A Formative Assessment Strategy for Learning Science-Related English through an Online Video Quiz System

Simon D. C. TOWNSEND
Iwate University

Hamish SMITH
Iwate University

Abstract

E-Learning in higher education has cemented a central role in modern education. This has prompted a deeper exploration of teaching and learning pedagogy in the field of conducting quizzes to learn science vocabulary in ESL contexts. In this study, we explore methods to employ a regulated test utilizing formative assessment (FA) and feedback strategies. A test framework is devised which enables a practical and online student-centered approach to language learning pedagogy. A test strategy is used to create a series of online quizzes of increasingly more difficult question types based on videos. This FA test is conducted in an ESL university class to teach science-based content and is evaluated. These results provide significant findings in the development of FA and feedback strategies in Computer Assisted Language Learning (CALL) and how they have guided students throughout the testing and learning process.

1. Introduction

Whilst online assessment and teaching methods have been a prominent research area in higher education, 'online assessment' is comprised of a wide variety of test approaches. Not only does this make comparison difficult, but research into the use of online quizzes to learn vocabulary is also lacking. The aim of this action research is to evaluate an innovative video and online quiz testing framework to address this gap by: implementing a student-centred and online test unit to learn key vocabulary and language based on a science topic video. We embrace a socio-constructivist and alternative assessment paradigm, and believe that learning through a testing procedure is enhanced and supported when students collaborate with others in small groups (Poehner, 2008). When using online quizzes for learning language and content "[a] central argument is that, in higher education, formative assessment (FA) and feedback should be used to empower students as self-regulated learners" (Nicol & Macfarlane Dick, 2006, p. 205). In such learning contexts, research shows that students can learn to be more self-regulated (Zimmerman & Schunk, 2001, p. 295). This test strategy implements the use of

increasingly difficult question types and we created a student focused strategy to assist learning steps to be carried out in small groups. In addition, an online forum serves as a space for students to asynchronously discuss understandings of vocabulary meanings and how they came to them. The research question aims to evaluate the testing strategy in terms of its formative assessment procedures (Scriven, 1967), which focus on the process as well as the end product (Johnston, 1992). A mixed-method of quantitative and qualitative research methods (Lindlof & Taylor, 2002) is proposed as being best suited to discuss the merits of these testing strategies and procedures.

2.   Literature Review

Technology is increasingly being used in higher education to deliver learning materials and assessment, and to communicate with students. Education is now immersed in the globalization age and as for our millennial students Tapscott provides the following account for generational change: "Each generation is exposed to a unique set of events that defines their place in history and shapes their outlook" (2009, p. 16). As part of this there has been a noticeable shift from an instructor-centred to a student-centred paradigm. These new paradigms are realizations of the instructionist model and constructivist model respectively (Steffe & Gale, 1995). In the instructionist model, knowledge is transferred from the instructors to the students. Education from a constructivist perspective is about assisting students to learn how to obtain knowledge, which is grounded in the work of Piaget (1970) and Vygotsky (1978). Constructivist theories and methods have been further developed and adapted to different kinds of learning. As Computer Assisted Language Learning (CALL) continues to make inroads into educational institutions, finding ways to integrate students' online learning and assessment to build knowledge and collaborate together is increasingly important.

2.1 Traditional Assessment Verse Alternative Assessment

Generally, in traditional assessment, a summative test evaluates the student's final outcomes as being representative of their learning (Anderson, 1998). This can lead to a situation where "Learners do not consider their own performance, and they concern themselves less with the process than with the outcome" (Johnston, 1992, p. 37). However, in alternative assessment practices, the process is valued as well as the product (Anderson, 1998). The purpose of this alternative test framework is to facilitate student understanding of the meaning of science terminology as well as the learning process (Johnston, 1992). For example, quiz results provide feedback on performance and peer feedback in small group discussion helps to provide students with direction and support in their learning. A shared model of student input embraces a democratic decision-making process (Heron, 1988) and positions learning as a collaborative endeavor (Poehner, 2008). These procedures are intended to give this test its formative assessment characteristics (Ellis, 2003). The evaluation of the testing strategy is concerned with how the formative assessment strategies have assisted students to focus more on learning the vocabulary and not on studying for a test (Butler & Winne, 1995).

2.2 FA and online quizzes

In paper-based formative assessments, providing individualized feedback is time-consuming and may not be feasible for large classes (Velan et al., 2002). In response to this, the implementation of an online formative assessment unit can provide a time-effective alternative feedback and test method. While online formative assessments are becoming an increasingly popular supplement to traditional summative examinations in higher education, they are much debated and formal evidence to support their educational benefits is relatively limited and often contradictory. In a study aiming to encourage students to study biology content on a regular basis, Haberyan (2003) put forward that formative assessments do not improve the learning outcomes of students over a short period of time due to time constraints and other assessment procedures. On the other hand, Kibble (2007) used unsupervised online quizzes as formative assessment in a medical physiology course and his results have shown that they do have a positive effect on students' performance in summative examinations. Peat and Franklin (2002) used computer-based formative assessment models in the form of computer delivered and marked weekly quizzes for first year university biology students. In a survey asking students open-ended evaluative questions regarding the quizzes, the three aspects identified as being most positive were "instant feedback (17% of the responses), multiple choice format (15% of responses) and quick to complete (13% of the responses). In addition, this research highlights the benefits of using self-assessment technology in the self-motivation of students. Evidence in a study based on pre-lecture quizzes suggests that quizzes are more beneficial if given before related class materials or activities are presented before class (Narloch et al., 2006). As a science lecturer, Peat and Franklin (2002) documented that formative feedback facilitates students' learning, especially if it is used early on in a course.

2.3 Online Asynchronous Forums

The test process utilized an asynchronous forum online to support students in the answering process, enabling them to share topic information, and discuss the meaning of important vocabulary and other language. In an online discussion forum, students can brainstorm, disseminate information, role-play, and discuss course material, and the asynchronous nature of the discussion allows time for reflection (Warschauer, 1999). Wegerif (1998) identifies that the nature of dialogue combined with the lack of time constraints can allow time for reflection while maintaining intrinsic motivation for the discourse. Example forum discussion threads (lines of student discourse) from quiz (3) will be given in the results (see Section 4.3) to examine how students collaborated online during test.

2.4 Regulated Learning

In an Intensive English Program (IEP) of 55 ESL students Hong-Nam and Leavell (2006) found that the act of learning strategies helps learners become efficient in language and also increases learners' self-directed learning. In addition, they claim "that the students preferred to use metacognitive strategies most, whereas they showed the least use of affective and memory strategies" (2006, p. 399).

In this study, the activity access and completion functions built into the Learning Management System (LMS) were utilized to direct student effort and establish a student-centered learning approach to foster learners' autonomy in language learning (Holec, 1981). Outlined in the methodology, one of the test objectives is to incorporate quiz FA and feedback in a way that supports learners to take control of the test taking process by self-managing their learning progress (Nicol & Macfarlane Dick, 2006; Zimmerman & Schunk, 2001). A regulated test strategy is devised to assist students every step of the way as they progress from one quiz to the next to acquire the key vocabulary and language to learn science concepts. In this study, regulated learning is defined as a test strategy employed to provide feedback to students on their level of understanding, learning performance and to track progress.

3. Methodology

This research aims to evaluate how well the video and test strategy, which progressed from learning and understanding key vocabulary to answering inference-based questions about the subject material, has contributed towards student learning and knowledge. This leads to an investigation of the roles of the three quiz types in providing the students and the teacher with FA opportunities and strategies to assess and provide student-centered learning. The LMS Moodle system (Dougiamas, 2011) was used to deliver the online quizzes. In addition, the test evaluation includes investigating whether or not the test was able to promote student collaboration to further support and enhance the learning of vocabulary and key concepts. It is not within the scope of this paper to evaluate the final activity, which is a small group science presentation project worth a final grade of 15%. However, ways to broaden the scope of the test evaluation will be discussed for future research.

3.1 Learning Context

The English communication class is a 90-minute lesson and there are 15 classes per semester which are carried out in a computer assisted language-learning (CALL) classroom. The 34 participants were first-year Japanese ESL students, majoring in engineering, agriculture and veterinarian science. The university has an English proficiency placement examination for first-year students and the students' TOEIC level falls within the range of 410 to 430. The three-week unit began with self-enrollment, and an automated completion date ended the unit and restricted student access. In class, students were placed in small groups and accessed the unit using Moodle. It was unknown if the students had previous experience using online activities in language education prior to the study, however it was not expected that they did.

3.2 Video and Test Language

Since students study general environmental science in first year, a short YouTube video (four minutes) about 'Tidal Energy' was selected for this study. In the video selection process the dialogue of the video was copied from YouTube and next checked. Then the Compleat Lexical Tutor

commonly referred to as 'Lextutor' which is an online lexical analysis program which utilizes Heatley, et al.'s (2002) range and frequency programs, was used to evaluate the suitability of the subject material in terms of key vocabulary and language with two main purposes;

1. Appropriateness of the content and English language for year one science majors.
2. Identifying the key vocabulary used and other phrases later needed to create the quiz questions and deliver the science concepts and ideas.

Table (1) gives a small sample of the lexical results identifying the key vocabulary from the video dialogue and includes: 1) topic words, 2) frequency of words, and 3) a list of academic words. Next, the key vocabulary and the main concepts in the video were used to design the quiz questions and answers. As part of the test strategy, quiz (1) and quiz (2) used the vocabulary and language directly from the video dialogue, and quiz (3) required students to research the internet for related and additional language.

Table 1. Lextutor Results and Sample of Key Vocabulary

1. Topic Words	2. Words (Frequency 1001-2000)	3. Academic Words
amenity_[1] appetite_[1] arrayed_[1] australia_[1] barrier_[1] benchmark_[1]	clean_[1] electricity_[4] harming_[1] international_[1] knot_[1] oceans_[1]	environment_[1] environmental_[1] equivalent_[1] established_[1] estimate

*How many times a word is repeated is designated by [number].

3.2.1 Test Strategy

Based on FA and feedback procedures three types of quiz questions were set up to influence the way students learn vocabulary and subject material by increasing the level of difficult of each quiz: 1) a drop-down box type of question, 2) a short answer type of question, and 3) a deduction based selection type of question. The type and sequencing of the quiz questions is intended evaluate the students' level of understanding as they progress in the test. In Table (2) the design features of each quiz shows question attributes, source of information, the number of possible attempts, and the pass grade as a percentage.

Table 2. Question Type, Question Attributes, Source, Attempts, and Pass Percentage

Type	Question Attributes	Source	Attempts	Pass (%)
Quiz 1	Drop-down box: select the correct word - 35 questions	Video Content	Unlimited	80%
Quiz 2	Short-answer: type the correct word - 35 questions	Video Content	Unlimited	80%
Quiz 3	Multiple-choice: select the correct text - 10 questions	Video Content / Internet	3	100%

3.2.2 Question Types Influencing Learning

The purpose of quiz (1) is to introduce the test language and test the key vocabulary and language in the video dialogue. In Table (3) a sample question is given (correct answers are underlined).

Table 3. Drop-down Box Type of Question

Q. Tidal energy is the world's most reliable energy [source / material / product / fuel]. Twice a day and every day since the world began the oceans [manufacture / fuel / product / produce] powerful [surf / tides / water currents / underwater waves] and tidal movements that are so reliable they can be predicted years in advance.

The purpose of quiz (2) is for students to write the missing words. The question type is intended to reinforce the students understanding of key vocabulary and language in the video dialogue. A sample question is provided (Table 4) and the correct answers are the same as quiz (1).

Table 4. Short Answer Type of Question

Q. Tidal energy is the world's most reliable energy [   ]. Twice a day and every day since the world began the oceans [   ] powerful [   ] and tidal movements that are so reliable they can be predicted years in advance.

Quiz (3) requires students to carry out the following tasks a) research for additional topic information on the internet, b) share and discuss their ideas about the topic in the online group forum, and c) do the quiz until the test is completed. The purpose of quiz (3) is two-fold; the test is used as a formative strategy to review the meaning of key vocabulary, and also to test and build knowledge of the science subject material. A sample question is provided (Table 5) and the correct answer is underlined.

Table 5. Selection Type of Question

Quiz 3 Deduction quiz implements a selection type (correct answer is underlined)

Q. The world has an increasing insatiable appetite for power. What does this mean?
   - The demand for producing more power in the world is constantly increasing.
   - We need to take a lot more energy out of the earth than we are now.
   - Power is out of control so we need to be careful about how we use it.

3.2.3 Test Taking Process

Summative assessment (SA) can be defined as assessment that focuses on the end results of learning. However, as will be shown, this test uses video content and SA of three online quizzes in a broader planned formative assessment (FA) strategy (Ellis, 2003). The test strategy implements the use of the three abovementioned progressive and increasingly difficult question types. Each quiz is designed to test the student's vocabulary at different levels of understanding, and these test results are later evaluated and discussed. After each quiz attempt, direct feedback is given in the form of a pass or fail result. A pass result indicates to the student that they have adequately learnt the vocabulary to continue to the next quiz. After each attempt the students are able to access their test result. The questions answered correctly are marked in green, and incorrect in red. The correct answer is not given

as test feedback. If the students fail a quiz they have to re-learn the vocabulary they do not know before they can re-attempt the quiz, either in or after class. Once they reach the pass mark they can go to the next quiz. These test results do not contribute to the student's final course grade. In quiz (3) the asynchronous forum is set up for each group to share topic information and discuss the subject material to help them answer the test questions. It was expected that the test-forum would provide an opportunity for students to reflect on test results and discuss their efforts with other group members at any stage of the test taking process, and maintain student motivation. Figure 1 outlines the test taking process. It is important to mention that students were not informed that the reason for doing the test was to prepare them for a presentation project after the test was completed.
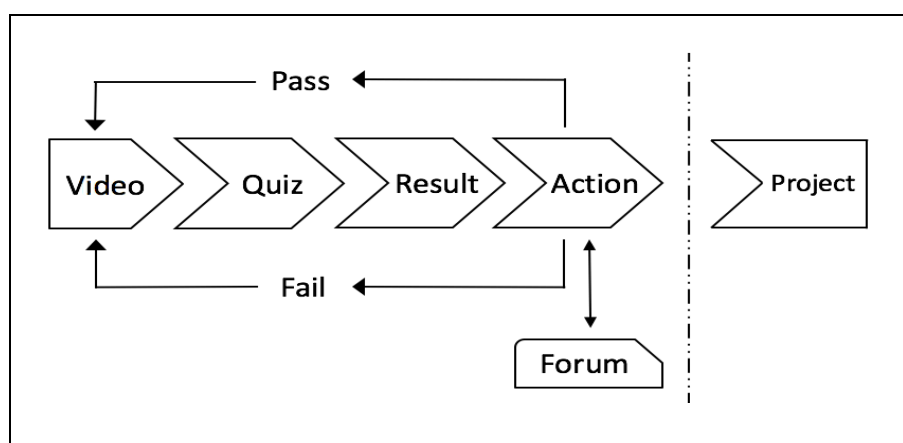

Figure 1. Video and Online Quiz-testing Framework

3.3 Data Collection and Analysis

As SA from online quizzes was intended to be used as an overall FA tool, an approach was devised to evaluate a test that focuses on the assessment process the students went through (Bertrand, 1993). Other test characteristics exist such as test quality or validity, which is determined by how well it 'measures what it is created to measure' (Borg & Gall, 1989). Test reliability links to test validity, in that "it impacts the accuracy with which one can draw inferences about a particular characteristic or attribute intrinsic to the test taker" (Van Gog, 2007, p. 769). However, the current test evaluation best suits the investigation of a test centering on the students' potential for learning through assessment (Poehner & Lantolf, 2005). The qualitative data collection method for conducting observations is made in class by the teacher/administrator. Participant and nonparticipant observation may be used in a mixed method study along with quantitative methods to examine what learners do while learning, as was done in a Savenye and Strand's (1989) study regarding an initial pilot test of a multimedia-based science curriculum. Classroom and test-forum observations will address the implications of the testing procedure experienced by the students. The teacher/administrator was able to use the LMS to track test results, and record any test issues and other technical problems. Table (6) shows the observation method conducted every week for each quiz, and shows the student questionnaire administered in

week (3). The student test results will be given in section (4.1) The student responses in an end-of-test questionnaire will provide quantitative data to determine the efficacy of implementing FA and feedback strategies in small test-groups (see Section 4.2). A five-step Likert-type rating scale was used to accurately determine the strength of the students' attitude (O'neal & Chissom, 1994) when participating in this method of online testing for the first time. Examples of student discourse in thread format will be provided to show how students discussed the science content online as a test-group (see Section 4.3).

Table 6. Data Collection Methods

Week	Quiz Results	Class Observations	Test-forum	Questionnaire
1	√	√		
2	√	√		
3	√	√	√	√

3.4 Research Question

The test aims to encourage students to make learning decisions that impact their level of understanding of vocabulary and knowledge of key science concepts, through a progression of three different types of quizzes consisting of increasingly difficult questions. The online test incorporated FA and feedback strategies to facilitate collaboration in small test-groups to support vocabulary acquisition and enhance student-centered learning. The research question specifically asked the following:

o *How effective was the test strategy to learn vocabulary, and encourage learners to collaborate in test-groups and empower them as autonomous learners?*

4. Results

4.1 Test Results

Below are the results for each quiz (Table 7) that show the overall test outcomes for 34 participants including the number of quiz attempts, the quiz pass grade as a percentage, and the number of students who passed the quiz. It is important to note that (N/A) means the attempt was not available due to the limit being set at three attempts.

Table 7. Student Results for Each Quiz

Quiz Number	Number of attempts taken for students to pass each quiz						Pass Percentage	Total Passed
	1	2	3	4	5	6		
1	1	21	10	2	-	-	80%	34
2	4	11	13	0	3	3	80%	34
3	0	10	14	N/A	N/A	N/A	100%	24

4.2 Student Questionnaire

The first category data specifically relates to the effectiveness of the test strategy and will provide insight into using a test designed as a FA learning strategy (see Figure 2). The second category data (see Figure 3) will be analyzed to evaluate the feedback methods used in the quizzes as well as the classroom activities that were conducted in small groups. The responses recorded in Figure 4 will be analyzed to evaluate the effectiveness of small group work in terms of student discussion carried out by students in class in quiz (1) and quiz (2) and the online test-forum discussion carried out during quiz (3).
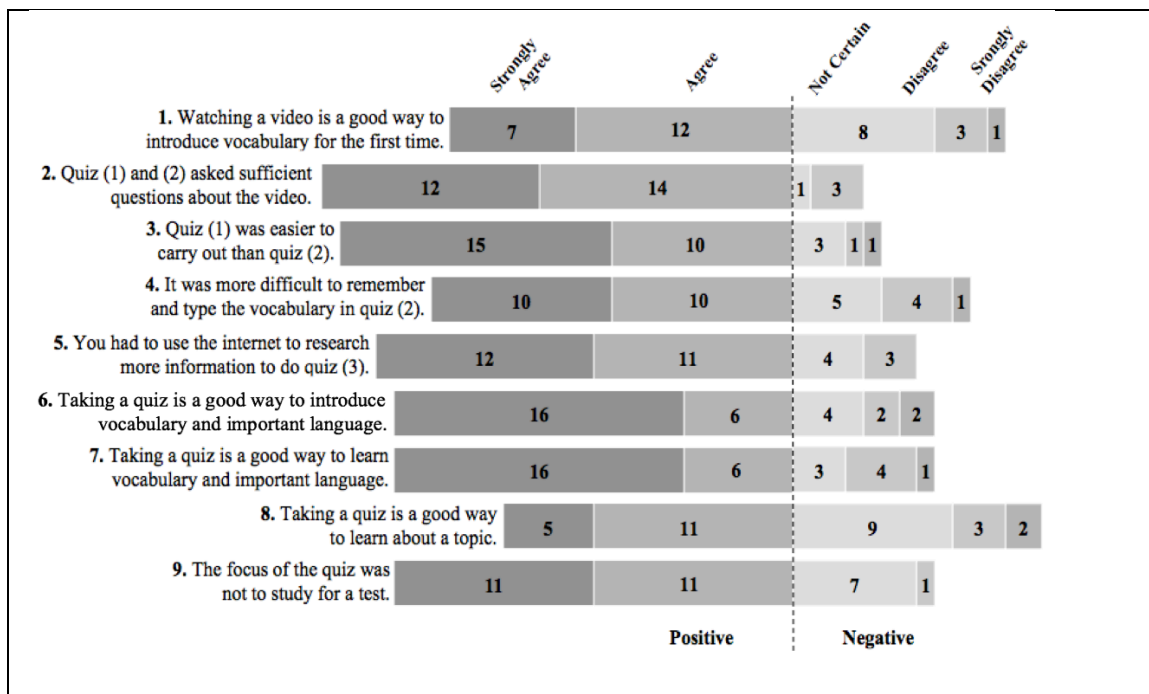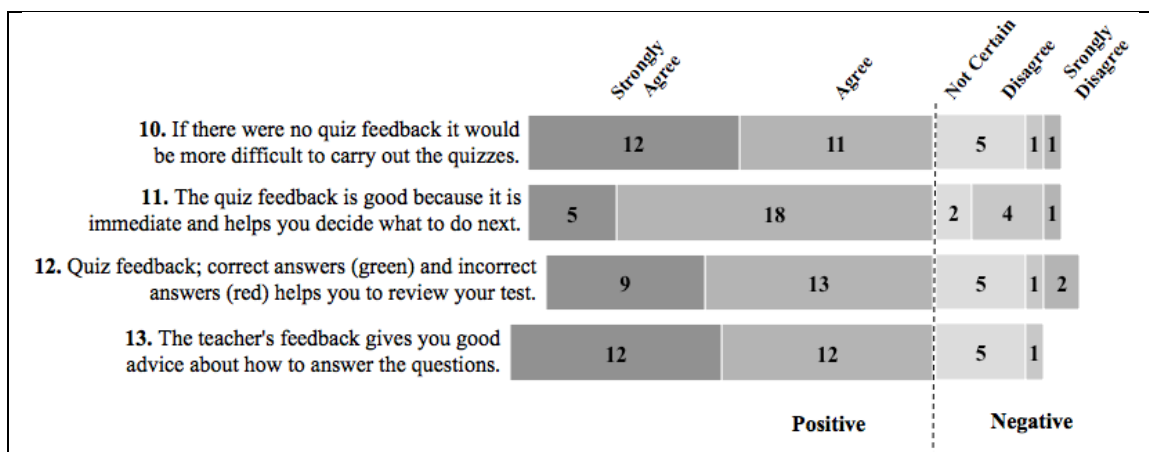

Figure 2. Student Responses Based on the Test Strategy.

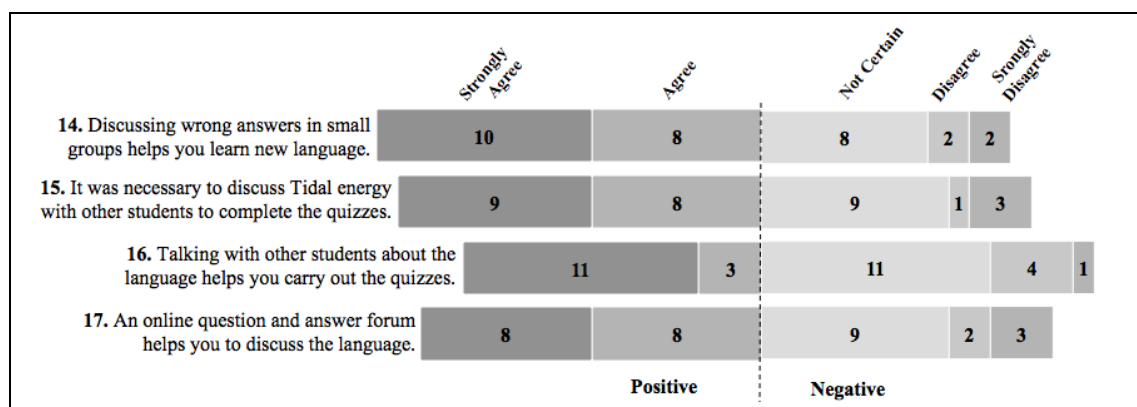Figure 3. These Student Responses are Based on FA and Feedback Strategies.

Figure 4. Student Responses Based on Collaboration in Small Groups

4.3 Forum Discussion

Example (1) in Table (8) shows the students' discussion (S) about the words 'shrouds' and 'venturies' between four group members. In Table (9) the word 'footprint' is discussed between three group members (Example 2). The data was copied directly from the test-forum.

Table 8. Example 1: Forum discussion

(S1)	About the question "Why is the company 'Tidal Energy' a strong competitor in tidal energy?" "they have worked on tide technology mounted in shrouds." is not right. But I do not know why. By the way, What does "shrouds" mean?
	(S2) I chose "they have worked on turbine efficiency", and it's not correct answer. But I have no idea which other answers should I choose. Please tell me your idea.
	(S3) Another answer is "they developed turbines mounted in Shrouds or Venturies".
	(S4) I chose "they developed turbines mounted in Shrouds or Venturies", it is true. In the video Tidal Energy took a different approach working on turbines mounted in shrouds, also known as Venturies to increase turbine efficiency.

Table 9. Example 2: Forum discussion

(S1)	What is the definition of foortprints?
	(S2) I checked Wikipedia and it said that footprint is: (url link)
	(S3) In the quiz, the footprint means the impact on the environment. It mean "measure of the amount of carbon dioxide produced by a person, organization or state in a given time

5. Discussion and Implications

Research Question: "*How effective was the test strategy to learn vocabulary, and encourage learners to collaborate in test-groups and empower them as autonomous learners?*" In the discussion below there are six 'Areas' identified in the data deemed as relevant to the investigation of this study.

Topic Video (Area 1): As outlined in the methodology, a video was selected based on environmental science as this corresponds with the students' first year academic course materials. Initial evidence suggests that the video topic was appropriate and the level of vocabulary and language was suitable for quiz creation. The overall test results (Table 7) and questionnaire data (see Section 4.2) indicates that the lexical analysis procedure outlined in section (3.2) was proven to be fundamental to the following aspects;

1. Identifying and classifying vocabulary in the test design phase.
2. Creating the quiz questions and answers using specific dialogue.
3. Implementing the three types of question as part of the test strategy.

Test Strategy (Area 2): The data obtained from the questionnaire results (see Figure 2) regarding the test strategy (Table 2) supports the use of the three different question types to;

1. Introduce and initially pre-test the key vocabulary and language (quiz 1).
2. Reinforce it using the context of the video dialogue (quiz 2).
3. Test the key vocabulary and broader topic knowledge via questions utilizing the vocabulary and content outside of the scope of the video dialogue (quiz 3).

In addition, the data results from the questionnaire (see Figure 3) confirmed that the FA and feedback strategies were beneficial in the test taking process. The use of test-groups for discussion (see Figure 4) helped students discuss incorrect answers, learn about the topic and language, and generally talk about the topic in English. As such we deem it as being beneficial. The purpose of quiz (1) was to remember and select the right vocabulary, and it was considered easier than remembering and typing the correct word in quiz (2). It was expected that quiz (3) would be the most difficult quiz to perform and this was reflected in the final test results as well as the students' responses to questions (2), (3) and (4) in the questionnaire. In quiz (3), questions required students to research content not provided in the video. Students also had to infer the meaning of vocabulary and language in relation to the science subject material, and if needed, students could discuss the questions in the online test-forum. Due to this we are not alarmed by the fact that even though quiz (1) and quiz (2) were passed by all 34 students, there were 10 students who could not pass quiz (3); although all these students achieved 85% or more in their third and final attempt. The inability of these 10 students to pass may be a result of the following: a) the quiz being limited to three attempts; b) the pass mark had increased from 80% to 100%; c) the process to research and acquire the language to answer questions of an inference nature was considerably harder. It is recognized that, from a design perspective, obtaining more knowledge about different quiz types would also help explain how question types influence learners.

Question types influencing learning (Area 3): That the majority of students agreed in the questionnaire that a progression of quizzes was effective not only for learning vocabulary and language, but also learning about a topic does seem favorable (see Figure 2). It was expected that students would

fail any number of quizzes throughout the testing process, and upon failing, students had to decide how they were going to learn the vocabulary and content. We now know from the results (Table 7) that more difficult question types produced more failed attempts, but the way in which the progressive nature and order of drop-box questions, short answer questions and selection questions have influenced learner behavior requires further examination.

In the beginning, the teacher observed students identifying key words from the video and memorizing them for the first quiz. Students mostly worked on their own, and the test results provided adequate feedback for students to re-take the quiz if they failed (only 1 student passed on the first attempt) and the majority of students worked alone. Students re-watched the video, and occasionally asked group members for help, and continued memorizing the key words to repeat the test. However, in the next class (week 2) students reacted differently after doing quiz (2) for the first time. During quiz (2) students were observed using dictionaries, taking notes and comparing lists of key words with other group members. Some students also watched the video together in groups and discussed its content. The teacher observed that the students were not simply asking each other for the correct answer in order to reach the pass mark, but instead giving feedback in question-based discussions focused on the meaning of key words. The test-forum provided in quiz (3) shows that students often posted discussions immediately after a failed attempt and were able to continue test discussion online, which is discussed further in area (5).

These observations suggest that as the students progressed from one quiz to the next, they were able to adapt their learning approach due to the different characteristics of the quiz. However, further research would be required to determine if FA and feedback strategies have been effective in building a metacognitive understanding of vocabulary as part of the learning processes (Pintrich & Zusho, 2002; Nicole & Macfarlane-Dick, 2006). One way to continue this research would be to link and investigate the level of science learning demonstrated in the test with the final oral presentation project.

Test-groups (Area 4): The testing process necessitated in-class discussion to generate information to share ideas about questions and answers. As intended, student discussion placed emphasis on knowing the science vocabulary in quiz (1) and quiz (2) while in quiz (3) it focused on understanding broader topical content (Anderson, 1988). Also, observations in class noticed that some students didn't progress to the next quiz until everyone in the group reached the pass mark. The role of assessment shifted to a student-centred paradigm (Huba & Freed, 2000; Holec, 1981). However, it could also be said that, students did not make decisions merely based on their own performance, but instead demonstrated an alliance based on group performance. This assumption is confirmed by student questionnaire responses indicating that it was necessary for them to discuss incorrect answers and to collaboratively work out correct answers with each other (questions 14, 15 and 16). This seemed to be an essential part of the test-taking process (Macdonald, Mason & Heap, 1999) and leads into a short discussion regarding the impact of online collaboration in the test-forum used in quiz (3).

Test-forum (Area 5): In addition to test-groups, the student discourse data (see Section 4.3)

exemplifies the use of the test- forum in quiz question (3). In example (1) students are discussing the meaning of 'Shrouds' and in the discussion. Student (3) and student (4) are explaining to student (1) and that the word 'Ventures' has the same meaning. In example (2) students collaborate to investigate a deeper meaning of the word 'footprints'. In doing so students use their dictionary and the internet (Wikipedia) to resolve the answer. Therefore, the test-forum has aided the students by giving them a tool to assist them in discussing important science terms using more difficult language initially provided in the video (question 17). The forum discourse has identified the students' use and understanding of the key words and language in these discussion posts. It could be said that quiz (1) and quiz (2) provided a springboard for students to solve problems and expand their knowledge of the subject material as was carried out in quiz (3).

Unexpected test results (Area 6): Not shown in Table (7) is the fact that after reaching the 80% pass-mark in quiz (1) and quiz (2) students continued to re-attempt the quiz until they gained 100%. As Johnston (1992) pointed out in traditional assessment learners are less concerned with the process, and instead more focused on passing. Our results indicate that the students were not just focused on reaching the pass mark but rather were more satisfied until they believed that they had learned all the material. It could be deduced therefore that students considered the quizzing process more important than the goal of passing, a characteristic usually associated with summative assessment (Johnston, 1992). Furthermore, the students themselves realized that the learning process they were going through extended beyond passing a test (question 9).

6. Conclusion

This test evaluation has given insight into the effectiveness of an online video quiz system for learning science vocabulary and language. In order to enable students to focus on learning rather than just getting a good test result, emphasis in the test design was placed on the learning process (Anderson, 1998). The overall results show that the use of different types of quiz questions increased the cognitive load, and as a result of this, students depended on their test-group to aid in the testing process. Both discussion in class and student discussion in the online forum in quiz (3) show that FA and feedback strategies promoted test-collaboration, and facilitated a constructivist approach to learning and assessment. As a result, students were observed taking control of how and when they did quizzes as part of their own learning development in a student-centered learning process (Butler & Winne, 1995). This was exemplified by the fact that students aimed to get 100% in quizzes, and that some students only progressed to the next quiz when everyone in the group had reached the quiz pass mark. We deem these findings to be of high value in the vocabulary-learning process. Further research is needed to give teachers and curriculum developers more of an understanding of the practicality of such an alternative assessment test utilizing different question types to conduct FA as a tool for online learning.

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