

Exploring Rote Versus Meaningful Learning Activities in an FFL Textbook 'Sunrise 12' on the Basis of Bloom's Revised Taxonomy

Kazhal Mohammed Amin Saeed¹, Farahman Farrokhi², Mohammed Zohrabi³

¹ PhD student, University of Tabriz, Iran, Email: kazhal.amin@univsul.edu.iq

² Professor, University of Tabriz, Iran, Email: ffarrokhi20@yahoo.co.uk

³ Associate professor, University of Tabriz, Iran, Email: mohammadzohrabi@gmail.com

*Corresponding Author: kazhal.amin@univsul.edu.iq

Citation: Saeed, K. M. A., Farrokhi, F. and Zohrabi, M. (2025). Exploring Rote Versus Meaningful Learning Activities in an FFL Textbook 'Sunrise 12' on the Basis of Bloom's Revised Taxonomy, *Journal of Cultural Analysis and Social Change*, 10(4), 5386-5398. <https://doi.org/10.64753/jcasc.v10i4.4494>

Published: December 21, 2025

ABSTRACT

This study attempted to analyze and categorize rote and meaningful learning activities included in the Sunrise12 EFL textbook in light of the six cognitive categories in Bloom's Revised Taxonomy. The study also attempted to calculate the percentages, frequencies, and expected numbers of these activities. In addition, this study sought to determine the extent to which the distribution of cognitive categories, including meaningful learning, is equitable throughout the Sunrise12 textbook. The findings showed that the total distribution of rote and meaningful learning activities, as well as the cognitive domain within meaningful learning, was imbalanced. The findings showed that both SB and AB included meaningful learning more than rote learning. The former included 71.7%, and the latter included 77.2%. On the other hand, SB included 28.3% of rote learning, and AB included 22.8%. The total frequency of rote learning activities is 118 constituting (25.7%) while, the total frequency of meaningful learning activities is 341 constituting (74.3 %). The findings also indicated that unbalanced distribution among the cognitive levels encompassing meaningful learning.

Keywords: Rote learning, meaningful learning, activities, Sunrise12.

INTRODUCTION

Whenever students engage with the educational system, the question arises: how much of their learning constitutes meaningful learning—emphasizing understanding and the ability to transfer prior knowledge—and how much is simply memorization through repetition or rote learning. While both forms of learning have a place in education, it is important to distinguish between them, recognize strategies that help students move away from rote memorization, and promote more meaningful, understanding-based learning (Stefansson et al., 2021). Educators are encouraged to promote meaningful learning that engages students on emotional, social, and intellectual levels (Hung, 2019). Thornbury (2002) asserts that meaningful learning is essential in teaching because it engages the learners; in other words, any instructional activity that fails to engage students cannot be considered effective. However, both types of learning are necessary—though in different degrees—as Ausubel (2000, cited in Hung, 2019) notes that learning may be either rote or meaningful. Each type can support the learning process, but they serve different roles and have varying degrees of effectiveness.

Accordingly, it can be argued that examining and assessing the activities within curriculum materials is an effective method for determining the degree of rote and meaningful learning included in the EFL textbook (Sunrise 12), based on cognitive categories in Bloom's Revised Taxonomy (BRT). BRT holds an approved priority position in educational systems (Sadighi et al., 2018). Sunrise textbooks require examination from several perspectives as

feedback because they are the principal textbooks used by schools in the Kurdistan Region of Iraq. Based on the researchers' knowledge, there is no research on this subject in Sunrise 12 EFL textbooks; accordingly, the researchers opted to conduct the current investigation to assess the Sunrise 12 textbook. Therefore, analyzing the textbook is necessary and worthwhile to investigate the range of rote and meaningful learning it includes. Zohrabi (2011) asserts that assessing textbooks is essential for identifying their deficiencies in order to improve them.

Literature Review

Types of Learning

The word learning is defined differently by scholars. According to Kolb (1984, as cited in Borredon et al., 2011) Learning means creating knowledge by transforming experience and integrating what is grasped with how it is reformed. To Nortvig et al., (2018) learning is a deliberate activity designed to support a structured process of acquiring knowledge and skills. It involves following certain procedures to attain predetermined learning goals. According to (Anderson et al., 2001) there are two types of learning: rote and meaningful learning

Rote Learning

Rote learning is a careful reading of material. Students control the material and memorise it. If the students are asked to remember the material, they can recall almost all the key terms, major components, and important information. If they are asked to use the information to solve a problem or transfer the knowledge to facilitate other information, they cannot. Although students possess the relevant knowledge, they cannot transfer it and benefit from it. Therefore, students memorise all the information, but they do not understand it deeply. Subsequently, they cannot use and transfer it in another situation. When the goal of teaching is to encourage transfer, tasks' objectives should include the cognitive processes related to Understanding, Applying, Analyzing, Evaluating, and Creating. If the goal of assessment is to promote transfer, assessment questions should involve high cognitive categories as well. If the goal is to promote retention, objectives must contain the cognitive process connected with the Remember cognitive category. So, rote learning mostly includes Remembering cognitive category (Anderson et al., 2001; Mayer, 2002).

However, when learning is done by rote or at a lower level of meaningful learning, situational learning takes place. Students in situational learning obtain high grades. Unfortunately, the majority of their obtained "knowledge" quickly disappears from long-term memory and, even if remembered, it is seldom put into use in fresh problem-solving situations because students cannot link the present knowledge with related information that has been gotten previously. Thus, a large portion of this high level of "success" is actually fake or unreal because even those students who got high marks originally had misconceptions or did not understand the subject matter deeply. The primary cause of this situating learning refers to rote learning or near-rote learning (inadequate meaningful learning). Consequentially, the student's ability to transfer their knowledge is limited or faulty (Novak, 2002). According to Keezhatta (2020), memorization and rote learning are common teaching methods that discourage students from engaging in the material, which eventually leads to unsatisfactory academic performance. According to Marton and Saljo (1976, cited in Ahmed & Ahmad, 2017), there are generally two strategies of learning: the surface learning approach and the deep learning approach. In surface learning, students involve themselves in memorising information without understanding the deeper knowledge; it is parallel to rote learning (Duff et al., 2004). In surface or rote learning, the knowledge achieved is at the macroscopic level. That is only factual, concrete, and informative and does not demonstrate conceptual understanding. Students can provide as much information as they want, but only on the surface. Thus, in rote learning, knowledge construction does not take place in the cognitive structure, making it challenging to apply to explain complex problems and solve problems in daily life. In rote learning, general knowledge can only be memorised, described, or even exemplified, but not comprehended entirely but rather just at a surface level. Students at this level of learning can solve problems that are mathematically complex because the procedure is memorised as a result of the exercises they do. However, when one or more variables are changed, the student is unable to solve the problem because the procedure has changed. (Erman et al., 2021). Students who can only use their concrete thinking skills are more interested in surface learning. Rote learning, or surface learning, does not result in knowledge development. In reality, development is the most important process, and each component of learning occurs as a result of overall development. To comprehend the progression of knowledge, we must first recognise that knowledge is not a carbon copy of reality. Knowing an object or an event does not imply merely looking at it and creating a mental copy of it. Knowing an object means acting on it. To know is to change and adjust, to transform the object, and to comprehend the process of this transformation as well as how the object is formed (Piaget, 1964).

Additionally, surface learning has a converse relationship with academic achievement. That is, once the students use a surface approach in their studies, their academic achievement will be low (Hasnor et al., 2013). Surface approach deals with a learning focus on retention. In surface learning, the student's objective is frequently to finish the required material by retaining data required for tests and evaluations. In surface learning, students regularly emphasise facts without combination; they are commonly unreflective, and they consider the learning process like an external obligation (Savin-Baden & Major 2004, cited in Wirth & Perkins, 2013). Instructors frequently protest that their learners, after a short period, do not remember what they have learned, which is an expected result of rote learning which is somehow unproductive learning. In rote learning, knowledge is delivered by an expert to students who record it passively on paper and review or memorize it definitely before the exam. Then this type of learning does not encourage the mind to generate mental links among various things previously learned. Eventually, the brain forgets this information because it dislikes isolated or unlinked knowledge. Even if the learners get high degrees when faced with issues in real contexts, they cannot overcome the problems because their minds have not developed and they cannot utilise what they have learned (Cohen, 2015).

Meaningful Learning

Retention and transfer are two of the most fundamental aims of education. The latter signifies the acquisition of meaningful learning. To retain information means to recall it at a later time in a form similar to that in which it was delivered during education. Transfer refers to the cognitive process by which individuals apply previously acquired knowledge and skills to address novel challenges, respond to unfamiliar inquiries, or enhance the acquisition of new subject matter (Mayer & Wittrock, 1996, as cited in Anderson et al., 2001).

Retention and transfer are observed differently, with retention primarily concerned with past learning experiences, whereas transfer places greater emphasis on future application and utilisation. For example, following the completion of a textbook lesson on Ohm's law, students may be assessed on their recollection of the material using a test that requires them to articulate the formula associated with Ohm's law. On the other hand, a transfer assessment may require students to redesign an electrical circuit in order to increase the electron flow rate (Anderson et al., 2001). Brookhart focuses more on transfer skills. According to him, the primary objective of incorporating cognitive taxonomies in education is to facilitate students' ability to engage in the transfer of knowledge and skills. The ability to engage in critical thinking entails the capacity of students to effectively transfer and apply the knowledge and skills they have acquired during their educational journey to novel and diverse situations. The term 'new' in this context refers to applications that have not been previously considered by the student, rather than denoting something that is universally novel or innovative. This approach emphasises the objective of fostering self-reliance in students (Brookhart, 2010).

Like rote learning, learners in meaningful learning are able to recall nearly all of the key concepts and details of the material when they are required to do so. Additionally, they can produce a lot of alternative ideas when asked to apply the information to solve difficulties. In this situation, learners not only have the necessary information, but they also know how to use it to solve issues, transfer it to comprehend new ideas, and connect the current information with the previous one. They are able to apply their expertise to fresh challenges and instructive circumstances (Mayer, 2002; Vallori, 2014). When meaningful learning or deep learning takes place, students achieve and comprehend the object or concept entirely, which is defined as having a macro-level understanding of an object or concept. At this level of learning, students conceptually grasp what is known and what is needed in the problem (Erman et al., 2021).

Ausubel draws a clear line between rote and meaningful learning. In the former, learners make little or no effort to join new thoughts and propositions with related thoughts and propositions already known, while with the latter, learners work hard to join new knowledge with related existing knowledge (Novak, 2011). According to Anderson et al., students in meaningful learning read the matter intensively, and their primary attention is on meaning. If they are asked to retain the material, they can recall almost all the significant events. In addition, when they are asked to utilise the knowledge to benefit from it in another situation to solve an argument, they can create many possible solutions. Accordingly, the students have control over the relevant knowledge, understand the information deeply, and can transfer and use it in a new situation (Anderson et al., 2001). It means inducing learners' thinking abilities and equipping them with what they have learned to benefit from it in their lives; they learn adaptable information (Corley & Rauscher, 2013).

According to Novak (2010), meaningful learning is based on these three conditions:

1. Relevant ideas: students must have some knowledge about the subject matter previously.
2. Significant material: the subject matter must comprise important ideas and suggestions that have a relation to and effect on our lives;

3. Student must have the desire to learn meaningfully; in other words, they must intentionally and purposely want to combine the present information with prior information to expand it and produce something new. As shown in Figure 1

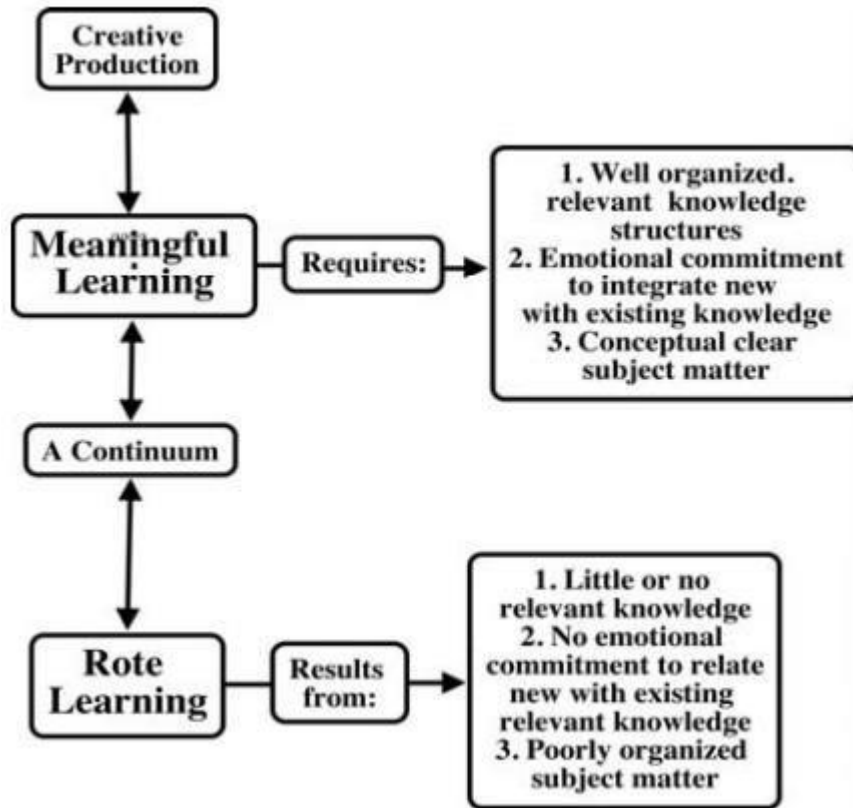


Figure 1. Requirements for Meaningful Learning (cited from Novak, 2011, p.2).

Based on the above explanation of rote and meaningful learning, one can create a relationship between rote and meaningful learning on one hand, and the six cognitive categories (Remembering, Understanding, Applying, Analysing, Evaluating, and Creating). It can be concluded that rote learning involves only the Remember category, while meaningful learning includes all five cognitive categories, beginning with Understanding and ends with Creating category. See Figure 2.

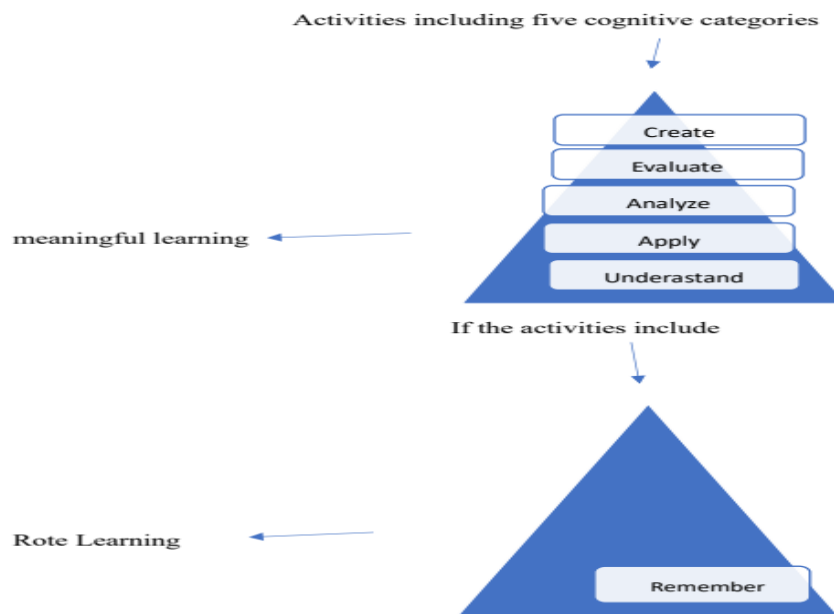


Figure 2 The Relation between Rote-Meaningful Learning and Cognitive Categories.

Figure 2 shows that the cornerstone of meaningful learning is the understanding stage. After a thorough understanding of the given subject, it is easy for the students to go towards a higher stage, which is the applying level in which learners can apply and use the present knowledge in other situations. This stage requires learners to go toward a broader and higher stage, which is Analysing level where students try to analyse and break down the taken knowledge into its segments and link it with other similar parts that they have already known on that topic. Beyond this stage, learners need to evaluate the given knowledge. At this level, learners will assess and distinguish the advantages and disadvantages of the topic and give their opinions on it. Then, learner's minds grow and develop step by step till they sometimes reach Creating level, the top cognitive category. This is the most important part of education, and the goal of education is to help students get to this stage. At this level, students will progress further and try to innovate, produce a novel thing, and/or plan the subject to develop and expand it.

In contrast to meaningful learning, students in rote learning, are taught to memorise and recognise the subject matter. Rote learning primarily depends on the first cognitive category Remembering. In addition, Understanding and Applying categories participate in this type of learning, but they are not the most dependable ones. That is, students understand the material in a surface way; they do not go deeply. The cognitive category is used in a simple way as well, i.e., the students are required to use the application cognitive category for a simple and familiar situation. This type of learning does not encourage or teach them to expand and develop their cognitive abilities. As a result, their abilities and talents will decline. This leads to create generations that cannot understand, apply, analyse, evaluate, create, produce, and plan. A consumer generation, not a producer, will be produced. This in itself is an effective and deadly reason for the country's backwardness. A generation will collapse, despair, and lack self-confidence if they face the slightest problem. They cannot face the obstacles and problems of life and find alternative solutions to them.

Related Studies

Valadares (2013) conducted a study employing concept maps as a means to support meaningful learning, linking various concepts in a hierarchical diagram so learners could organize their existing and newly acquired knowledge conceptually. The study concludes that concept maps can ease meaningful learning. Hung (2017) carried out a quasi-experimental study in Vietnam to compare meaningful learning with rote learning in teaching English prepositions. Participants completed a pre-questionnaire and a pre-test to assess their understanding of preposition meanings and to determine prior instructional experiences. Following the instructional treatment, they took a post-test and filled out a post-questionnaire. The findings showed that the meaningfully educated group performed better than the rote-learning group, and participants expressed a preference for meaningful learning over rote learning.

Song (2013) carried out a study aimed at supporting students' meaningful learning of English prepositions. The study featured two groups: an experimental group receiving meaningful learning-inspired instruction and a control group practicing rote learning. Results showed that the experimental group scored higher on the post-test, while both groups had similar mean scores on the pre-test (cited in Hung, 2019).

METHODOLOGY

Materials

Sunrise 12 EFL textbook (student's book and activity book) of 12th grade in Kurdistan region of Iraq is used as the material to be analysed using BRT. Sunrise 12 consists of four parts: the student's book, the activity book, the teacher's book, and the CD. The student's book (SB) consists of eight units, a literary reader that consists of eight episodes and six role-plays. The activity book (AB) consists of eight units and a set of activities that correspond to each episode of the literary reader. The teacher's book (TB) includes concise and easy-to-use lesson plans for each lesson in Sunrise 12. It offers options for extension work and different exercises, as well as ideas for how to begin lessons for the teachers. It includes the solutions for all activities in both the SB and the AB. Finally, the CD includes all recorded listening subjects and pronunciation exercises. The total number of activities included in the SB and AB is 459 activities. The activities might include wh-questions, yes/no questions, multiple-choice questions, completing the sentences or charts, statement questions, and request questions as well as the roleplays. The textbooks used in this study and the number of activities is presented in Table 1.

Table 1. The averages of activities in SB and AB used in the study

Table of the textbooks	Number of activities	Grade	Publication Year	Publisher
Sunrise 12(SB)	240	12	2011	Ministry of Education
Sunrise12(AB)	219	12	2011	Ministry of Education

Design of the Study

The design implemented in this research is content analysis. Ary et al. (2019, p. 14) define content analysis as “a research method applied to written or visual materials to analyse characteristics of the material.” Textbook analysis is a major process that highlights the strengths and weaknesses of activities and shows how much they contribute to shaping students’ thinking. The analysis functions as a tool for curriculum designers to decide which activities to keep, modify, or enhance (Assaly & Igbaria, 2014).

Content analysis is employed to describe, expand, and categorize the data within the BRT framework. The entire activities of English textbook Sunrise 12 (SB&AB) are utilized. The researchers aim to analyse and categorize all activities included in the EFL textbook Sunrise 12 according to BRT cognitive levels. The activities might include wh-questions, yes/no questions, multiple-choice questions, completing the sentences or charts, statement questions, and request questions as well as the roleplays.

Research Questions

The study attempts to answer the questions below:

1. How are the students’ book activities of Sunrise 12 distributed to rote learning versus meaningful learning?
2. How are the activity book activities of Sunrise 12 distributed to rote learning versus meaningful learning?
3. Is there a balanced distribution of meaningful learning cognitive levels activities in Sunrise12 EFL textbook?

Data Analysis Procedures

Selecting the right research tool is essential. Many academics worldwide use a revised version of Bloom's Taxonomy of Educational Objectives, specifically focusing on the cognitive dimension. Educational researchers advocate for Bloom’s Taxonomy as a common framework in education because it helps educators design curricula, teaching methods, and evaluations that encourage thorough understanding and critical thinking in students (Cullinane,2010; Chandio et al., 2016; Sadighi et al., 2018). Therefore, a comprehensive examination of all activities in Sunrise 12 is essential to evaluate how well they incorporate Bloom's Taxonomy. According to the researchers' knowledge, no existing study in the Kurdistan Region of Iraq has analysed Sunrise textbook activities using Bloom's Taxonomy. As a result, it can be concluded that this instrument is both suitable and vital for the aims of this research. The data analysis process involves the following steps:

Firstly, a coding scheme is used to codify, classify, and analyse the content of the senior secondary stage Sunrise 12 to rote learning and meaningful learning based on BRT cognitive levels (i.e., Remembering, Understanding, Applying, Analysing, Evaluating, and Creating). See appendices (A & B). After that, all the activities in Sunrise 12 are analysed, codified and classified in the light of the definitions and clue words of each cognitive category in BRT. Finally, the activities are codified, and the frequencies, percentages, and expected numbers of rote and meaningful learning are computed and displayed.

Categories of Analysis

To examine the activities of Sunrise 12, this study uses the six cognitive categories defined in BRT along with their corresponding definitions. Additionally, the related specific clue words guide the analysis to ensure the activities are interpreted correctly. Tables 2 and 3 present the six cognitive categories, their definitions, and the guiding clue words.

Table 2. The six cognitive categories along with their definitions and examples

Cognitive Categories	Definitions & Examples
A. Remember	Retrieve knowledge from long -term memory (e.g., Recognize the dates of important events in U.S. history)
B. Understand	Construct meaning from instructional messages, including oral, written, and graphic communication. (e.g., Give examples of various artistic painting styles)
C. Apply	Carry out or use a procedure in a given situation. (e.g., Divide one whole number by another whole number, both with multiple digits)
D. Analyze	Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose. (e.g., Determine the point of view of the author of an essay in terms of his or her political perspective)
E. Evaluate	Make judgments based on criteria and standards. (e.g., Judge which of two methods is the best way to solve a given problem)

F. Create	Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure (e.g., Plan a research paper on a given historical topic)
-----------	---

Table 3. The six cognitive categories and their key words

Cognitive Categories	Key Words
A. Remember	Choose • Define • Describe • Find • Label • List • Match • Name • Recall • Locate • Select • Show • Spell • Tell • Identify • What • When • Where • Which • Who
B. Understand	Classify • Compare • Contrast • Demonstrate • Define • Describe • Explain • Illustrate • Infer • Interpret • Outline • Relate • Rephrase • Exemplify • Understand • Rewrite • Summarize • Translate
C. Apply	Apply • Experiment with • Interview • Make use of • Present • Solve • Utilize • Carrying out • Organize • Practice
D. Analyze	Analyze • Assume • Categorize • Classify • Compare • Conclusion • Contrast • Discover • Distinguish • Divide • Examine • Function • Infer • Inspect • List • Motive • Relationships • Simplify • Survey • Take part in • Test for
D. Evaluate	Agree • Assess • Choose • Compare • Conclude • Criteria • Criticize • Decide • Deduct • Defend • Determine • Disprove • Estimate • Evaluate • Explain • Influence • Interpret • Judge • Justify • Mark • Measure • Opinion • Perceive • Prioritize • Prove • Recommend • Select • Support • Value
F. Create	Adapt • Build • Change • Combine • Collect • Compose • Construct • Create • Design • Develop • Discuss • Elaborate • Formulate • Imagine • Improve • Invent • Make up • Maximize • Minimize • Modify • Originate • Plan • Generate • Write • Revise • Reorganize

Cited from Krathwohl, (2002); Munzenmaier and Rubin (2013); Stanny (2016)

Validity

In the educational community, Bloom's Taxonomy is broadly viewed as a framework for categorizing and arranging information. (Assaly&Smadi,2015), and examining the consistency among goals, tasks, and assessments in a unit (Krathwohl 2002). Its validity has been confirmed by numerous studies such as, (Riazi & Mosalaejad, 2010; Razmjoo & Kazempourfard, 2012; Ighbaria, 2013; Assaly& Smadi,2015). Therefore, the analysis categories, which are directly drawn from BRT, are regarded as valid.

To further validate the analysis categories, their concepts were precisely defined based on the BRT definitions and their key terms. Three doctors from different universities namely (Prof. Dr. Ayad Hamed Mahmood, Prof. Dr. Fatimah Rashid Hassan, and Dr. Rasool Mohammed Kheder) examined the displayed categories. There was agreement among them about these categories and definitions. They also concluded that the instrument appeared suitable for the study's aims.

Coding Reliability

To establish the inter-rater reliability of the coding scheme, three independent raters with master's degrees in TEFL were briefed on the study's aims and the data analysis approach. They were given sample items from comparable studies and an explanation of the coding procedure. Each rater independently coded roughly one-third of the data, achieving a high level of agreement. Any discrepancies were resolved through discussion. The three raters and the researcher then discussed and adjusted any differing interpretations, resulting in changes to the coding scheme as needed. This process provided strong evidence that the coding scheme was highly objective and that the researcher could reliably code the remaining data independently. The results are displayed in Tables 4–5.

Table 4. Kruskal Wallis test among analysers for both textbooks

Chi-Square	0.007	0.008
Df	3	3
Asymp. Sig.	0.9998	0.9997

Table 4 presents the Kruskal-Wallis test statistics for the evaluations by the analysers of both textbooks, SB and AB. Overall, no statistically significant difference was found among the analysers' results.

To assess the level of consistency, the researcher's evaluations of the SB and AB activities in Sunrise12 were compared with those of three analysers. Table 5 shows the level of agreement between the researcher's results and each analyser.

Table 5. *Coefficient Correlation Among the Researcher and the Three Analysers: Reliability through Persons*

Book	Raters	Number of items	Points of agreement	Points of difference	Correlation coefficient
SB	Researcher	80	76	4	0.95
	1st Analyser	80			
AB	Researcher	72	66	6	0.92
	1st Analyser	72			
SB	Researcher	80	74	6	0.93
	2nd Analyser	80			
AB	Researcher	72	66	6	0.92
	2nd Analyser	72			
SB	Researcher	80	74	6	0.93
	3rd Analyser	80			
AB	Researcher	72	66	6	0.92
	3rd Analyser	72			

Table 5 displays the agreement between the researcher's results and each analyser. The table indicates a high correlation between the researcher and the three analysers, supporting the continuation and processing of the collected data.

FINDINGS AND DISCUSSIONS

Answering Research Questions

1. How are the students' book activities of Sunrise 12 distributed to rote learning versus meaningful learning?
2. How are the activity book activities of Sunrise 12 distributed to rote learning versus meaningful learning?
3. Is there a balanced distribution of meaningful learning cognitive levels activities in Sunrise12 EFL textbook?

Before answering the first and second research questions, it is worth observing that rote learning involves Remember cognitive category, while meaningful learning involves the other cognitive categories: Understand, Apply, Analyse, Evaluate, and Create (Anderson et al., 2001; Mayer, 2002). To answer these research questions, Tables 1, 2 below show all the required data such as, frequencies, percentages, expected number of rote learning and meaningful learning in SB and AB.

Table 6. Frequencies, percentages, and expected number of rote learning and meaningful learning and related cognitive categories in SB and AB

Type of learning	Cognitive Categories	SB			AB			Total		
		F.	%	Expected N.	F.	%	Expected N.	F.	%	Expected N.
Rote learning	Remember	68	28.3	40	50	22.8	36.5	118	25.7	76.5
Meaningful learning	Understand	73	30.4	40	83	37.9	36.5	156	34	76.5
	Apply	18	7.5	40	19	8.7	36.5	37	8.1	76.5
	Analyse	20	8.3	40	38	17.4	36.5	58	12.6	76.5
	Evaluate	47	19.6	40	17	7.8	36.5	64	13.9	76.5
	Create	14	5.8	40	12	5.5	36.5	26	5.7	76.5
Total		240	100	240	219	100	219	459	100	459

Table 7. Total Frequencies, Percentages, and Expected Number of Rote Learning and Meaningful Learning in SB and AB

Type of learning	SB			AB			Total		
	F.	%	Expected N.	F.	%	Expected N.	Total F.	Total %	Expected N.
Rote learning	68	28.3	40	50	22.8	36.5	118	25.7	76.5
Meaningful learning	172	71.7	200	169	77.2	182.5	341	74.3	382.5
Total	240	100		219	100		459	100	

Table 7. shows that both SB and AB include meaningful learning more than rote learning. The former includes 71.7%, and the latter includes 77.2%. On the other hand, SB includes 28.3% of rote learning, and AB includes 22.8%.

Tables 6 and 7 display the level of the activity, the frequencies and percentages of rote and meaningful learning in SB and AB. Table 7 indicates that the total frequency of rote learning activities is 118 constituting (25.7%). All these activities belong to Remember cognitive category. Thus, there are 118 activities to enhance students' ability to receive, gather, and store knowledge. On the other hand, the total frequency of meaningful learning activities is 341 constituting (74.3 %). So, the rate of meaningful learning is about three times higher than rote learning. It is worth mentioning that this high rate belongs to five cognitive categories, not just one, which are: Understand, Apply, Analyse, Evaluate, and Create

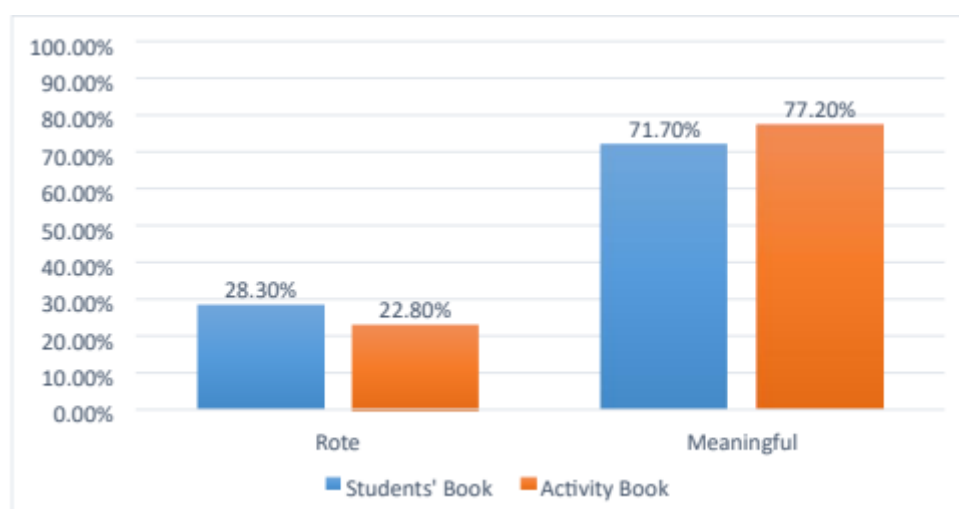


Figure 3. Percentages of Rote and Meaningful Learning in SB and AB

DISCUSSION

Regarding rote and meaningful learning, the results showed their frequencies were 118 and 341, respectively. So, rote learning, which involves Remembering cognitive category was given a quarter frequency from the total. Although rote learning facilitates the establishment of information in long-term memory, individuals need more than mere memorization and recollection. However, to develop a comprehensive plan that equips students with multiple skills, educators must engage students in a process of instruction that demands meticulous analysis, evaluation, logical reasoning, and decision-making when addressing diverse concerns and situations. This view can be supported by Collins (2014), who states that for the purpose of evaluating students' proficiency, it is crucial for

educators to purposefully design assessment tasks that encompass many cognitive levels of the taxonomy, including logical reasoning, judgment and critical thinking, problem solving, and creative thinking.

The inclusion of both rote and meaningful learning methods in Sunrise 12 is a positive aspect. Since within both kinds of learning, the six categories of BRT are included. Within rote learning, Remember can be provoked, which is a significant part of human life. Many matters must be memorised and understood as well, such as the holy Quran, Hadith, poems, proverbs, rules, and important events. According to Rohmi (2017), the process of rote learning significantly contributes to the acquisition of language. Rote learning is characterised by the processes of repetition, memorization, and practice. People widely acknowledge that repetition as a significant aspect of vocabulary acquisition. The process of learning a language acknowledges vocabulary acquisition as a fundamental component.

On the other hand, meaningful learning fosters the development of all five cognitive levels, from comprehension to creation. Thus, the efficient process of learning needs to include and integrate both types because each has a noticeable effect on students' future lives. This is in agreement with Ausubel's (2000, cited in Hung (2019, p. 99) belief that "learning can be either rote learning or meaningful learning. They may both assist the learning process with different functions and levels of effectiveness." So, the existence of rote learning is not a problem; rather, it has its advantages.

Including high frequencies of meaningful learning provides positive feedback for Sunrise designers, as this type of learning—which encompasses Understand, Apply, Analyse, Evaluate, and Create—allows students to engage more with subject matter, develop their cognitive levels, and master the language. Since meaningful learning covers these significant cognitive categories, each level necessitates specific skills that enhance students' cognitive abilities, and encourage them to master the target language, all of which are required for effective communication, speaking, and writing capabilities. For example, Understand requires comprehending the matter, interpreting, explaining, summarising, drawing inferences, and paraphrasing. Apply demands students to apply and use what they have gotten and learned. Analyse requires learners to break material into its component parts, indicate their relations, organise them, and deconstruct them. Evaluate requires students to assess something or someone, make a decision, and give their opinions. Finally, Create requires students to combine various elements to create a new and unique product.

However, the high rate of meaningful learning is not divided equally among the included cognitive categories. For example, Create is given just 26 frequencies. Table 1. shows that Understand receives a high frequency 156 out of 341 activities. This high portion of Understand reduces the value of meaningful learning because there is an argument about understanding cognitive level. Although Anderson et al., (2001) state that this level refers to meaningful learning, scholars such as Mystakidis (2021), believe that even Understand includes rote/surface learning. Both views are supported in this study because Understand can be taught as either rote learning or meaningful learning. This is because it encompasses cognitive processes such as interpreting, exemplifying, classifying, summarising, inferring, comparing, and explaining. If students are asked to perform certain cognitive processes, like interpreting and exemplifying, this can be classified as rote learning or surface learning, but if students are required to use all cognitive processes, it can be counted as meaningful learning. Therefore, Understand encompasses both low and high cognitive demands. That is why there is an argument about it among the scholars. However, even if Understand is included in meaningful learning, its high frequency at the expense of the other cognitive categories is considered a drawback because it reduces the frequencies of the other categories. As the results showed, out of 341 meaningful activities, 156 are devoted to Understand, which is far from its expected frequency. Whereas the total frequencies of Apply, Analyse, Evaluate, and Create are 185 activities, and this portion, if compared to Understand, is very low. As a result, the frequencies of Remember and Understand together are 274 which is more than half of the total frequencies. Consequently, the students are primarily engaged in receiving, not producing and transferring.

CONCLUSION

The study findings reveal that both rote and meaningful learning are included, which is positive feedback because within both types, all six cognitive categories can be included. The frequencies that belong to meaningful learning are three times those of rote learning, which is also a helpful point. The drawback of feedback begins with an irregular distribution of the activities between these two types of learning. Meaningful learning should have been five times. Additionally, the distribution of the activities among the included cognitive categories of meaningful learning is uneven as well. The frequency of Remember which includes rote learning, is very high and far from the expected number. In addition, Understand, which relates to meaningful learning, is high too, i.e., its frequencies are far from the expected number.

In brief, rote learning, which involves Remember covers 118 activities, i.e., this high number just enhances students' ability to recall and recognize. Surely this large amount is too much for the twelfth grade. On the other

hand, meaningful learning covers 341: Understand covers 156, which is again too much. This high rate just enhances students and urges them to summarize, describe, and explain. It also aids students in acquiring knowledge, not transferring. The total frequencies of Apply category are 37 which is lower than the expected number. Even those low rates are used simply, but rather they are used as imitation. The frequency of Analyse category is 58. This rate is again lower than the expected number. Through this category, students are encouraged to practice analysing, i.e., they are trained to analyse the structure or element into its pieces and combine them. Evaluate category has 64 frequencies. This proportion is less than the expected number. At this rate, the students are encouraged to learn evaluation, use their experience and what they have learned to make decisions, to elicit the advantages and disadvantages of subjects, and to be critical people. Finally, Create is given the lowest frequency 26. This rate is also lower than the expected number. So just 26 activities enhance students' ability to think creatively, i.e., to connect the parts to produce new things, plans, and solutions. So, the cognitive categories which include meaningful learning were distributed in unbalanced way.

Pedagogical Implications

The main pedagogical benefits of this study can be stated as follows:

1. Balancing the distribution of RBT levels over textbook activities to ensure covering all of these activities.
2. Evaluating each textbook prior to its utilisation. A textbook should be appropriate for students' intellectual ability.
3. Following reading texts by questions that require problem solving, make predictions, or finding alternative solutions for an issue derived from the reading text. The issue must combine the text with real life. This can encourage students to engage with the challenging topics and integrate their understanding with their personal experiences. In other words, the four skills and literacy reader should be revised to incorporate advanced cognitive skills, such as prediction, interpretation of texts, critical evaluation of texts, identification of the writer's views and bias, differentiation between facts and opinions, and comprehension of the author's style, mood, and attitude. English textbooks should provide activities that encompass a range of cognitive demands. This will equip students with the necessary skills to tackle tasks at any cognitive level, both in school and in real-life situations.
4. Decision-makers and instructors are advised to include both types of learning, rote and meaningful, but with more dominance of the latter. As well as including its cognitive categories in a balanced way.
5. Teachers be more specific and aware when setting their instructional objectives and planning their daily activities and exercises. They should be more precise in knowing the levels of cognitive domains they want to include into these objectives and the way they deal with these activities.
6. Teachers should also be specific and aware when planning their tests. They should be more precise in knowing the levels of cognitive domains they want to test in designing questions and assessing students' answers. This can contribute to design more comprehensive and efficient tests.

REFERENCES

- Ahmed, A. & Ahmad, N. (2017). Comparative analysis of rote learning on high and low achievers in graduate and undergraduate programs. *Journal of education and educational development*, 4 (1), 111-129.
- Anderson, L.W.(Ed), Krathwohl, P.W.(Ed), Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., Wittrock, M.C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of educational objectives*. New York: Longman.
- Ary, D., Jacobs, L. C., Irvine, C.S., & Walker, D.A. (2019). *Introduction to research in education* (8th ed.). Wadsworth, Cengage Learning
- Assaly, I., & Igbaria, A. K. (2014). A content analysis of the reading and listening activities in the EFL textbook of Master Class. *Education Journal*, 3(2), 24-38.
- Assaly, I. R., & Smadi, O. M. (2015). Using Bloom's Taxonomy to evaluate the cognitive levels of master class textbook's questions. *English Language Teaching*, 8(5), 100-110. <http://dx.doi.org/10.5539/elt.v8n5p100>
- Borredon L., Deffayet S., Baker, A. C., & Kolb, D. (2011). Enhancing deep learning: Lessons from the introduction of learning teams in management education in France. *Journal of Management Education*, 35 (3), 324–350. Doi: 10.1177/1052562910368652
- Brookhart, S. (2010). *How to assess higher order thinking skills in your classroom*, ASCD.
- Chandio, M T., Pandhiani, S. M.& Iqbal, R. (2016). Bloom's Taxonomy: Improving assessment and teaching-learning process. *Journal of Education and Educational Development*,3, (2),203221.
- Cohen, M. (2015). *Critical thinking skills: For Dummies*. John Wiley & Sons, Ltd.

- Collins, R. (2014). Skills for the 21st Century: teaching higher-order thinking. *Curriculum and Leadership Journal*, 12 (14), 1-8.
- Corley, M., A. & Rauscher, W. C. (2013). Deeper learning through questioning. TEAL Centre, (12), 1-5. Retrieved from: https://lincs.ed.gov/sites/default/files/12_TEAL_Deeper_Learning_Qs_complete_5_1_0.pdf
- Cullinane, A. (2010). Bloom's Taxonomy and its use in classroom assessment. National Centre for Excellence in Mathematics and Science Teaching and Learning, Resource & Research Guides, 1 (13), 1-4.
- Duff, A., Boyle, E., Dunleavy, K., & Ferguson, J. (2004). The relationship between personality, approach to learning and academic performance. *Personality and Individual Differences*. Pergamon. 36, 1907-1920.
- Erman, E., Rosdiana, L., & Wakhidah, N. (2021). Deep learning ability of students from superior and nonsuperior classes at microscopic level of protein. *Journal of Physics*, pp.1-7.
- Hasnor, H. N., Ahmad, Z., & Nordin, N. (2013). The relationship between learning approaches and academic achievement among Intec students, Uitm Shah Alam. *Procedia - Social and Behavioural Sciences*, 90, 178-186.
- Hung, B. P. (2017). Vietnamese students learning English prepositions. *GEMA Online Journal of Language Studies*, 17(4), 146158. doi: <http://doi.org/10.17576/gema-2017-1704-10>.
- Hung, B. P. (2019). Meaningful learning and its implications for language education in Vietnam. *Journal of Language & Education*, 5 (1), 98-102.
- Igbaria, A., K. (2013). A Content analysis of the wh-questions in the EFL textbook of Horizons. *International Education Studies*, 6 (7), 200-224. <http://dx.doi.org/10.5539/ies.v6n7p200>
- Keezhatta, M., S. (2020). Efficacy of role-play in teaching and formative assessment for undergraduate English major students in Saudi Arabia. *Arab World English Journal (AWEJ)*, 11 (3), 549-566. <https://dx.doi.org/10.24093/awej/vol11no3.36>
- Mayer, E. R. (2002). Rote versus Meaningful Learning. *Theory into Practice*. Taylor & Francis Group, 41 (4), 226-232. https://doi.org/10.1207/s15430421tip4104_4
- Munzenmaier, C. & Rubin, N. (2013). Perspectives Bloom's Taxonomy: What's old is new again. *The Elearning Guild Research*. Retrieved from, <https://onlineteachered.mit.edu/edcpakistan/files/best-practices/session-2/Pre-Session-Munzenmaier-Rubin-2013.pdf>
- Mystakidis, S. (2021). Deep meaningful learning. *Encyclopedia*, 1(3), 988-997. <https://doi.org/10.3390/encyclopedia1030075>
- Nortvig, A. M., Petersen, A. K., & Balle, S. H., (2018). A Literature Review of the Factors Influencing E- Learning and Blended Learning in Relation to Learning Outcome, Student Satisfaction and Engagement. *The Electronic Journal of e-Learning*, 16(1), 46-55. Retrieved from, www.ejel.org
- Novak, J.D. (2002). Meaningful learning: The essential factor for conceptual change in limited or inappropriate propositional hierarchies leading to empowerment of learners. *Science Education*, 86(4), 548-571.
- Novak, J. D., (2010). Learning, creating, and using knowledge: Concept maps as facilitative tools in schools and corporations. *Journal of e-Learning and Knowledge Society*, 6, (3), 2130.
- Novak, J.D. (2011). A theory of education: meaningful learning underlies the constructive integration of thinking, feeling, and acting leading to empowerment for commitment and responsibility. *Aprendizagem Significativa em Revista/Meaningful Learning Review*, 1(2), 114.
- Piaget, J. (1964). Part 1: Cognitive Development in children: Piaget development and learning. *Journal Research of science teaching*, 2 (3) 176-186.
- Razmjoo, S. A. and Kazempourfard, E. (2012). On the representation of Bloom's Revised Taxonomy in Interchange course books. *The Journal of Teaching Language Skills* 4(1), 172204.
- Riazi, A. & Mosalanejad, N. (2010). Evaluation of learning objectives in Iranian high-school and pre-university English Textbooks using Bloom's Taxonomy. *TESL. The Electronic Journal for English as a Second Language*, 13(4), 1-15.
- Sadighi, S., Yamini, M., Bagheri, M.S., & Zamanian, M. (2018). Using Bloom's Revised Cognitive Skills Taxonomy to evaluate Iranian students' pre-university English textbook and university entrance exams. *Journal of Studies in Learning and Teaching English*, 7 (1), 6997.
- Stanny, C. (2016) Reevaluating Bloom's Taxonomy: What measurable verbs can and cannot say about student learning. *Educ. Sci.*, 6 (37), 2-12.
- Stefansson, G., Jonsdottir, A. H., Jonmundsson, T., Sigurdsson, G. S., & Bergsdottir, I. L. (2021). Identifying rote learning and the supporting effects of hints in drills.
- Thornbury, S. (2002). *How to teach grammar* (4th ed.). Essex, UK: Pearson Education.
- Valadares, J. (2013). Concept maps and the meaningful learning of science. *Journal for Educators, Teachers and Trainers*, 4, 164-179. Retrieved from <http://jett.labosfor.com/index.php/jett>.

- Vallori, B. A. (2014). Meaningful learning in practice. *Journal of Education and Human Development*, 3(4),199-209.
- Wirth, K. & Perkins, D. (2013). Learning to learn. Retrieved from, <http://www.macalester.edu/geology/wirth/CourseMaterials.html>
- Zohrabi, M. (2011). Coursebook development and evaluation for English for general purposes course. *English Language Teaching*, 4(2), 213-222.