The Impact on Student Learning Outcomes and Mastery of the Unit when Guided Feedback is added to the Instructional Design

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1. OVERVIEW OF THE RESEARCH

With the disruption that COVID-19 pandemic brought to teaching and learning in educational institutions around the world, during the 2020-2021 academic year, I reflected on the curriculum and my instructional strategies, and the impact my teaching had on the learning outcomes of my students. As an educator, one of the variables I discovered that required a second look was the manner that I gave feedback to my students after an assessment, be it formative or summative. Being a STEAM (Science, Technology, Engineering, Art, and Math) school, I implement Project Based Learning (PBL) as a teaching strategy and I give feedback to my students after every assessment; however, the feedback is not detailed as it is not integrated in my lesson plan. Typically, no resubmissions or regrading of assignments are allowed because of time constraints to complete the curriculum.

1.1 Background Information and Definitions

My school provides college preparatory courses that include career exploration programs that are divided into four tracks: health science, engineering, technology, and business administration. Students have to choose one of these programs in grade ten and follow a Vertical Alignment Matrix (VAM) that provides a developmental map of student objectives of the curriculum for the track. As part of the graduation requirement, students must fulfill a minimum of forty hours of practicum in their chosen track at an institution or organization such as Hamad Medical Corporation or Sidra Medicine for health science, Qatar Petroleum (QP) in engineering, technology, and business to name a few. For these subjects, the main mode of assessment is through PBL, and students are assigned a project per unit of lessons and formal assessments are given every class meeting to gauge the progress of the project. The lesson units can range from two weeks where there are five ninety-minutes lessons or four weeks with ten ninety-minute lessons. At the completion of the unit, the final

project is submitted as the summative assessment of the unit to determine if desirable learning outcomes were achieved.

1.2 Feedback Definition

Feedback in any situation is an integral part of communication between two or more parties. When you give feedback when dialogue is occurring, it is either, "Yes", the message is clear and understood, or "No", the message was not clear thus not understood. In education, it is no different. As I analyze the word feedback in teaching and learning, it is tied to comprehension of the topic being taught**.** School systems follow various pedagogical strategies to impart knowledge to students. To determine if the lesson was understood, assessments are done, and based on the results, feedback is provided to the students. I give feedback to students to inform them that they are on the right track, or they are not.

In my PBL classroom, the student is the center of the curriculum. Unlike the traditional lecturing, where it is teacher centered, as defined by Kokotsaki, et al., (2016) PBL is "an active student-centered form of instruction which is characterized by students' autonomy, constructive investigations, goal-setting, collaboration, communication and reflection within real-world practices." Mubuuke, et al., (2016) defined feedback as the correlation between the assessment results to the learning objectives. Additionally, in research by Wiggins (2012), feedback is defined as information provided to a student on a completed task during the learning process. Conversely, feedback can inform a teacher if the teaching strategies applied are successful and the expected learning outcomes are realized.

1.3 Learning Outcomes and Mastery Definition

Learning outcomes in this action research is the understanding and the skills demonstrated by a learner at the completion of a unit, based on the objectives of the lessons. In my classes, the goal of teaching and learning is mastery of a unit taught so that I can move to the next unit. In my Action Research, I refer to **mastery of a unit** as comprehension of the

learning objectives that allows the student to move to the next lesson. In recent research by Farah, (2021), "mastery-based learning" is defined as the proficiency of knowledge that a student must attain in one unit of lesson before a teacher can move on to the next lesson. As my lessons are based on PBL, each class builds up from the previous lesson before I move to the next lesson. Ideally, I would like all students to have comprehended the lesson presented in class today, before I move on to the next lesson, tomorrow. However, from the assessment results, I have noticed that is not what is happening presently. I move on to the next unit even if a percentage of my class did not acquire mastery of the unit.

1.4 Problem Identification

Typically, in my classroom, feedback is provided in an unstructured manner, mostly verbal, such, "on track", "excellent", "good", etc. for the progress checks and no follow-up is provided; however, a grade is assigned for the progress checks. The design of my school is preparing our students for college (a college preparatory school), and the pace of all courses is rigorous, and focus is on finishing the curriculum. Consequently, at the end of the school year, a percentage of the class population may not have achieved the learning outcomes expected of those units, and mastery is not reached. Additionally, I have observed that students' perception about assessments, especially summative ones, are a cause of anxiety and fear. The formative assessments are 25% of their final grade and the summative assessment is 35% of their final grade. With that said, I have reflected in the past on what teaching strategies I can employ to ensure that all my students understood the content before the final assessment is submitted to ease their anxiety during any assessment. Given that I do not give detailed feedback after an assessment, students who have not understood the content in lesson one, may not know how to improve their project scores in the assessment of lesson two. Consequently, it results in a not fulfilling the desired learning outcomes in the final

submission of their project, the summative assessment, which greatly impacts their final grade of the course.

To understand the significance of feedback in pedagogy, this paper looked at Guided Feedback in terms of its importance in achieving desirable learning outcomes for all students and mastery of the unit in my PBL classroom.

1.5 Researchable Problem

My researchable problem was to investigate whether the addition of Guided Feedback in my instructional design will result in mastery of the content and enhanced learning outcomes. According to Wormeli (2017), lesson plans should be restructured to include reassessments and regrading in order for students to master the content. This may also give the opportunity for teachers to look at the teaching strategies and discover gaps in their instructional strategies.

2. LITERATURE REVIEW

2.1 The Role of Feedback

This literature review looked at what role feedback plays in pedagogy and the effect on student learning outcomes. Studies have proven the important role that feedback plays in students' learning outcomes; Wiggins (2012) described feedback as the information provided to a student on a completed task during the learning process. In a study by Mubuuke et al., (2016), feedback was defined as knowledge given to students so that they are able to recognize what they are good at and what they need help with. Martin (2019) concluded that when students were provided with "explicit feedback", it resulted in improvement of the "student's self-regulated learning (SRL) in a project-based learning (PBL) classroom". In a study by Brown et al., 2012, it was discovered that, "how and when" to give feedback after an assessment is done, is imperative to confirm if content was understood. Sharma and Sharma, (2017) in their research on the importance of feedback for effective and

improvement of learning, found that not only is feedback integral to learning and is seen as the end product of learning, but it is also seen as a way to determine if teaching strategies are effective that result mastery of the unit. Brown et al., (2012) concluded in their study that providing students with timely and accurate feedback, has a direct impact on learning outcomes.

2.2 Purpose of feedback

Providing feedback is an important part of the learning process, however, to understand the purpose, we should know why we are giving feedback. Feedback, according to a study by Sadler (2010), is meant to help students concentrate their learning by providing them with corrective feedback at every step of the way. Learning is a cyclical process that takes place both in and out of the classroom, according to this definition of the learning journey (Schartel, 2012). There are many different ways a learner might progress toward a certain learning goal, and the term "learning journey" refers to these many paths (Schimmer, 2016). When a unit of study has been taught from beginning to end, students may participate in many learning journeys throughout the school year. In a study by Toshnazarovna (2021) about teaching foreign languages,

"Feedback performs two functions:

1. Evaluation - approval, disapproval of the answer, grade, score, etc.

2. Correction of identified errors - discussion of the work performed, clarification of difficulties, highlighting correctly completed tasks, recommendations for improving work, etc."

Schools are moving away from conventional grading systems in which grades and scores are used as the major form of feedback. With guided feedback as their mechanism for conveying the standards, they are now focusing on the acquisition of specific standards (Schimmer, 2016). There are a wide range of views on the importance of feedback as a

learning tool; one such tool is teachers utilizing feedback as a way to explain grades (Brown et al., 2012).

2.3 Feedback and Learning outcomes

This research paper looked at the impact of feedback on learning outcomes. I will begin by defining what is meant by learning outcomes. Mahajan, Awang, (2017) in their study about Learning Outcomes, discussed the "Importance and Benefits of Learning Outcomes" and defined it as what is expected from a student at the end of the unit. Learning outcomes in this action research is the understanding and the skills demonstrated by a learner at the completion of a unit in a particular subject

Research has shown that there is a relationship between feedback and learning outcomes. The table below, represents the results that Sharma and Sharma, (2017) found and deduced the importance of feedback after assessments, when they compared 'Before Feedback and After Feedback'; they found that the learners may not realize they have a skill or weaknesses, if feedback is not provided, whereas after implementing feedback, learners not only had positive learning outcomes, but feedback gave them confidence to notice their weaknesses and realize skills that they have.

	Before feedback		After feedback
1	One way Communication	1	Two-way Communication
2	Learner is unaware of his skills	2	Helps learner to realize his true skills
3	Learner is unaware of his weaknesses	3	identify his weakness and raise his level of understanding
4	Misunderstandings and doubts remain unresolved	4	Misunderstandings and doubts get resolved.

Table 1: Before Feedback After Feedback (Sharma and Sharma, 2017)

Though some students may have anxiety about assessments, teachers should use feedback as a way to make both learning and assessing approachable. By adding feedback in the lesson plans, a topic that may be complexed, may be easier to assess, as student participation will increase thus making learning easier (Sharma and Sharma, 2017). Students need to view feedback as a positive part of assessing content learnt. In an article by Zdonek, (2018), it was found that, teachers should model the positive aspect of feedback and "create a positive classroom culture", so that it treacle down to students to make them feel at ease with feedback and see it as a gain and a way for self-improvement. Teachers who give feedback to students with a specific goal in mind are more likely to get the most out of it. The goal here is to provide students a clear picture of their progress. In addition, students are given explicit instructions on how to improve their performance through the use of feedback (Brown et al., 2012).

2.4 Formative and Summative feedback

Formative assessments, also known as formative feedback, are offered to students in order to help them prepare for a summative evaluation. Using input from formative evaluations, the learner may improve their performance (Schartel, 2012, p.78). Descriptive feedback on formative assessments is the most important factor in influencing student performance during the assessment for learning stage (Schimmer, 2016). The summative assessment is used to evaluate and verify the overall performance of students. As a way to determine mastery, summative assessments may take the shape of a test or project. Summative assessments are graded and recorded in a student's gradebook, preventing them from making further progress (Schimmer, 2016).

2.5 The Diversity of Feedback.

According to research, there is evidence that student feedback is subject-specific. Additionally, studies have shown that there are multiple techniques and styles for feedback;

however, several variables should be in place to be effective. The technique of feedback a teacher chooses determines the student outcomes. It should be noted that, for feedback too be effective and desired learning outcomes achieved, a teacher should ensure that the objectives and expectations of the lesson are clear, feedback techniques should be specific and helpful to the lesson, an exemplar can be provided that will allow students to grade their own work, an analysis chart with a rubric of the expectations may be provided to students, or a discussion of mistakes with students may be implemented Wormeli, (2017).

3. METHODOLOGY

3.1 Research Purpose

The purpose of my Action Research was to investigate the impact on student learning outcomes and mastery of the unit, when Guided Feedback was added to the instructional design. I looked at assessment results before and after the implementation of Guided Feedback to compare the learning outcomes of my grade twelve Health Science class. My researchable problem was to investigate whether the addition of Guided Feedback to my instructional design will result in desirable learning outcomes and mastery of the unit for all students. I added a new teaching technique of allowing the opportunity for students to have the assessment resubmitted after Guided Feedback has been provided. Several studies have highlighted the relationship between feedback and learning outcomes in assessment, however, it should be noted that feedback should be timely, instructional focus that provides multiple opportunities for students to review and resubmit for follow up feedback Wormeli (2017). Though I gave feedback to my students after an assessment, the feedback I gave was not productive. This research investigated the inclusion of Guided Feedback to my instructional strategy and looked at the learning outcomes thereafter.

Before embarking on my Action Research, I requested permission from my administration to conduct my Action Research (Appendix A). I would like to add that the

administration was interested as well as curious about the effect Guided Feedback would have in the learning outcomes of my class and were supportive of me conducting the Action Research. Once I was granted permission, I sent an email with a consent form attached to the parents of the students in my Health Science class, requesting consent to conduct my Action Research (Appendix B and C). I received consent from all the students.

3.2 Research Question

My Action Research question was:

1. What is the impact on student **learning outcomes and mastery** of the unit when guided feedback is added to the instructional design?

3.3 Variable

The variable manipulated was Feedback. This was **Guided Feedback** which was in the form of detailed instruction driven by the unit objectives and tailored for each student, targeting their missed objectives. For example, Guided Feedback about the function of the parts of a microscope: "*You identified the parts of the microscope, but you missed to explain the function of the different lens sizes and why we use oil immersion. Review the unit and resubmit.*"

3.4 Teacher Role

As the teacher, I documented the results of the assessments during **Pre-Action Research** which was **Phase I** of the study, where minimum feedback was provided, and no resubmission was allowed. During **Phase II** of the study, the **Action Research phase**, I documented the results of the assessments before Guided Feedback was provided and after Guided Feedback was given and one resubmission of the Formative Assessments was allowed. To gain insight and perspective of what students think about feedback, I gave them two questionnaires, one during Pre-Active Research and another after Action Research was completed.

3.5. Participants and Unit

The participants in this study were my grade twelve Health Science class that has twenty students, (five females and 15 males). The curriculum is taught in English and in this class, seventy five percent of my students are Second Language Learners (SLL). The unit that was covered in the curriculum was "Scientific Research Method: Data Collection and Data Analysis" in the third cycle out of the four school cycles per year. The site of the class was the Health Science Simulation Lab and Computer lab.

3.6 Data Collection

The aim of this study was to investigate the impact on student learning outcomes and mastery of the unit, when Guided Feedback was added to the instructional design. My Action Research was focused on learning outcomes that will result in mastery of the unit for all students. There were two phases in this Action Research.

3.6.1 Phase I: Pre-Action Research

In Phase I, there were four total assessments, three formative assessments and one summative assessment. I documented the assessments grades, where minimum feedback was provided, and no resubmission was allowed. This provided me with the insight to the Guided Feedback that was needed in Phase II, the Action Research phase. I also gave a questionnaire to find out students' perception about the present feedback that was the norm in my classes. It is worth noting that the minimal feedback that I provided did not target any specific objectives; feedback for all my students was in the form of one-word adjectives such as "Excellent", "Good", "Late" and at most, "Review the unit again". It is worth noting that I conducted this phase for two weeks and no resubmission was allowed. This data served as a baseline to determine the impact Guided Feedback had on students' learning outcomes in Phase II, during Action Research, after Guided feedback was implemented and the resubmitted assignments were graded.

3.6.2 Phase II: Action Research

In Phase II, I documented the assessment grades during **Action Research;** the initial grade for the assessment was recorded, then Guided Feedback was provided, and resubmission was allowed. The grade for the resubmission was then recorded in the same excel sheet to determine the percentage difference. There were four total assessments, three formative assessments where resubmission was allowed, and a final summative assessment at the end of the unit; however, no resubmission was allowed for this assessment. Additionally, a questionnaire was given to find out students' perception after the completion of **Phase II** of the Action Research. This phase lasted for four weeks. It is worth noting, that the unit plan was designed for six to eight assessments; however, accommodating resubmission took away from both instructional and assessment time.

3.7 Research Method of Data Collection

The method of data collection I used was a mixed method; quantitative and qualitative. I used the **Quantitative method** to document the student's assessment grades during the duration of a unit in Phase I, the Pre-Action Research where four assessments were scheduled and during Phase II, the Action Research, where I had to reduce the assessments from six to four so as to accommodate the Guided Feedback and resubmission of the assessments my unit plan.

For the **Qualitative method,** two questionnaires were given to find out students' perceptions, the first one during Phase I (Pre-Action Research) to find out the perception of students about the presently given feedback or the lack of feedback in relation to the learning outcomes. The second questionnaire was conducted after completion of Phase II, after Guided Feedback was provided and resubmissions allowed in during the **Action Research** phase to find out students' perception about Guided Feedback and resubmission of assessments and in relation to mastery of the unit.

3.8 Instrumentation

I created an excel sheet (Appendix D) to document the assessment grades of **Phase I** of the study (before Guided Feedback was provided). Students as subjects of this Action Research, were numbered S1-S20 to maintain anonymity. In **Phase II** of the Action Research, the initial submission grade was recorded; Guided Feedback was then provided, and resubmission was allowed, and the resubmission grade was recorded in a column next to the initial grade. (Appendix E).

For **Phase I**, to get students' perception about the feedback provided I presently, I designed a questionnaire (Appendix F), using Google Forms. There were six structured questions and students completed it anonymously after the duration of **Phase I**, which was weeks. This questionnaire allowed students to give me an honest opinion about whether the feedback provided is beneficial to their learning process or not.

For **Phase II**, I designed a second questionnaire (Appendix G) using Google Forms, to find out what impact Guided Feedback had on the mastery of the unit. This questionnaire was given at the end of Phase **II** for students to provide me with their honest opinion if the Guided Feedback provided was beneficial to the learning outcomes and mastery of the unit. Guided Feedback was intentional and tailored to individual students. An example of Guided Feedback that I provide about the Scientific Research Methods Unit:

Good work; however,

 1. The Data Analysis charts help explain your findings and should have been represented in the analysis part.

2. Redundancy of analysis in the appendix, - copies of supporting documents and not explanation, please review research format

3. The survey and interview questions should have been specific for your themes such as

4. Review APA format; APA through the whole paper, check for margins, edit the paper

Grade:48

Please resubmit

Resubmitted Grade: 55

3.9 Duration of Study

The scope of the study was six weeks. The **Pre-Action Research** (No Guided

Feedback- Phase I), was two weeks where I conducted a total of five/ninety minutes lessons

that included the assessments. I commenced my Action Research in semester two of the

school year during the third cycle. During this time, students had three formative assessments

and one summative assessment. The Action Research duration was four weeks (Phase II)

with a total of ten/ninety minutes of lessons, where there were three formative assessments

with one resubmission each and one final end of cycle summative assessment without

resubmission.

ACTION RESEARCH TIMELINE

Phase	Week	Action	Outcome
Seeking Approval to conduct Action Research and Consent Forms	Jan. 2 to Jan. 11	1.The request for approval to conduct research was sent on January 11, 2022. 2. Consent forms to parents emailed on January 12, 2022	1.Approval from administration January 12, 2022 2.Consent Forms returned by students on January 13, 2020
Phase I (2 weeks) **Pre-Action Research**	Jan.16 to Jan. 27 Week 1&2	3. Two Formative Assessments with presently provided feedback were given 4. One Summative Assessment for the unit. (Duration 5/90 min Lessons)	3. Three Formative and one Summative assessment grades recorded. - Present Feedback type: *Excellent, Good, Late, Review the unit again.*
	End of Week 2	-Questionnaire – students' perceptions about feedback on Google Forms -Documentation of level of mastery of a unit during Phase I	-19/20 students responded to the questionnaire about students' perceptions about the feedback Pre-Action Research -Percentage of students who mastered the unit (Desired learning outcome)

Phase II Action Research (4 weeks) Jan. 30 to Feb. 24	Week 3-6 (10/ 90 min Lessons)	Three Formative and one Summative assessment were given - One Assessment were given per week - Assessments grades were documented weekly - Guided Feedback was provided, and resubmission was allowed - Resubmission grades documented	Three Formative and one Summative assessment grades recorded - One resubmission per Formative assessment Guided Feedback was provided, and resubmission was allowed No resubmission with the Summative Assessments
After Action Research Feb. 27 to March 3	Week 7	-Questionnaire – students' perceptions after Guided Feedback -Students complete a questionnaire on Google Forms	18/20 responded
		Documentation of level of mastery of a unit	By percentage of how many students mastered the unit (Desired learning outcome)
Mar. 6-Mar. 10	Week 8	-Data Analysis of assessment -Questionnaire after Guided Feedback has been implemented	

4. FINDINGS

4.1 Data Analysis: Quantitative Analysis

Documentation of the assessment grades in Phase I, the Pre-Action Research was required as a baseline in order to observe any grade change when Guided Feedback was implemented in Phase II, during Action Research, where resubmission was allowed.

4.1.1 Feedback and Learning outcomes

The change in the learning outcome is represented by comparing each assessment results during Phase II of my **Action Research.** The initial assessment result was recorded on an excel sheet that was mapped on a line graph; then Guided Feedback was provided, and the resubmission grade was recorded and plotted in the same graph to determine if an upward trajectory of improved assessment grades occurred. **Figures 1- 3** represent the three Formative Assessments that Guided Feedback was provided during Action Research. During

weeks one to week three of the study, students were online as the COVID 19 restrictions were imposed again for the whole country.
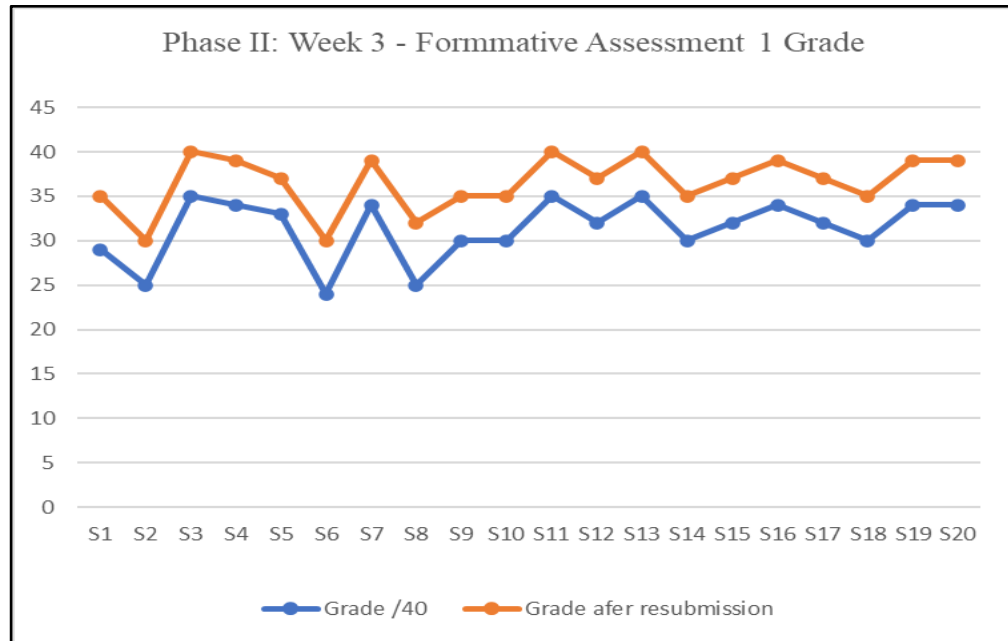

Figure 1: Phase II - Week 3 - Formative Assessment 1
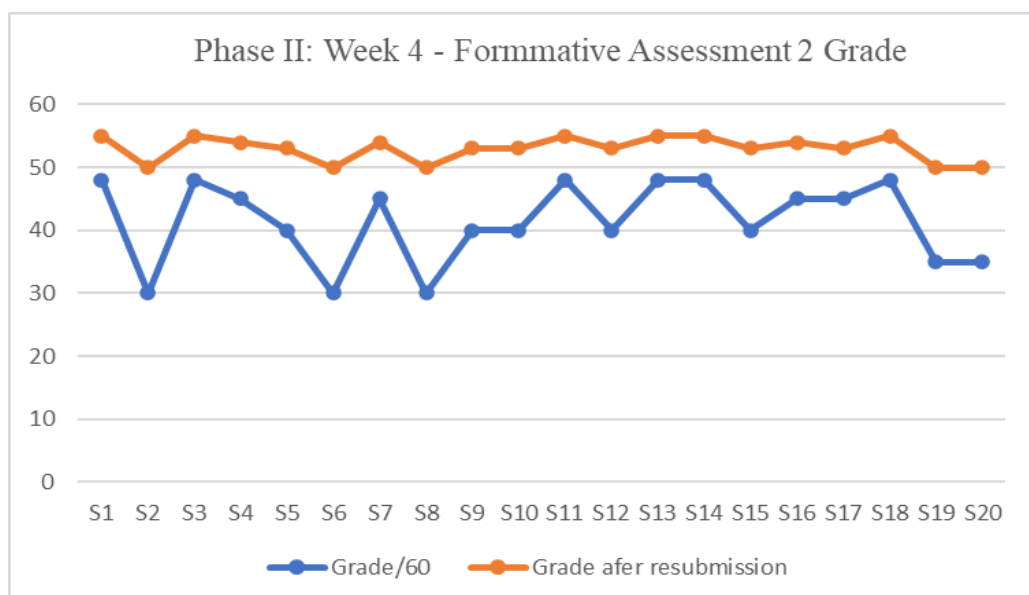
Figure 2: Phase II - Week 4 Formative Assessment 2

On week four of the study, we were back on campus and the initial grades of Formative

assessment 2 were lower than when they were during online classes. However, the resubmission grade did improve after the Guided Feedback was implemented.
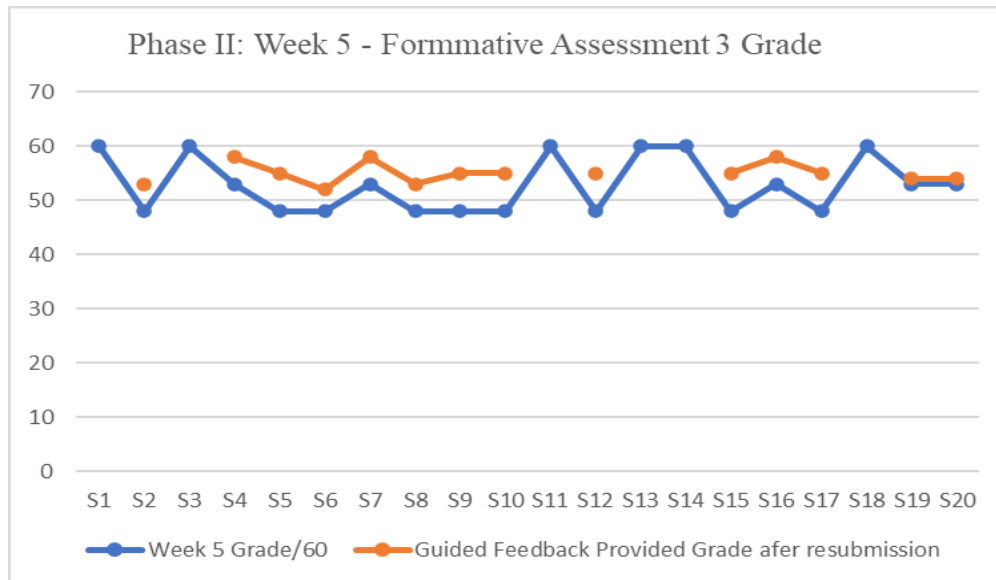
Figure 3 Phase II - Week 5 Formative Assessment 3

As I compared each of the three figures above, the Formative Assessment grade for every student improved with implementation of Guided Feedback and resubmission of the assessment as the weeks progressed.

4.1.2 Feedback and Mastery of the Unit

This Action Research was investigating the understanding and the skills demonstrated by a learner at the completion of a unit, when Guided Feedback and resubmission was allowed. In my classes, the goal of teaching and learning was meeting the expected learning outcomes and mastery of a unit so that I can move to the next unit. Mastery of a unit is the comprehension of the learning objectives that allows the student to move to the next lesson and the graphs clearly illustrated the importance that Feedback has in pedagogy as by week five, the initial Formative 3 Assessment grades for thirty percent of the sudents attained mastery of the unit. I compared the Summative Assessment grades of Phase I, before Guided

Feedback against the Summative Assessment grades of Phase II, where Guided Feedback
was provided, and there was a percentage range of 0%-8% increase in the grades of the
majority of the students, even for those students who fared well to begin with, as represented
in **Figure 4** below. My Action Research was investigating if there is a relationship between
Guided Feedback and learning outcomes, and mastery of the unit, and my findings concluded
that Guided Feedback after assessments had a positive impact on student learning.
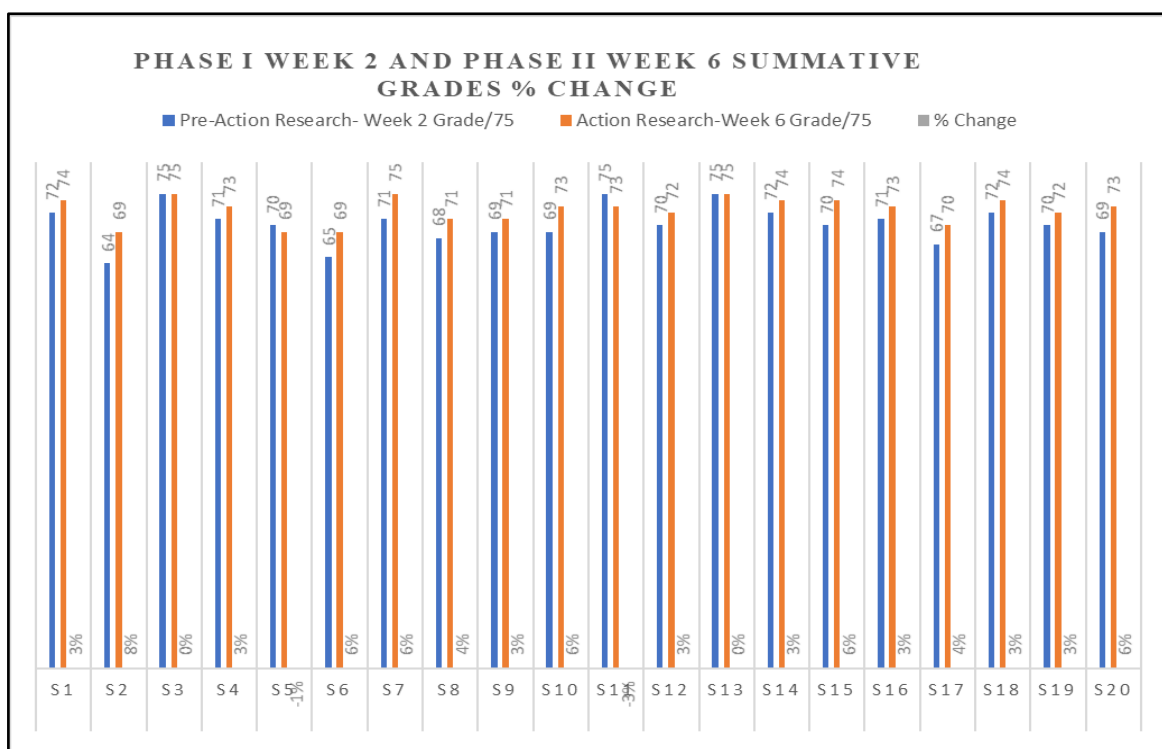
**Figure 4: Phase I Week 2 and Phase II Week 6 Summative Grades % Change
Comparison**

4.1.3 Feedback and Student Confidence Level

Learning outcomes in this action research is the understanding and the skills
demonstrated by a learner at the completion of a unit. When I analyzed the data from Figure
1-3, and using the lesson objectives as a guide, I observed an improvement in every student's
assessment results as we progressed when the tailored Guided Feedback was provided based
on the lesson objective that they missed. Additionally, I noticed that the confidence level of

students rose after every resubmission. By the third Formative assessment, thirty percent of the students did not require resubmission which indicated mastery of the unit.

4.1.4 Role of Feedback and Student Anxiety

The students' knowledge and skills were reflected in their grades. As their assessment grades improved in Phase II of the Action Research, I observed students' anxiety levels reducing during assessments, as learning outcomes were being met and mastery of the unit was being achieved. Tailoring the Guided Feedback for every student in my class was time consuming, however, as I reached the last week of my Action Research, the Guided Feedback had little variance for most students which indicated that the majority of the students were meeting mastery of the unit from the initial submission of the assessment.

4.2 Data Analysis: Qualitative Analysis

The **qualitative analysis** compared the students' responses in the questionnaire about their perceptions before and after Guided Feedback was added to the instructional design and is represented in the following pie charts:

The **Phase 1: Pre-Action Research Questionnaire** with no Guided Feedback results are illustrated in the charts below. Nineteen out of the twenty students responded, and of those fourteen were male and 78.9% were males and 21.1% females.
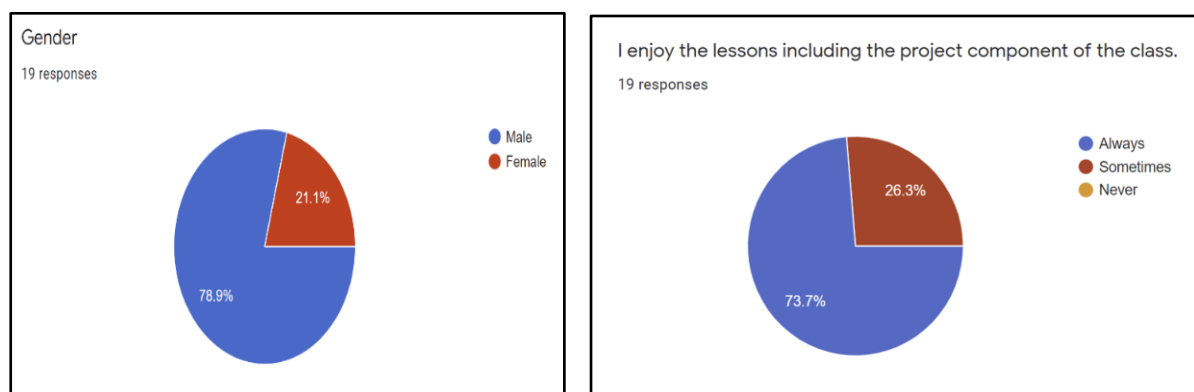
73% of the respondents indicated that they enjoyed the project component of the unit while 26.3% said they sometimes enjoyed it. And though most of the respondents understood the content of the unit, 18.2% stated that they did not enjoy the unit because the content was not

clear.
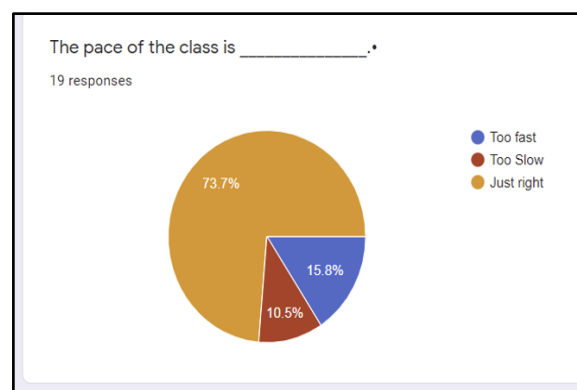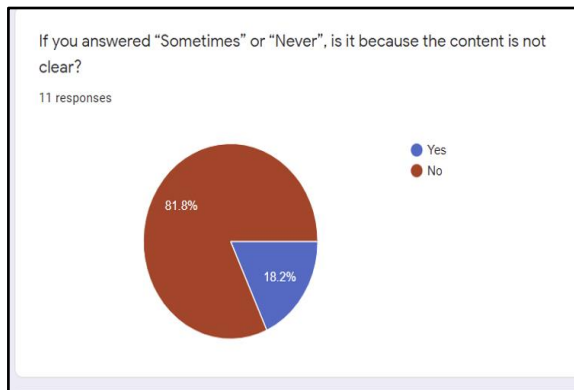
As for the pace of the class, 15.8% of the respondents stated that the class was too fast and 10.5% stated that it was too slow. One observation that came out from the questionnaire is the contradiction of the perception. The majority of the students stated that the pace of the class was just right (73.7%), and the feedback they received was adequate, yet 26.3% of the class stated that at the end of the unit they sometimes did not understand the content and expected objectives.
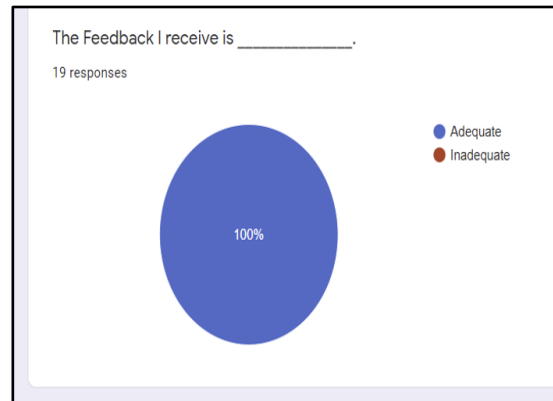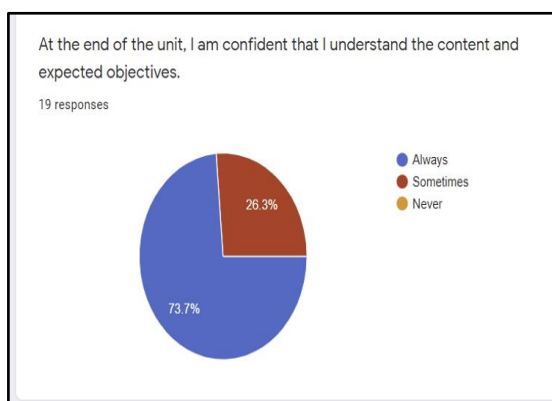
However, 100% of the students stated that the minimal feedback they received was adequate.
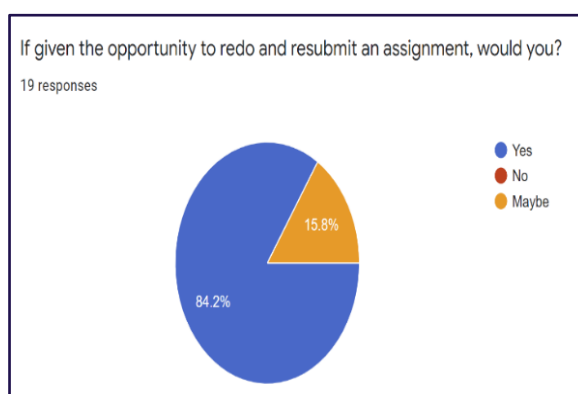
84% of the students indicated that if given the opportunity to resubmit the assignment, they would take the opportunity.

After Guided Feedback was implemented and resubmission was allowed, students

submitted a second questionnaire for me to find out the perception of the Action Research that implemented Guided Feedback and resubmission of assessments.

Phase 1I: Action Research Questionnaire with Guided Feedback and Resubmission of Assessments are illustrated in the charts below:

A total of eighteen students responded, and of those 78.9% were males and 21.1% females.
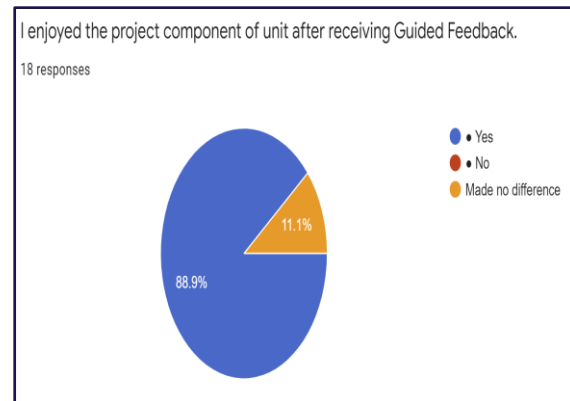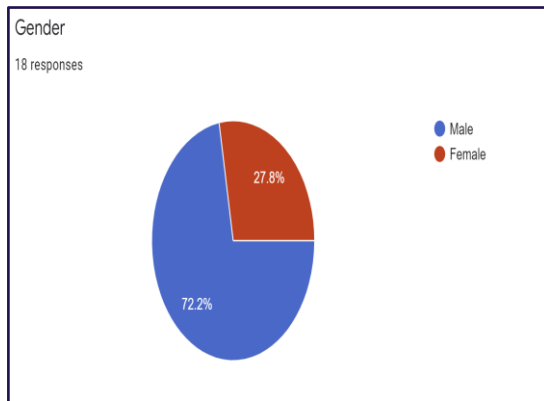
After receiving Guided Feedback and Resubmission of Assessment was allowed, 88.9% of the student's response indicated that they enjoyed the project component of the unit compared to the 73% of the respondents Pre-Action Research. This indicated a 15.9% increase of student satisfaction and possibly decrease in assessment induced anxiety levels.
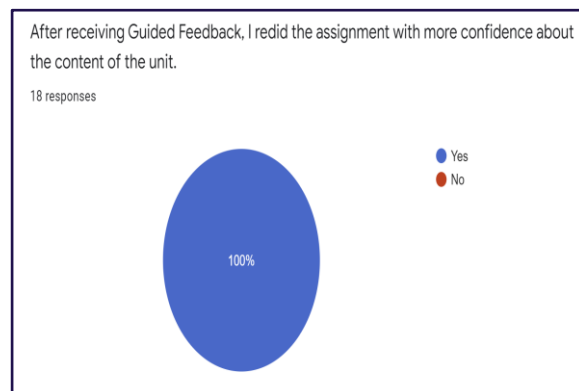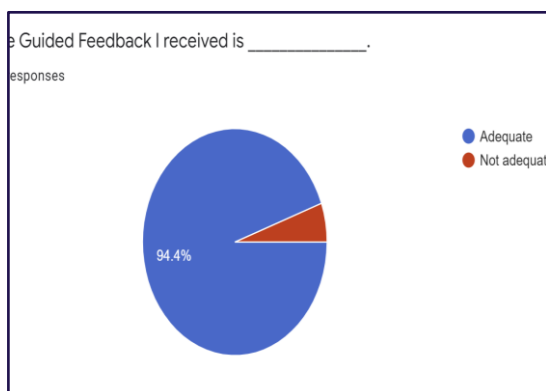
Most students indicated that the Guided Feedback they receive was adequate (94.4%), which was a decrease of 5.6% compared to Pre-Action where 100% of the students indicated the feedback received was adequate. Having given tailored Guided Feedback, I concluded that students were not informed about the diversity of Feedback and the impact it has in students meeting their learning objectives.

The opportunity to resubmit my assignments has given me a better understanding of the content of the unit.

18 responses

Yes
No

100%

The Guided Feedback I received had a positive impact on my grades.

18 responses

Yes
No
Stayed the same

88.9%
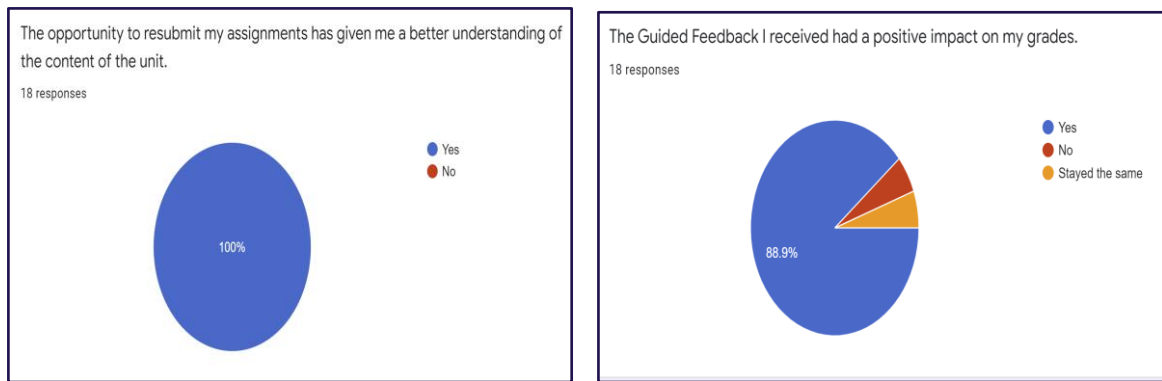
My students loved the Guided Feedback I provided and 100% of the students indicated that they had a better understanding of the content of the unit.

My researchable problem was to investigate whether the addition of Guided Feedback and resubmission of assessments to my instructional design to achieve desirable learning outcomes and mastery of the unit for all students. I added this new teaching technique to my instructional strategy and the impact to mastery of the unit for all students was promising.

5. LIMITATIONS AND OTHER PROJECT CONSIDERATION

5.1 Limitations

At the onset of the Action Research, my plan had to be altered as COVID 19 restrictions were imposed again in my host country. Schools shifted to hundred percent online learning, and this meant I had to use virtual labs or a project that would not require live practical application in class. This was a limitation that I did not anticipate. During semester one, schools conducted concurrent classes and I saw my students once a week which enabled me to conduct practical projects. I had to come up with an alternative assessment that would still be Project Based yet hands-off. Fortunately, one of the assignments in my grade twelve class was conducting a study using the Scientific Research Method and I used that unit for my Action Research as it satisfied the criteria I had set, even though it was not in class.

During the fourth week of my study, COVID 19 restrictions were lifted, and classes resumed on campus. However, I did not consider students who were COVID 19 positive or one of their family members, as this subset of students had to be quarantined and joined class

via the online platform. The majority of the students were in class and managing a class of eighteen and one or two students online proved to be extremely challenging.

I also worried about strategies to use to manage my time to make sure that most of the curriculum was covered during the Action Research phase; the resubmission of assignments after Guided Feedback was provided, was tapping into my instructional time. I made sure the administrators were aware that I was restructuring the curriculum to manage the time constraints.

5.2 Other Project Considerations

This year, as the head of the STEAM department, I had to step back into the classroom to teach all the health science courses as we did not have a teacher at the beginning of the school year. In the meantime, we were interviewing for a full-time teacher to teach the courses. However, as weeks went by it appeared that I may have to teach for the whole academic year as by the end of semester one in December, we had not found a qualified candidate. It was a stressful period, as I was juggling two jobs, plus throwing in COVID 19 into the equation, and online classes; the semester was tedious and long. Fortunately, we were able to find a suitable teacher for the health science track who was able to take over some of the teaching responsibilities on the first day of semester two. I handed over four of the six classes that I was teaching. However, one of the classes that I had to hand over was the grade eleven that I had planned to conduct my Action Research. I immediately decided to shift the study to my grade twelve class. This decision paid off as the grade twelve students were very responsible, diligent and were able to submit their assignments on time so they can achieve the best grades as they are starting to apply to universities. This was a change that I had not anticipated.

Another concern that arose due to the sudden shift to the online platform, was the inflated grades when students did online assessments. I was afraid that I may not make conclusive deductions from my findings as with academic integrity in question.

I observed a change in a few students' attitude about resubmission of assessments. In Phase II of the action research, their performance was lower than in Phase I; the assessment quality turned in was poor the first time. I reflected if this is due to the expectation of Guided Feedback and resubmission as there was a significant dip in their first submission compared to Phase I.

6. SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Summary

My Action Research investigated the impact Guided Feedback had on student learning outcomes and mastery of the unit when it was added to the instructional design. My study focused on mastery of the unit for all students as I wanted to increase all my student's knowledge and skills. There were two phases in this study, Phase I was the Pre-Action Research stage where no detailed feedback was provided. In Phase II, Guided Feedback was provided, and resubmission was allowed, which was the Action Research period. The grades of all assessments were recorded. I was curious about students' perception about Feedback and prepared two questionnaires to be taken, one before implementation of Guided Feedback, and the other after.

Feedback is an important part of the learning process and functions as an evaluator and corrector of missed objectives (Toshnazarovna, 2021). Providing Guided Feedback and tailoring it to their individual missed objectives was an important part of my findings as students could not pinpoint what learning objectives they were missing. This was deduced by Sharma and Sharma, (2017), in their study about the importance of feedback after

assessments and found that the learners may not realize they have a skill or weaknesses, if feedback is not provided.

My research question had two parts that were correlated: "What is the impact on student **learning outcomes and mastery** of the unit when Guided Feedback is added to the instructional design?"

COVID 19 disrupted teaching and learning and educational systems had to scramble for alternative learning strategies when the online platform was adopted. With pedagogy being disrupted suddenly, learning gaps resulted and as I reflected, the feedback I provided had to shift. As Schimmer, (2016) deduced in his research about grading reform, that there are many different ways a learner might progress toward a certain learning goal; based on the results of my Action Research, this was accurate. I provided my students with the opportunity to review the missed learning objectives and resubmit their assignments to be reviewed. The Guided Feedback was tailored to individual students and though the addition of this instructional strategy tapped into my instructional time, and the unit took longer than what was planned, students did achieve mastery of the unit.

One observation I made was when we came back on campus, in the second week of Phase II, the grades of some were below average. Though the resubmission grades were on target, I questioned the integrity of the online assessment submission and had to consider if there was inflation of results due to this, however, I had no way of proving it.

I was curious to find out if this new instructional strategy would be inclusive of both the gifted and talented (GT) students and students who are Second Language Learners (SLL). I feared that GT students may get bored as the inclusion of Guided Feedback in the lesson plans will result in the curriculum progressing at a slower pace, and conversely, I feared that the SLL students may not understand the feedback expectations because of their limited language abilities; however, from my findings, both the GT and the SLL students

benefited for the Guided Feedback provided. Tailoring the Guided Feedback to each student proved to be productive for all.

6.2 Conclusion

From my findings, this Action Research disclosed information about the important role feedback plays in pedagogy and the correlation between the type of feedback students receive and mastery of the unit. The Formative assessment grades of every student in the class went up by an average of 16% during Phase II of the Action Research when Guided Feedback was provided. Additionally, when I compared the Summative assessment results of Phase I and Phase II (no resubmission allowed for both) there was an average increase of 3.5% for most students. This is evidence of the purpose of Feedback in achieving the desired learning outcomes (the desired understanding and skills demonstrated by a learner).

Formative assessments are a critical part of learning as well; providing Guided Feedback that is tailored for each student was critical in that students realized the learning objectives that had not mastered and resubmitted the assignment. This resulted in a higher percentage of students attaining mastery of a unit taught, which consequently guaranteed that learning is occurring.

I observed an improvement in every student's assessment results as we progressed when Guided Feedback was provided based on the tailored lesson objective that they missed. The confidence level of the students rose after every resubmission and there was a percentage of students that did not need to resubmit their assessments as mastery of the unit was achieved the first time, by week five of the Action Research. It is worth noting, that the unit plan was designed for six to eight assessments; however, accommodating resubmission tapped into both instructional and assessment time, nevertheless, mastery of the unit was achieved, by the end of the unit. Additionally, the study findings may also clue us into a way to alleviate students' anxiety during assessments.

Including Guided Feedback as a teaching strategy results in classes that are inclusive of all types of learners. Implementation of Guided Feedback will fulfill inclusiveness of all exceptionalities as allowing resubmission will capture those learners that need that extra coaching, and this will guarantee learning is occurring for all students.

6.3 Recommendations

Though this Action Research yielded findings that have proven that adding Guided Feedback to the instruction design results in the desired learning outcomes as mastery of the unit is achieved, I would recommend using a larger pool of subjects to attain conclusive results. Additionally, the specific grade involved may mean that the statistics generated of the percentage increase in the assessment grades may not be representative of other classes' grade levels. Inclusion of lower school students is highly recommended as when they join the school in grade five, the feedback provided can be measured early and help with their growth and development in and outside the classroom. Another recommendation would be to conduct the Action Research for a longer duration to account for any anticipated shifts such COVID-19 restriction in order to make a conclusive deduction.

With these findings, I intend to propose to the administration to add Guided Feedback to the instructional design of some of the lower school classes. Our lower school starts from grade five and seventy five percent of the students enrolled are ELL. Though one limitation of implementing Guided Feedback will be time constraints as adding it to the instructional strategy will be time consuming, however, the findings from my Action Research is promising as mastery of the unit was reached and the desired learning outcomes were achieved. An additional recommendation would be to review the school's Learning Outcomes and update them (Sample: APPENDIX H).

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8. APPENDICES

8.1 APPENDIX A: School Permission to Conduct Research and Questionnaire

CEO and President,
Michael E. DeBakey High School

RE: Permission to Conduct Research Study

Dear Dr., Parras,

I am writing this letter to formally request permission to conduct a research study as the final course requirement for my Masters Degree in International Graduate Programs for Educators from the State University of New York (SUNY). The final requirement to graduate is an Action Research Project.

My Action Research will study the importance of Guided Feedback that is tied to lesson objectives to ensure mastery of content is achieved. Students will be given two questionnaires, pre and post study. The initial questionnaire will be to get students perspective about present feedback provided after an assignment and the final questionnaire will be given after Guided Feedback that is tied to the learning objectives is implemented. Please note the following:

- The scope of the survey/study will be restricted to only students in my classes.
- The survey responses will be related to experiences in the classroom for the purpose of the study
- Student participants will complete the questionnaire during recess, or after school
- The questionnaire process should take no longer than ten minutes.
- The results of this study will remain absolutely confidential and anonymous, using only subject numbers as identifiers with no mention of the school.
- No cost will be incurred by either the student or school.

Thank you for your support,
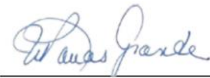
Sincerely,

Majida Timimi

Approved by:

Dr. Virginia Parras   January 12, 2022

CEO and President   Signature   Date

8.2 APPENDIX B: Parent Email for Consent Form

Dear Parents,

I am writing this letter to formally request consent to conduct a research study about the impact of Guided Feedback that is tied to lesson objectives. The objective is to explore and improve teaching strategies to ensure mastery of content is achieved. Students will be given two questionnaires, pre and post study. The initial questionnaire will be to get students perspective about present feedback provided after an assignment and the final questionnaire will be given after Guided Feedback that is tied to the learning objectives is implemented.

Attached, please find the consent form with details about the scope of the study.

Should you have any concerns or queries, please don't hesitate to contact me.

Thank for your assistance.

Sincerely,

Majida Timimi, MT (ASCP)
Director of STEAM and Practical Applications Programs
Michael E. DeBakey High School for Health Professions at Qatar
"An Outstanding American High School, Nurturing students beyond their potential"
P.O. Box 7582, Doha-Qatar
Tel: + 974-44999602
majida.timimi@debakeyatqatar.org

www.debakeyatqatar.org

MISSION:
We provide academic excellence and character development that prepares students to compete, lead, and succeed in a global society through a rigorous American curriculum focused on medical sciences, technology, engineering, and business administration, while nurturing local customs and culture.

VISION:
Michael E. DeBakey High School for Health Professions at Qatar will be an exceptional multicultural institution *challenging* every student to develop skills and *inspiring* outstanding character while *empowering* teachers and students to lead and transform the global landscape and their local environment for prosperity and good.

8.3 APPENDIX C: Parent Consent Form Page 1

Informed Consent Form for the Parents of Students

This informed assent form is for the parents of students between the ages of 14-18 who have been selected to participate in an Action Research as a part of my thesis project. The purpose and focus of this study the role of feedback after an assessment and in relation to the learning outcomes of lesson objectives.

This Informed Consent Form has two parts:
- Information Sheet (to share information about the study with you)
- Certificate of Consent (for signatures if you agree that your child may participate)

PART I: Information Sheet

Introduction and Purpose
The research will investigate the impact of the addition of Guided Feedback in terms of its importance in achieving desirable learning outcomes for all students and mastery of the unit in the classroom. Feedback is given after every assessment; however, feedback will be implemented based on the learning objectives not achieved so as to focus on the mastery of the content of one unit before moving on to a new unit so as to ensure learning outcomes are positive.

Procedures and Protocol
There will be two phases in this Action Research. A questionnaire to find out students' perception about feedback that is presently given, and second questionnaire will be administered to find out students' perception after Guided Feedback has been implemented.

Duration
the total time required for the questionnaire will not take more than 10 min.

Risks
As a researcher I do not perceive any risks from your child's involvement in this study

Benefits
There are no benefits from participation in this study.

Confidentiality
The results of this research will be presented for academic purposes only. Your child will be identified in the research records by a number. When the results of this research are finalized, no information will be included that would reveal your child's identity. All data will be stored in a secure location accessible only to me and the administrative team.

Participation & Withdrawal
Your decision to have your child participate in this study is entirely voluntary. If you choose not to consent, nothing will affect your child. Should you and your child choose to participate, they can withdraw at any time without consequences of any kind.

Questions about the Study
If you have questions or concerns during the time of your child's participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact me.

8.3 APPENDIX C: Parent Consent Form Page 2

Certificate of Consent
I have been invited to have my child participate in an Action Research

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked to have been answered to my satisfaction. I consent voluntarily for my child to participate as a participant in this study.

Ubaida Al-Aani
_____
Print Name of Participant

Fuad Al-Aani
_____
Print Name of Parent or Guardian

_____   **Date:**   31/1/2022
Signature of Parent or Guardian   **Day/month/year**

Statement by the researcher taking consent
I have accurately read out the information sheet to the parent of the potential participant, and to the best of my ability made sure that the person understands that the following will be done:

- Two questionnaires will be conducted in this Action Research

I confirm that the parent was given an opportunity to ask questions about the study, and all the questions asked by the parent have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

_____
Print Name of Researcher taking the consent

_____   **Date:** _____
Signature of Researcher taking the consent   **Day/month/year**

Page 2 of 2

8.4 APPENDIX D: Phase I: Pre-Action Research Assessment Documentation Week 1

Pre-Action Research Assessment Documentation Excel Sheet		
Phase I: Week 1 - Formative Assessment 1		
Subject #	Grade /25	Notes
S1	24	
S2	24	
S3	24.5	
S4	21.5	
S5	23	
S6	23	Classes Conducted Online
S7	22.5	No Guided Feedback
S8	22	No Resubmission
S9	21	
S10	22	
S11	24.5	
S12	23.5	
S13	22	
S14	22	
S15	22.5	
S16	19	
S17	14	
S18	24	
S19	23	
S20	22	

Pre-Action Research Assessment Documentation Excel Sheet		
Phase I: Week 1 - Formative Assessment 2		
Subject #	Grade /30	Notes
S1	29	
S2	26.5	
S3	30	
S4	28	
S5	27	
S6	29	Classes Conducted Online
S7	30	No Guided Feedback
S8	25.5	No Resubmission
S9	23	
S10	27.5	
S11	30	
S12	25.5	
S13	28	
S14	28.5	
S15	26	
S16	26	
S17	25	
S18	29	
S19	29	
S20	28.5	

8.5 APPENDIX E: Phase I: Pre-Action Research Assessment Documentation Week 2

Pre-Action Research Assessment Documentation Excel Sheet			Pre-Action Research Assessment Documentation Excel Sheet		
Phase I: Week 2 - Formative Assessment 3			**Phase I: Week 2 - Summative Assessment**		
Subject #	Grade /40	Notes	Subject #	Grade/75	Notes
S1	35		S1	72	
S2	30		S2	64	
S3	40		S3	75	
S4	39		S4	71	
S5	37		S5	70	
S6	35	Classes Conducted Online	S6	65	Classes Conducted Online
S7	39	No Guided Feedback	S7	71	No Guided Feedback
S8	32	No Resubmission	S8	68	No Resubmission
S9	35		S9	69	
S10	35		S10	69	
S11	40		S11	75	
S12	37		S12	70	
S13	40	.	S13	75	
S14	35		S14	72	
S15	37		S15	70	
S16	39		S16	71	
S17	10		S17	67	
S18	35		S18	72	
S19	39		S19	70	
S20	39		S20	69	

8.6 APPENDIX F: Comparison of the Formative Assessment Initial Grade and After Guided

Feedback Weeks 3 and Week 4

Action Research Assessment Documentation Excel Sheet				
Phase II: Week 3 - Guided Feedback Provided				
Formative Assessment 1	Grade/40	Grade after resubmission	% Increase	Notes
S1	29	35	21%	Classes
S2	25	30	20%	Conducted
S3	35	40	14%	Online on
S4	34	39	15%	Week 3
S5	33	37	12%	
S6	24	30	25%	
S7	34	39	15%	
S8	25	32	28%	
S9	30	35	17%	
S10	30	35	17%	
S11	35	40	14%	
S12	32	37	16%	
S13	35	40	14%	
S14	30	35	17%	
S15	32	37	16%	
S16	34	39	15%	
S17	32	37	16%	
S18	30	35	17%	
S19	34	39	15%	
S20	34	39	15%	

Action Research Assessment Documentation Excel Sheet				
Phase II: Week 4 - Guided Feedback Provided				
Formative Assessment 2	Grade/60	Grade after resubmission	% Increase	Notes
S1	48	55	14%	Classes
S2	30	50	36%	Conducted
S3	48	55	13%	Online on
S4	45	54	17%	Week 4
S5	40	53	26%	
S6	30	50	37%	
S7	45	54	18%	
S8	30	50	38%	
S9	40	53	25%	
S10	40	53	24%	
S11	48	55	13%	
S12	40	53	24%	
S13	48	55	13%	
S14	48	55	13%	
S15	40	53	24%	
S16	45	54	17%	
S17	45	53	15%	
S18	48	55	14%	
S19	35	50	30%	
S20	35	50	30%	

8.7 APPENDIX G: Comparison of the Formative Assessment Initial Grade and After

Guided Feedback Weeks 5

Action Research Assessment Documentation Excel Sheet				
Phase II: Week 5 - Guided Feedback Provided				
Formative Assessment 3	Grade/60	Grade after resubmission	% Increase	Notes
S1	60		-100%	Classes
S2	48	53	10%	conducted
S3	60		-100%	On
S4	53	58	9%	Campus
S5	48	55	15%	Week 5
S6	48	52	8%	
S7	53	58	9%	
S8	48	53	10%	
S9	48	55	15%	
S10	48	55	15%	
S11	60	60	0%	No Resub
S12	48	55	15%	
S13	60		-100%	No Resub
S14	60		-100%	No Resub
S15	48	55	15%	
S16	53	58	9%	
S17	48	55	15%	
S18	60		-100%	No Resub
S19	53	54	2%	
S20	53	54	2%	

8.8 APPENDIX H: Action Research Summative Assessment Grade Comparison of Phase I

and Phase II

Action Research Summative Assessment Comparison				
Phase I and Phase II Summative Grades				
	Week 2 Grade/75	Week 6 Grade/75	% Increase	Notes
S1	72	74	3%	Classes
S2	64	69	8%	conducted
S3	75	75	0%	On
S4	71	73	3%	Campus
S5	70	69	-1%	Week 6
S6	65	69	6%	
S7	71	75	6%	
S8	68	71	4%	
S9	69	71	3%	
S10	69	73	6%	
S11	75	73	-3%	
S12	70	72	3%	
S13	75	75	0%	
S14	72	74	3%	
S15	70	74	6%	
S16	71	73	3%	
S17	67	70	4%	
S18	72	74	3%	
S19	70	72	3%	
S20	69	73	6%	

8.9 APPENDIX I: Student Questionnaire Pre-Action Research

Questions   Responses 19   Settings

Phase I: Perception About Feedback

The aim of this questionnaire is to get your perspective about present feedback provided after an Assessment/assignment.

Gender *

○ Male

○ Female

I enjoy the lessons including the project component of the class.

○ Always

○ Sometimes

○ Never

If you answered "Sometimes" or "Never", is it because the content is not clear?

○ Yes

○ No

The pace of the class is _____.•

○ Too fast

○ Too Slow

○ Just right

At the end of the unit, I am confident that I understand the content and expected objectives.

○ Always

○ Sometimes

○ Never

The Feedback I receive is _____.

○ Adequate

○ Inadequate

If given the opportunity to redo and resubmit an assignment, would you?

○ Yes

○ No

○ Maybe

8.10 APPENDIX J: Student Questionnaire after Action Research

Phase II- Perception about Guided Feedback

The aim of this questionnaire is to get your perspective after Guided Feedback was provided after an Assessment/assignment and resubmission for regrading was allowed.

Gender   *

◯ Male

◯ Female

I enjoyed the project component of unit after receiving Guided Feedback. *

◯ • Yes

◯ • No

◯ Made no difference

The Guided Feedback I received is _____. *

◯ Adequate

◯ Not adequate

After receiving Guided Feedback, I redid the assignment with more confidence about the   *
content of the unit.

1. Yes

2. No

The opportunity to resubmit my assignments has given me a better understanding of the content of the unit.

1. Yes

2. No

The Guided Feedback I received had a positive impact on my grades. *

1. Yes

2. No

3. Stayed the same

Do you wish to add any comment about the Guided Feedback you received? *

Long answer text

8.11 APPENDIX K: Clear Learning Outcomes Sample

School's Learning Outcomes

Strand	Learning Outcomes (knowledge, skills, abilities) (know, understand, do)
Literacy	• Students will be able to comprehend and evaluate complex texts across a range of types and disciplines as part of a rigorous curriculum. • Students will be able to construct effective arguments and convey intricate and multifaceted information • Students will be able to discern a speaker's key points, request clarification, and ask relevant questions. • Students will be able to comprehend and critique material. • Students will be able to use technology and digital media strategically and capably • Students will come to understand other perspectives and cultures as part of a global community. • Students will be able to express themselves effectively across a wide variety of written texts. • Students will be able to communicate effectively to a wide variety of audiences as global citizens.
Critical Thinking	• Students will be able to assess problems and persevere in solving them • Students will be able to reason abstractly and quantitatively and qualitatively. • Students will be able to construct viable arguments and critique the reasoning of others. • Students will be able to apply the critical thinking skills to solve problems in diverse environments. • Students will be able to collaboratively with their communities. • Students will use organizational and project planning skills to build presentation skills.
Character Development	• Students will have an awareness of their own strength, talents, and interests as well-balanced citizens. • Students will be able to evaluate community resources to determine which programs would best assist them with their goals. • Students will develop an awareness of service opportunities in the local and international community. • Students will be able to undertake and reflect on a community service project of their own learning. • Students will develop an awareness of their own learning styles and preference ways of working. • Students will be able to respond to challenges, successes, and failures in a socially appropriate way. • Students will be developed as 21st century citizens.