International Journal of Arts, Sciences and Education
Volume 3 Issue 4 | October 2022
ISSN: 2799 - 1091
Page No. 17- 23

LEVEL OF COMPLEXITY IN UTILIZING SOLO TAXONOMY AMONG GRADE VI PUPILS OF CALLEJON ELEMENTARY SCHOOL

JUN M. DUMARAOS
Callejon Elementary School
San Antonio District
Division of Quezon Province
jun.dumaraos@deped.gov.ph

Abstract

The main objective of this study was to find out the level of complexity in utilizing SOLO Taxonomy in Science among Grade VI pupils of Callejon Elementary School.

The study used the descriptive method employing the purposive sampling among 36 Grade VI pupils of Callejon Elementary School. The main instrument used was the validated Teacher-made test questions focusing on Science VI Quarter 1 competency "Describing techniques in separating mixtures". The relevant data were treated statistically using weighted mean score and Likert Scale for data interpretation.

The result showed that the use of SOLO taxonomy as an assessment tool can provide the teachers significant information about how well the pupils understand a topic thus allowing him to provide appropriate remedial instructions or intervention program.

Keywords: Assessment, Hierarchy, SOLO Taxonomy

Rationale/Background

Many educators in different parts of the world today talk of developing 21st century skills within their students. Like other progressive-thinking countries, the K to 12 program in the Philippines makes an explicit claim of integrating 21st century skills within its instructional system.

Just like content standard, performance standard and instructions, assessment is also an integral part of teaching and learning. For it is a process to keep track of learners' progress in relation to learning standards and in the development of 21st century skills; to promote self-reflection and personal accountability among learners about their own learning; and to provide bases for the profiling of students performance on the learning competencies and standards of the curriculum. (DepED Order No. 08 s. 2015)

However, a paradigm shift in education caused by COVID-19 pandemic has brought new realities and limitations in the delivery of basic education services and has changed the ways of life of people from normalcy into new normal (Asfani, 2020). Despite of this unprecedented challenge to basic education, DepEd pursues learning continuity (DepEd Order No. 12, s. 2020) in this time of crisis while looking after the health, safety and well-being of all its learners, teachers and personnel. Schools had adapted assessment and grading practices that can most meaningfully support learner development and respond to varied contexts of this time. (DepED Order No. 31 s. 2020)

In Callejon Elementary School where Modular Distance Learning is the only applicable modality, teachers had the struggles to assess learners' learning and to identify whether learners are on the right track. Although DepEd issued interim policy guidelines for assessment, (DepED Order No. 31 s. 2020) teachers still had uncertainty on the credibility

ISSN: 2799 - 1091
Page No. 17- 23

and validity of the assessment results. Therefore, it is necessary, even in Modular Distance Learning, to utilize alternative tools and strategies for assessing and supporting learning. So, teachers can be able to provide appropriate intervention program to address this problem. With this, the proponent of this study adapted the SOLO taxonomy as an aid in assessing pupils' level of knowledge in Science VI specifically focusing on the Quarter 1 competency "Describing techniques in separating mixtures such as decantation, evaporation, filtering, sieving and using magnet (S6MT-Id-f-2)".

From the aforementioned scenario, the researcher came up with this research question: What is the level of complexity in utilizing SOLO Taxonomy in Science among Grade VI pupils of Callejon Elementary School?

Solo Taxonomy (Structure of Observed Learning Outcomes**),** developed by Biggs and Collis (1982), is a systematic way that describes how learners' understanding build from easy to difficult while learning different tasks or subjects. The Solo Taxonomy can be used to enhance the quality of learning within the classroom teaching and provide a systematic way of developing deep understanding (Damopolii, 2020). Learners learning can be guided in ways that promote deep learning. In addition, SOLO offers a structured outline for the learners to use to build their learning and thinking**.** It motivates learners to ponder where they are presently in terms of their level of understanding, and what they must do to progress.

Methodology

The researcher utilized the descriptive method of research in this study employing purposive sampling technique to 36 grade six pupils currently enrolled at Callejon ES, School Year 2021-2022 as respondents.

The researcher used 10-item teacher-made test questions in Science VI focusing in Quarter 1 competency "Describing techniques in separating mixtures such as decantation, evaporation, filtering, sieving and using magnet (S6MT-Id-f-2)." wherein the options were crafted based on the 5 levels of knowledge of SOLO taxonomy with corresponding points. After a series of revisions and validation of the District Science Coordinator and Master Teacher In-Charge in Science, the researcher administered the test questions to the pupils understudy with the permission of the school head and of their parents/guardians.

The acquired data were retrieved, tallied and summarized. Likewise, the data gathered were treated using weighted mean score and Likerts scale where the SOLO Taxonomy Hierarchy of Knowledge served as the descriptor for data interpretation.

RESULTS AND DISCUSSION

Table 1. Weighted Mean Score on the Level of Complexity in Utilizing SOLO Taxonomy in Science VI

Item No.	SOLO TAXONOMY									Total	WMS	Interpretation
	Pre-Structural (f)	**fx**	**Uni-Structural (f)**	**fx**	**Multi-Structural (f)**	**Fx**	**Relational (f)**	**fx**	**Abstract (f)**			

ISSN: 2799 - 1091
Page No. 17- 23

1	4	5.6	1	1.6	3	8.58	28	116.76	0	132.54	3.68	Relational
2	5	7	3	4.8	11	31.46	17	70.89	0	114.15	3.17	Multi-Structural
3	8	11.2	4	6.4	15	42.9	9	37.53	0	98.03	2.72	Multi-Structural
4	1	1.4	4	6.4	12	34.32	19	79.23	0	121.35	3.37	Multi-Structural
5	13	18.2	6	9.6	3	8.58	14	58.38	0	94.76	2.63	Unistructural
6	3	4.2	9	14.4	15	42.9	9	37.53	0	99.03	2.75	Multi-Structural
7	5	7	1	1.6	16	45.76	14	58.38	0	112.74	3.13	Multi-Structural
8	1	1.4	16	25.6	7	20.02	12	50.04	0	97.06	2.70	Multi-Structural
9	10	14	3	4.8	14	40.04	9	37.53	0	96.37	2.68	Unistructural
10	1	1.4	9	14.4	7	20.02	19	79.23	0	115.05	3.20	Multi-Structural

AWMS = 3.0 Multi-Structural

Legend:
4:30-5.0 - Abstract
3.50-4.29 - Relational
2.70-3.49 - Multi-Structural
1.90-2.69 - Uni-structural
0.80-1.89 - Pre-structural

Table 1 presents the weighted mean score on the Level of Complexity in Utilizing SOLO Taxonomy in Science VI. Based from the given data, the pupils' understudy fell under Multi-structural level of complexity in utilizing SOLO taxonomy with an average mean score of 3.0. This implies that the pupils have several relevant independent ideas but these are not enough and/or not related. Therefore, SOLO taxonomy gives a framework for considering how deep the pupils' understand the topic.

According to the study of Rohlin et al (2020) entitled "assessment model blending formative and summative assessments using the SOLO taxonomy", the concept of the SOLO taxonomy can be applied to provide a picture of students' level of understanding. Thus, they concluded that alternative assessment strategies may be valuable tools with which to assess learning outcomes and students' understanding at levels of cognitive complexity.

ISSN: 2799 - 1091
Page No. 17- 23

CONCLUSIONS

This study revealed that the use of SOLO Taxonomy as an assessment tool will provide significant information for thinking about how well the pupils understand a topic, it provides direction on what learning competencies needing focus in responding to pupils' learning difficulties, it serves as basis in the possibility of remedial work/lessons and of appropriate intervention program.

The use of SOLO taxonomy is an innovative approach in administering assessment. This study impresses that the use of SOLO Taxonomy can be considered an alternative in assessing pupils in learning science concepts.

ISSN: 2799 - 1091
Page No. 17- 23

References

Abana, A (2021). A Scrutiny of K-12 Strands and the Learning Program Vis-à-vis its Academic Performance. Psychology and Education Journal. 58 (2): 7977-7984

Agustin, C. P. (2019). The teaching behavioral attitudes of the faculty members of college of business, entrepreneurship and accountancy: A comparative Students evaluation. International Journal of Advanced Research in Management and Social Sciences. 8 (3), 132-170

Agustin, C.P. & Lagundi R.F. N. (2019) Classroom teaching Management and Evaluative techniques of the Instructional Staff of business, entrepreneurship and accountancy. International Journal of Advance Research in Management and Social Sciences.8 (3), 171-196.

Alfiler, C. (2021). Assessment Status of Technical Vocational Education in the Northern Philippines: Assessment Status of Technical Vocational Education in the Northern Philippines. *International Journal of Arts, Sciences and Education*, *1*(3), 124–138. Retrieved from https://www.ijase.org/index.php/ijase/article/view/26

Aquino G. V. (2000). *Essential of research and thesis writing*. Phoenix Publishing House.

Asfani, M. (2020). A *Paradigm shift in learning: shaping student for the new normal*., published on May 3, 2020, Jakarta, Indonesia.

BALOG, P., & Gonzales, E. . (2021). From Linguistic Landscapes to Teaching Resources: A Case of Some Rural Areas in the Province of Quezon. *International Journal of Arts, Sciences and Education*, *1*(2), 23–44

Biggs, J. B., & Collis, K.F. (1982). *Evaluating the quality of learning. The SOLO taxonomy* (Structure of the Observed Learning Outcome). New York: Academic Press.

Biggs, J., & Collis, K. (1989). *Towards a model of school-based curriculum development and assessment using the SOLO taxonomy*. Australian journal of education, 33(2), 151-163. . *Retrieved November 18, 2021 https://www.structural-learning.com/post/what-is-solo-taxonomy*

Biggs, J. B. (2011). *Teaching for quality learning at university: What the student does*. McGraw-hill education (UK).

Biggs, J., & Tang, C. (2007). *Teaching for quality learning at university. What the student does* (3rd Ed.). Berkshire: Society for Research into Higher Education & Open University Press.

ISSN: 2799 - 1091
Page No. 17- 23

Brabrand, C., & Dahl, B. (2009). *Using the SOLO model to analyze competence progression of university science curricula.* Higher Education, 58*(4), 531-549.*

Bruner, J. S. (1961). *The act of discovery*. *Harvard Educational Review*, 31, 21-32.Retrieved January 24, 2022 https://www.simplypsychology.org/bruner.html

Damopolii, I., N et al. (2020). *The effectiveness of Inquiry-based learning to train students' thinking skill based on SOLO taxonomy*. In Journal of Physics: Conference Series (Vol. 1567, No. 4, p. 042025). IOP Publishing. *Retrieved November 18, 2021 https://www.structural-learning.com/post/what-is-solo-taxonomy*

DECENA, A. J. (2021). A SURVEY ON THE READING DIFFICULTIES OF K-12 LEARNERS IN SELECTED TAGALOG-SPEAKING PROVINCES: BASIS FOR INTERVENTION . *International Journal of Arts, Sciences and Education*, *1*(2), 219–226. Retrieved from https://ijase.org/index.php/ijase/article/view/61

DepED Order No. 08 s. 2015, *Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program*

DepED Order No. 12, s. 2020, *Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021 in light of Covid-19 Public Health Emergency*

DepED Order No. 31 s. 2020, *Interim Guidelines for Assessment and Grading in Light of of the Basic Education Learning Continuity Plan*

Drew, Chris, 2021, *SOLO Taxonomy – 5 Levels of Learning Complexity.*

Liberman J. et. Al. (2020), *Are students still learning during COVID-19? Formative assessment can provide the answer,* Education for Global Development Journal. Retrieved May 19, 2022 https://blogs.worldbank.org/education/are-students-still-learning-during-covid-19-formative-assessment-can-provide-answer

Maribbay, R. (2022). Reading Interests and Habits: Their Relationship to the Reading Comprehension of Grade 11 Students. *International Journal of Arts, Sciences and Education*, *3*(2 June Issue), 84–101. Retrieved from https://ijase.org/index.php/ijase/article/view/128

Nieva, A. (2022). The Relationship between Career Interests and Academic Achievements in English, Mathematics, and Science of Grade 10 Students. *International Journal of Arts, Sciences and Education*, *3*(2 June Issue). Retrieved from https://ijase.org/index.php/ijase/article/view/122

Nightingale, P. et al. (1996). *Assessing learning in universities. Sydney: University of New South Wales Press. Retrieved November 18, 2021 https://sites.google.com/site/wongyauhsiung/edu-5033-principles-and-practice-of-assessment/l2-i-learning-theories-ii-assessment-of-learning*

ISSN: 2799 - 1091
Page No. 17- 23

Penwarden, R. (2014). 3 types of survey research, when to use them, and how they can benefit your organization. Retrieved from http://fluidsurveys.com/university/3-types survey-research-use-can- benefit-organization/

Rohlin M. et. al. (2020). Assessment model blending formative and summative assessments using the SOLO taxonomy. Retrieved August 31, 2022 https://onlinelibrary.wiley.com/doi/pdf/10.1111/eje.12787