

A Study on the Application of SOLO Taxonomy theory in Senior School English Writing Teaching from the perspective of the integration of teaching evaluation

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Abstract

The "English Curriculum Standards for General Senior High Schools" (2017 Edition, Revised in 2020) states that language skills, as an important part of language application ability, include skills in listening, speaking, reading, viewing, and writing. English writing teaching, as a crucial part of English teaching, is an important way for schools to cultivate students' comprehensive abilities and also a main approach for students to master English knowledge. However, currently, there are some problems in senior high school English writing teaching. The evaluation methods for English writing used by teachers and students are inefficient, the input and output of students' knowledge are not equivalent, students' interest in writing is low, and the writing teaching mode lacks innovation. Based on this, teachers need to optimize the writing evaluation methods, innovate writing teaching strategies, and enrich writing teaching. The Structure of the Observed Learning Outcome (SOLO) classification theory is a "qualitative" evaluation method characterized by hierarchical description. It divides the thinking level into five structural levels: pre-structural level, uni-structural level, multi-structural level, relational level, and extended abstract level. In recent years, many relevant studies at home and abroad have shown that the SOLO classification theory is conducive to improving students' writing level. At the same time, the integration of teaching, learning, and assessment, as a new teaching requirement put forward by the new curriculum standards, is also an indispensable and important teaching mode. However, currently, there are few in-depth studies on the integration of the SOLO classification theory and senior high school English writing teaching from the perspective of the integration of teaching, learning, and assessment. Based on the above problems, this paper explores the application of the SOLO classification evaluation theory in senior high school English teaching from the perspective of the integration of teaching, learning, and assessment.

Keywords

The SOLO Taxonomy; The integration of teaching evaluation; English teaching

1. Introduction

English writing is a kind of output expression, which tests the effect of students' language use and reflects their comprehensive language use ability. The cultivation and training of writing skills is a necessary way to develop students' ability to think and express themselves, and it is also one of the criteria for measuring the effectiveness of teaching. English writing ability is an important language application ability.

In teaching aims, English writing ability is often placed at the top, its educational difficulty and teaching effect is more difficult than listening, speaking and reading. It is also an indicator to truly test students' foreign language acquisition. From the English writing ability, it can not only be seen whether a student's foreign language performance is excellent, but also the attitude of an educator towards the use of language.

At present, there are still many deficiencies in the high school English writing class. Students' writing learning effect is not high and easy to fear. In this regard, if teachers want to cultivate students' core qualities in daily English writing teaching, they should follow the concept of integrated teaching evaluation, explore the writing teaching mode in line with students' cognitive development, and improve the development of students' cognition, evaluation and emotion. The English Curriculum Standards for Compulsory Education (2022 Edition) points out that teaching assessment should run through the whole process of teaching and learning of English courses, including classroom assessment, homework assessment, unit assessment and final assessment.

Teachers should fully understand the role of evaluation, make clear the principles that evaluation should follow, select assessment contents and methods based on assessment objectives, apply assessment results to further improve teaching and enhance students' learning effectiveness, and implement the integration of "teaching, learning, and evaluation". Writing assessment is an important part of English writing teaching, which is of positive significance for improving students' writing ability and improving teachers' writing teaching. It is found in real writing classrooms that most writing lessons are inefficient and boring.

This paper will combine the specific classroom teaching cases and discuss the SOLO teaching theory from the perspective of teaching evaluation integration to provide reference for the construction of high school English writing teaching mode.

2. Conceptual Interpretation

(1) The SOLO Taxonomy Assessment

"Structure of Observed Learning Outcomes" is the full name of SOLO, a qualitative assessment method characterized by hierarchical descriptions, proposed jointly by Professor Biggs (1982), a renowned educational psychologist, and his colleague Collis after extensive research. SOLO classification evaluation theory considers any

learning results, both its quantity and quality, are determined by the teaching process in the learning process and the students' personality characteristics. It is characterized by knowledge structure, learning investment and learning strategy, from concrete to abstract, from unidimensional to multidimensional, from the disordered organization to organized one (Jiao Meihong 2013).

According to the SOLO taxonomy assessment, the level of students' responses to specific problems can be categorized into "five levels", namely the pre-structure level, the uni-structure level, the multi-structure level, the relational level and the extended abstract level. Liu hui (2022) in the big concept teaching: literacy oriented unit overall teaching design in the book building house metaphor the five kinds of thinking cognitive level: former structure like building of basic materials, single point structure like in the building for the relationship between raw materials, multiple structure level like different building materials, associated structure like the basic framework of the house, abstract development structure like focus on housing design, function and the surrounding environment. This vivid metaphor is conducive to teachers to understand and use SOLO classification evaluation theory to evaluate students' thinking level, and to adjust classroom teaching strategies accordingly.

The Pre-structure level is the first level, students usually cannot find a way to deal with specific situations. Students at this level act as respondents, they randomly select an irrelevant knowledge point as an answer in the disorganized existing knowledge system, so that the answer results do not reflect the relevance of the topic. The Uni-structure level is the second level, where students do not have a comprehensive understanding of the analysis of problems and they will not actively delay the depth of thinking, and then easily draw one-sided conclusions. The Multi-structure level is the third level, and the student's perspective on the problem is broadened compared to the previous level. But they cannot dig internal connections, which may also be that the information found by students does not have the necessary connection itself, so students' thinking is not clear enough. Relational is the fourth level, and students have a high level of understanding of problems, so they are efficient in solving problems and they can analyze things according to a certain development logic, and finally form a persuasive point of view. Extended Abstract is the fifth level, and students' thinking development reaches a high level, and they often have a certain degree of innovation in interpreting and solving problems. The SOLO Taxonomy Assessment changes the approach of Bloom's Taxonomy Educational Objectives to evaluate the change of students' learning behaviour, because the meaning of "behaviour" is more abstract to evaluate students' learning outcomes. Assessment objectives are clear and specific, and the validity and reliability of assessment are improved.

(2) The integration of Teaching, Learning and Assessment

In recent years, the education sector has attached great importance to teaching

evaluation. At the same time, during the process of classroom teaching design and practice, teachers also pay considerable attention to teaching evaluation, effectively promoting the proposal of the concept of integration of teaching, learning, and evaluation. According to the concept of the integration of teaching, learning, and evaluation, teachers should, on the premise of ensuring the consistency of the goals and content of teaching, learning, and evaluation, promote the coordinated development of teaching, learning, and teaching evaluation, so as to effectively improve classroom teaching efficiency. The Senior High School English Curriculum Standards clearly state that in actual teaching, teachers should handle the relationship between evaluation, teaching, and learning well and promote the implementation of the integration of teaching, learning, and evaluation (Senior High School English Curriculum Standards, 2020).

A complete teaching activity requires the organic linkage of teaching, learning, and evaluation. Among them, "teaching" means that, on the premise of grasping the curriculum standards, teachers master the teaching objectives and core teaching content of the class, and organically organize classroom activities and extracurricular tasks to achieve the goals of cultivating morality and educating students in this class. "Learning" refers to the fact that students, as the main body and core role of English teaching activities, under the guidance of teachers, master the subject knowledge and skills of the class and improve their comprehensive subject ability and subject literacy by participating in various classroom activities and tasks. "Evaluation" means that in the teaching activities inside and outside the classroom, teachers evaluate the degree to which students have mastered the content of this class through various means, so as to feedback the teaching efficiency and effect of the classroom, monitor students' knowledge acquisition and ability level, and achieve the promotion of teaching and learning through evaluation.

3. Current Situation of Senior High School English Writing Teaching

As a comprehensive reflection of students' English expression and knowledge application abilities, English writing plays a crucial role in cultivating students' core competencies. At present, various teaching methods and models are still being explored to enhance students' English core competencies through writing teaching. However, due to limitations in actual teaching conditions and the influence of the traditional exam - oriented teaching model, there are still many shortcomings in current English writing teaching.

(1) Insufficient Emphasis on Students' Dominant Position

Affected by traditional teaching concepts and the pressure of teaching tasks, many teachers still adopt an "injection - style" approach to writing teaching. The writing content, form, and progress are all controlled by teachers. Teaching activities in class are still teacher - centered, ignoring students' needs and experiences during

the learning process and obscuring students' dominant position. As a result, students' enthusiasm and initiative for learning are low. They lack in - depth understanding, internalization, and integration of writing knowledge, making it difficult to achieve efficient learning outcomes.

(2) Inadequate Implementation of Deep Learning

In real - world English writing teaching, most teachers mainly focus on quickly explaining language knowledge, asking students to mark vocabulary and sentences, and providing writing templates for memorization. Students passively and negatively receive and memorize knowledge, having only a superficial understanding of language expressions, text structures, and thematic ideas. There is a lack of in - depth communication and interaction between teachers and students. In this way, teaching and learning become a static and rigid process, making it difficult to stimulate students' understanding of new knowledge and construction of meaning, and thus they cannot transfer what they have learned to solve problems in new situations.

(3) Single - mode Writing Evaluation

Due to practical problems such as limited teaching time and large class sizes, teachers find it difficult to provide targeted guidance and feedback to students. They often adopt a single final evaluation method of giving a grade. Students have weak self - correction ability and the ability to evaluate others' English writing levels, and they are unable to correctly recognize and reflect on the problems in their writing output. Over time, students' incorrect writing thinking patterns and language expression methods become increasingly fixed, their writing abilities cannot be improved, and their core competencies are difficult to develop. Faced with these common problems, how to design a scientific and reasonable writing teaching procedure, help students become constructors of learning, and implement evaluation to promote students' progress and growth have become the focus of current English writing teaching.

4. Exploration of the Model of the SOLO Taxonomy Evaluation Theory in Senior High School English Writing Teaching from the Perspective of Integrated Teaching, Learning and Assessment

The SOLO Taxonomy Evaluation Theory divides students' learning level into five levels: the pre-structure level, the uni-structure level, the multi-structure level, the relational level and the extended abstract level. The SOLO Taxonomy believes that the hierarchical structure of individual cognitive development is in a spiral state, which is more in line with human cognitive law than Bloom' s hierarchical structure based on the logic of linear accumulation. In addition, the SOLO Taxonomy focuses more on "quality" evaluation based on "quantity" .

In the pre-writing step, teachers can use SOLO Taxonomy to assess students' writing accurately, identify their current levels.

Table 1. Pre-writing stratification based on SOLO Taxonomy

Thinking level	While-writing Specific Teaching Strategies
Pre-structural level	Vocabulary accumulation training one day; the other day; last week; last month; a few days/ weeks/ months ago; when I was...years old; a long time ago; at six o'clock in the morning; at on the weekend; by the end of last term; during the summer holidays; on Sunday morning
Uni-structural level	The use of sentence structure and provide targeted guidance on the students in my office; on the way to school; on the way home; at the crossing; at the end of the street; at the foot of the mountain; at the airport
Multi-structural level	The structure of the whole writing and focus on training the students in the use of correlative words sb. was/ were doing... in someplace when sb. was about to do... when... sb. was on the point of doing...when... sb. had just done... when...
Relational-structural level	Emphasis students' emotional awareness in their writing Personally, I think that... What surprised/ attracted/ delighted us most was that... Tired as we were, we learned what we couldn't learn in/ at school. I was deeply impressed/ moved/ touched by...I learned a lot from...
Extended Abstract Structural level	Focus on the literacy level of the students' compositions Through this meaningful activity, we learned something that can't be learned in class. What an unforgettable experience!

SQ3 In the while-writing step, teacher can use different teaching strategies for students of different levels.

Table 2. Different teaching strategies for students of different levels

An Event Description	Thinking level	Pre-writing Stratification
	Pre-structural level	S1: my birthday party S2: my parents' birthday party Ss: ...birthday party
	Uni-structural level	S4, S5, Ss: a birthday party, a family gathering, a graduation ceremony... The event (beginning, process, ending)
	Multi-structural level	Ss: a birthday party, a family gathering, a graduation ceremony, a friend gathering... first / then / after that / finally... luckily / amazingly / surprisingly / excitedly...
	Relational-structural level	Ss: More sequence words: now, at present, recently, after, in the beginning, to begin with, later, next, finally, immediately, suddenly, at the moment, as soon as, before, after
	Extended Abstract Structural level	Ss: Some words describing a party: wonderful, awesome, amazing, excellent, great, brilliant, astonishing, extraordinary Some words expressing feelings: enthusiastic, excited, interested, joyful, satisfied, disappointed, surprised

For those at lower levels like the first three levels, more foundational grammar and vocabulary instruction, along with clear task guidance, can be provided. For advanced students who are at the last two levels, challenges like in-depth topic exploration and advanced stylistic training can be introduced. In this way, SOLO Taxonomy helps to enhance the effectiveness of high school English writing instruction and promotes students' continuous improvement in writing abilities.

In the Post-writing step, students' learning outcomes can be described and assessed according to the table based on SOLO Taxonomy below.

Table 3. Learning outcomes descriptions and evaluation criteria

Thinking level	Learning outcome description and evaluation criteria
Pre-structural level	(1) many grammar mistakes and misspellings, no well-formed sentences, and no advanced vocabulary or phrase collocations (2) incomplete and incoherent organization or the connecting words (3) lacking a particular focus and consisting solely of unrelated information and does not fulfill the requirements of the writing task.
Uni-structural level	(1) more grammatical errors and fewer advanced vocabulary and phrase collocations (2) incomplete organization and lack coherence (3) only one topic-related information is involved and conveyed, and the writing task is poorly accomplished
Multi-structural level	(1) improved vocabulary and phrase collocations, as well as fewer grammatical errors (2) a comparatively complete organization, with poor completeness and coherence (3) relevant to multiple elements of the task; the paragraphs are not logically related to each other; no fully justified connecting rationale, and the writing task is completed in a moderate degree.
Relational-structural level	(1) occasional grammatical errors, and advanced vocabulary and phrase collocations (2) well structured and coherent organization (3) highly relevant and logical to the writing requirements; content is clear, but is not at a high literacy level; the writing task is accomplished.
Extended Abstract Structural level	(1) almost no grammatical errors, more advanced vocabulary and accurate phrases (2) well structured, with good integrity and coherence (3) highly relevant to the requirements of the writing tasks and meets the requirements of the questioner's logical development with unexpected and rational arrangements; content literacy level is at a high level, reflecting the writer's vivid imagination and creativity, and the writing task is well accomplished

5. Demonstration of Application Examples of the SOLO Taxonomy Evaluation Theory in Senior High School English Writing

Teaching from the Perspective of Integrated Teaching, Learning, and Assessment

To explore the application strategies of the SOLO Taxonomy Evaluation Theory based on integrated teaching, learning, and assessment in senior high school English writing teaching and promote the development of students' core competencies, the following will take the writing lesson "Writing for an animal fact file" in Unit 5 "Into the wild" of the compulsory English textbook published by Foreign Language Teaching and Research Press as an example. The key operational points of the SOLO Taxonomy Evaluation Theory in English writing teaching will be specifically explained from aspects such as the design of teaching procedures and the establishment of evaluation objectives.

Stage 1 Stratification of students based on the SOLO Taxonomy

Step 1 Lead-in

The teacher starts from the topic "animal" by showing students some pictures and then asks them to describe their favorite animals in groups.

Task 1: Before the class, the teacher shows some pictures about animals and introduce some popular animals in front of class.

Task 2: Let the students to work in groups to gather vocabulary, phrases and sentences, etc to describe their own favorite animals' appearance.

T: OK, boys and girls. Who can tell me what's your favorite animal?

Ss: My favorite animal is the cat.(or the other answers)

T: So, guys. What key aspects should be included to give a vivid description for animals?

Ss: Height, unique features, its food...

T: Ok, then what expressions can you thought when you describe your favorite animals? You can write down your ideas.And you can look at useful expressions on the page 79 for references.

Ss: Sure.

Step 2 Pre-writing

Task 3: The teacher asks the students to review the structure of the reading passage that is given on the book.

T: Well, guys. Now please read the paragraphs about the red-crown crane and tell me what' s the structure

Ss: Introduction, appearance,habitat,migration,diet and its current situation.

T: Yes, good. Now, it' s your turn to share your favorite animal in this way, and you can talk about them with your group members. At the same time, you should write down your ideas based on your notes.

Task 4: Assess students' writing accurately based on the Table 5-1

Teacher shows the table in front of students and make them self-assess their level according to the sample table based on their notes.

Table 4. Pre-writing stratification based on SOLO Taxonomy

Thinking

(Purposes: The students' participation in the classroom can be improved, and the students' initiative, interest and enthusiasm in English writing can be enhanced and stimulated.)

Stage 2: Selection of teaching strategies based on students' stratification

Step 3 While-writing

Task 5: Give students adequate time to compose a draft of their outline relevant to their favorite animals

T: OK, boys and girls. It is your turn to write your events, and you can write an outline.

Ss: My outline is....

Task 6: The teacher encourages students to write their events using phrases and sentences discussed in the first part.

T: Please write about your favorite animals using the phrases and sentences you discussed in the task 3.

Ss discuss quickly, write down their first draft using those expressions that they have noted down.

T: You can use the more correlative words and sentences, such as: Sth. has long been regarded as a symbol of...; Sth. is as adj. as sth.; Not only... but also...; etc.

And teacher should use different strategies for different levels of students. Below are specific teaching strategies.

Table 5. While-writing Specific teaching strategies

Thinking

(Purpose: In this way, students can connect the preceding and following texts in a logical way and their writing generalization ability can be improved.)

Stage 3 Evaluation of learning outcomes based on

Step 4 Post-writing

Task 1: Students should be instructed to review their written work for errors thoroughly.

T: Please edit your writings by yourself, and especially pay attention to spelling, punctuation, or grammar errors. Mark any unclear expressions.

Ss: That is OK.

Task 2: Let students exchange their writings and use the peer editing sheet

T: Please exchange your writings with your partner, and assess your partners' writing based on the peer editing sheet on the whiteboard. You can also write appropriate words, phrases, or sentences according to the specific evaluation.

Ss exchange their writings and comment on them according to the peer editing sheet table 5-3.

Table 6. Peer editing sheet

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hen teacher should use the specific evaluation of each level to assess students' writings and choose different teaching strategies for different levels of students. The evaluation table 5-4 is below.

Table 7. Post-writing evaluation

Thinking

(Purposes: This part belongs to the “post-writing” in the “Trinity” teaching model of the SOLO Taxonomy, that is to say, after the writing process, the teacher gives the corresponding teaching evaluation through the distribution of the students' thinking level.)

6. Conclusion

The significance of this process lies in the full revelation of students' thinking capacities. The teacher captures the students' evaluative language, analyses their writing process, and subsequently re-evaluates their work in a harmonious communication atmosphere. The SOLO Taxonomy enables qualitative evaluation for students' writing. The flexible use of this method helps to teach scientific writing. During practical teaching, the teacher assesses the students' current levels of thinking by analyzing their expressions in response to questions before writing. The teacher then uses this information to identify the students' needs and guide the development of their thinking skills, ultimately enhancing the quality of their writing.

Besides, it is consistent with the integration of teaching, learning and assessment. Teachers focus on teacher-student interaction and student-student communication in the process of applying the SOLO Taxonomy.

In conclusion, the use of the SOLO Taxonomy in senior English writing can not only

provide students with more targeted and effective guidance paths, stimulate their learning interest and potential, and improve their reading ability and thinking level, but also create better opportunities for students to have high - quality learning experiences. It helps students internalize learning content from multiple dimensions and promotes the comprehensive development of students' core competencies.

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