

The effect of self-evaluation skills in developing the quality of individual performance Action Research

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Abstract

Grade 12 students participated in a study that looks to answer the question "does use of self-assessment skills as teaching technique improve student the quality of individual achievement and performance and their attitudes in grade 12 science courses in our schools? Attitudes were measured with a Likert Scale survey "Questionnaire"; while achievement was measured with pre-posttest. The unit included in this study is " Chemical Calculations of the Elements" which is one of the most difficult subjects for the students. The main sources of information were teachers and grade 12 student's book. Students took both a unit test and Likert scale following the instructional period. The results show that using self-assessment skills enhanced and improve the test scores. The Likert scale survey shows that students in the first group like the way of using self-assessment skills and enjoy it. In contrast, the second group which subjected to the traditional way did not like it.

Keywords: self-assessment skills, individual performance, quality, schools.

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1. Introduction

Effective teaching strategies are those that give students or participants a simple, fast, and clear explanation. This is very useful for Grade 12 students for the quality of their individual performance in science subjects. Self-assessment skills are one such strategy that students can activate to improve their understanding and interpretation of scientific phenomena to make them enjoy classroom situations. The self-assessment method is considered a methodology because it helps students to review the level of quality of individual performance and feedback on the process of improving it as well as to compare levels of performance according to the specified standards. This method contributes to deducing the training needs of students and the necessary information for this. The Learning and Skills Council stated that students' ability to self-assess and identify points that need strengthening and points that need strengthening and implementation is critical to developing an ever-improving sector LSC (2005).

Self-assessment skills depend on the ability to judge the quality of your performance and how to improve. This is done through feedback on periodic reports, which are subject to basic standards. Students use the self-assessment report to help plan to see and assess your ability to make further improvements. The main goals that fill my mind are to find an effective strategy to improve the individual performance of students in science subjects and the academic achievement of their continuous assessments. This strategy uses the students' self-assessment skills as mentioned at the beginning. I will measure the improvement of this strategy among students of science subjects in the twelfth grade.

2. Review of Literature

The self-assessment skills method has been used in the development of individual performance quality for learning, philosophy of science and policy studies to provide a visual representation of knowledge structures and forms of argument. They provide an effective strategy for the students' self-learning process and develop their

creativity Whereas, evaluation is the process of defining the strategy and how we achieve the objectives.

During the evaluation, we go through stages including collecting evidence and reaching provable results about the quality of programs, projects, and services organizations and the Action of Individuals (Stufflebeam & Shenfield, 2007). Self-evaluation can also be defined as a mechanism that helps in self-improvement and gives schools the opportunity to monitor their work (Maes, 2005).

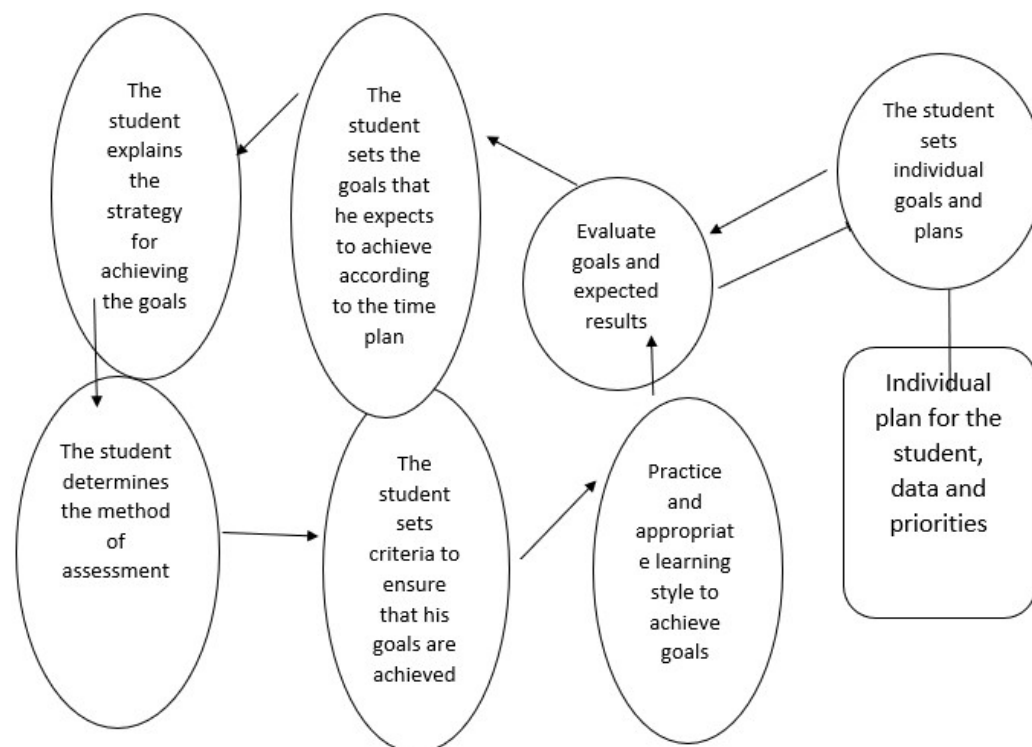
There is a relationship between self-evaluation skills and the quality of individual performance. As the self-evaluation is a potentially powerful technique because of its impact on student performance through enhance self-efficacy and increase motivation. Evidence of the positive.

The effect of self-assessment on student performance is particularly compelling for difficulty tasks (Maehr & Stallings, 1972; Arter et al., 1994), especially academically oriented schools (Hughes et al., 1985) and among students in need (Henry, 1994). maybe just Important, students like to evaluate their work.

Here, Osscarrsson (1989) identified six features for self-assessment; The first is to support learning, and the second is that it reinforces learners and teachers are aware of learners' abilities, and the third advantage of self-assessment is that by obtaining aware of learning objectives, learner motivation increases, next is participation Learners in their own assessment make them more familiar with assessment, the fifth advantage is that learners Participation in the assessment process reduces teacher responsibility.

The advantage of self-assessment is that it has a lot of advantages over time and makes more learners independently so that they can assess their improvement.

Here, the role of students is to monitor and evaluate the quality of their individual performance in terms of Learning and identifying strategies that improve their understanding and skills as well. Another form of self-evaluation is that when students are able to judge own performance and identify the scientific information that they still need to work on in order to get the desired score for their performance (McMillan & Hearn, 2008).



The chart above shows how self-assessment skills help students improve their individual performance. We note from the diagram a logical sequence of self-assessment processes starting with the student's individual plan, data, and priorities, and then the student sets individual goals and plans. In the next stage, the objectives and expected results are evaluated, and the student sets the goals that he is expected to achieve according to the time plan and explains the strategy for achieving the goals. There comes a stage where the student defines the method of assessment and sets standards to ensure the achievement of his goals, and finally the practice and the appropriate learning method to achieve the goals. At the end of these stages comes the concluding stage, which is the evaluation of the objectives and the expected results because it is a continuous process and giving the appropriate feedback.

Through my review of a study conducted by the researcher (Heidi L. Andrade 2019) entitled "a critical review indicated a conclusion:" Self-assessment is the act of of research on student self -assessment. Where she monitoring one's processes and products to make adjustments that deepen learning and enhance performance. Although it can be summative, the evidence presented in this review strongly suggests that self-assessment is most beneficial, in terms of both achievement and self-regulated learning, when it is used formatively and supported by training". Here, I agree with this conclusion through our experiences in the educational field and the experiences that we carried out during our educational practices.

I read a book effective self-evaluation basic skill by Rosemary Brooke (2006). It included self-assessments process and I summarizing it with the next figure.

* In planning a self-assessment through the following elements:

Targets for self-assessment •

What am I looking for?

What is the main objective of self-assessment skills?

Tools for collecting your information •

What are your sources of evidence?

*Evidence gathering

Documentation with references •

Counseling for those with expertise and experience from the field •

Take direct notes •

Summarize and arrange data •

* Making judgments

Organizing and analyzing information and data •

Setting standards •

Compare personal notes with others' notes •

Draw strengths and weaknesses •

Editing the personal report •

.Initial review of all data and reports •

*Acting on judgments

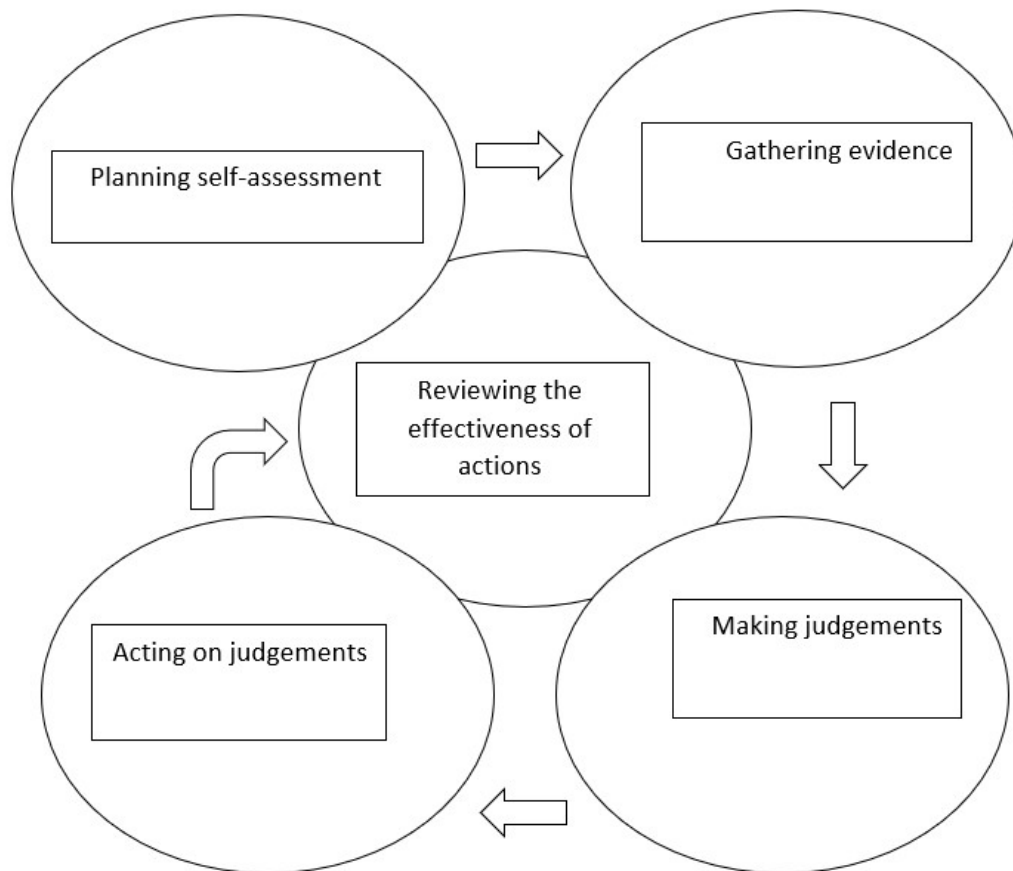
Determine the priorities to be focused on •

Ensuring the presence of trained cadres with sufficient qualified experience. •

*Review the effectiveness of the procedures

Activate the follow-up and control of the previously received operations by focusing on the following:

Ensure that the procedures are completed.
Existence and traceability .
The extent of progress and success.
The difficulties they face.
Appropriate feedback to raise individual performance in
planning process.



In a book (Schenk 2004) he said that self-monitoring, which is a necessary skill for effective self-assessment it involves focusing attention on some aspect of behavior or thinking Students observing themselves deliberately pay attention to what they do, often in relation to external standards. Thus, self-monitoring relates to awareness of thinking and progressing as it happens as such, it defines a portion of what students do when they do self-assessment.

The development of the educational process in general is followed by developments in teaching strategies and thus the development of assessment. Through feedback and the opinion of school administrations

They can also tell which area they are having difficulty in and need more practice. Kanner (2010) mentions this alternative assessment methods reveal learners' achievements and ability to use their knowledge in practical ways.

Self-assessment skills can be used to remember important items, as student feedback, for daily preparation, lessons, and to develop individual performance in exams. There are some benefits of using self-assessment skills. These benefits are:

1. It makes the students more interested and attentive to the lessons.
2. It facilitates the process of students focusing on the main points in the scientific subjects.
3. Students gain experiences in the process of explaining the lesson and explaining scientific phenomena.
4. Focusing on developing the skill of criticism, analysis, and interpretation.
5. Linking the relationships between the content and units of scientific subjects.
6. Focus on quality and not on quantity of information.
7. Self-assessment skills contribute to the development of students' mental and intellectual abilities.
8. It helps students to organize their time, schedule, and homework.

Through our presentation of the benefits and studies about self-assessment skills, I became excited to ask my research question: "Does the use of students' self-assessment skills contribute to the development of their individual performance in the direction of scientific subjects?" Student scores will be measured by a pre/post unit test for both groups (controlled and experimental) while students' attitudes will be measured using a pre/post scale questionnaire. The teaching method used in this study is self-assessment skills with the experimental group only while the control group is taught in the traditional way.

3. Method

To answer my research question and to measure students' achievement and progress in individual performance, I designed a pre/post unit test and a pre/post scale questionnaire. A self-assessment skills test is used to measure student scores while a Likert scale questionnaire is used to measure students' attitudes toward science and curriculum information. The students were divided into two groups, experimental (group A) and control (group B). Group A will be taught by activating self-assessment skills. Group B will be taught in the traditional way in class. At the end of the unit, both groups will undergo a pre/post unit test and a pre/post likeness scale questionnaire. To infer the results, I will compare the test results within the same group and between the two groups. I will also compare the previous/post questionnaires for both groups.

3.1 Sample

Specify the topic on which the strategy will be applied in the scientific article to be more precise. The study was applied to two groups, experimental and control. The sample size consisted of 30 students from grade 12 students at public high school. The school's headquarters is located in the village in the Wilayat of Ibri in the Al-Dhahirah region. The students are divided into two groups of 15 students in group A and 15 students in group B. The age group ranged from 17 to 19 years old, and these students are from different villages in my state. Arabic is the first language for all students, while English is their second language. I chose the school because of its presence in the city center and its positive distinction in terms of academic achievement and its tributaries of students from the various surrounding villages.

3.2 Data collection

Data collected through the study. Initially, two groups took a pre-unit test of 15 multiple-choice questions and a 10-statement Pre-Likert scale questionnaire. Unit test to measure students' marks and Likert scale to measure their knowledge and understanding of the scientific material. Then the experimental group (Group A) taught using self-assessment skills for 5 weeks and the control group (Group B) was taught in the old traditional way. Upon completion in the fifth week, each group took a post-unit test, the same as a pre-test. They also took the Likeability Scale questionnaire. Finally, I should compare the pre- and post-test for each group with the pre- and post-likeness scale for each group.

3.3 Data analysis

To assess the impact of self-evaluation skills in developing the quality of individual performance: -

- Quantitative analysis of the data was performed. An SPSS computer package has been implemented for analysis Statistically collected data.
- Descriptive statistics, standard deviations, frequencies, etc. were calculated.
- Before and after treatment a t-test was performed to detect the presence of any of these
- Significant differences in mean scores between the experimental and control groups in the pre-test and post-test of the self-reported questionnaire (SRQ). For statistical analysis, the alpha significance level is 0.05 of trust is set.

3.4 Threats to Validity

During my studies, I expected some challenges that would face me, and this is something to be expected. As in the beginning, some of the students did not understand the pre/post test and the liking scale in English, so I have to translate them into Arabic and give each student two copies, one in English and one in Arabic. The student must answer in the English version of the pre/post-test and Likert scale. During the post-test unit, some of the experimental group (Group A) students were absent, so I repeat the test for them in the sixth week.

The actual start of the application was on 17/09/2022. I noticed that some students were absent due to illness or sometimes being late, so they were taught once again separately. Sometimes technical problems are encountered, but they are overcome with flexibility and ease, and the application continues. I was expecting some of these problems to occur, and we solved and overcome them and proceeded to implement according to the plan and in line with the work plan, and positive results were produced according to the expected achievement of the goal.

4. Results

4.1 Results: Attitudes

There are no statistically significant differences between the mean scores of the experimental group and the control group on writing performance after developing self-assessment skills.

In order to compare two educational methods with each other and remove the factors that

It may have a negative effect on the conclusion, the first difference between people's scores on the pre and post test obtained, and then using an independent t-test, two experimental and control groups are compared with each other.

The results of our study showed that there is a significant change through the average acquisition scores of the experimental group compared to the control group, as this difference is illustrated through the table below.

Data Summary	X	Y	Total
n	15	15	30
Σx	266	-11	255
Σx^2	4974	137	5111
SS	151.4375	129.4375	2882.875
mean	16.3125	-0.5875	7.8625

*By looking at the significant level obtained from the data analysis, it was concluded that there are statistically significant differences between the individual performance of learning the science subjects in both the experimental and control groups after treatment.

*By Looking at the mean scores, it is observed that the mean scores of the subjects in the experimental group is higher than the average scores of the subjects in the control group.

ResultsQ

Mean x—Mean y	t	Df
18	+15.08	20

($t = +15.05$ $df = 20$ $p < 0.001$)

Mean x—Mean y	t	df
18	+15.6	19.85

P	one-tailed	2.3
	two-tailed	< 0.001

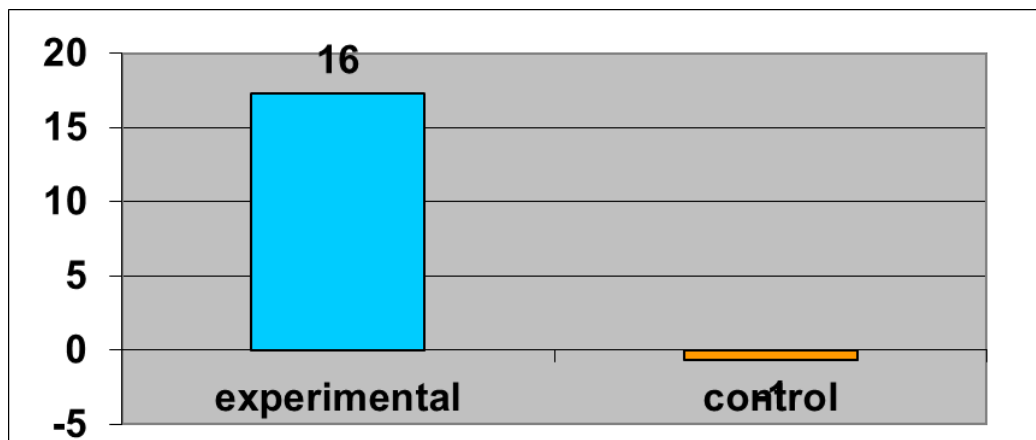
($t = +15.05$ $df = 20$ $p < 0.001$)

By looking at the high level obtained from data analysis the comparison at the 0.01 level ($t = 15.05$ and $p < 0.01$) concluded that her self-assessment skills.

The effect on the learning of science subjects, so by looking at the average scores presented in the table above, it is observed the self-assessment skill of the individuals in the experimental group after treatment is better than their own before treatment.

Results: Attitudes

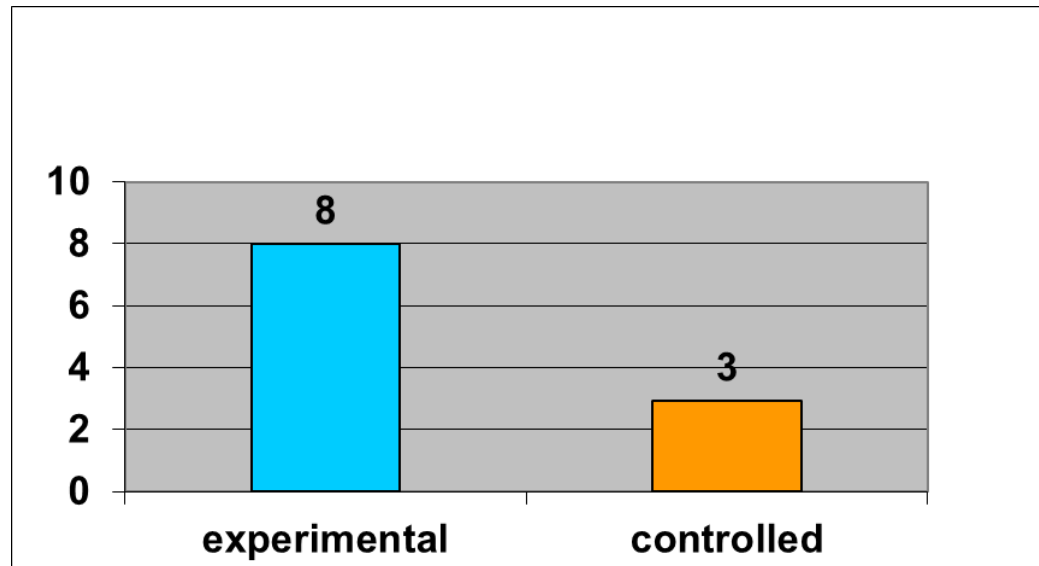
The results of our study show that there is a significant change in the mean of the gain scores of the experimental group compared to the control group as shown below.



($t = +15.05$ $df = 20$ $p < 0.001$)

Results: Unit Test

The results of our study show that there was a significant gain in the achievement scores of the experimental group compared to the control group as shown below.



$t = +2.57$ $df = 30$ $P = 0.0076895$

5. Discussion and Action Plan

Self-assessment skills provide an ideal learning tool since studies with all types of students and in all grade levels. It allows students to master their individual performance and to interpret and evaluate scientific phenomena and information. Where the explanation has become simplified and understand the concepts. Students can use self-assessment skills to prepare and re-understand their lessons in a positive and orderly manner. Through this research, we noticed that students in our study demonstrated a better understanding of the scientific material and applications when using self-assessment skills rather than oral lectures. The average was higher when self-assessment skills were implemented. In addition, students' attitudes showed that they prefer to activate self-assessment skills for learning science subjects. Therefore, according to the results, I decided to generalize the recommendations for the application of this strategy to teachers during their teaching of scientific subjects. I will also share my research and findings with the district's education specialists and supervisors. Finally, he concluded that students need to develop and activate their skills in their learning, in the way we used instead of the traditional method and increase their individual performance.

As it became clear from the results of data analysis, that self-assessment skills develop individual skills in understanding scientific materials in the experimental group improvement after treatment with self-assessment skills. It can be concluded that the use of self-assessment for individual performance development is fruitful because it provides the opportunity for learners to focus more on teach them about science subjects. Because of the opportunity given to subjects to develop their skills.

They can find and improve their weaknesses the results of this study also show that individual skills the students in the experimental group have more improvement after treatment because they have the time, and they are They are motivated to recognize and practice their mistakes and not repeat them in their learning tasks.

Conclusion

Result summary

This chapter is summarized in the following phrases:

It is also clear from the results of data analysis that the students' individual performance skill was weak before the experiment. The mean scores for the experimental group and the mean scores were control group.

The results showed that the individual performance skill of the respondents in the experimental group was better of individual performance skill in the control group after treatment. average trial score the group post-administration of the writing test was higher compared to the control group having the average score was lower.

The results indicate that the experimental group outperformed the control group after conducting the experiment. The average score of the experimental group in the percentage of post-assessment for the individual performance test was higher compared to the control group whose average score was less after treatment.

This study contributes to new knowledge about improving students' individual performance skills for understanding science materials through the development of self-assessment skill. It may also be useful it also helps students learn more about the strengths and weaknesses of individual performance, as well as it may help them provide feedback on and improve their individual performance. It can also be important for teachers. It also helps them develop their own teaching and assessment strategies by discovering the advantages of the self-assessment skills approach to improving the quality of individual performance.

In order to increase my knowledge as a researcher, I find here and through the application in this study that it increases my balance of knowledge of the importance of this research and may motivate researchers to study in the field of individual skills and its relationship to the method of self-assessment.

Self-assessment as a complement to the traditional assessment method positively affects school students during their learning by developing the quality of their individual performance. Self-assessment skills can be used as a useful feature. A tool to assess and raise the achievement level of students during their studies.

As it is clear from the results of this study, there is a positive relationship between self-evaluation and the quality of students' individual performance because the use of self-assessment improves their skills in understanding and absorbing scientific information.

Detected from the data analysis that using self-assessment skills to raise students' achievement also makes them more motivated to learn science subjects.

Use the impact strategy with the self-assessment skill makes the learning process more understanding and balanced for the learner and increases cooperation between the learners' students and teachers.

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Appendix A: Likert Scale (Questionnaire)

Dear Student: The specific goal of this questionnaire is to measure your attitudes toward studying scientific courses by different types of teaching techniques.

Read carefully the following instructions before you fill the Likert Scale:

-The Questionnaire consist of (10) statements, each one have (5) agreements, from Strongly Disagree (1) to Strongly Agree (5).

- Please choose one agreement for each statement.

- You have a time period about (10 minutes)

- You are free to if you want to write your name or not on the questionnaire paper.

Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.Scientific curriculum is easy for me.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
2. I can explain scientific experiments.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
3.Analyze the data of scientific questions in any situation in the class.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
4.I can use self-assessment skills in my understanding of scientific topics.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
5.I use self- assessment to help me get organized my articles.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
6.Self-evaluation skills help me remember schematic diagrams.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
7.I can activate one of the self-assessment skills to help me Learn content.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
8.Using self-assessment skills helps me Understanding assigned reading.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
9.I like to study scientific facts from science courses.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
10.I enjoy studying science at home online.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

Appendix B: Assessment of Lesson

Student Assessment/Reflections

•Use the following rubrics to assess students' work on the various aspects of this lesson:

-Group work rules.

- Rules for entering the diary.

-Planning worksheet.

Ask students to answer the following questions to help them reflect on their learning with self – assessment.

Small-Group Reflection Questions

*How effective was our group collaboration in discussing and developing diverse perspectives?

* How clearly did our visual map express our plan, the obstacles?

* How effectively did our skit dialogue reflect different perspectives?

* How effective was our performance in conveying different perspectives?

* How effectively did our backdrop convey our ideas?

Individual Reflection Questions

* How effectively did I define in my writing?

* How did using drama enhance my understanding?

* How effective was my diary entry in expressing my thoughts on the obstacles?

Use the students' reflections to assess the effectiveness of the lesson and to help you learn about using process drama as a teaching tool.

Modifications to Lesson after assessment:

* Ask students to create a public service announcement to promote. If possible, videotape students' work. You may wish to visit Just Think: Silence to see examples of public service announcements created by youth on a variety of topics.

*Write the word "scientific definition" in the center of a circle and ask the class to brainstorm a list of 50 words that describe it. Post the students' list in the classroom and encourage them to add words to the list throughout the school year. Encourage visitors to your classroom to add words to the list.

Instruction and Activities

Session 1

As a class, visit the following websites that offer differing perspectives scientific definition:

-The scientific definition Corps.

-Cranes for scientific definition.

- Pieces for scientific definition.

-After viewing the websites, ask students to discuss how scientific definition is defined and represented in varied ways.

2- Lead a class discussion on current events that have had an impact on scientific definition.

You may use the following questions as a guide:

-What are the major obstacles to Learn science subjects in our times?

- What does Learn science subjects look like in the resolution of different conflicts?
- What does Learn science subjects mean to the people involved in conflicts?

Encourage students to make connections between world events that impact their lives.

3-Tell students that they are going to do a "think-pair-share" activity. In this activity students first briefly respond to a writing prompt. They then meet in pairs to discuss their ideas for about five minutes. After the discussion, they are asked to share their ideas with the entire class.

Ask each student to respond in writing to the following prompts:

- What does Scientific definition mean to you?
- Describe the most peaceful place you can imagine. Visualize and describe the colors you see, the sounds you hear, the mood that surrounds you, and the images you picture.
- Divide the class into pairs and ask students to share their responses. After they have briefly discussed their ideas, ask for volunteers to share their thoughts with the entire class.

Session 2

1-Tell students that they are going to participate in a simulated Scientific definition Journey drama that will be based on their definitions and ideas on Scientific definition. Students will create a skit that highlights their journeys to an imaginary peaceful place.

2-Divide the class into small groups of four to five students per group. Provide each group with a copy of the Scientific definition Journey Planning Worksheet. Tell students to use the worksheet to develop their skits. The worksheet asks students to:

- * Assemble a cast of characters that reflects their individual ideas on Scientific definition.
- * Describe their vision of an ideal Scientific definition destination.
- *List the obstacles they will face in reaching their Scientific definition destination.
- * Select tools that will be helpful in reaching their destination.
- * Create a visual map using symbols to represent the varied aspects of their journey.
- *Discuss the visual map portion of the worksheet in more detail with students. Tell students that, for example, they might represent people's unwillingness to communicate as a wall, or the difficulties of the journey as an uphill climb.
- *Students can refer to the Rubric for Scientific definition Journey Planning Worksheet to see how the assignment will be evaluated.

3-Ask each group to present its Scientific definition Journey Planning Worksheet to the class.

Encourage students to share how they made group decisions. Discuss and compare the different representations of Scientific definition the groups developed.