choice Type

4 Items across topics covered should be randomly placed in the test paper.

Item No. 5: Evaluating

Topic 5: Humans and the Water Cycle

5. Acid rain is produced when air pollutants react with cloud waters. Once the rain falls, this will be extremely harmful to us. How can you help prevent acid rain formation?

   A. Burn only organic waste.

   B. Use an umbrella or raincoat.

   C. Avoid exposing self to the rain.

   D. Reduce or avoid burning garbage.

Topic 2

Applying the Principles of Assessment Planning

The Table of Specifications

5 All test types in the assessment tool are organized in one plan.

Table of Specifications of the Summative Test in Math 6

Learning Content	No. of Hours	%	No. of Items	Type of Test and Placement
Numeration Systems	3	12.5	6	MC: 1, 5, 6, 16, 18, 24
Whole Number Concepts	6	25	13	MC: 2, 7, 8 PP: 41 – 50
Ordinal Numbers	2	8	3	MC: 4, 9, 17
Place Values with Rounding Off	6	25	15	MC: 3, 10, 11, 12, 21 PS: 31 – 40
Units of Measurement	4	17	8	MC: 13, 19, 22 CN: 26 – 30
Estimation	3	12.5	5	MC: 14, 15, 20, 23, 25
Total	**24**	**100**	**50**	

MC – Multiple-Choice CN – Conversion PS – Problem-Solving PP – Problem-Posing

Topic 2

Applying the Principles of Assessment Planning

The Table of Specifications

TYPES OF TOS

ONE-WAY

TWO-WAY

Topic 2

Applying the Principles of Assessment Planning

The Table of Specifications

TYPES OF TOS

One-Way TOS

This type of TOS is usually done in planning formative and short assessments. Only four of the five elements of the assessment plan are exhibited. The learning skills to be tested are not specified in the one-way TOS

Topic 2

TYPES OF TOS

The Table of Specifications

One-Way TOS

Table of Specifications of the Formative Test in Math 6

Learning Content	No. of Hours	%	No. of Items	Type of Test and Placement
Place Values of Whole Numbers	3	50	10	Identification 1-10
Rounding Off Numbers	3	50	10	Computation 11-20
Total	**6**	**100**	**20**	

Topic 2

Applying the Principles of Assessment Planning

The Table of Specifications

TYPES OF TOS

Two-Way TOS

This type is more recommended or required in most schools because it is complete with all the elements of the assessment plan. The two-way TOS shows how test items are placed in the instrument and the learning skills they measure.

Topic 2

TYPES OF TOS

The Table of Specifications

Two-Way TOS

Table of Specifications of the Summative Test in Math 6

Learning Content	No. of Hours	%	No. of Items	Item Placement Across Skills					
				Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Numeration Systems	3	12.5	6	MC: 1	MC: 5,6	MC: 16	MC: 18	MC 24	
Whole Number Concepts	6	25	13	MC: 2		MC: 8	MC: 7		PP: 41-50
Ordinal Numbers	2	8	3	MC: 4	MC: 9	MC: 17			
Place Values with Rounding Off	6	25	15		MC: 3	MC: 10,11	MC: 12, 21	PS: 31-40	
Units of Measurement	4	17	8	MC: 13		MC:19	MC: 22 CN: 26-30		
Estimation	3	12.5	5	MC: 14	MC: 15		MC: 20, 23	MC: 25	
Total	**24**	**100**	**50**	**5**	**5**	**6**	**12**	**12**	**10**

MC – Multiple-Choice CN – Conversion PS – Problem-Solving PP – Problem-Posing

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Engineering the Test: The Table of Specifications

CONCLUSION

The Table of Specifications (TOS) is the blueprint of the assessment instrument to be crafted. It ensures the validity and quality of the planned test, which indicates the learning content and skills to be assessed and how they are assessed.

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Engineering the Test: The Table of Specifications

REFERENCES

Kubiszyn, T. & Borich, G. (2007). *Educational testing and measurement: Classroom application and practice. 8th edition.* N.J., U.S.A.: John Wiley & Sons, Inc.

Navarro, R.L., Santos, R.G., & Corpuz, B.B. (2019). *Assessment in learning 1. 4th edition.* Quezon City, Philippines: LORIMAR Publishing

Dela Peña, K. (2023). *Southeast Asia rank: PH 2nd to worst in Grade 5 students' reading, math* [Online Image] [Accessed on October 15, 2023] https://newsinfo.inquirer.net/ 1721616/southeast-asia-rank-ph-2nd-to-worst-in-grade-5-students-reading-math-skills