

Mastery Learning and Spiral Learning for Linguistic Competence

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Abstract - *Much attention has been paid to prove which of the two approaches, Mastery Learning (skill – based approach) or Spiral Learning (concept – based approach), would best help learners to achieve higher level of competency especially in 2010 when K – 12 was actualized in the country. Mastery learning is premised on the concept of teaching students in “knowing how things work”; while the latter believes in teaching students by “understanding why things work”. Hence, the primary purpose of this study is to investigate which of the two would really work best to students in order for them to use English language effectively, and consequently, attain higher level of linguistic competence. This study was conducted at University of San Carlos – North Campus to some selected grade 8 students. To obtain the entry and exit level of the participants’ linguistic competence, a pretest and posttest were administered. The data that were gathered and tabulated revealed that both skill - based approach and concept – based approach could really advance students’ linguistic competence. However, teaching the students with concepts and using these concepts meaningfully in real – life situations resulted an overwhelming interest of the students on their lessons and proved to be more successful in helping them become more effective English language users.*

Keywords: *Mastery Learning, Spiral Learning, linguistic competence, grammar instruction, k-12 curriculum*

INTRODUCTION

It has been the Philippine Education’s ultimate goal to reform basic education in response to the country’s two major problems: high dropout rate and insufficient mastery of skills [1]. Added to that is the current demand of 21st century skills (4Cs) the industries expect from graduates today, i.e., communication and media literacy; critical thinking and problem solving; collaboration and leadership;

and creativity and innovation [2] – [3]. However, when we talk about mastery of skills, the perennial argument whether to achieve mastery by developing skills in carrying out procedures or by helping students in understanding why procedures work always comes into the picture. These refer to Mastery Learning and Spiral Learning in which this study is anchored upon. In grammar instruction, these correspond to overt and covert grammar teaching widely known as explicit and implicit grammar teaching. Harmer [4] described overt grammar teaching as an approach in which grammatical rules and explanations are provided by the teacher. In contrast, he defined covert grammar teaching as an approach in which students is drawn not into the grammatical rules but to the meaning, functions and tasks of the language so that the rules discovered are memorable, meaningful, and serviceable.

Mastery Learning and Spiral Learning have been trending in blogs, forum sites, and educational magazines at the onset of K-12 implementation. Both claimed to be effective in training students to master skills. The latter is postulated by Jerome Bruner [5] and believes that a brief exposure of a topic and revisiting its basic concept as new ideas or skills are added over the course of the lesson, provide the students the opportunity to construct their own understanding of the basic framework of the lesson. In the context of grammar instruction, this refers to extensive grammar teaching by Ellis [6], in which a lesson focuses on a whole range of grammatical structures within a period of time so that each structure receives only a minimal attention.

Further, interrelated concepts are logically arranged from simple one to complex one, thus, called spiral. Bruner believes that structuring the lesson this way solidifies understanding. This is manifested when the students can consolidate all the ideas, and consequently can see a thin line between these ideas; thereby find meaning in what they are doing.

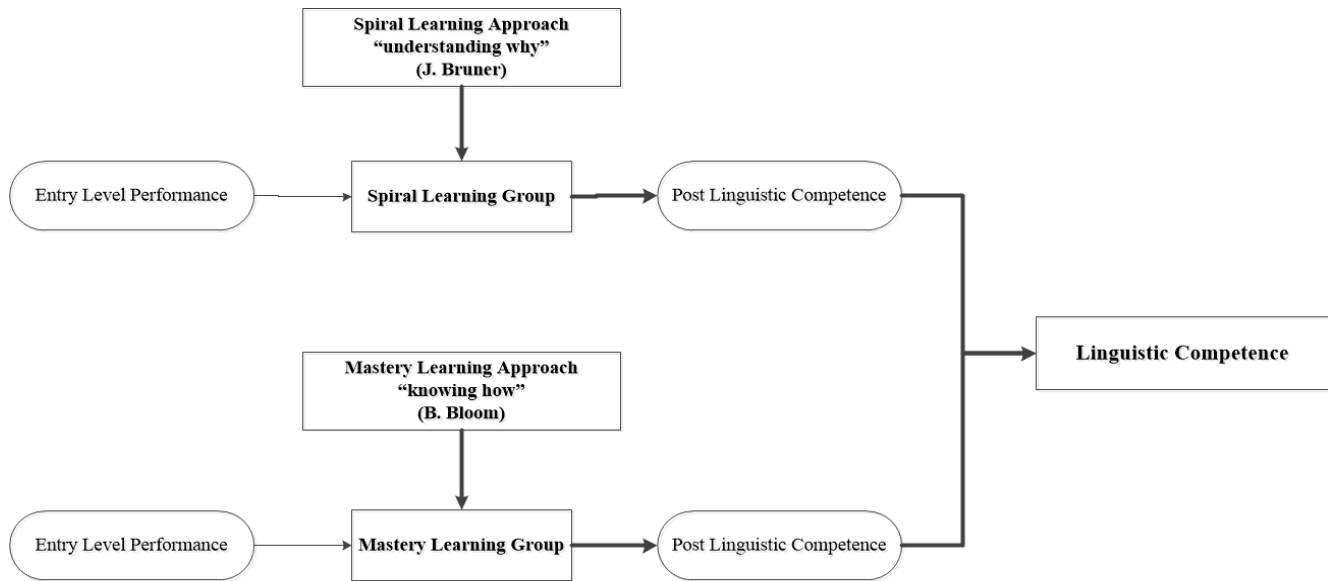


Figure 1 Schematic Diagram of the Theoretical – Conceptual Framework

Bruner believes that learners should construct new ideas or concepts based upon their existing knowledge (1. *Learning from Experience*), thus, a teacher structures the lesson by starting with what the students already know. Then, he presents the fundamental concept of the topic (2. *Learning from Source*), not so much about its details --- rules, formulae, and other pieces of information, and connects this to the learners' prior knowledge. Bruner maintains that children need to learn the fundamental principles of a lesson rather than just mastery of facts. So instead of having the learners memorize the rules, the teacher engages them into learning activities that will lead them to discover how things work (3. *Learning by Doing*). It is during this discovery stage that feedback occurs through the teacher who acts as a floating coach and keeps an eye on what the students might uncover. He also processes misconceptions and confusions of the learners while continually revisiting the basic concept. Spiral learning asserts that feedback should occur early and continue frequently through to the completion of a task or topic. Thereafter, the learners will be tested how well they can apply what they have learned through an activity that will lead them to reflect, connect, and generalize concepts (4. *Learning by Application*) [7]-[9]. The figure illustrates these ideas [10]-[12].

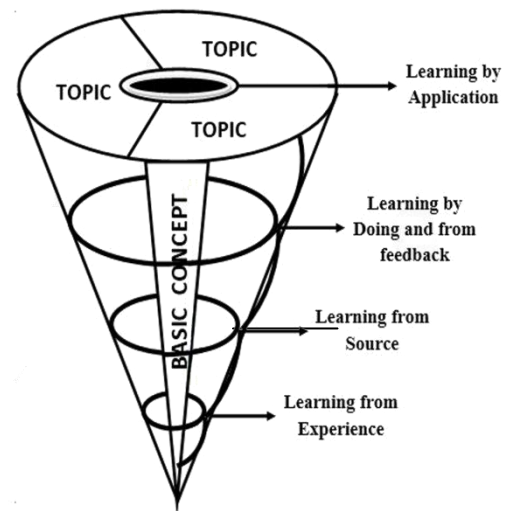


Figure 2. The Spiral Learning Process

On the other hand, Mastery Learning propounded by Benjamin Bloom [13] states that:

“Most students can attain a high level of learning capability if instruction is approached sensitively and systematically, if students are helped when and where they have learning difficulties, if they are given sufficient time to achieve mastery, and if there is some clear criterion of what constitutes mastery”.

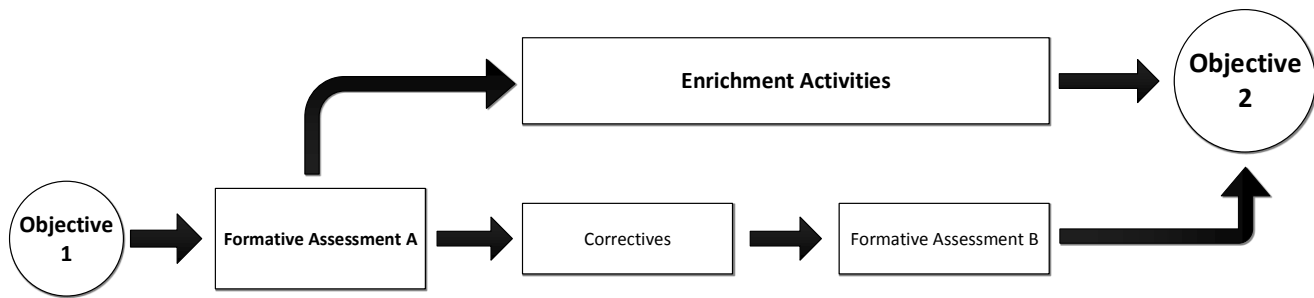


Figure 3. The Mastery Learning Process

With this, students are helped to master each learning unit before proceeding to a more advanced learning task. This is equivalent to Ellis's intensive grammar teaching [6] in which a lesson concentrates on a single grammatical structure. Topics are introduced one by one in an in – depth discussion allowing students to master all concepts within a topic (accuracy – focused). The teacher doesn't proceed to the next topic unless the students reach mastery criterion which is usually 80 – 90% correct. He begins with a discussion, and then gives the first formative assessment, which serves as diagnosis for learning. Bloom calls this *formative assessment* because it means *to inform or provide information*, or feedback. Therefore, the teacher identifies not only the quantity of students who pass or fail, but also the strengths and weaknesses of those who pass and fail. If feedback comes while the learners are doing their task in spiral learning, it comes after they do a particular task in mastery learning. Consequently, those who do not reach the mastery criterion will proceed to the next stage called *corrective or remediation*, in which they will be given individualized instruction and/or activities based on their deficiencies. On the other hand, those who get 80 – 90% correct will be given *enrichment activities* such as special projects or reports, academic games, or problem – solving tasks. After remediation, the *second formative assessment* is given. This covers the same concepts and skills tested in the first assessment, however, in different problems, or context, or questions to some extent. This time, the formative assessment serves as a test to verify whether the correctives given were effective for the students to overcome their individual learning difficulties, at the same time, as a motivational factor as it gives them another chance to attain success [14] – [15].

Unlike Spiral Learning, Mastery Learning does not revisit a particular topic because, as what it

emphasizes, the learners already have the foundation to move on to the next topic as they already have a strong grasp with the fundamental concepts. Hence, it is sometimes called linear method. It is only one way. The topics do not go back and are tackled in detail and in a way the teacher can do maximally. He gives the maximum knowledge in one setting, while in spiral approach, the teacher gives the minimum one or the core ideas only.

Linguistic competence as defined by Chomsky [16] is an idealized understanding of the rules and construction of a given language which includes the distinct sounds used in the language, the combination of these sounds, the creation of sentences and the interpretation of a sentence. Canale [17] considers this a component of communicative competence which consists of four competencies: grammatical competence, sociolinguistic competence, discourse competence, and strategic competence. Grammatical competence is the native speakers' knowledge of the syntactic, lexical, morphological, and phonological features of the language, as well as the capacity to manipulate these features to produce well – formed words and sentences. This is equivalent to Chomskyan's concept of linguistic competence. Grammar comes from the Greek word *graphein*, which means "to write". It refers to the rules by which we put together meaningful words and parts of words of a language to communicate messages that are comprehensive. It may be simple because it only deals with two aspects: *knowing the rules and applying the rules*, but it is the most complicated and difficult to teach simply because students detest rules, and especially memorization of them. The teaching of it and the ways to make it more understandable and meaningful to the students are where most of today's educators find challenging with. Most often, they are puzzled with these questions:

- What should be learned by the students to be linguistically competent? Is it skills or concepts?
- How can we make grammar teaching more understandable and meaningful to the students? Is it by practicing them with skills or by leading them in understanding concepts?

OBJECTIVES OF THE STUDY

This study was purposely conducted to determine which of the two approaches, Mastery Learning or Spiral Learning would greatly help the learners to be linguistically competent. In addition, it seeks to find out the students' perceptions of their learning in the two approaches to answer this pressing question of how learners acquire competence more effectively --- Is it by practicing them with skills or by leading them in understanding concepts?

MATERIALS AND METHODS

This study utilized the causal – comparative or commonly known as quasi – experimental approach in research to obtain the linguistic competence of the high school students after receiving an intervention of Mastery Learning and Spiral Learning approaches.

A quasi – experimental research requires no random assignment of the participants of the study. This means that the researcher has the control to select the experimental groups as some variables could still greatly affect the outcome of the study. In this particular experiment, the IQ of the students served as the basis in selecting the group participants. There were a sample of 74 students or an estimated 29% of the total number of 8th graders in the University of San Carlos– North Campus which were divided into two groups to comprise the mastery learning group and spiral learning group. Mastery Learning has 25 males and 12 females; while Spiral Learning group has 24 males and 13 females, making a total of 37 equal number of participants for each. Moreover, these language learners averaged a more or less the same IQ level; 97 for mastery learning group and 95 for spiral learning group. This data was taken from the University of San Carlos – North Campus's Testing Office upon the students' entry to school.

To observe ethical procedure and ensure integrity of data gathering, a consent letter was obtained from the school's administrators. As soon as it was approved, a pretest was administered to the selected grade 8 high school students using Cambridge First Certificate for Schools. Afterwards they were employed in Mastery Learning Approach and Spiral

Learning Approach. Both groups started with a story or a poem or an article. Then the teacher moved to a grammar lesson which was derived from the text previously talked about. How grammar was taught differentiates the learning experiences of the participants. After one - quarter exposure to the two approaches, the students' linguistic competence was tested using the same tool, Cambridge First Certificate for Schools.

The Cambridge First Certificate in English (FCE) for Schools is mapped in accordance with the approaches and principles of Common European Framework of Reference (CEFR) for Languages, an internationally recognized system in describing language proficiency. The CEFR is divided into three divisions, namely, basic user (A), independent user (B), and proficient user (C). Furthermore, these three divisions were subdivided into six levels. These are the breakthrough/beginner (A1 level), waystage/elementary (A2 level), threshold/independent (B1 level), vantage/upper intermediate (B2 level), effective operational proficiency/advanced (C1 level), and mastery/proficiency (C2 level [18].

The subjects of this study, who were grade 8 students, belong to intermediate level. Thus, this study made use of B2 level exam which is FCE for Schools. This was chosen among any other B2 level exams because its content and treatment of topics are particularly targeted at the interests and experience of young learners. Moreover, its format includes Use of English, which tests how well the students take control of their grammar and vocabulary.

FCE has five sections; reading, writing, use of English, listening, and speaking. However, since the main purpose of this study was purely to test the linguistic competence of the students, only the use of English section was utilized. It is subdivided into five parts; multiple - choice cloze, open cloze, word formation, and key word transformation. Multiple – choice cloze and open cloze assess the students' lexical knowledge and understanding of the text. Word formation, on the other hand, tests the students' skill in forming words using their understanding of prefixes, suffixes, and parts of speech. Lastly, key word transformation examines the ability of the students to show flexibility and use of language in expressing a message in a variety of ways [19].

The entire test is a total of fifty (50) points. The first (multiple – choice cloze), second (open cloze), and third part (word formation) carry one mark per

item, while the last part (key word transformation) carries two marks.

The statistical mean was used to obtain the students' competency level in both pretest and posttest. The t-test for dependent samples was utilized to get the mean gain of the pretest and posttest results of the linguistic competence of the students, while the t-test for independent samples was applied to determine the significant mean gain difference of the students' performance after exposure to Mastery Learning and Spiral Learning Approach. The data collected, tabulated and interpreted were employed with the permission from the participants.

The given scale was used to interpret the Linguistic Competence among Grade 8 Students: 80% to 100%: *Exceptional*; 75% to 79%: *Good*; 60% to 74%: *Borderline*; 45% to 59%: *Weak*; 0% to 44%: *Very Weak*.

RESULTS AND DISCUSSION

The learners from both groups, Mastery Learning and Spiral Learning, showed a comparable level of linguistic competence in their pretest and posttest scores. Mastery Learning group got a mean score of 23.351 or 46.7%, while Spiral Learning group got

21.1008 or 42.2%. Based on Cambridge First Certificate in English grading scale, these are equivalent to weak and very weak, respectively. The five competency levels and their corresponding percentages are as follows: exceptional (80% - 100%), good (75% - 79%), borderline (60% - 74%), weak (45% - 59%), and very weak (0% - 44%).

Both groups' performance is not impressive considering that they are below the borderline, or passing percentage score of 60%. This result could be attributed to the fact that the students in the University of San Carlos – North Campus are not used to the kind of test utilized in this study. Just like most Filipino students, the participants were accustomed to achievement – kind of test in which they are measured according to how much they know the lessons than to how effective users they are of the English language. This further suggests that the learners from both groups are although, not equal in their level of competency, but are realistically not linguistically competent enough yet as shown by their failing percentage grade. In other words, they are poor users of English grammar.

Table 1. The Entry Level of Grade 8 Students in Linguistic Competence

Test Parts of Targeted Competencies	Mastery Learning Group			Spiral Learning Group		
	Mean Score	Mean % Score (MPS)	Level of Competency	Mean Score	Mean % Score (MPS)	Level of Competency
Choice Cloze for Vocabulary	8.216	68.5%	Borderline	8.487	70.7%	Borderline
Open Cloze for Grammar & Vocabulary	4.730	39.4%	Very Weak	4.676	39.0%	Very Weak
Word Formation for Grammar & Vocabulary	5.324	53.2%	Weak	4.568	45.7%	Weak
Key Word Transformation for Grammar	5.081	31.8%	Very Weak	3.378	21.1%	Very Weak
Totality	23.351	46.7	Weak	21.108	42.2%	Very Weak

Table 2. The Level of Linguistic Competence among Grade 8 Students after Exposure to Two Selected Approaches

Test Parts of Targeted Competencies	Mastery Learning Group			Spiral Learning Group		
	Mean Score	Mean % Score (MPS)	Level of Competency	Mean Score	Mean % Score (MPS)	Level of Competency
Choice Cloze for Vocabulary	8.270	68.9%	Borderline	8.865	73.9%	Borderline
Open Cloze for Grammar & Vocabulary	7.703	64.2%	Borderline	7.946	66.2%	Borderline
Word Formation for Grammar & Vocabulary	7.757	77.6%	Good	6.865	68.7%	Borderline
Key Word Transformation for Grammar	7.784	48.7%	Weak	7.432	46.5%	Weak
Totality	31.514	63.0%	Borderline	31.108	62.2%	Borderline

After exposure to the two selected approaches, both groups reached the borderline level of competency; Mastery Learning got 63.0%, while Spiral Learning got 62.2%. These posttest results of the participants exhibited a significant improvement from their pretest. This implies that both Mastery Learning and Spiral Learning could really foster the second language learners' linguistic competence.

However, it is worth highlighting that mastery learning group attained higher level of competency in word formation with 77.6 mean percentage score as oppose to 68.7% of spiral learning group. This could be attributed to Mastery Learning's style of in – depth discussion of the topic against Spiral Learning's brief exposure of the topic. In Mastery Learning class, reconstructing a word into another function was rigidly practiced by the group until they had fully acquired the competence. On the contrary, this particular skill was just an introductory activity in Spiral Learning class which was interconnected to sentence and fragments. What was emphasized was the core idea of the difference between sentences and fragments not the skill of restructuring a word.

Evidently, key word formation appeared to be the weakest for both groups. Mastery Learning got a mark of 7.784 or 48.70% while Spiral Learning group got 7.432 or 46.5%. This is exactly the same skill that put the two at the very weak level in the pretest along with open cloze. In this test, the learners were asked to paraphrase the given sentence using two to five words including the given word. Based on their answers, it was observed that the learners are not only incompetent in understanding the meaning of the sentence to be paraphrased, but are also deficient in creating well - formed sentences and expressing ideas

grammatically. These syntactic inaccuracies are the common errors committed by secondary language learners. Azar [20] termed this phenomenon as the “Final - S Problem” in which the students commit mistakes in expressing ideas no matter how much they practice grammar rules and concepts. He explained that students usually can do well in controlled activities such as quizzes, assignments, seat works, etc., but then commit grammatical errors when they write or talk freely. This happened because of the so called affective filter [21] or some emotional barriers that prevent comprehensible input of language to be utilized by the learners correctly such as mental block, anxiety, pressure, fatigue, etc. These affective filters act as barriers in utilizing skills to construct well - formed sentences.

In the end, the Spiral Learning group significantly outperformed the Mastery Learning group. Mastery Learning group gained a mean score difference of 8.162 in their pretest and posttest scores, while Spiral Learning group gained 10.000. This proves that, without doubt, teaching the learners with the functions of the language, and not the form, is more effective in helping them to improve linguistically. In fact, according to Foppoli [22] presenting the students with dozens of new rules, patterns, and structures to memorize will only cause a great frustration to students which will result to them having problems in understanding academic concept since what they get is only something abstract and lecture method. In other words, students should be given learning experiences to discover the purpose of language in real life, not pure memorization of grammatical rules and procedures.

Table 3. The Mean Gain Difference of Students' Linguistic Competence Between the Mastery Learning and Spiral Learning Group

Test Parts of Targeted Competencies	Tests	Mastery Learning Group		Spiral Learning Group		Computed t-value	P-value
		Mean Score	Gain	Mean Score	Gain		
Choice Cloze for Vocabulary	Pretest	8.216		8.487		0.556 ^{ns}	0.580
	Posttest	8.270	0.054	8.865	0.378		
Open Cloze for Grammar & Vocabulary	Pretest	4.730		4.676		0.463 ^{ns}	0.644
	Posttest	7.703	2.973	7.946	3.270		
Word Formation for Grammar & Vocabulary	Pretest	5.324		4.568		0.248 ^{ns}	0.805
	Posttest	7.757	2.432	6.865	2.297		
Key Word Transformation for Grammar	Pretest	5.081		3.378		1.700 ^{ns}	0.093
	Posttest	7.784	2.703	7.432	4.054		
Totality	Pretest	23.351	8.162	21.108	10.000	2.051*	0.044
	Posttest	31.514		31.108			

* Significant at 0.05 Level

ns Not Significant at 0.05 Level

Very importantly, mastery learners and spiral learners claimed that they were motivated and challenged with the kind of activities they had experienced. However, the way they were motivated and challenged notably affects the overall result of this study. For Mastery Learning group, passing the 80% mastery criterion in every activity, though motivating, challenging and helpful, gave so much frustration and hassle to them especially those who always fail to attain it, and repeatedly undergoes remediation. Below are the remarks from the students that authenticate this pronouncement:

“It’s a bit boring too because it’s the same routine everyday like discussion, activity, and then checking.”

“The lessons were pretty serious and there were just few activities.”

“All we had in this class were activities. I want groupings to improve more of my skills.”

“Most of the time we were doing individual activities; and it’s not fun because we don’t get to work and interact with other people.”

“This individual activity isn’t really good because we won’t be able to develop teamwork.”

“Attending remedial class almost every day is really tiring.” “Most of the time many of us fail and would attend remedial class. It’s kinda frustrating because it’s like we all have been above 50% of the perfect score yet we are still considered a failure.”

On the contrary, group tasks, varied strategies, informative and analytical discussions, and real – life activities, not only motivated and challenged the Spiral Learning group but also gave them a fun and interesting learning experience which incited them to excel more and perform better than Mastery Learning group. The following exact words from the participants reflect this claim:

“I love the multitude of group activities. Group activities are really effective in developing our social skills.”

“This class really helped me improve my ability to work with other people even though there are dissimilarities in our opinions sometimes.”

“I like the teaching style and the activities that have to do with group works and group task.”

In addition, the spiral learners strongly claimed that they have learned something new everyday. This could possibly be because of the Spiral Learning’s brief exposure of the topic which provides new learning every class encounter. Below are the statements attested by the spiral learners.

“The discussions and lectures are short, but it’s complete with all the necessary information with no extra churva – ever that is not important. All we discussed showed up in the test. Our teacher connects the lessons in real life situations and the lessons are comprehensive. Our teacher also tells us how important reporting and summarizing or understanding and listening can be. We were also taught many times things that we can also use in other subjects. So all in all, it was a very fun experience.”

“With our English class, I already understood a lot of topics.”

“Our English class is fun. We learn new things and also it is very informative and enjoyable.”

“I’ve learned so many things in just one lesson.”

“With this class, I really had a very wonderful time learning new things in life and additional knowledge in my studies.”

“This year’s English class was a bit tough because we had a lot of things done which required deep analysis. But overall, I enjoy it because I’ve learned many things that widened my knowledge.”

Based on the responses of the learners, it is evident that positive comments are favorable to Spiral Learning Approach. It can be concluded that Spiral Learning, in consonance with the result presented in table 3, not only benefited the learners in acquiring higher level of competency, but also gave them an opportunity to develop this so - called 21st century skills deemed needed in today’s workforce.

On the other hand, although Mastery Learning aided in the improvement of the learners’ linguistic competence, how the learners acquired their skills through it resulted an undesirable effect to them towards learning. Further, because of the pressure to

attain 80% passing score in every activity, mastery learners tend to focus only on grades rather than learning. As observed, the learners were more likely geared towards passing every quiz or activity and not for lifetime learning. In fact, one of the students made this comment:

“The activities really motivate me because we’re competing for points.”

As explained by Murcia and Freeman [23], to make language effective, language teachers should not only help the learners achieve a certain degree of formal accuracy (Mastery Learning), but most importantly, must help them use the structures of language meaningfully and appropriately (Spiral Learning).

CONCLUSION AND RECOMMENDATION

Both approaches, Mastery Learning (*skill – based approach*) and Spiral Learning (*concept – based approach*) have definitely advanced students’ linguistic competence. Achieving mastery by developing skills in carrying out procedures (*skill – based approach*) or by understanding why procedures work (*concept – based approach*), should not, therefore, be a big issue. However, the astounding interest experienced by the students in the Spiral Learning Approach spurred them to grasp a better perspective towards learning, thus, making them effective second language users.

This positive effect of Spiral Learning Approach manifests that the students in the 21st century are not lured by routinized classroom activities. Students nowadays opt for a more interesting, fun, and at the same time relevant experiences. They are different breed of learners. This implies, therefore, a paradigm shift from teaching to learning; from a teacher – centered to a learner – centered instruction; from a controlled to a scaffold learning activities; and from a traditional assessment to a varied and realistic one.

Teaching is a dynamic process. It demands change from all areas of instruction since the kind of students are changing from generation to generation, as well as the society decade after decade. Thus, teachers need to adapt these changing demands in education; otherwise, it is waste of time and effort inculcating skills no longer needed by students, and culture no longer effective in the society. It is a must so that every graduate is prepared to engage, contribute and compete in the global workforce.

Further, the result suggests a favorable impact of K – 12 program which incorporates Spiral Learning Approach in its curriculum. Millennials value freedom, learn best through risks, and are self – expressive. With spiral learning’s inquiry – based and learner – centered style of teaching [24] – [25], 21st century learners could attain their full potential through self – discovery that provides them the freedom to explore, learn, and express in the best way they can. Moreover, it is integrative [24] – [25]. This means that classroom activities are based on culture, history and reality which opens awareness to cross – cultural understanding and social involvement that in turn provide today’s learners the opportunity to collaborate and solve critical issues and problems.

Since learning areas embody different sets of principles and standards, a future study on the effectiveness of Mastery Learning and Spiral Learning to other skill – based subjects, such as Math, is recommended.

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