International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Impact of Exit Tickets on Student Achievement and Learning Experience in Science

Rosemarie R. Lim

Master Teacher/ PhD, Bacoor National High School- Villa Maria Annex

Abstract

This study conducted at Bacoor National High School - Villa Maria Annex aimed to assess the impact of exit tickets on grade 9 students' academic achievement and learning experience during the third quarter of the school year 2023-2024. Purposive sampling was used to select 59 students in an intact class. A pre-experimental design with one group pretest-posttest was employed, utilizing three research instruments: the Science Achievement Test (SAT), Exit Tickets Questionnaire, and Students' Learning Experiences Survey Questionnaire (SLESQ).

The SAT was developed by the researcher, while the SLESQ was adapted.

Data from the SAT were analyzed using descriptive statistics (weighted mean, standard deviation) and inferential statistics (paired t-test) to evaluate the significance of pretest-posttest score differences. Statistical analysis was performed using VassarStats online calculator, with a significance level set at 0.05. Results showed a substantial increase in mean scores from pretest (8.14) to posttest (39.14), with a mean difference of 31.00. The paired t-test yielded a t-value of 48.84 and a p-value of 0.000, indicating a significant improvement in academic achievement.

The students had a positive learning experience on employing the tickets. The overall mean rating of the participants is 3.58 interpreted as strongly agree. This is an indication that the Exit tickets tend to enhance students' achievement in science.

Context and Rationale

As educators, we use a variety of assessment tools to determine students' learning. Typically, we pose questions during class to gather feedback from our students. It is challenging for us educators to ascertain whether students have learned the lesson, understand a little, or did not understand at all. It is also challenging to motivate and keep our students actively engaged and participating during class discussions and activities. Students' lack of appreciation for the importance of chemistry, low interest in the subject, and being passive learners hinder their academic progress in chemistry. This is evident from the Second Quarter MPS Year 2022-2023. The grade 9 students yielded a mean percentage score of 47.33%, which is far below the standard MPS of 75%. The result calls for a strategy that will help improve students' scores on the said examination. One way is to provide appropriate intervention and learning resources to the learners. Teachers must adapt innovative teaching strategies to improve the teaching and learning process. One intervention that the researcher must use is the use of exit tickets. The researchers believe that the use of exit tickets will hold the potential to transform the learning experience by providing educators with real-time insights into student comprehension. Recognizing the challenges faced in chemistry education, including common misconceptions and the need for effective assessment strategies, this research aims to explore the effects of exit tickets on both student learning and motivation. The primary objective is to

investigate how the strategic integration of exit tickets into chemistry lessons influences student learning outcomes and motivation levels. By examining the correlation between the implementation of exit tickets and improvements in understanding complex chemical concepts, the study seeks to contribute valuable insights to the realm of pedagogical practices. Guided by established learning theories such as behaviorism, cognitivism, and constructivism, the study aims to uncover the underlying mechanisms through which exit tickets impact the learning process. Additionally, the research explores the connection between assessment strategies and student motivation, drawing on theoretical frameworks like Self-Determination Theory to elucidate the motivational aspects of the study. The result of the study is essential to the science teachers; this research will provide information of science teachers a strategy that promote teaming and motivation to students. For school administrators, they might be given insights on providing teachers training and workshops that will help in monitoring learning progress of the students. For future researchers, this study can be used a reference for a new research.

Action Research Questions

This study determined the impact of the exit tickets on the students' academic achievement and their learning experience. This study specifically sought to answer the following questions:

1. What are the mean scores of the grade 9 students in chemistry before and after employing the exit tickets?
2. Is there a significant difference in the grade 9 students pretest and posttest mean scores in the achievement test after employing exit tickets?
3. What are the learning experiences of the students on the use of the Exit tickets?

The impact of exit tickets on student achievement and learning experiences in science have drawn significant attention in educational research. Fisher and Frey (2014) emphasize the importance of formative assessment techniques, including exit tickets, as tools that not only gauge student understanding but also foster deeper engagement with the material. Their work illustrates how these assessments can inform instruction and provide immediate feedback, ultimately enhancing student learning outcomes. Similarly, Hattie (2012) highlights the effectiveness of formative assessment strategies, asserting that methods like exit tickets can significantly improve student performance, particularly in subjects such as mathematics and science. This aligns with the findings of Harrison and Topping (2017), who conducted a systematic review on the influence of formative assessment in secondary science classrooms. Their research underscores the positive effects of exit tickets on student learning, indicating that such practices promote reflection and critical thinking, which are crucial for mastering scientific concepts. Collectively, these studies suggest that the strategic implementation of exit tickets can play a vital role in enhancing both student achievement and overall learning experiences in science education.

Proposed Innovation, Intervention and Strategy

To address the identified challenges in chemistry education, the proposed innovation involves the strategic implementation of exit tickets as a formative assessment tool. Departing from traditional assessment methods, exit tickets serve as a real-time feedback mechanism, allowing educators to gauge student comprehension immediately after a lesson. This innovative approach aims to bridge the gap between instruction and understanding, fostering a more dynamic and responsive learning environment.

The primary intervention is the incorporation of exit tickets into the daily routine of chemistry classes. Following each lesson, students will be presented with concise questions or prompts related to the covered

material. These exit tickets will not only serve as a means of assessing immediate understanding but will also act as a catalyst for reflective thinking and engagement. The intervention is designed to encourage active participation, prompt critical thinking, and provide instructors with valuable insights into areas requiring further clarification.

Several strategies can be employed, such as **Strategic Implementation:** Exit tickets will be strategically integrated into lesson plans, focusing on key concepts identified as challenging for students based on the Second Quarter Learning Outcomes Assessment. This targeted approach ensures a tailored intervention that directly addresses areas of difficulty. Diverse Question Formats**:** The exit tickets will incorporate a short answer, and reflective prompts. This diversity aims to accommodate different learning styles and provide a comprehensive understanding of students' comprehension levels.. Educators will promptly review and provide constructive feedback on exit tickets, allowing students to grasp their strengths and weaknesses. This continuous feedback loop aims to motivate students through recognition of their progress.

Action Research Methods

A. Participants and/or other Sources of Data and Information

One intact section of grade 9 students composing 59 students, in Bacoor National High School- Villa Maria Annex were chosen as a sample using purposive sampling.

B. Data Gathering Methods

The study used three research instruments, namely: (1) the Science Achievement Test (SAT), (2) Exit Tickets Questionnaire (3) Students' Learning Experiences Survey Questionnaire (SLESQ). The SAT was developed by the researcher while the, SLEQ was adapted.

The SAT was administered to determine the science achievement of the students before and after employing the Exit tickets. It was developed by the researcher based on the cognitive domains of the revised Bloom's Taxonomy covering the topic of mole concept. The final form consists of 50 items (see Appendix A for the sample test items). The perfect score in the SAT is 50 points. It consisted of 3 (7%) items on remembering, 7 (15%) items on understanding, and 17 (38%) items on applying; 8 (18%) items on analyzing, 6 (13%) items on evaluating; and or 4 (9%) items creating.

The exit tickets help the students to reflect on what they learned, allow students to express what or how they are thinking about new information. This particular ticket includes prompts for assessment that fall into 3 categories such as students document their learning, emphasize the process of their learning and evaluate the effectiveness of the classroom instructions.

The exit tickets were composed of 3 questions number 1 question is, what was the 3 most important things you learned in today's class and why is it important? Question number 2, What are two ways you contributed in class today? Questions number 3 is, what is one thing you would like me to explain more clearly and include in our review in the next lesson?

Before every lesson determines a key concept that want to think about or for which wishes to gather information. Explain to the students that they are going to respond to a prompt posed to the class which is related to the day's lesson or information learned. At the end of the lesson or five minutes before the end of the class. Distribute the exit tickets and ask students to complete it. Before the students leave the classroom, collect their exit ticket and review to determine how to alter the instructions or better meet the needs of the students.

The Students' Learning Experiences Survey Questionnaire (SLESQ) was adapted from the study of Salv-

iejo (2013) to determine the students' learning experiences in employing exit tickets. Minor modifications will be made such as replacing the SIM-BILA with exit tickets. The questionnaire consists of 10 items answerable on a scale of 1 to 4, Each statement is rated using a 4-point scale with their corresponding qualitative descriptions. A rating of 1 is equivalent to strongly disagree, 2 disagree, 3 agree, and 4 means strongly agree. The SLESQ checklist was given to the students after their exposure to exit tickets. (See Appendix B).

The researcher used the interval scale in order to interpret and evaluate the overall mean rating for each statement. The following are the range of values and interpretation used by the researcher.

Mean Range	Qualitative Interpretation
3.50 -4.00	Strongly Agree
2.50- 3.49	Agree
1.50- 2.49	Disagree
1.00- 1.49	Strongly Disagree

C. Data Analysis Plan

The responses of the students in the SAT, were individually scored and tallied. All the data collected were tabulated for analysis and appropriate statistical measures will be employed to quantify the data gathered and answer the problems set in the research study. To describe the students' science achievement, descriptive statistics namely, standard deviation, and weighted mean were used.

The pretest means describes the science achievement of the students before the treatment while the posttest mean describes the science achievement after the treatment. The paired *t*-test was used to find out if there is a significant difference in the science achievement of the students before and after their exposure to exit tickets and it will be evaluated at 0.05 level of significance. All data in the students' achievement are presented in tabular form.

Students' responses to the Student learning experience survey questionnaire were tabulated. The survey was utilized a 4-point Likert scale with equivalent description as follows: 1 is equivalent to strongly disagree, 2 disagree, 3 agree, and 4 means strongly agree. Frequency of responses by the participants will be tallied and presented also in tabular form. The weighted mean for each statement and the overall weighted mean were computed.

For the Statistical Treatment of Data. Descriptive statistics was used to analyze the data gathered such as weighted mean and standard deviation. While inferential statistics, was used to test the significance between the pretest and posttest means in the SAT.

All data gathered were entered into an online statistical calculator, VassarStats for data processing and analysis. Test of significance was evaluated at 0.05 level of confidence.

Action Research Work Plan and Timelines

ACTIVITIES	***Month 1**	**Month 2**	**Month 3**	**Month 4**	**Month 5**	**Month 6**
1. Preparation of research proposal and questionnaire	■					
2. Reproduction of the Instruments		■				

3. Pretest and Implementation of Exit Tickets		■	■	■		
4. Posttest and Survey of Learning Experiences of Respondents				■		
5. Analysis and Interpretation of Data					■	■
6. Submit the report on the result on the action research made						■

**Shade the corresponding month per activity*

Plans for Dissemination and Utilization

DISSEMINATION ACTIVITIES	***Month 1**	**Month 2**	**Month 3**	**Month 4**	**Month 5**	**Month 6**
1. Department Meeting				■		
2. School Learning Action Cell					■	
3. Research Conference						■

**Shade the corresponding month per activity*

D. RESULTS AND DISCUSSIONS

Analysis and interpretation of the gathered data were summarized in the following tables.

1. What are the mean scores of the grade 9 students in chemistry before and after employing the exit tickets?

Table 1. Descriptive Statistics of the Pretest and Posttest of the Grade 9 Students in Chemistry

Test	Highest Score	Lowest Score	Mean	SD
Pretest	17	3	8.14	3.09
Posttest	44	34	39.14	2.86

As presented in Table 1, the highest score in the pretest is 17 and the lowest score is 3 while in the post test, the highest and lowest cores are 44 and 34, respectively. The standard deviation of 3.09 in the pretest and 2.86 in the posttest indicate that the scores of the students in the pretest are more scattered around its respective mean compared to their scores in the posttest. The mean in the pretest is 8.14 and 39.14 in the posttest. This indicates that the students had better scores in the Science Achievement Test after employing the Exit Tickets.

2. Is there a significant difference in the grade 9 students pretest and posttest mean scores in the achievement test after employing exit tickets?

Table 2 Comparison of the Pretest and Posttest Science Achievement Test Means

Test	Mean	SD	t-value	p-value	Remarks
Posttest	39.14	2.86			

Pretest	8.14	3.09	48.84	0.000	Significant

Table 2 reveals the pretest and posttest scores in the Science Achievement test. The mean score in the posttest is 39.14 and the mean score in the pretest is 8.14. based on the mean score, it can be noted that there is a significant increase in the mean scores from the pretest to posttest (mean difference =31.00). The t- test for paired samples resulted to a t-value of 48.84 and p-value of 0.000. This indicates that the difference between the posttest and pretest mean is significant.

3 What are the learning experiences of the students on the use of the Exit tickets?

Table 3. Students Learning Experience on the Exits Ticket

Statement	Mean	Qualitative Interpretation
1. The exit ticket helped me to understand the concept and principles in science	3.59	Strongly Agree
2. The exit ticket questions were clear and fitted to my needs.	3.64	Strongly Agree
3. I could easily express my thoughts and ideas in exit tickets.	3.68	Strongly Agree
4. I learned some useful information not mentioned in the regular teaching.	3.39	Agree
5. The time allotment is adequate for each exit ticket	3.48	Strongly Agree
6. The exit tickets help me to motivate in the subject	3.59	Strongly Agree
7. I enjoyed doing exit tickets in our everyday class.	3.55	Strongly Agree
8. The exit tickets guided me to formulate ideas on my own.	3.50	Strongly Agree
9. The exit tickers inspired and encouraged me to stay focused in Science class.	3.75	Strongly Agree
10. The exits tickets helped me to be more attentive in Science class	3.64	Strongly Agree
Overall Weighted Mean	3.58	Strongly Agree

Table 3 shows the responses of the participants in each statement. Based on the result, statement 9 (*The exit tickers inspired and encouraged me to learn more in Science*) got the highest mean score of 3.75 interpreted as strongly agree followed by number 3 *(I could easily express my ideas in exit tickets*) with a mean rating of 3.68. The first statement, *The exit ticket helped me to understand the concept and principles in science* obtained with a mean rating of 3.59 interpreted as strongly agree.

Statements number 2, 10, and 6 were also rated as “Strongly Agree” with a mean score of 3.64,3.64, and 3.59, respectively. However, statement number 4 obtained the lowest mean score of 3.59 interpreted as agree. The participants strongly agreed that *the Exit tickets activities guided me to formulate ideas on my own* (mean=3.50). A mean rating of 3.48 interpreted as strongly agree is on the statement number 5(*The time allotment is adequate for each exit ticket)* Statement number 7, (*I enjoyed doing exit tickets in our everyday clas*s), had an interpretation of strongly agree with a mean rating of 3.55.

The overall mean rating of the participants is 3.58 interpreted as strongly agree. This is an indication that the Exit tickets tend to enhance students’ achievement in Science. The students had positive learning experience on employing the tickets.

Conclusion

In light with the foregoing findings. The researcher believed that the use of the exits tickets was effective and contributed learning in science. This findings was similar to the study of Daga, et. al (2019) that exits tickets helped students motivation in chemistry before and after use of exit tickets. The result of the study also showed that there is a significant difference on the student's achievement in science before and after the use of exit tickets. Based form the students learning survey questionnaire students' responses found out that majority of the students found that the use of exit tickets inspired and encouraged them to stay focused in Science class and easily express their thoughts and ideas in exit tickets.

Recommendations

Based from the findings and conclusions of this study the following recommendations were made by the researcher: First, teachers should promote the utilization of varied formative assessment that will measure students least mastered skills, and provide intervention based on the learning gaps of the students. Second, Since the use of Exit Tickets has shown a significant improvement in students' scores in the Science Achievement Test, it is advisable to continue implementing this strategy in the teaching process. Exit Tickets appear to be an effective tool for reinforcing learning and assessing understanding. Third, encourage teachers to share their experiences and best practices with using Exit Tickets effectively. This could include strategies for designing meaningful Exit Ticket questions, incorporating them into lesson plans, and using the feedback obtained from Exit Tickets to inform future instruction.

Implications

The use of Exit Tickets likely increased student engagement with the material. By requiring students to reflect on their learning and demonstrate their understanding before leaving the classroom, Exit Tickets encourage active participation and involvement in the learning process**.** The reflective nature of Exit Tickets can contribute to improved retention of material. By prompting students to summarize key concepts or apply their knowledge in new contexts, Exit Tickets reinforce learning and help solidify understanding over time. Exit Tickets serve as a formative assessment tool, providing valuable feedback to both students and teachers. By quickly gauging student comprehension and identifying areas of confusion or misconception, teachers can adjust instruction to better meet the needs of their students. The data collected from Exit Tickets can inform personalized learning approaches. By analyzing trends in student responses, teachers can tailor instruction to address individual learning styles and preferences, fostering a more personalized and effective learning experience for each student. Exit Tickets promote accountability and reflection among students. By requiring students to reflect on their learning and articulate their understanding, Exit Tickets encourage metacognitive skills and help students take ownership of their learning process. The positive learning experience observed from employing Exit Tickets suggests that this strategy is effective and worth incorporating into regular classroom practice. Teachers can use ongoing reflection and evaluation to refine their use of Exit Tickets and maximize their impact on student learning outcomes.

REFERENCES

1. Almo,M.(2002) " Starter Experiment- Based Approach(SEBA) and the Science Process Skills of High School Chemistry Students Technological University of the Philippines

2. Daga, J (2019) Effects of Exit Tickets on the Students Learning and Motivation in Chemistry Dekker, H. Wolff SW. (2016) Re- inventing Research- based teaching and learning.
3. European Forum for Enhanced Collaboration in Teaching of the European University Association.
4. Fisher, D., & Frey, N. (2014). *Checking for Understanding: Formative Assessment Techniques for Your Classroom.* ASCD.
5. Granjero, Erica Maria (20190. Research- based teaching method: A strategy to motivate and engage Students' in human physiology ClassesHealey, M.(2205). Linking research and teaching: Exploring disciplining spaces and the role of inquiry based learning.
6. Hattie, J. (2012). Visible Learning for Mathematics, Grades K-12. Corwin Press.
7. Homewood,J.etal (2011) A research Enhanced Teaching; learning Through Scholarshiphttps://www.perle.uni.kiel.de https://serc.carleton.edu
8. Kinash S.(2019) Teaching the Bond Way. Issue 3, 8 Steps to Improving Learning and Teaching Through Research LaBeoouf,J.(2009) Research-based Student learning at the Post-Secondary level