ELS Journal on Interdisciplinary Studies in Humanities
Volume 6 Issue 2, 2023
DOI: https://doi.org/10.34050/elsjish.v6i2.26803
Homepage: journal.unhas.ac.id/index.php/jish

Spiral Progression Approach in Science Curriculum: Student Perception on its Implementation

Junpel U. Acut[1]

[1]Department of Education/Division of Misamis Oriental/Matangad NHS, Philippines
*Correspondence: junpel.acut@deped.gov.ph

ABSTRACT

The student's perception on the implementation of spiral progression approach in science curriculum was studied using descriptive survey method. It also seeks to identify the profile of students and to determine how the spiral progression approach in science curriculum enhances the learning process. A researcher-made questionnaire was the instrument used in the study considering the four factors, namely: teaching strategies, instructional materials, equipment and apparatus and science laboratory room. The results of the study showed that majority of the respondents were13-15 years old, females, 3-4 number of siblings, family monthly income of Php 1,001-5,000, and parent's educational attainments were high school level. The overall perception of the respondents on the spiral progression approach in science curriculum in terms of teaching strategies, instructional materials, equipment and apparatus, and laboratory room was rated agree. The overall mean on how can the spiral progression approach enhance the learning process was 2.93. This further mean that in enhancing the new science curriculum one should consider the teaching strategies used by teachers, the availability of instructional materials, equipment, apparatus and science laboratory room. School administrators should proactively respond to the needs of their schools concerning on the availability of science equipment, apparatus, instructional materials, and science laboratory room to enhance the effective teaching-learning process and to improve teaching effectiveness on teachers.

ARTICLE HISTORY
Published June 10th 2023
Check for updates

KEYWORDS
Perception; Science Curriculum; Spiral Progression Approach.

1. Introduction

In the international community, Filipinos are renowned to be competitive. Its current educational system, on the other hand, prevents it from becoming even more competitive. As a result, the K to 12 curriculum is the solution to the Philippines' academic disadvantage as well as the key to the country's progress. The current curriculum was implemented in the Philippines for the 2012-2013 school year (Montebon, 2014; Weda et al., 2021). This is when the Basic Education Curriculum gives way to the new K–12 Curriculum (Cabansag, 2014; Tupas & Linas-Laguda, 2020; Hasnia et al., 2022). As a result, this curriculum strives to provide every student with access to a high-quality education based on an upgraded, decongested, and internationally comparable curriculum (K-12 Basic Education Program, 2012; K-12 Primer, 2013; Dunton, 2019; Rahman, 2018).

Many improvements and reforms to the curriculum have been implemented, including the lengthening of school years. It has been changed from a ten-year system (Grade 1 to 10) to a 12-year scheme. Science is one of the subjects that is undergoing considerable review among the several subjects or disciplines. Strengthened Science teaching that follows a spiral progression is one of the features of the K-12 Enhanced Basic Education Program (Barrot, 2021; Andini et al., 2021). Spiral progression in science education attempts to build scientific literacy in learners, preparing them to be educated and engaged citizens capable of making judgement and decisions on scientific knowledge applications that may have social, health, or environmental implications (Quijano & Technical Working Group on Curriculum, 2012).

Resurrecion and Adanza (2015) stated that science is divided into four areas: Integrated Science, Biology, Chemistry, and Physics in the Secondary Science curriculum. Integrated Science was taught in the first year of the old curriculum, followed by Biology, Chemistry, and Physics in the second, third, and fourth years. However, in the new Secondary Science curriculum, all four key areas' topics are taught at the same time. Students are exposed to a spiral

progression strategy each year, in which the four areas are taught one every grading period. In addition, Integrated Science was renamed Earth Science.

Indeed, the spiral progression approach in the Science Curriculum of the K to 12 Program of the Department of Education is a good innovation and prerogative to develop that enhances the Philippine Science education (Orbe et al., 2018). But sad to know that schools, including Matangad National High School lack equipment and apparatus for their science experiments and laboratories. They do not have even a single laboratory room or facilities to where science experiments must be done. On the other hand, students also have major challenges to the shift of Science curriculum to Spiral Progression Approach. These are some of those challenges that this study is going to adhere with and to ascertain the subjective responses of students on how spiral progression approach can enhance the learning process as well as taking into consideration their perception in the implementation of spiral progression approach in Science curriculum.

This study attempted to determine the implementation of Spiral Progression Approach among Grade 10 students of Matangad National High School in the Division of Misamis Oriental, SY 2019-2020. Specifically, this paper attempted to answer the following questions: (1) What are the characteristics of the student-respondents in terms of age, gender, number of siblings, family monthly income, and parent's educational attainment?; (2) What are the challenges in the implementation of the spiral progression approach in Science curriculum in terms of teaching strategies, equipment and apparatus, instructional materials and laboratory room?; and (3) How can the spiral progression approach in Science curriculum enhance the learning process of the respondents?

2. Methodology

The type of research method used by the proponent in this study is descriptive research method. The survey questionnaire for determining the perceptions of students on Science spiral progression approach was used to collect data and information. Before the sampling and gathering of data was done, the researcher determined the populations of Grade 10 students of Matangad National High School of Gitagum District to get the number of samples among student respondents. From the list, the total number of one hundred (100) students Grade 10 students was determined.

Test questionnaires were utilized to collect data for the study. The research instrument that was used to gather necessary information for this study had two parts. Part 1 dealt with the profile of student-respondents in terms of age, gender, number of siblings, family income, and parent's educational attainment. Part 2 delved into the challenges in the implementation of the spiral progression approach in Science curriculum. The researcher-made questionnaire follows a Likert scale with the following options: 1) strongly disagree; 2) disagree; 3) agree; and 4) strongly agree. The survey questionnaires consisted of twenty (20) perceptions statement which composed of four parts: teaching strategies, instructional materials, equipment and apparatus, and laboratory room.

3. Result and Discussion

The data gathered were drawn from the survey questionnaire and presented and analyzed accordingly. The percentage of students' profile in terms of age, gender, number of siblings, family monthly income and parent's educational attainment and their perception were determined and presented through pie chart and graph for analysis, respectively. To examine how spiral progression approach enhances the learning process of students, the mean scores of each factor considered was determined.

A. Characteristics of the respondents in terms of age, gender, and number of siblings, family monthly income, and parent's educational attainment

The researcher show the characteristic of the respondents of age, gender, and number of siblings, family monthly income, and parent's educational attainment

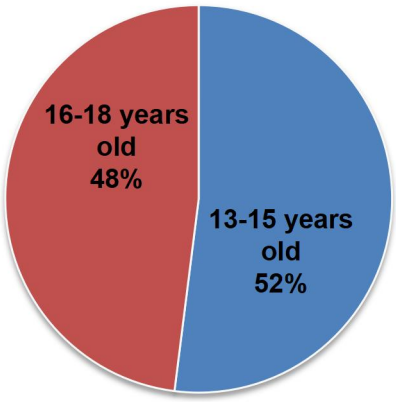

Chart 1. Percentage of Student Respondents in Terms of Age

Chart 1 shows the percentage of student respondents in terms of age. It describes that 52.00 percent of the respondents were 13-15 years old and 48.00 percent were 16-18 years old. This denotes that majority of the respondents were 13-15 years old. Age of students is considered a factor in the success on the implementation of the curriculum when there is a combination of different age groups in a particular class. This means that different age groups would also need different way of teaching, instruction and treatment.

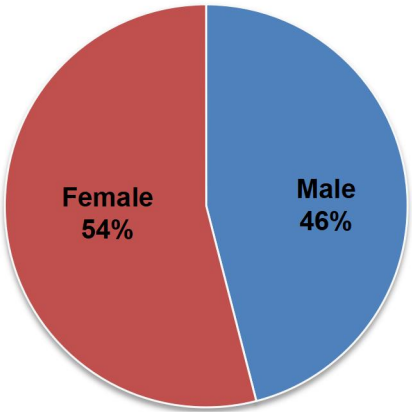

Chart 2. Percentage of Student Respondents in Terms of Gender

Chart 2 shows the percentage of student respondents in terms of gender. It detects that 54 percent of the respondents were female and 46 percent were male. This means that majority of the respondents were female.

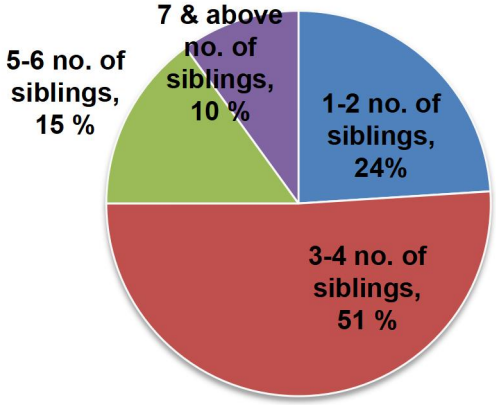

Chart 3. Percentage of Student Respondents in Terms of Number of Siblings

Chart 3 depicts the percentage of student respondents in terms of the number of siblings. It shows that 51 percent were 3-4 no. of siblings, 24 percent were 1-2 no. of siblings, 15 percent were 5-6 no. of siblings, and 10 percent were 7 & above no. of siblings in their family. This means that majority of the respondents had 3-4 no. of siblings in their

family. Academic achievement declines when families grow, according to Grabmeier (2015), since parents spend less time with their children and economic resources for each child decrease. As a result, as the size of the family grows, parents talk less about school with each child, have lower educational expectations, save less for college, and have fewer educational materials on hand. This means that the number of siblings in a family affects the academic performance of students because of the parental concerns and dilution of economic resources.

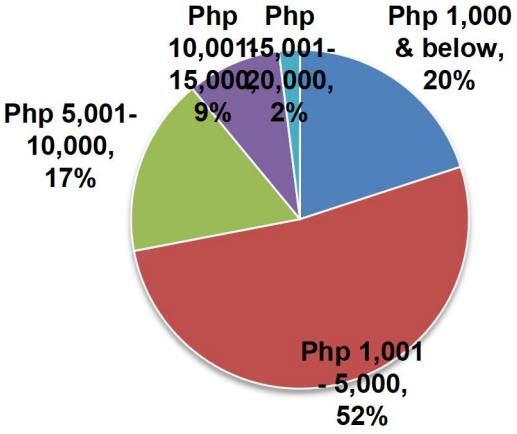

Chart 4. Percentage of Student Respondents in Terms of Family Monthly Income

Chart 4 exhibits the percentage of student respondents in terms of family monthly income. It reveals that 52 percent of the respondents were Php 1,001-5,000 family monthly income, 20 percent were Php 1,000 & below family monthly income, 17 percent were Php 5,001-10,000 family monthly income, 9 percent were Php 10,001-15,000 family monthly income, and 2 percent were Php15,000-20,000 family income. This illustrates that majority of the respondents' family monthly income was Php 1,001-5,000. This also indicates that majority of the respondents' family income is within the minimum and probably not enough for a monthly budget in a family. Thus, government's bridging program such as 4Ps is really a big help to support families with insufficient income and resources.

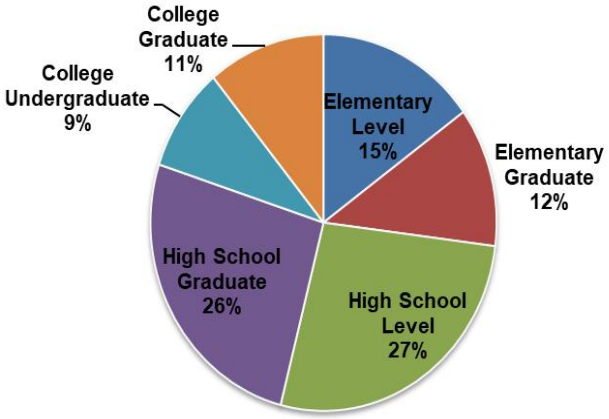

Chart 5. Percentage of Student Respondents in Terms of Parent's Educational Attainment

Chart 5 displays the percentage of student respondents in terms of parent's educational attainment. It reflects that 27 percent of the parents' educational attainment of the respondents was high school level, 26 percent were high school graduates, 15 percent were in elementary level, 12 percent were college undergraduate. This suggests that majority of the parents' educational attainment of the respondents were high school level. Parents' educational attainment affects the way their children think of schooling Students' motivation towards academic success depends how parents motivated their children. When parents have higher level of educational attainment, they can really guide, help and teach their children because they have enough knowledge that they can share and relate to their children. However, parents with low level of educational attainment have lesser motivation, lesser knowledge, and lesser engagement towards schooling of their children.

B. Challenges on the implementation of spiral progression approach among students in terms of teaching strategies, equipment and apparatus, instructional materials, and laboratory room

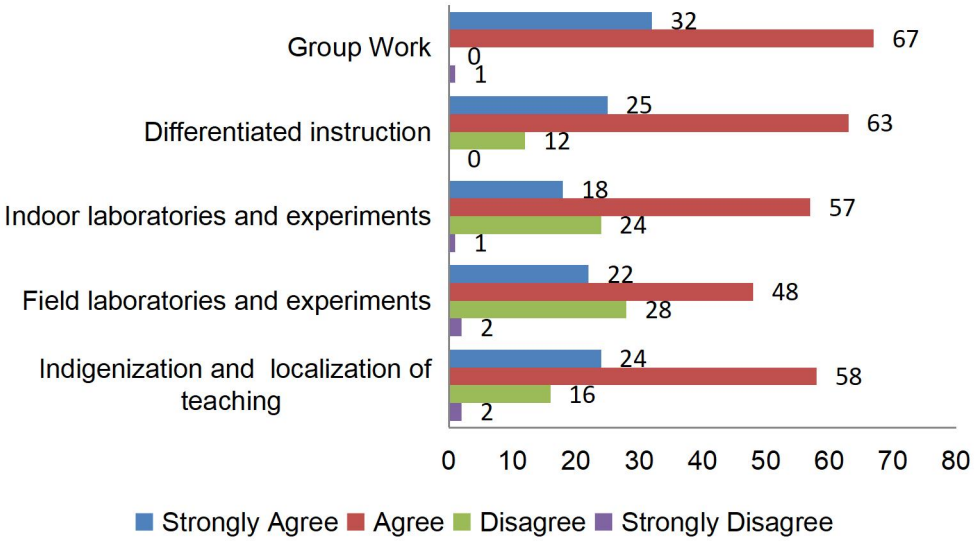

Chart 6. Students Perception on the Implementation of Spiral Progression Approach in terms of Teaching Strategies

Chart 6 shows the perception of students on the implementation of spiral progression approach in terms of teaching strategies. It reveals that the students generally agree with the statements on the questionnaire in terms teaching strategies. Among the items in the teaching strategies, students strongly agreed that group work is very effective in getting them to work together in solving problems in the new Science curriculum. On the other hand, field laboratories and experiments have the highest number of disagree responses as observed. This suggests that students may not have been exposed to field laboratories and experiments that allow them to have hands-on and minds-on experience towards science concepts and ideas.

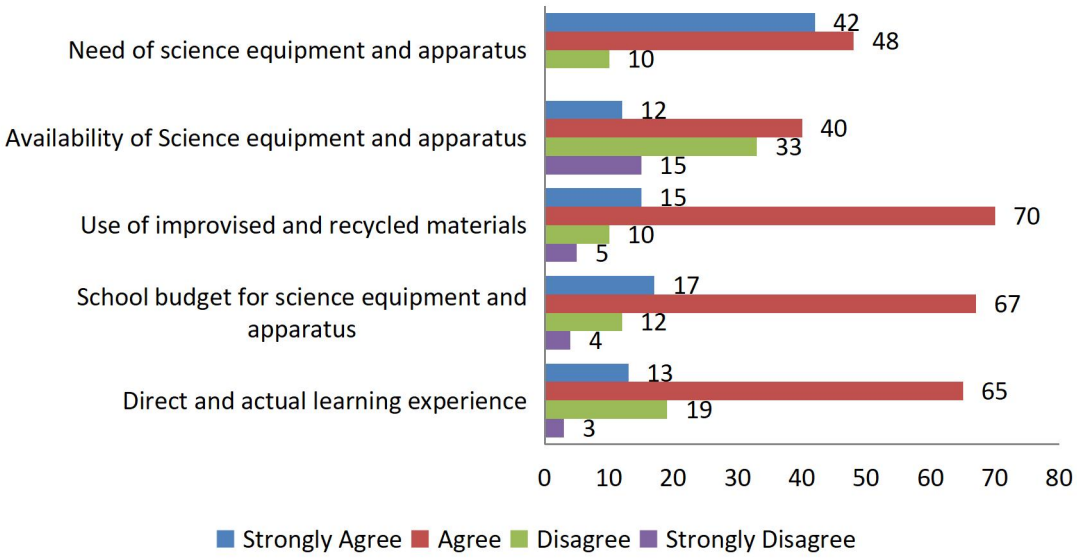

Chart 7. Students Perception on the Implementation of Spiral Progression Approach in terms of Equipment and Apparatus

Chart 7 presents the perceptions of students on the implementation of spiral progression approach in science curriculum in terms of equipment and apparatus. Students generally agree on the statements on the survey questionnaire and recognized the importance of science equipment and apparatus in enhancing the learning process of

the spiral progression approach in science curriculum. Among the items in the equipment and apparatus, students strongly agree that the availability and the use of science equipment and apparatus in the learning environment are very much needed in the new science curriculum. The item which has the highest agreement perception where students find that when there are no available equipment and apparatus for science activity, the use of improvised and recycled materials are utilized by their teachers to make their activity be realized. Consequently, the highest number of disagree response is the item on availability of Science equipment and apparatus. This implies that the school do not have enough Science equipment and apparatus that is needed for the new science curriculum.

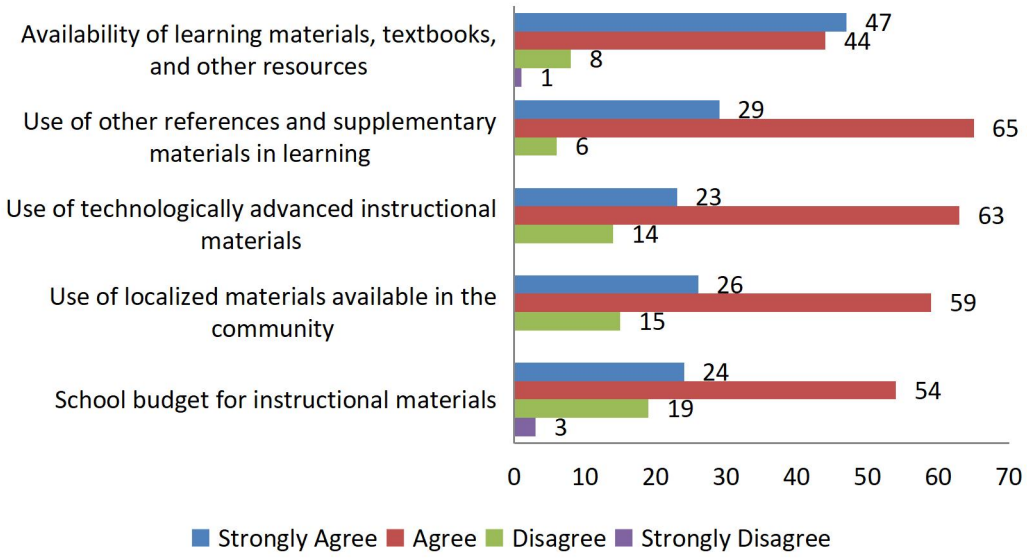

Chart 8. Students Perception on the Implementation of Spiral Progression Approach in terms of Instructional Materials

Chart 8 shows the perception of students on the implementation of spiral progression approach in terms of instructional materials. In terms of instructional materials, students generally perceived that they strongly agreed that the utilization of the learning materials, textbooks and other resources are available in the school. Students believed that their learning materials and textbooks are already enough for them to learn. In other sense, school budget for instructional materials got the highest disagree response which indicates that although the school allocated budget for instructional materials to every teacher and student but still, it is not enough to be provided to them. In this reality, the department must allocate additional budget for instructional materials to be utilized in the teaching-learning process.

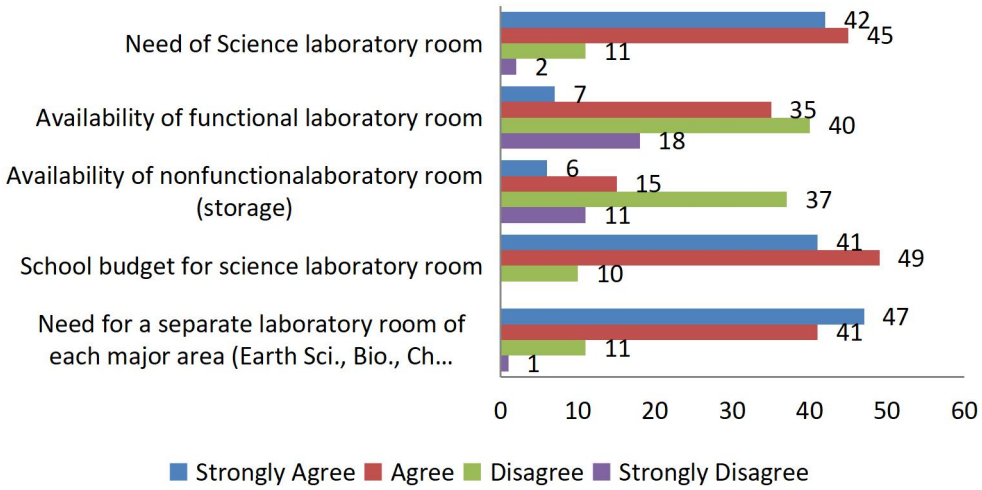

Chart 9. Students Perception on the Implementation of Spiral Progression Approach in terms of Laboratory Room

Chart 9 depicts the perception of students on the implementation of spiral progression approach in terms of laboratory room. In general, students agreed that there is really a need for a laboratory room to meet the learning standards and competencies required by the DepEd. This explains why, in order to improve the spiral progression approach in science curriculum, a science laboratory room must be built because it is the only convenient and safe location where science experiments and activities may take place. Students also strongly disagree that they have available and functional laboratory room where science experiments and laboratories are done. Among the items for laboratory room, the need for a separate laboratory room of each major area in Science got the highest agreement perception among students indicating the need for individual laboratory room for Earth Science, Biology, Chemistry and Physics.

C. How can the spiral progression approach in Science curriculum enhance the learning process of the respondents.

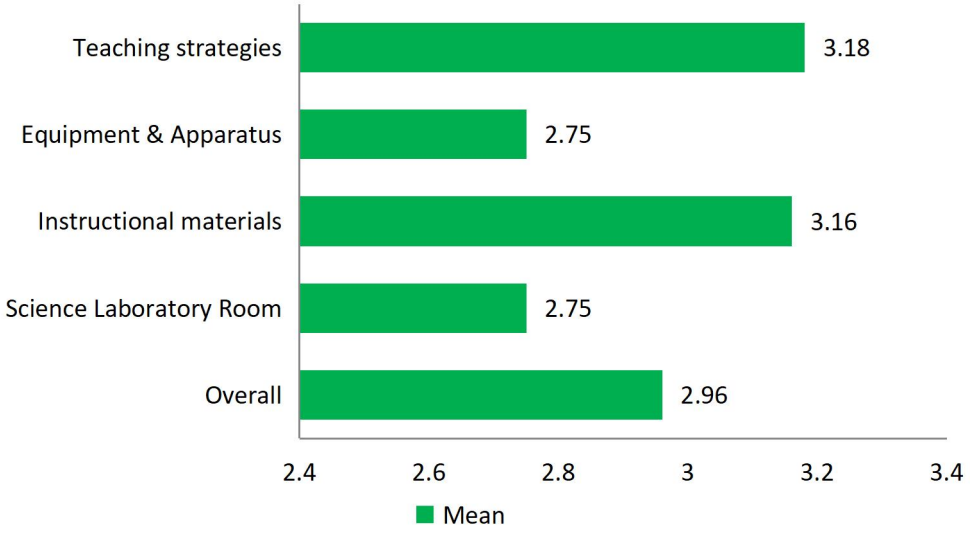

Chart 10. Summary of Mean Ratings Showing the Perception of Student Respondents on the Implementation of Spiral Progression Approach in Science Curriculum

Figure 10 draws the summary of mean rating of the responses of the respondents on the implementation of spiral progression approach in science curriculum considering the following: teaching strategies, equipment and apparatus, instructional materials, and laboratory room. It signifies that among the factors considered, teaching strategies has the highest mean rating of 3.18. This implies that teaching strategies are a crucial method for assisting students in learning desired course information and developing future objectives that are attainable. On the other hand, factors on equipment and apparatus (M = 2.75) and science laboratory room (M = 2.75) yielded the lowest overall mean indicating the need for schools to address the insufficiency and inadequacy of science equipment, apparatus and laboratory room. Considerably, these are very substantial factors in catalyzing the emerging quality education in science curriculum. Although there are still constraints and challenges in the new science curriculum as to the availability of equipment and apparatus, allocation of budget and resources for instructional materials, the choice of appropriate and effective strategies among teachers, the overall mean (M = 2.96) would interpret that these are pressing factors to consider in enhancing the learning process of the spiral progression approach and should be given a priority so that the aim for quality be achieved.

4. Conclusion

This research is subjected to a variety of constraints. Firstly, the study was limited to one hundred (100) Matangad National High School students. The findings of this study cannot be assumed to represent the views of all Grade 10 students studying science in other schools. Secondly, because the respondents in this study were only Grade 10 students, the results may not be representative of other year levels, which may have a different perspective on the science curriculum. Lastly, the survey was carried out at a small school. Thus, this study may not reflect the same perceptions and issues as students from large schools.

Based on the results of this study the following are recommended: (1) school administrators, through the schools division superintendent, should proactively respond to the needs of their respective schools concerning on the availability of science equipment, apparatus, instructional materials, and science laboratory room to enhance the effective teaching-learning process and to improve teaching effectiveness on teachers; (2) school administrators should also embrace parental involvement in all school activities to encourage parents in supporting their children towards academic success and endeavor; and, (3) teachers should find ways for professional growth especially with the current trends in education for them to be effective in their fields.

Through the perception of students in this research, it can be inferred that students are giving positive feedbacks as to how this new science curriculum be enhanced in the teaching-learning process. With this scenario, may it give light especially to those people concerns to proactively respond to the needs and challenges faced by the implementation of spiral progression approach in science curriculum so that it could lead for the success of its implementation and thus, paving the way for the betterment of our nation.

References

Andini, C., Yassi, A. H., & Sukmawaty. (2021). The Use of Honorifics in English and Buginese with special Reference to Bone Language: A Comparative Study. *International Journal of Innovative Science and Research Technology, 6*(7), 873-877.

Barrot, J. S. (2021). K to 12 curriculum reform in the Philippines: Towards making students future ready. *Asia Pacific Journal of Education*, 1-15.

Cabansag, M. G. S. (2014). Impact statements on the K-12 science program in the enhanced basic education curriculum in provincial schools. *Researchers World, 5*(2), 29.

Dunton, J. B. (2019, November). Spiral progression approach in teaching science and the performance of learners in District I, Capiz. *In Journal of Physics: Conference Series* (Vol. 1254, No. 1, p. 012045). IOP Publishing.

Grabmeier, J. (2015). *More siblings means lower grades in school, study shows*. Research News. Retrieved from https://researchnews.osu.edu/archieve/siblings.html.

Hasnia, H., Andini, C., Tahir, M. D., Hunaeni, H., Zulfikariandi, Z., & Muslimin, M. T. (2022). The Ability of 1st Class Students of SMAN 11 Enrekang to Arrange Verbal and Nominal Sentences. *ELS Journal on Interdisciplinary Studies in Humanities, 5*(3), 539-550.

K-12 Primer. (2013). *Teachers' lounge*. Retrieved from http://www.rexpublishing.com.ph/basic-education/teacherslounge/basieducation/k-to-12-Primer/.

K to 12 Basic Education Program. (2012). *The official gazette* (Presidential Communications Development and Strategic Planning Office and PREGINET). Retrieved from http://www.gov.ph/.

Montebon, D. T. (2014). K12 science program in the Philippines: Student perception on its implementation. *International Journal of Education and Research, 2*(12), 153-164.

Orbe, J. R., Espinosa, A. A., & Datukan, J. T. (2018). Teaching chemistry in a spiral progression approach: Lessons from science teachers in the Philippines. *Australian Journal of Teacher Education (Online), 43*(4), 17-30.

Quijano, Yolanda S. & Technical Working Group on Curriculum. (2012). *Orientation Division Coordinators*. DepEd Complex.

Rahman, F. (2018). The Constraints of Foreign Learners in Reading English Literary Works: A Case Study at Hasanuddin University. *Journal of Arts and Humanities, 7*(2), 01-12.

Resurrecion, J. A. & Adanza, J. (2015). Spiral progression approach in teaching science in selected private and public schools in cavite. *Proceeedings of the DLSU Research Congress*, 3. Retrieved from https://www.dlsu.edu.ph/wp-content/uploads/pdf/conferences/research-congress-proceedings/2015/LLI/017LLI_Resurrecion_GF.pdf

Tupas, F. P., & Linas-Laguda, M. (2020). Blended Learning–An Approach in Philippine Basic Education Curriculum in New Normal: A Review of. *Universal Journal of Educational Research, 8*(11), 5505-5512.

Weda, S., Atmowardoyo, H., Rahman, F., & Sakti, A. E. F. (2021). Linguistic aspects in intercultural communication (IC) practices at a higher education institution in Indonesia. *Eroupean Language Scientific Journal, 14*, 2-6.