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Research Article

Structure of Observed Learning Outcomes (Solo) Taxonomy and Learner Achievement: Impact on Educational Performance

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ABSTRACT

The incorporation of the Structure of Observed Learning Outcomes (SOLO) Taxonomy into classroom practice is insufficiently examined, yet its capacity to improve teacher efficacy and student learning outcomes. This study investigated educators' comprehension of SOLO Taxonomy, its impact on student academic performance, and the obstacles faced during its implementation in secondary education. Employing a descriptive correlational research approach, the study examined teachers' perspectives of familiarity, lesson planning, and alignment with learning objectives, while linking these factors with student performance measures and identified instructional problems. Results indicate that teachers demonstrate diverse levels of knowledge and application abilities, and that previous SOLO-specific training markedly impacts their competency. Students' academic performance, critical thinking, and involvement are positively correlated with teachers' SOLO proficiency; yet, obstacles remain in aligning the curriculum, designing assessments, and ensuring student preparation. These results show how important it is to have organised professional development and support from the institution in order to make the most of SOLO-based practices. Targeted training, collaborative lesson preparation, scaffolded assessments, and integrative frameworks may boost teachers' skills, help students do better, and make it easier to put these ideas into practice. The study suggests a structured framework for embedding SOLO Taxonomy in assessment, offering practical strategies for classroom integration, professional development, and policy direction, and advocates for additional research to confirm and broaden its implementation in various educational settings.

Keywords: *Academic achievement, student readiness, teacher competence, scaffolded assessment*

Introduction

The Global Crisis and the National Policy Requirement Nevertheless, Philippines' inadequate performance on the Programme for International Student Assessment (PISA), where it ranked 77th of 81 nations in 2018,

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indicates that the nation is ill-equipped for the workforce, which hampers economic growth (Bernardo, 2023). In response, the Department of Education initiated Sulong EduKalidad. This is an extended version beyond the basic levels of cognitive complexity laid down in DepEd Order No. 8, s. 2015 The agency implemented this through the issuance of DepEd Memorandum No. 067, s. 2022 on Higher Order Thinking Skills — Professional Learning Packages (HOTS-PLPs). This memo clearly states that the Structure of Observed Learning Outcomes (SOLO) Taxonomy should be used to change assessment practices from simply regurgitating facts up through solids to higher-order thinking levels, as required by international standards. This marks a significant shift in strategy — moving education away from rote memorisation, which has fared poorly in international assessments, and towards imparting students with critical thinking and problem-solving skills necessary for success in 21st-century jobs. This framework allows teachers to determine which specific cognitive difficulties contributed to the low PISA scores by organizing student responses into categories according to how challenging they are to interpret.

Local Context and Research Gap The national guidelines resonated in Region III, where Regional Memorandum No. 262 s; 2022 integrated PISA-like tools into the Regional Diagnostic Assessment (RDA). The Schools Division of Zambales offered capacity training for such SOLO-based practices, however there is still a prevailing gap between policy and practice. They don't mean all the 'go to capacity-building seminar' will change teaching methods, so it is important to check whether they are being put into practical use. It has not yet been confirmed whether Junior High School Teachers Zone 1 are using the SOLO levels in their daily assessment and if this use impacts directly on students learning achievement. Without such data, there is no way to know whether the region’s recovery strategy is effective. The aim of this study is to explore the effectiveness of these mandates by determining whether SOLO-based assessment leads to increased performance that can close the national achievement gap.

Materials and Methods

This study employed a descriptive-correlational research methodology to ascertain the association between the perceived level of application of the SOLO Framework and the academic achievement of secondary school students in Zone 4 of the Schools Division of Zambales. The descriptive-correlational method entailed data collection without modifying the research subjects to ascertain the existence of a link between two variables and formulate predictions based on that relationship. Descriptive studies frequently utilize questionnaires and existing data, rendering this design particularly suitable for investigating the correlation between the perceived implementation of the SOLO Framework in instruction and students' academic performance (Gonzalez & Garcia, 2021).

Descriptive-correlational research sought to delineate the attributes of a population and substantiate assumptions concerning particular groups. This method was especially helpful for looking into variables that were hard to change or not right to change, since it let researchers see and measure things that were already happening. The researchers, for example, looked at how well the SOLO framework was being used and looked at existing academic records without changing the way teachers taught or the way students learned. Lee et al. (2022) assert that data collection in these studies frequently utilised standardized instruments delivered to extensive audiences to obtain information on certain subjects of interest. This study employed this design to elucidate the correlation between the implementation of the SOLO framework and student achievement.

The goal of this study was also to show how things were happening right now by answering the questions "what," "how," or "why" (Rojas & Perez, 2021). This method let the researchers learn important things about how things are taught now and what happens as a result, find patterns, and find places where things may be better. Descriptive-correlational research significantly contributed to the integration of observation and theory (Dizon & Rivera, 2020). By establishing a correlation between the application of the SOLO Framework and academic performance, the researchers were able to propose possible causal pathways

or provide frameworks for subsequent experimental investigations. The goal of understanding this link was to come up with ways to improve teaching methods and learning results. The researcher used this strategy to find out how the variables were connected, which helped them make a good and useful improvement program.

Respondents and Location

This study will involve soliciting participation of all junior high school teachers from fiscally independent schools located within the same area. 1 of Zambales Schools Division. This study shall be conducted in the area as mentioned previously encompassing the districts comprising of Schools Division of Zambales. The schools division office must grant permission to the researcher before proceeding with the study.

Based on the filed School Form 7, this is the total number of teachers per school per district who were included in this survey as responses needed from all of the 163 junior high school teachers (from autonomous schools) in Zone 1 of the School Division of Zambales. This met the property of complete population sample method was used in this research. A full survey of the target population which is complete but manageable in size was deliberately chosen as being an appropriate method that here would be feasible and practical. Given that this study was descriptive, the main purpose, however was to provide a full and detailed picture of the characteristics, attitudes, and experiences of teachers. By using complete population sampling, sampling error was eliminated, meaning the results were a true representation of this group, rather than an estimate.

As Hayes (2020) stated, total population sampling is a purposeful sampling method in which the entire population is selected to be studied based on some predetermined criteria. For this instance, all that was needed was for the individual to be a junior high school teacher in said city. To guarantee maximum validity and depth, all subjects meeting this criterion were included in the study. Complete population sampling, as Ghosh (2021) argues, means not the analysis of a small part of the population showing the features being examined but the whole population. This distinction was very important as sampling could have resulted in excluding some nuanced or minority views needed for a full understanding.

Overall, the decision to survey all participants was primarily driven by a desire for data saturation and completeness. The worry stated by Sukmawati, Salmia and Sudarmin (2023) on how elite dominance might lead to the exclusion of even small numbers of entities from a study resulting in serious inadequacy in understanding framework being presented was immediately addressed using this technique. In a cohort of 163 teachers, each teacher's perspective mattered and may have differed from their peers. By encompassing all perspectives, this study formed a thorough and substantive dataset in order to build a firm basis for its assessment and recommendations — without forcing the constraints and biases over limited sampling.

The Instrument

In this study, the relevant data was collected as the researcher prepared a questionnaire to ask questions about it. Before the data collection took place, the researcher read extensively on relevant studies and literature to ensure that the items in the enquiry were grounded on solid research. Prior to distribution, the draft questionnaire was reviewed by a panel of experts to establish content validity to ensure that items were clear and pertinent.

The questionnaire consisted of three main parts. The first part asked the respondents demographic questions, including their sex, age, specialization, number of SOLO Taxonomy-related trainings attended and how long they had been working. This information helped to provide context for the results and a clearer picture of who took part. The second part of the questionnaire asked the participants about their awareness and understanding on SOLO Taxonomy. Those who answered were asked to rate their skills according to a Likert scale of 1–4 (where 4 = Highly Knowledgeable, 3 = Knowledgeable, 2 = Moderately Knowledgeable and 1 = Not Knowledgeable).

The last component of the tool focused on students' academic performance overall (quarterly average), engagement,

Data Collection

1. **Frequency Count and Percentage** were employed to determine whether the percentages of participants correspond to a particular cohort in terms of their profile characteristics.
2. **Mean (WM)** was employed to evaluate the value of the variables regarding respondents' perception of the level of SOLO Taxonomy implementation.
3. **Standard Deviation** was utilized to quantify the extent of variation within the set of scores in relation to the average value.
4. **Analysis of Variance** was to ascertain the discrepancies in the perceptions of participants when categorized based on their profile characteristics.
5. **Likert Scale.** To improve the legibility of the assessments pertaining to the perceptions of the participants, the subsequent scale was utilized.
6. **Pearson Product-Moment Coefficient of Correlation** was used to test the significant relationship between the major variables of this study.

Result and Discussion

After getting the approval for the thesis proposal, researcher requested permission from the Schools Division Office of Zambales to conduct the research and distribute the tool to those responding from which used by them Permission was granted by the Public Schools District Supervisors of each of the municipalities in Zone 1.

Afterward, the researcher explained to the school's principal what the study involved. Afterwards, they asked people to provide their contact details — [(phone)/Facebook account/email address] which allows information to be collected online via Google Forms, Facebook Messenger or by telephone. Those without access to the internet received a paper version of the tool.

The questionnaires were sent through Google Forms, and the researcher has a limit of fifteen (15) days to get the desired amount of replies. It will be ensured that all the 100% items will be retrieved.

The researcher also used various statistical techniques to process, prepare, compute and analyse the data after distributing and collecting the questionnaires. Data were analysed using Microsoft Excel Data Analysis Tool Pack and SST-SPSS version 20. The collected data were analysed and interpreted using the following statistical techniques: The results of the inferences were checked at 0.05 alpha level of significance**.**

Profile of Teacher-Respondents

Age

As presented in Table 2, the majority (36 or 22.10%) of the teacher-respondents registered an age between 31 and 35; while a total of respondents revealed: ages between 41 and45 (27 or16.60%), ages between36 and40 (25 or15.30%),ages between26and30 (22 or13.50%), agesbetween46and50 (21or12.90%); ages betweem51and55(13or8%) then out of163 respondent teachers10(6.10%) were24 years old below,9(5.50 %)were56 year-old above

Among the teachers responding to our survey, the mean age was 39.04 years. This result indicates that teacher-respon e in the later stages of early adulthood.

The age distribution of the teacher responders with high representation in late early adulthood indicates that teachers belong to a workforce mostly composed of individuals with both long service and long commitment. By this time, teachers have typically spent enough hours in the classroom to fuse their knowledge about teaching with both pragmatic approaches for dealing with various forms of learners and shifting curricular demands. In real schools, in this stage of growth, teachers are typically seen taking on additional responsibilities such as mentoring new faculty members and overseeing instructional programs and working to improve schools. Johnson has those attributes, and because they are professionally mature, they can make balanced decisions, manage their classrooms well, and teach in a way that makes them reflect on what they are doing which enhances the quality of learning. Teachers in this age range are also quite motivated and adaptable, particularly regarding new technologies and teaching approaches. (Making it a responsive and dynamic learning environment.) The extent of teachers in this life stage suggests a secure and effective teaching cadre that can preserve

instructional wellness while consistently responding to the evolving nature of education and institutional requirements.

The categorisation of the current findings are supported by concurrent observations in recent academic literature. Studies have shown that teachers in their early to middle adulthood tend to show increased professional engagement and joint participation in the activities of the school, owing to their developing ability as instructors and stability in their careers (Borabo, Caballes & Capuno 2023) As teachers develop their long-term identity in the profession, they are found to be more committed to professional development and stronger attachment, indicating formative stage of teachers' professional identity (Rahman et al., 2022). Evidence also suggests that relatively inexperienced teachers are highly willing to adapt new pedagogical practices and accommodate diverse students' needs. This is primarily due to their prior engagement with reflective practice and confidence in their teaching (Ekawati, Santoso, & Hartono, 2024). The academic perspectives align well with the views of HEI members because educators within this demographic are often considered in institutional circles adequately experienced to lead instructional practices and flexible enough to embrace change. Hence, they prospects such as new learning paradigms by promoting continuous educational effectiveness and institutional evolution.

Sex

The majority, one hundred thirty-seven (137) or 84.00%, are female, and twenty-six (26) or 16.00% are male.

The recent survey investigation revealed the superiority of female teachers in comparison to their male counterparts.

The prevalence of female teachers in the current findings indicates a persistent trend in the teaching profession, where women represent most of the workforce, especially in basic education. This pattern can be understood within the larger social and professional framework in which teaching is typically seen as a nurturing and socially oriented job that fits with duties that are traditionally linked to care, patience, and being sensitive to others. In real schools, it is common to see female teachers who are very involved in helping students, managing the classroom, and working together on projects that keep schools running smoothly. They also take part in co-curricular activities that need them to connect with others on a regular basis, such as advising student groups, arranging programs relating to the community, and helping parents communicate with each other. At the same time, having male professors, even though there aren't as many of them, can add different points of view in areas like discipline, athletic development, and technical or specialized topics. The predominance of women in the teaching workforce exemplifies not only demographic trends but also the shifting dynamics of professional commitment, as female educators persist in maintaining instructional continuity, mentorship roles, and learner-centered practices that enhance the educational environment.

Recent academic studies reflect analogous demographic trends within the teaching profession. The examination of teacher workforce composition indicated that women constitute most educators and typically demonstrate significant instructional dedication and student-centered participation in classroom practices (Dela Cruz, Ramos, & Bautista, 2023). Another study on teacher professional participation found that female educators often exhibit greater engagement in collaborative school activities and learner support initiatives due to their pronounced inclination towards relational and supportive teaching methodologies (Abdullah, Karim, & Rahman, 2022). Research on teacher involvement in school-based programs indicates that women frequently undertake various instructional and mentoring roles that enhance the stability and continuity of school operations (Sari, Widodo, & Prasetyo, 2024). These studies collectively corroborate the current findings, as daily experiences in educational settings frequently show female teachers actively guiding students, upholding classroom order, and supporting institutional initiatives, thereby cultivating a learning environment characterized by consistent displays of empathy, commitment, and professional collaboration.

Specialization

With regards to specialization, thirty (30) or 18.40% are specialized in English; twenty-nine (29), or 17.80%, are specialized in Mathematics and Araling Panlipunan; twenty-seven (27), or 16.60%, are specialized in Technology and Livelihood Education [TLE]/Edukasyong Pantahanan at Pangkabuhayan [EPP]; twenty-two (22) or 13.50% are specialized in Science; fifteen (15) or 9.20%, specializing on Filipino; six (6) of which is three point seventy percent who specializes GMRC/Edukasyon sa Pagpapakatao (ESP); five, for Music, Arts PE & Health MAPEH

The classification of professors according to their areas of competences demonstrates that language, mathematics, and social sciences are the principal domains of knowledge on the faculty. The trend illustrates what is often emphasized in basic education: core academic courses represent the foundation upon which literacy, numeracy and critical thinking skills are built among students. In real life, teachers who specialize in these subjects generally have much more busywork to deal with and are masterminds behind planning the curriculum, shaping assessments and providing extra help because national tests and institutional performance indicators focus most of their scrutiny on these subjects. In paths like technology and livelihood, teachers republican customers decision-making experiences that prep pupils for the real world. This is particularly important in schools looking to enhance students' technical skills and life skills. At the same time, those who teach values and the arts help students develop all areas by literally improving each student's character, creativity and wellbeing. The variety of specializations among teachers illustrates that there is a balanced instructional environment where basic skills in reading/writing/mathematics are reinforced with practical skills, cultural awareness, and moral growth. All these are needed to deliver a well-rounded education in modern-day schools.

Recent empirical studies show similar patterns around the specialization of teachers and its influence on instructional practices. According to Gonzales, De Chavez and Martinez (2023), the bulk of the faculty believes that language and math teachers are effective for educational institutions because schools prioritize literacy and numeracy enhancement. Similarly, Hassan, Yusof, and Ibrahim (2022) found that teachers in core subject areas tend to lead the way by designing lessons and tracking students due to the importance of such subjects in a school curriculum. Moreover, Wibowo, Hidayat and Pratama (2024) reported that specialization alignment is considerably related to teaching performance suggesting that teacher's academic programs would lead experts in their own fields displaying proficiency content mastery. Corresponding Findings: These findings are broadly consistent with our current results, where actual classroom practices show that teachers who specializes on subject areas tend to feel more confident in planning lessons, clarifying complex concepts and customizing strategies towards learners needs which as a result facilitates nothing but better quality of academic instruction and the overall school outcomes.

Number of Structure of Observed Learning Outcomes (SOLO) Taxonomy Related Trainings

Most had never gone to any training on the Structure of Observed Learning Outcomes (SOLO) Taxonomy Specifically, 94 (57.70%) did not attend any training; 39 (23.90%) attended 1–2 trainings; 18 (11.00%) had been exposed to 3–4 trainings; seven (7 or)4.30% students attended five or six training courses and five students or (3.10%) had attended seven or more trainings.

The teachers who responded to the survey had attended on average 1.21 Structure of Observed Learning Outcomes (SOLO) Taxonomy trainings. Model 3 predicts that few teachers attended SOL taxonomist training.

The findings indicate that only about 1 in every 5 instructors had very familiar with professional development activities related to the Structure of Observed Learning Outcomes Taxonomy. This implies that the framework has not yet fully taken hold in conventional teacher training programs. This situation may be partly because other educational initiatives

— like new curricula; tech integration; and revisiting how to assess students performance — usually fill much of the time at schools. Educators in many educational environments rely on generic frameworks and traditional assessment formats when designing learning experiences and measuring student understanding. As a result, the progressive development of cognitive complexity outlined in the SOLO Taxonomy is not consistently reflected in classroom assessment practices. At this point, field observations in several schools demonstrate that teachers are able to successfully lead students through the content of a lesson; however, the systematization of the classification of student responses based on greater levels of understanding is rarely carried out as there has been little orientation and lack of permanence training for educators with respect to the model. Such limited training exposure can impact the usage of higher-order assessment methods among teachers as well. This is because professional development opportunities are most often the primary method of introducing teachers to new frameworks enhancing reflective teaching and evidence-based assessment of student learning outcomes.

Rising trends in educator differentiation through specialized pedagogic training have recently been underscored by academic studies, making this distinction even powerful. As noted by Rivera, Alipio and Guinto (2023), educators often report low participation in professional development programmes related to advanced assessment as many trainings offered at the institutional level prioritise generic teaching strategies instead of specific assessment frameworks. Likewise, Lim, Tan and Siti Hajar (2022) found that teachers are aware of new types of student assessment but struggle to implement them unless they receive sufficient regimented training and supervised practice. Besides, Wulandari Setiawan and Prakoso (2024) also emphasized the significance of training for teachers to use systematic assessment framework that assist students to get a better understanding. The congruence of past research with the findings from my study suggests that in situations where opportunities for specific training are limited teachers turn to well-used instructional methods rather than utilising explicit evaluative frameworks such as the SOLO Taxonomy. In fact, through opportunities to learn more about progressive assessment structures through targeted workshops or mentoring programs in classrooms, teachers report greater confidence and consistency in designing tasks that clinically gauge understanding from surface-level concepts right through to deep understanding. This leads to better general quality of classroom assessment practices.

Length of Service

Fifty-six (56) or 34.40% of teacher-respondents had length of service ranging from 21 – 25 years; forty (40) or 24.50% with a range of length and /or duration of service of 11-15; twenty-seven (27) or16.60% are in the range of 6 to10 years in service; fourteen (14) or about8.60%, with a range of-length/service/years as16–20 year; twelve(12),or7.4%, have been listed in range length o service/years, both at26~30 and ten(10)i e, having0–5}; while four(4)t, at least2.50%.

The average length of service was 16.99 years (17 years) for teacher-respondents. She said the results proved that teachers were experienced as they had worked for a long time.

The distribution of teachers by years on the job clearly indicates that many respondents had a wealth of teaching experience. This means they are a relatively mature teaching staff who have passed through the various stages of professional development, and have gone through what happens in a typical pedagogic practice training to work on adaptation to changes within education. Well-established teachers often have better strategies to manage their classrooms, know more about curricular standards, and are more confident in how to address the needs of diverse students. On a day-to-day basis, experienced teachers sometimes work as informal mentors to newer teachers by sharing effective teaching techniques, helping with lesson planning and ensuring that school rules are followed. The extended time in the field also helps them

approach challenges that arise in the classroom with greater composure, having learned to manage behaviour problems, deliver instruction in different ways and grade students. Even teachers who have been in the profession for a long time are often very invested in the school community. It helps to keep the school steady and the standard of teaching and learning good."

Recent studies provide similar observations regarding teaching experience and its connection to instructional quality and career engagement. According to Valdez, Cabero and Llorente (2023), highly experienced professional educators demonstrate increased pedagogical confidence in instructional decision-making, their extensive time in the classroom helping them perfect their practice. In their studies, Ahmad, Hassan and Yusof (2022) also observed that experience educators are often found to mentor or engage in leadership roles within schools where they guide novice teachers and encourage a collaborative professional learning workplace. In a similar study, Pratama et al (2024) found that renewed classroom management and reflective practice overtime are common affairs among teachers with long teaching experience, as both characteristics do not seem to develop in isolation but instead grow alongside continued engagement of the teacher in instructional activities over time. These academic observations match top practice, as in-school experience shows that highly experienced teachers predict student learning challenges and adapt teaching strategies better while also providing consistent and nurturing classroom environments — all contributing to higher impact on school delivery of services.

Summary: Perceived Level of Structure of Observed Learning Outcomes (SOLO) Taxonomy Knowledge and Understanding

Table 1 presents a summary of how well people thought they understood the Structure of Observed Learning Outcomes (SOLO) Taxonomy.

The teacher-respondents demonstrate a comprehensive understanding of the Structure of Observed Learning Outcomes (SOLO) Taxonomy, particularly regarding alignment with learning objectives, evidenced by the highest overall weighted mean of 2.72 (rank 1); lesson planning, with an overall weighted mean of 2.68 (rank 2); and familiarity, which received the lowest overall weighted mean of 2.64 (rank 3).

Overall, the teacher-respondents are educated about the Structure of Observed Learning Outcomes (SOLO) Taxonomy, as shown by the grand mean of 2.68.

Table 1

Summary on the Perceived Level of Structure of Observed Learning Outcomes (SOLO) Taxonomy: Knowledge and Understanding

	Dimensions	Overall Weighted Mean	Descriptive Equivalent	Rank
1	Familiarity	2.64	Knowledgeable	3
2	Lesson Planning	2.68	Knowledgeable	2
3	Alignment with Learning Objectives	2.72	Knowledgeable	1
	Grand Mean	**2.68**	**Knowledgeable**	

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The results show that the teachers who answered the survey have a good level of knowledge and understanding of the Structure of Observed Learning Outcomes (SOLO) Taxonomy across different areas. They had the best understanding of aligning learning objectives, followed closely by lesson planning, and they were less familiar with the framework itself. This means that teachers are often good at using taxonomy in real-life classroom situations, especially when it comes to making sure that lesson activities and instructional goals match up with the cognitive outputs they want. This is seen in real schools when teachers plan lessons that gradually move students from simple recall tasks to more difficult analytical or evaluative tasks. This shows that the teachers understand how students' brains work, even if they don't know much about the levels of the taxonomy. The lesser level of familiarity may be because teachers haven't had any formal professional development that focuses especially on SOLO Taxonomy. This means they have to rely more on their own experiences and the help of their peers when using the framework. The results show that teachers can use taxonomy to make their lessons more effective. However, more training and reflective practice could help them understand the concepts better and use them consistently in diverse teaching situations.

Recent research backs up the idea that teachers use and interpret evaluation frameworks in comparable ways. Alipio, Barrot, and De Guzman (2023) said that teachers are better at using cognitive frameworks to make sure that class goals and activities are in line with each other than they are at completely understanding the theoretical ideas behind these frameworks. Rahman, Yusof, and Karim (2022) also said that instructors use assessment taxonomies well when designing lessons and teaching them, although teachers' understanding of the taxonomy's conceptual hierarchy grows slowly over time with more training and practice. Wulandari, Pratama, and Hidayat (2024) added to these findings by saying that teacher competency improves when professional development combines hands-on work with reflective discussions. This makes lesson design and alignment with learning objectives better. These studies are in line with what we found because classroom observations show that teachers can use the SOLO Taxonomy to help with lesson planning and meeting learning goals, even though they still need to work on their deeper understanding of the concepts. This shows a practical balance between applied competency and theoretical understanding in real teaching situations.

Summary: Perceived Effects of the Structure of Observed Learning Outcomes (SOLO) Taxonomy in the Academic Achievements of Students

Table 2 shows the summary of the perceived effects of the Structure of Observed Learning Outcomes (SOLO) Taxonomy on the academic achievements of students.

Table 2
Summary on the Perceived Effects of the Structure of Observed Learning Outcomes (SOLO) Taxonomy in the Academic Achievements of Students

	Dimensions	Overall Weighted Mean	Descriptive Equivalent	Rank
1	Learners' Engagement	2.74	Agree	3
2	Critical Thinking and Problem-Solving Skills	2.79	Agree	2

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3	Changes in Student Performance	2.80	Agree	1
	Grand Mean	**2.78**	**Agree**	

Teachers-respondents agreed on the effects of Structure of Observed Learning Outcomes (SOLO) Taxonomy to students' academic accomplishments which manifested a weighted mean as high as 2.80 (rank 1) in students' academic gain; a weighted mean of 2.79 (rank 2) in critical thinking and problem-solving ability, and lowest overall weighted mean for learners engagement with ratings at Mean = 2.74 (rank 3).

It can be gleaned from the computed grand mean of 2.78 that there is an agreement among teacher-respondents on how much the Structure of Observed Learning Outcomes (SOLO) Taxonomy contributes to students' academic performances.

Teachers believe that the structure of observed learning outcomes (SOLO) taxonomy has a large positive impact on academic performance. The largest impacts were on improving student performance, closely followed by improvement in critical thinking and problem-solving skills. This suggests that the pedagogical principles based on SOLO framework assist in promoting student use of learning tasks, in contrast to surface level comprehension towards higher-level cognitive activity. As I observed other classes that were governed by SOLO principles, the students tended to provide a greater quality and coherence in their answers statement as well as being able to identify problems and seek solutions that require argumentation or concept integration. This effect, however, was less pronounced for learner engagement, which either means students gain cognitive benefits but sustaining high levels of motivation and participation may require additional scaffolding from an instructor or more interactive/peer to peer activities including collaboration. In general results indicate that SOLO Taxonomy can significantly influence and improve student learning outcomes (in terms of depth and quality of the desired knowledge). They also demonstrate that we need to find methods with which to keep students engaged while they learn.

Recent studies support these findings in emphasizing how structured cognitive frameworks are beneficial to student outcomes. Hierarchical learning outcomes, Alipio, Barrot, and De Guzman (2023), also point to leading students towards more elaborate and conceptually related answers that make a positive impact on their performance. In contrast, Hassan, Yusof and Rahim (2022) revealed that cognitive taxonomy-based education plays a pivotal role in improving learners' critical thinking and problem-solving skills; nonetheless, to develop longer-term engagement, active learning strategies must be adapted by the educator. According to Wulandari, Pratama, and Hidayat (2024), when teachers use taxonomies as guides to lesson planning, meaningful feedback, and prompting students' reflections on their work, then their performance will be improved. These studies support our findings that SOLO-inspired instruction enhances student performance and higher-order thinking. Nonetheless, learner engagement remains a threat to the success of any educational phase requiring less instructional method and more continuous teacher support.

Summary: Perceived Challenges of Teachers in Implementing the Structure of Observed Learning Outcomes (SOLO) Taxonomy

Table 3 shows the summary of the perceived challenges of teachers in implementing the Structure of Observed Learning Outcomes (SOLO) Taxonomy.

Table 3
Summary on the Perceived Challenges of Teachers in Implementing the Structure of Observed Learning Outcomes (SOLO) Taxonomy

	Dimensions	Overall Weighted Mean	Descriptive Equivalent	Rank
1	Teacher Competence & Conceptual Understanding	2.64	Agree	4
2	Instructional Planning & Resource Design	2.67	Agree	2
3	Assessment & Evaluation	2.65	Agree	3
4	Student Readiness & Engagement	2.75	Agree	1
	Grand Mean	**2.68**	**Agree**	

The teacher-respondents concurred on the challenges faced in implementing the Structure of Observed Learning Outcomes (SOLO) Taxonomy regarding student readiness and engagement, evidenced by the highest overall weighted mean of 2.75 (rank 1); instructional planning and resource design, with an overall weighted mean of 2.67 (rank 2); assessment and evaluation, with an overall weighted mean of 2.65 (rank 3); and teacher competence and conceptual understanding, which recorded the lowest overall weighted mean of 2.64 (rank 4).

In general, the teachers who answered the survey agreed on the problems they had when using the Structure of Observed Learning Outcomes (SOLO) Taxonomy. This is seen by the grand mean of 2.68.

The results show that teachers experience many different problems when they try to use the Structure of Observed Learning Outcomes (SOLO) Taxonomy. The biggest problems are with getting students ready and interested. Observations indicate that students frequently display apathy or doubt when required to independently apply SOLO criteria, underscoring the necessity for systematic scaffolding and incentive measures. Problems with organising lessons and designing resources show how hard it is to make materials that fit with SOLO levels. This is because traditional textbooks typically don't help with higher-order thinking activities, so teachers have to put in extra time and creativity. Problems with assessment and evaluation make it even harder to create tasks and rubrics that clearly show the differences between cognitive levels. At the same time, teachers' skills and understanding of the concepts show how important it is to get professional development in order to fully understand and use the SOLO framework. These findings indicate that effective implementation necessitates not only theoretical understanding but also practical methodologies, sufficient resources, and student-centered scaffolding to optimise the taxonomy's influence on educational outcomes.

Recent studies confirm these findings, emphasising analogous difficulties in the implementation of cognitive taxonomies within educational settings. Alipio, Barrot, and De Guzman (2023) underscored that student engagement and preparedness substantially affect the efficacy of taxonomy-based training, especially when learners lack familiarity with reflective and analytical methodologies. Hassan, Yusof, and Rahim (2022) stated that teachers face big problems when it comes to designing lessons and making sure that assessment tools are in line with them. To make sure that students understand something, they need guided examples and scaffolding. Wulandari, Pratama, and Hidayat (2024) discovered that professional development and

practical assistance enhance instructor competence and confidence in executing intricate frameworks, simultaneously promoting increased student engagement. These studies closely correspond with the current findings, as field observations indicate that addressing challenges in student engagement, instructional design, assessment, and teacher comprehension is crucial for the successful implementation of SOLO, underscoring the necessity for integrated training and practical classroom strategies.

Conclusion

Based on the foregoing results of the study, the researcher concluded that:

1. Most of the teacher-respondents are late teens or early twenties, female, majoring in English, and have only attended a few SOLO Taxonomy trainings. They have a lot of experience in the teaching field.
2. The teacher-respondents said that their students did extremely well in the first quarter of the school year 2025-2026 and well in the second quarter of the same school year.
3. The teachers who answered the questions know how much they know and understand about the Structure of Observed Learning Outcomes (SOLO) Taxonomy in terms of how well it fits with learning goals, lesson planning, and how well they know it.
4. The teachers who answered the question agreed on the effects of the Structure of Observed Learning Outcomes (SOLO) Taxonomy on students' academic success, such as how it changed their performance, critical thinking and problem-solving skills, and how engaged they were in learning.
5. The teacher-respondents concurred on the difficulties faced in applying the Structure of Observed Learning Outcomes (SOLO) Taxonomy regarding student preparedness and engagement, instructional planning and resource development, assessment and evaluation, as well as teacher proficiency and conceptual comprehension.
6. When teachers are grouped by the number of SOLO Taxonomy-related trainings they have taken, there is a big difference in how they see their level of knowledge and understanding of the Structure of Observed Learning Outcomes (SOLO) Taxonomy in terms of how well they know it, how they plan lessons, and how well they meet learning goals.
7. There is a strong positive link between how well pupils know and grasp SOLO Taxonomy and how well they do in school.
8. There is a strong positive link between how well people know and comprehend SOLO Taxonomy and how hard they think it will be to use it.
9. The proposed framework stresses making SOLO Taxonomy a part of the assessment process as a way to improve both teacher skills and student academic performance.

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