
CALIFORNIA STATE UNIVERSITY
MONTEREY BAY

# CAMTASIA TO DEVELOP VOCABULARY IN-CONTEXT WITH INTERACTIVE AUTHENTIC LISTENING IMPLEMENTING MULTIMEDIA PRINCIPES

CAPSTONE REPORT

Submitted in partial satisfaction of requirements of the degree of

MASTER OF SCIENCE in

Instructional Science and Technology

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Capstone Approvals: (At least one advisor and capstone instructor should approve)

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## Executive Summary

Authentic listening, which is the Levantine Arabic language, is different from the written standard Arabic. The notion of this language is that it is based on cultural reference and has a lot of irregularity in the way it is constructed. DLI language learners struggle to pass the authentic listening in their DLPT final test. Therefore, instructors should find a way to teach this language in its cultural context focusing on vocabulary.

According to Constructivist learning theory, people build their new knowledge based on their previous experience and knowledge (Harasim, 2017), thus, our goal was to build strong listening and vocabulary foundations for DLI language learners, mainly in semester I. Our learning solution offered DLI Instructors asynchronous instructional training for 60-to-80 minutes. The focus was on how to use Camtasia's basic tools to create interactive listening materials, how to place written words on screen implementing Multimedia, Contiguity and Signaling principles, for vocabulary retention, and how to make it interactive by adding quiz to the video.

The training benefited DLI instructors by introducing them to a new software. Learners were introduced for the first time to Multimedia principles and have recognized its effectiveness in authentic listening. As a result, DLI language learners will receive good quality authentic listening, with on-screen vocabulary which will reduce the cognitive load, and a quiz with feedback to assess learning.

The effectiveness of this training was monitored through formative and summative evaluation. The analyzed result indicated that the training was effective. The development plan will continue to cover more principles and foster the implementation of principles with material development.

# Introduction/Background

## Background on Project

After five years of direct instruction at the Defense Language Institute, Among the problems encountered during the said time was:

- Repeated failure in the authentic listening material
- Student's report revealed that they are unable to recall low level vocabulary from listening.
- DLI instructors are preparing their authentic listening material randomly.
- DLI curriculum textbooks printed in black and white, with not enough pictures for vocabulary to help recognizing the words in real life.
- Learning theories and principles are not being taken into consideration while preparing listening material.

The need assessed was to improve language learners' vocabulary recognition and retention by presenting it in context. Novice learners need vocabulary with pictures in its environmental setting. According to Richard Mayer, words and pictures support learning (YouTube, 2011). The learning solution offered, aimed at guiding DLI instructors on how to prepare videos and offer them new advanced ways of preparing their listening materials based on multimedia principles using Camtasia software.

**Problem Description**

I started at the Institute in 2015. Among the major problems I oversee with students, was vocabulary retention and cultural terms. Students are being exposed to a large number of vocabularies with less visual aid and interactivity in classrooms. Classrooms are more teacher-centered due to the intensive curriculum. That is why this training targeted DLI teachers. We all, as instructors, know that the main Defense Language Institute goal is to improve language proficiency levels and achieve the 2+ 2+ 2 standards in the three modalities, listening, reading, and speaking.

However, while analyzing the gap we have found the following facts:

1. Differences in Arabic Levantine DLPT results. After analyzing DLPT test results for three graduating teams, it was significant that there were high passing rates in reading and low passing rates in listening. For example, in a class of ten students, the percentage was 90% passing reading and 40 % passing listening. However, after each DLPT test, students are asked to write their feedback. Almost all of them attribute the problem to cultural terms and vocabulary retention.
2. The majority of DLI instructors, come from an educational background that believes in teacher centered classroom instruction. These beliefs affect the new generation of students who are connected to games and videos.

3. DLI instructors randomly select authentic excerpts for their mentees. Instructors select any YouTube video link and give it to students without dissecting the video and highlighting the most important vocabulary that covers the current unit.
4. Failing students, when given an extra 8 weeks of instruction, are passing listening.

Therefore, we can bridge the gap and work on achieving good listening results by working on the foundation. According to Piaget "humans learn through the construction of progressively complex logical structures" (Harasim, 2017). By presenting vocabulary through listening with pictures, in a cultural and environmental setting, we help learners construct knowledge and reinforce new learning.

**Target Audience and Context**

Our targeted audience is DLI instructors. They are familiar with technology due to emails communication, the COVID virtual teaching environment and test grading. Thus, instructors are living in a very active training environment. Therefore, they are used to different software applications such as UCAT, BookWidgets, Epuzzle, iMovie and many others. For this training our trainees were, team leaders, curriculum developers and instructors. Trainees were introduced to a new application where they benefited on a personal level by creating YouTube videos, educational interactive materials, and screencast videos.

Most of the DLI teachers have a bachelor's degree in language teaching and other degrees with at least 4 years' experience in language teaching.

**Technology Skills**

The Defense Language Institute is a healthy environment, busy at conducting training. Yet schools offer a variety of training. For example, there is schoolhouse training, school-wide training, holiday training, and the Center for Leadership and Development training. The field is broad, therefore, they will be welcoming any fresh and new idea.

DLI instructors have strong previous knowledge and are well informed about technology. Learners have computer basic knowledge, can navigate the internet, select articles and YouTube videos to use for educational purposes. They have previously received training on UCAT, iMovie, Edpuzzle and BookWidgets, and developed materials using the programs. The learners, for this training, are required to import pictures media files, edit videos, drag and drop from media files to the timeline, add quizzes to the timeline and export the movie to local files.

Thus, after COVID 19 lockdown and moving to virtual learning, the need for online interactive material has increased, and a lot of programs has been consumed. Camtasia gives the learner a broader platform to be creative in developing interactive listening. With this software DLI teachers can test their students' knowledge of the material by imbedding quizzes into the video.

**Environmental Scan**

According to DLI, training on new software and introducing teachers to new teaching strategies is part of the development program .. Teachers should submit successful Individual Development Plans that reflect their hard work and achievements. Therefore, our faculty learners are self-directed learners (SDL). They have their own goals and are working on improving their knowledge (Merriam, 2001).

There hasn't been any training that directs instructors toward integrating learning theories and principles in preparing their material. Using pictures to support learning hasn't been mentioned as a solution for a problem. Elkhdier and Khalil (2016) stated that the "omission of instructional design principles due to the lack of instructional design competencies leads to unanticipated and unexplained learning outcomes" (p.9). For this reason, we integrated principles in our authentic listening.

However, according to The Neuroscience of Learning (2019) video, learners with no previous knowledge start with an ambiguous impression or perception about the topic they are going to deal with. DLI language learners are starting their Arabic language course with ambiguous impressions. This is followed by a shock after unit one with the amount of vocabulary they must process daily.

With the current curriculum, students must deal with new alphabets, new writing skills, new sounds for the first time, and a new culture embedded in the language. The question asked, amid all these new skills, how does the brain work? When new knowledge enters the brain, it is entering an unorganized zone and has no place to sit there. The brain needs to create pathways "neural pathways", cultivate the road, and strengthen the transfer of the new knowledge through repetition and practice. Thus, here is why we worked on presenting new vocabulary on screen and give students clues about what they are listening to. Once we strengthen the muscle memory in the brain, the brain reaches what is known as plasticity which is the ability to create and strengthen new connection (Neuroscience, 2019). Here is where students start using the learned vocabulary. Therefore, our aim was to invest in our faculty SDL and show them more practical methods of preparing materials based on theories and principles, to reduce cognitive load on our DLI language learners. However, teachers have great influence on the learning process. It is their

role to provide a safe and healthy move of the new knowledge to the fresh brain, taking into consideration that the transportation process should be followed by good impressions to keep the language learner motivated.

## Solution Description

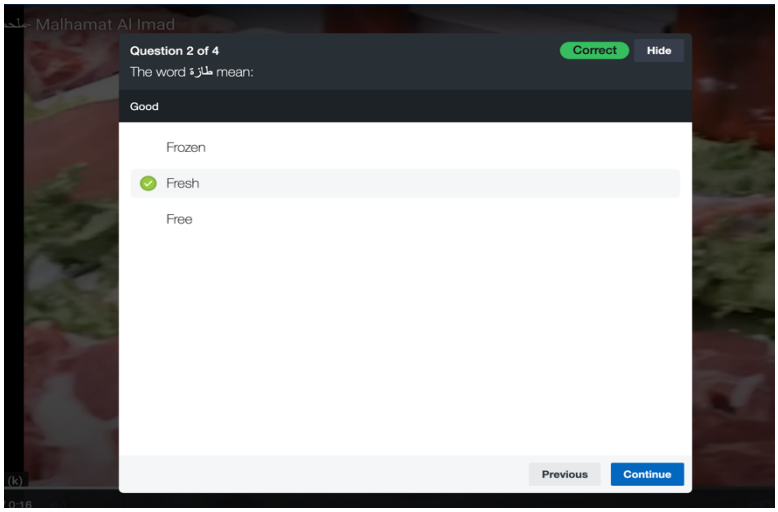
### Goals of the Project

This instructional design has two goals. Our first primary goal was looking into changing the way instructors prepare authentic listening materials for lower level listening by:

- focusing on introducing vocabulary in videos that mimic the culture and origin of the word itself, implementing Multimedia, Contiguity and Signaling principles.
- offering them a new software that can assist in creating interactive listening materials,
- helping them improve their personal skills and reflect that on their job.

The second is to have DLI language learners receive authentic listening materials based on contiguity and signaling principles, i.e., when a new vocabulary accompanied by its picture it will be reducing the load on their memory. When the learner receives new vocabulary without the burdens of guessing and forgetting, this will reflect on their motivational level (Mayer,2016). We are looking forward to making vocabulary retention easy on our learners (DLI students) and trying to achieve it through educating DLI Instructors.

The interactivity of this listening is shown on the screenshot below. This will give the students the chance to work on their own without the interference of the instructor. Students can listen, read, answer the questions, and receive feedback by themselves.




**Learning Objectives**

- Given list of previously prepared listening materials, a DLI instructor will be able to recognize if this listening activity is implementing contiguity principles or not, with 90% accuracy.
- Given a scenario, a DLI instructor will be able to define which principle is implemented in the scenario, with 90% accuracy.
- Watching a YouTube video tutorial, a DLI instructor will be able to select pictures and videos from files and import them to the Media Bin, with 100% accuracy.
- Given a list of topics to prepare level 1 authentic listening, a DLI Instructor will be able to create listening materials applying Mayer's cognitive theory of multimedia principles, with 100% accuracy.
- Selecting a listening link, a DLI instructor will be testing it for copyright issues, with 100% accuracy.

- Given Unit 2 vocabulary list, a DLI instructor will be using Camtasia Software to present each word with its picture in a video, with 100 % accuracy.
- Requesting a clarification on where to find listening folders on SharePoint, a DLI Instructor will be able to create a screencast instructional video, with 100% accuracy.

**Proposed Solution to Fill the Gap**

The learning solution was an asynchronous instruction training program using commercial software. In developing this lesson, it was taken into consideration not to overload the learner with too much information at the same time. Information was presented in small chunks with nice and pleasant presentation. The process started by introducing DLI instructors to the topic of the training and the steps to follow. Trainees were moved gradually from presentation to application. First, they were introduced to the meaning of a good video. Afterward, they proceeded to start the main lesson. Each module contains comprehension check questions in addition to a job aid. Learners were introduced to principles to inform them about the effect of cognitive load on students, and to start applying principles in their lessons. In an educational environment like DLI students are under pressure: 1) from the curriculum, 2) extra authentic listening above their level, 3) the way instructors flood them with vocabulary during their teaching hours. Informing instructors about the effect of the picture with audio and how much the memory can perceive at a limited time was a good decision. A change in behavior occurred (Appendix C). Instructors recognized the difference between random selection of listening topics and principle-based selection.

The Camtasia module was developed using Captivate simulation and divided into three parts. Part one was observing the main function of Camtasia tool. Part two was the training part

and part three the assessment followed by a quiz. To reinforce learning a job aid page was available for revision whenever the trainee was in need. Through the Resources page, the learner was able to download Camtasia software free trial and watch screencast tutorials on how to search for copyright free videos and do a screencast. Through the final page, the Assessment page. learners submit their usability and post-attitude surveys and submit their post-test.

## Learning Theories, Instructional Principles

### Adult learning theory:

In faculty professional development at DLI, adult learning theory is dominant and implemented. The learners are adults and intrinsically motivated. (1) they know why they are learning, (2) self-directed, (3) have previous experience and knowledge and they can connect to learning, (4) their approach is to solve a problem they have already encountered, (5) are independent learners who know what they want and why (Merriam,2001)

After this training DLI instructors will identify the problem behind vocabulary retention, and they will realize that introducing novice learners to new vocabulary without the aid of a picture, will add pressure on the memory. They will start using learning principles. Participants will be able to create their own YouTube and Interactive videos, and this will establish personal relevance.

### Cognitive theory, Situated Cognition:

To learn a language, one should know how the native speaker thinks and behaves. Our goal is to introduce the students to new vocabulary directly in its cultural setting by introducing the student to the picture of a particular word in its cultural place. Thus, as for the Situated Cognition Theory, (1) learning in context: to make sense of a particular situation, the learning

experience should be situated in its context, (2) community of practice: people act and construct meaning with the environment or community they live in, (3) learning as Active Participant: Learning occurs when you belong and participate with the community, (4) knowledge in Action: we can elicit knowledge from people's action in an authentic situation (Jonassen & Land, 2009)

**ARCS model of motivation:**

The ARCS is a model for improving motivational attraction of an instructional material and it includes four conceptual categories (Keller,1987)

- Attention: Introducing a new software, Camtasia, that attracts the learner's attention
- Relevance: The software is like other applications they are familiar with, such as iMovie, Powtoon and Edpuzzle. However, Camtasia has more interactive features and more practical tools.
- Confidence: The sample provided, and instruction given allow the learner to practice and develop new material like quizzes and test it among peers. This will add confidence to the learner.
- Satisfaction: After finishing the training DLI learners submitted their new authentic listening material to students. Using a flipped classroom setting helped the teacher run a productive teaching hour.

**Cognitive Theory of Multimedia Learning:**

Provides principles to guide multimedia learning. There are 12 principles. We used two of them:

**Contiguity Principle.**

Make sure text is closely aligned to the graphics it is explaining.

**Signaling Principle:**

Recommends using voice and visual signs to help the learner focus organize and avoid distraction.

**Constructivist theory:**

The theory is based on the idea that people usually build their own knowledge based on previous experience and knowledge. It is a construction process. Hence, DLI learners have their own previous experience on how to use iMovie or Edpuzzle. Therefore, they will be building on what they perceive from previous training to create interactive videos.

**Behaviorist***:*

According to John B. Watson, we develop ourselves based on what we see (Snow,2015, 1:39). Changing the environment leads to change in human's behavior. When we change the environment of training, we might see changes in behavior with the instructor. Based on my personal experience, after I have been introduced to multimedia principles and many other theories, I have changed in my old way of explaining lessons.

The purpose of this training is to see a change in behavior after offering principles and tools to instructor. The change will be in preparing interactive authentic listening material not crowded with vocabulary and avoiding overloading the memory which will lead to demotivating the students.

**Learning Strategies and Justification**

Using a student-centered strategy, students conducted the training asynchronously by themselves. The module starts with the main page that directs learners toward the whole lesson.

The main page contains step-by-step instructions. The introduction page sums it up with the presentation video created. The video showcased and compared the different types of listening given to our language learners. Then the training proceeded with covering each topic followed by comprehension checks.

**Various eLearning Cognitive and Multimedia Principles:**

- Pre- and post-attitude survey: To assess pre and post tutorials attitudes.
- Pre-test: Learners will take a pre-test to check their knowledge about the topic.
- Introduction: Learners will be introduced to the topic and presented with the key objectives of the training.
- Segmenting: The content of the lesson was presented in chunks to help the learner manage essential cognitive processing and avoid cognitive overload.
- Contiguity: Since we are teaching the contiguity principle, we are implementing it in this training too, the words used to label images will align to corresponding graphics. The temporal principle suggests concentration and better learning occurs when corresponding words and pictures are presented simultaneously. Closed captions will be used for learner accessibility. All graphics, animations, and learner-content interactions will be used to support cognitive processes needed for meaningful learning. The design will consider potential cognitive overload by refraining from using distracting multimedia elements.
- Signaling: The signaling principle was used to draw our learner's attention toward important information and comparison made.
- Demo presentation: A demo slide was developed to walk learners through the steps and improve their motor skills. These slides helped them understand the sequence of

steps.

- Assessment: The web page consists of eight pages. Four pages contain quizzes.

**Media Components** This training was presented using:

- Camtasia software, for the introduction video, Multimedia principles and Screencast tutorials.
- Adobe Captivate simulation for Camtasia training. With Captivate we created a demo, training, and assessment module. This was an intensive practice to reinforce knowledge and motor skills.
- YouTube Video Tutorial.
- Google forms for pre-and post-surveys, and test.

## Anticipated Challenges

Toward the end of the preparation process, we encountered a problem with exporting video as quizzes through TechSmith Knowmia. TechSmith is another website responsible on exporting the videos with their interactive component. However, after consulting with the IT department they suggested exporting the videos to local files then share it on Microsoft office or the school's share drive. Trainees were able to share their created work on share drive.

The other problem was the limited number of available Camtasia licenses. The school's IT manager attended my class and saw a sample video prepared using Camtasia. We received good feedback from him about student engagement in the classroom. Thus, we were informed that the school will have more licenses after the new year.

## Methods/Procedures

### Design/Development Narrative

This Capstone project focuses on how to use Camtasia to create interactive authentic listening materials. The training consists of a Captivate course designed to train learners on Camtasia's basic functions with emphasis on implementing Multimedia, Contiguity and Signaling principle when preparing interactive listening materials for vocabulary in context. Camtasia is a practical, advanced, motivational, and interesting software program designed in a way that arouses the curiosity of the learner. It has many functionalities, like doing screencasts, creating personal YouTube videos, and developing materials. Our learners were able to do them all (Appendix E)


The training is a one-hour online training, divided into Eight parts, (1) Home, (2) Introduction, (3) Video, (4) Principles, (5) Camtasia, (6) Job aid, (7) Resources and (8) Assessment. This new eLearning lesson is a developed version of the first ten minutes prototype which were tested in the summer term. Notes have been taken to correct and develop the module.

Thus, the training was launched by sending DLI teachers an email explaining the topic of the training and asking them to reply if they were willing to take it.

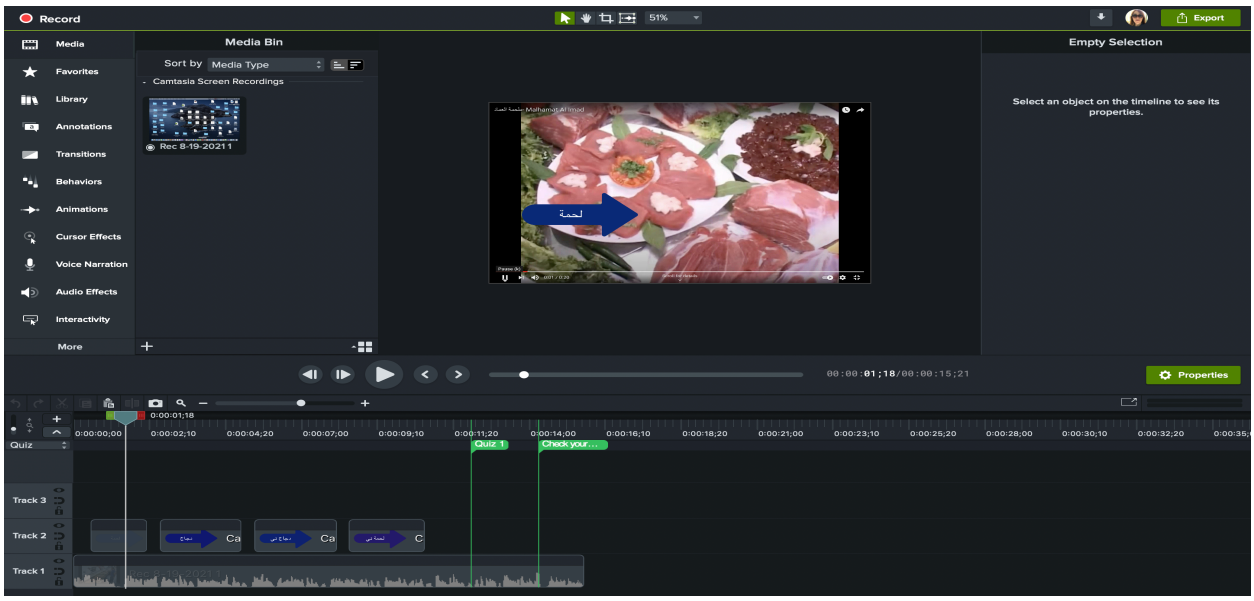
Those who sent the consent were emailed with the pre-attitude survey, then the pre-test. After we collected the first result, we send them the web page link. Trainees went through the following steps:

1. Home page: They were introduced to the training. They were informed about the navigation.
2. Introduction page: Contained a video prepared using Camtasia. The video showcasing three types of authentic listening. The first and second example are the one commonly used in schoolhouse and the third one is the one they should be implementing. This page also contains training's objectives.
3. Video page: Has a link to Richard Mayer's biography and a very important video for Richard Mayer explaining the importance of video with good instruction. The video followed with knowledge check quiz.
4. Principle module: Contains three interactive videos explaining the three principles covered in this lesson.
5. Camtasia Module: Divided into three parts, demo, training, and assessment.
6. Job aid: This page was created as an extra reference for the learner.
7. Resources page: In this page learner has a link to download Camtasia free trial in addition to tutorials on selecting copyright free YouTube video and how to do screencast video.
8. Assessment page: Contained the Usability survey, post-attitude survey, post-test, and the final task that should be produced by the learner.

## Project Sample Picture

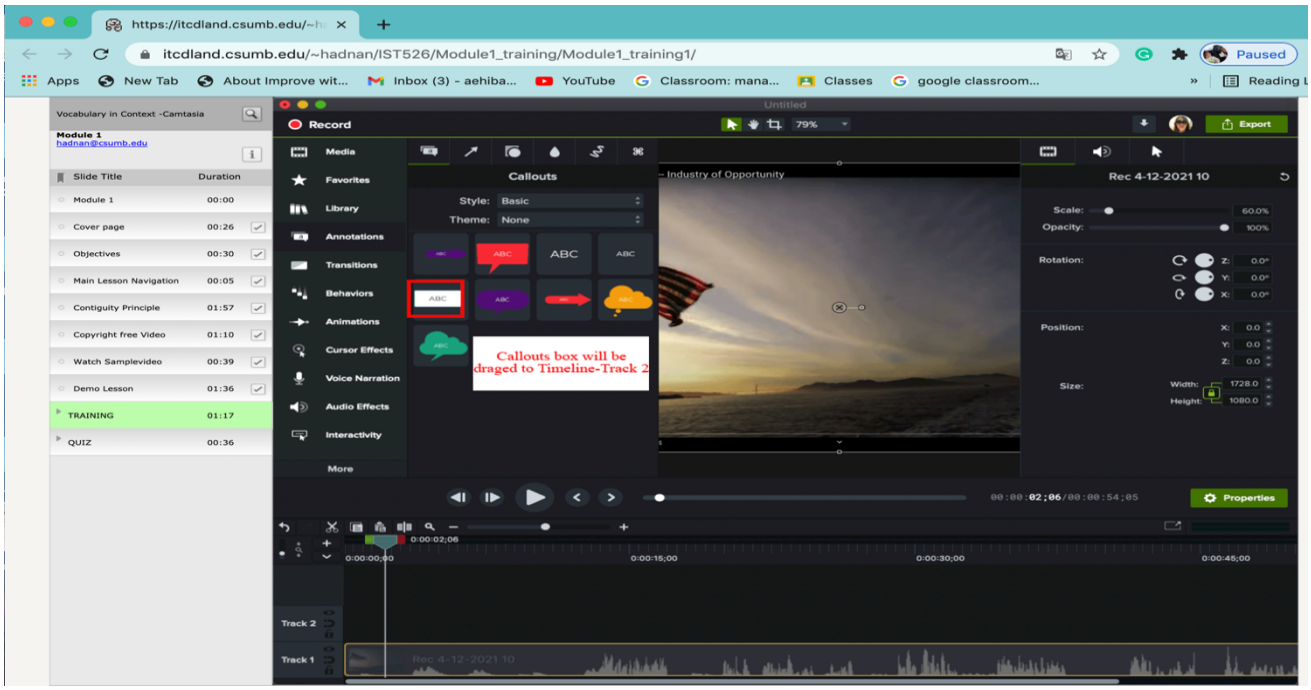
**Applying contiguity:**

This slide on how to prepare interactive listening, with Vocabulary in context




**Applying signaling principle:**

This slide on how we use callouts for vocabulary in context.



**Steps to Complete Project**

It was challenging working with this project, using Captivate simulation and Camtasia software was not supper easy, however, I was engaged and motivated doing all this technology and seeing how my project is growing big. The development process was monitored by my mentor who was reviewing and giving feedback on each deliverable. All major deliverables were wrapped up in one web page to make navigation easy and organized.

1. Submitted Capstone Proposal
2. Principle's tutorials were reviewed, corrected, then inserted in the web page
3. Adobe Captivate simulation: adjusted to correct the clicking issue that appeared to be confusing.
4. Update Pre-and Post-surveys to match the material added
5. Collect assessment data for summative evaluation and conducted the analysis study
6. Update rubric
7. Update observation check list

## Resources

1. Adobe Captivate for course development
2. Learners need to have their PCs, connected to the Internet and school's share point.
3. Camtasia Software installed.
4. Submit a training request to the Training department to reserve room either in school building or through Zoom for observation purposes.

5. No financial resources needed for this training.

**Technical Skills Required**

Since we are working with SDL they are well informed learners, therefore, we have no extra requirements for our trainees.

## Timeline/Progress Report

**Milestone Checklist**

| Deliverables | Submission Date |
|---|---|
| Progress report | August 29, 2021 |
| Capstone proposal | August 7, 2021 |
| Screencast tutorials | August 12, 2021 |
| Storyboard | September 21, 2021 |
| Interactive listening material student's feedback | October 19, 2021 |
| Start Capstone Web page development | October 20, 2021 |
| Sample Video materials | October 27, 2021 |
| Pre and Post-survey<br>Pre and post-test<br>Usability-Survey | November 6, 2021 |
| Introduction Video | November 7, 2021 |
| Job aid | November 10, 2021 |
| Captivate module, Demo, training, Assessment | November 12, 2021 |
| Multimedia Principles interactive tutorials | November 14, 2021 |
| Final Capstone project web page | November 16, 2021 |
| Online training | November 18, 2021 |

| | |
|---|---|
| Final submittal for Capstone project | December 7, 2021 |
| Summative evaluation | December 8, 2021 |
| Final Report | Dec 14, 2021 |

## Evaluation/Testing Plan

This eLearning module started by sending an email asking the trainee's willingness to take the training. Then another email was sent explaining the main idea of the training and the notions behind pre and post-survey and pre and post-test. They were also asked to download Camtasia prior to finishing the Assessment page.

### Formative Evaluation

An evaluation in the form of a usability test (Appendix A) was given to five participants. The participants are very well-informed candidates in the field of technology. Our trainees are language teachers but have different positions, team leaders, curriculum developers and assistant professors. This difference in samples gave credibility to our project. Four trainees were given the link to do the training asynchronously and one instructor observed while taking the training.

Learners gave positive feedback on the training (see Appendix A). However, to test the instructional effectiveness of the Camtasia module a meeting was held in person and through Teams with each candidate, and the following was revealed:

1. When conducting Camtasia's training and assessment module, clicking buttons were not functioning as fast as the learners' pace, the learners had to pause for a second and click again.
2. Camtasia's slides with inconsistent audio levels, this change of voice level did not distract the learner, but it was not preferable.

3. Camtasia's Assessment quiz recommended that learners send an email which is a proof that they finished their quiz. Not all trainees where able to send the email. They ended up sending screen shots.

For more precise formative evaluation one of the teachers was observed. Before conducting the training, an email was sent to the trainee about the date, time, and place of the training, and permission was taken from the chairperson of the department to reserve a room. The recommendation was to have the trainee with personal computer fully charged, connected to the internet and to have Camtasia software downloaded. While conducting the training the following points were checked:

Observation Checklist

| | | |
|---|---|---|
| Web page working properly | Good | |
| Navigation keys working properly | Good | |
| Video quiz prepared using JavaScript | Good | |
| Principals' Tutorials quiz, and feedback | Good | |
| Camtasia Training developed using Captivate | | Review buttons and voice level |
| Learner's engagement | Good | |
| Learner's attitude toward the training | Good | |
| Learner's comment | Good | |

Formative evaluation outcomes require a change in the Camtasia module which was developed using Captivate simulation software. While developing Camtasia training on Captivate the voice was recorded with the simulation. However, due to SME feedback on

wordings and sentence clarity, an adjustment was made to the voice narration. This switch between using the system's built-in microphone to voice-over recording changed the volume.

To make clicking on buttons free at any time, this should be done by recording it again and changing the settings on Simulation software from automatic to manual. When changing it to manual the designer can specify the time frame needed for the clicking function.

**Summative Evaluation**

The design was created with an intention to change attitudes and to introduce DLI instructors to a new way of developing authentic listening material. Each module contained a knowledge check quiz in addition to a job aid.

***Pre and post-survey***

Thus, a pre and post-attitude survey (see Appendix B and C) were given to check pre and post tutorial attitudes. The null hypothesis was there would be no change in attitude and behaviors after doing the tutorial. The alternate hypothesis was there would be a positive change in attitudes toward preparing authentic materials. After receiving learner results, a paired two sample t-test for dependent sample was conducted.

Learner's result

| | Pre-survey | Post-survey |
|---|---|---|
| H | 27 | 32 |
| M | 9 | 35 |
| A | 12 | 34 |
| S | 11 | 34 |
| R | 17 | 32 |
| MEAN | 15.2 | 33.4 |
| SD | 7.22495675 | 1.34164079 |

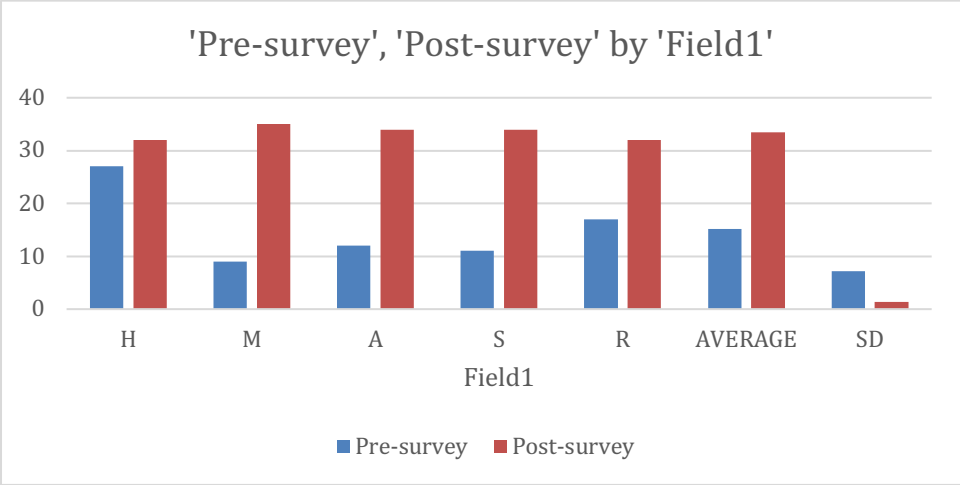
t-Test: Paired Two Sample for Means

| | *Variable 1* | *Variable 2* |
|---|---|---|
| Mean | 15.2 | 33.4 |
| Variance | 52.2 | 1.8 |
| Observations | 5 | 5 |
| Pearson Correlation | -0.861420041 | |
| Hypothesized Mean Difference | 0 | |
| df | 4 | |
| t Stat | -4.840014729 | |
| P(T<=t) one-tail | 0.004199996 | |
| t Critical one-tail | 2.131846786 | |
| P(T<=t) two-tail | 0.008399992 | |
| t Critical two-tail | 2.776445105 | |

It can be concluded that the result is statistically significant. The difference between pre- attitude survey and post-attitude survey was remarkable. The t-stat was 4.84, which is higher than the critical value of 2.13 and the p-value of .004 is smaller than the .025 Bonferroni alpha level. For this sample we calculated a new alpha using the Bonferroni correction $\alpha/n = .05/2 = .025$ because we did two ($n = 2$) different tests with the same sample. Therefore, the null hypothesis is not supported, and the result is found to be statistically significant. The pre-attitude survey score ($M=15.2$, $SD=7.2$) and the post-attitude survey ($M=33.4$, $SD= 1.3$) differed significantly [$t(4) =4.9$. The training was found to be efficient in the learner's improved post-survey.

Cohen's d = M2 - M1/(s divided by the square root of n) = (33.4 - 15.2)/5.17 = 3.51, indicates a large effect size, meaning the means are likely very different.

*Graph illustrating post-survey learning gains of participants "H" through "R" as well as the average learning gain*




***Pre and post-test***

Before taking the post-test (Appendix D) DLI instructors watched the principles videos, the interactive tutorials, the Camtasia simulation training and the assessment module. Each module contained a knowledge check quiz before taking the post-test. The result for Multimedia principles was monitored through the TechSmith website (see table below). The Camtasia training module was developed using Captivate simulation and the results for the quiz were emailed.

TechSmith Quiz summary report

| First Name | Last Name | Percentage Correct | Number Correct | Number Scored Questions | Number Unscored Questions | Time to Complete | Video Name |
|---|---|---|---|---|---|---|---|
| S | A | 100.00% | 4 | 4 | 0 | 00:03:40.0830000 | Contiguity |
| M | Gh | 75.00% | 3 | 4 | 0 | 01:16:29.9700000 | Contiguity |
| H | R | 100.00% | 4 | 4 | 0 | 00:03:42.0860000 | Contiguity |
| A | Kh | 100.00% | 4 | 4 | 0 | 00:04:21.0600000 | Contiguity |
| R | H | 75.00% | 3 | 4 | 0 | 01:02:39.2760000 | Contiguity |

Pre and post-test table

| | Pre-test | Post-test |
|---|---|---|
| H | 6 | 10 |
| M | 4 | 11 |
| A | 6 | 10 |
| S | 1 | 11 |
| R | 1 | 11 |
| | | |
| MEAN | 3.6 | 10.6 |
| SD | 2.50998008 | 0.54772256 |

t-Test: Paired Two Sample for Means

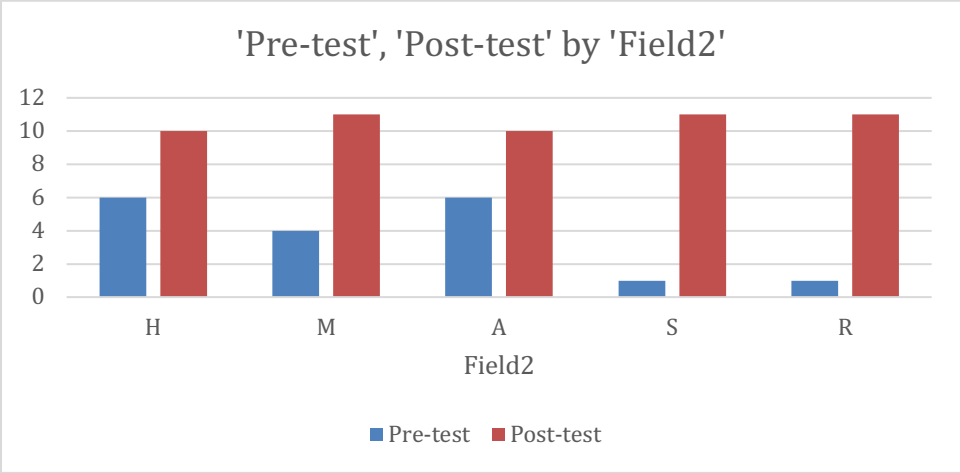
| | *Variable 1* | *Variable 2* |
|---|---|---|
| Mean | 3.8 | 10.6 |
| Variance | 6.7 | 0.8 |
| Observations | 5 | 5 |
| Pearson Correlation | -0.259160528 | |
| Hypothesized Mean Difference | 0 | |
| df | 4 | |
| t Stat | -5.155066696 | |
| P(T<=t) one-tail | 0.00336044 | |
| t Critical one-tail | 2.131846786 | |
| P(T<=t) two-tail | 0.006720881 | |
| t Critical two-tail | 2.776445105 | |

In analyzing post-and pre-test results we conducted the same method used in the pre- and post-attitude survey. We used Bonferroni correction $\alpha/n = .05/2 = .025$ because we did two ($n = 2$) different tests with the same sample. By using this method, we avoided type 1 error which is rejecting the null hypotheses when the null hypothesis should be supported. The t-stat was 5.15, which is higher than the critical value of 2.13 and the p-value of .006 is smaller than the .025 Bonferroni alpha level. Therefore, the null hypothesis is not supported, and the result is found to be statistically significant. The pre-test score (M=3.8, SD=2.5) and the post-test (M=10.6, SD= 0.54) differed significantly [t (4) =5.15. The training was found to be efficient in the learner's

improved post-test. Cohen's d = M2 – M1/(s divided by the square root of n) =(10.6 - 3.8)/ 1.81 = 3.74, indicates a large effect size, meaning the means are likely very different.

Objectives were measured by creating a rubric (Appendix E) to check the assignment accomplished under the Assessment module.

*Graph illustrating post-test learning gains of participants "H" through "R" as well as the average learning gain:*




**Recommendations**

The next step will be to publish the training school-wide and make it available for training events. However, there are a few things that should be reviewed.

1. Add to the Principles module, two more principles, the Coherence and Redundancy principle. The Coherence and Redundancy principles are an important supplement to the project's main idea. This will raise more awareness on how to use concise narration, and contextual graphics with good video.
2. Improve the sound quality in Camtasia module.
3. Consult with school's Helpdesk to solve the quiz report on the Camtasia module.

4. Review and adjust the clicking action of each key on the Camtasia module.

## Conclusion

This training on "**Vocabulary in Context Within Interactive Authentic listening-Implementing Multimedia Principles using Camtasia software"** proved its effectiveness among learners. Before taking the training 80% of the instructors indicated that they don't prepare their materials based on principles (Appendix B). 100% don't use Camtasia software (Appendix B). The majority have no basic knowledge about principles or how to search for copyright free video in general.

Post-attitude survey reflected a good change in attitude and knowledge. 80% of the instructors indicated that they implemented Multimedia principles while preparing authentic listening (Appendix C). 100% have basic knowledge about Multimedia principles (Appendix C) and 80% will be using Camtasia software (Appendix C).

The idea of this training was to offer something new to learners. Instructors should enjoy developing materials for their students. Camtasia software can offer more than just creating materials to students but also can be used for personal investment or as a hobby by creating personal YouTube videos, screencasts, quizzes, and movies.

The post-survey indicated the training was effective and learning s occurred. However, in light of the prototype based on the first module, I will be developing and correcting the errors of this training to come out with a more professional look.

Trainees recommended that this type of training be generalized and published in the schoolhouse. The next step, after correcting the gaps mentioned in the recommendation section, is to keep developing the module based on need analysis and increase awareness of principles, using images to support learning and help in vocabulary retention.

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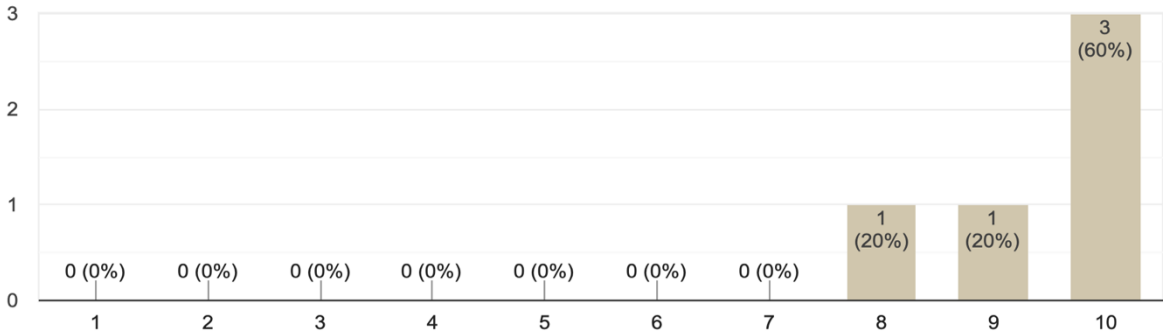
# Appendix A

## Usability Survey

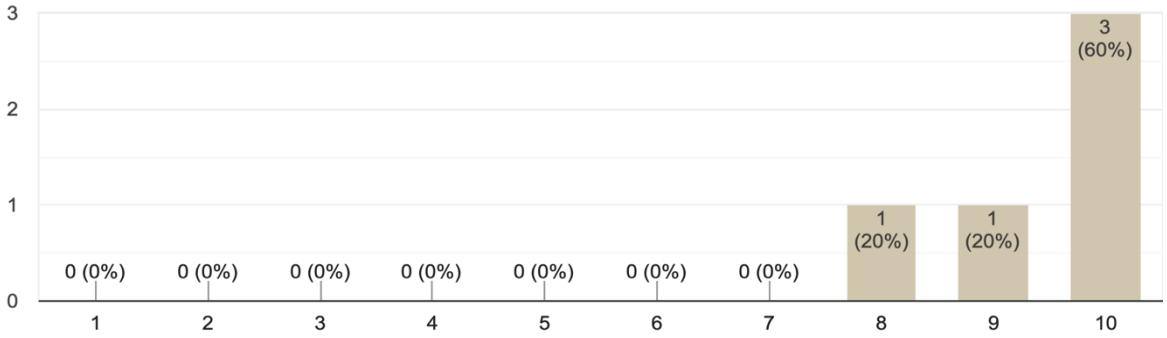
1. It was easy to use the system?

5 responses



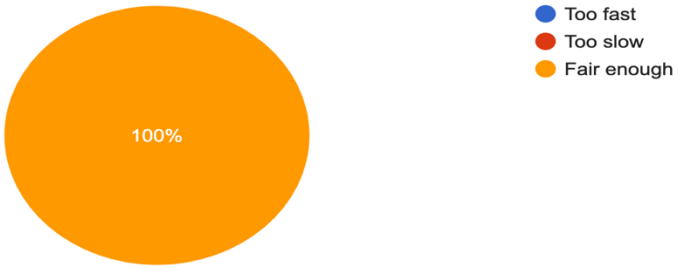

2. The navigation keys were functioning properly.

5 responses



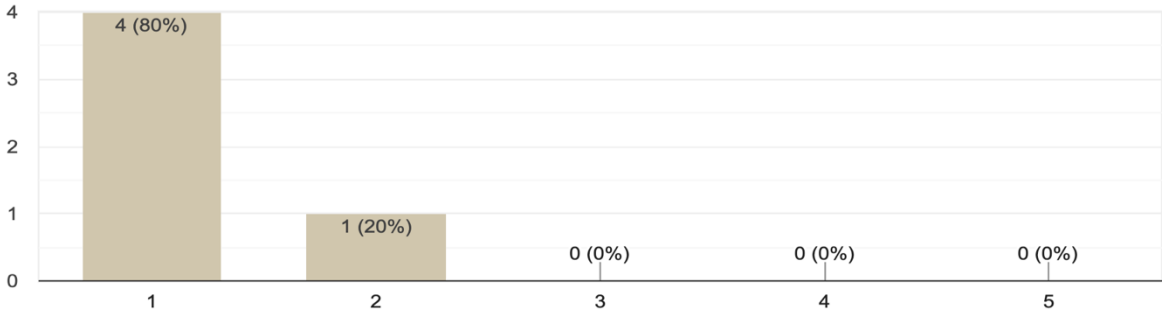
3. The Demo slides were?

5 responses



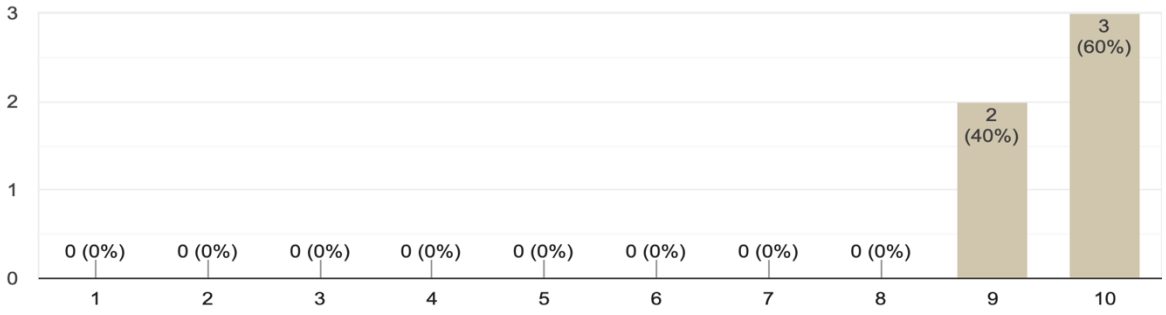

4. In Camtasia Assessment module, it was confusing where to click and when to click.

5 responses



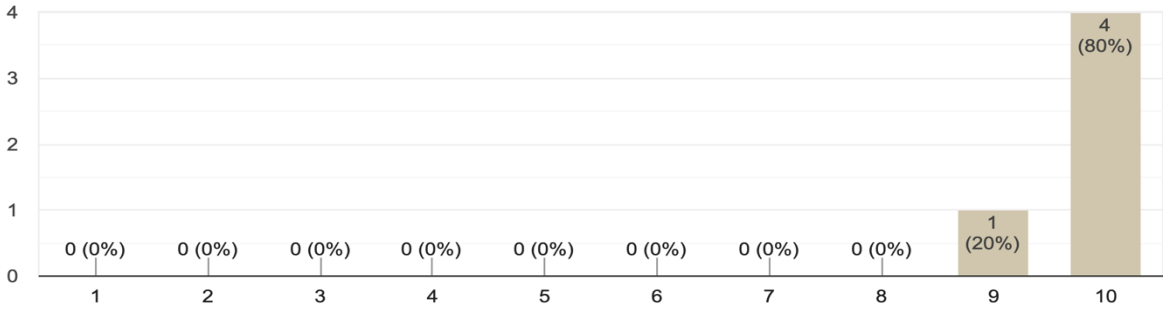

5. I felt comfortable navigating the page.

5 responses



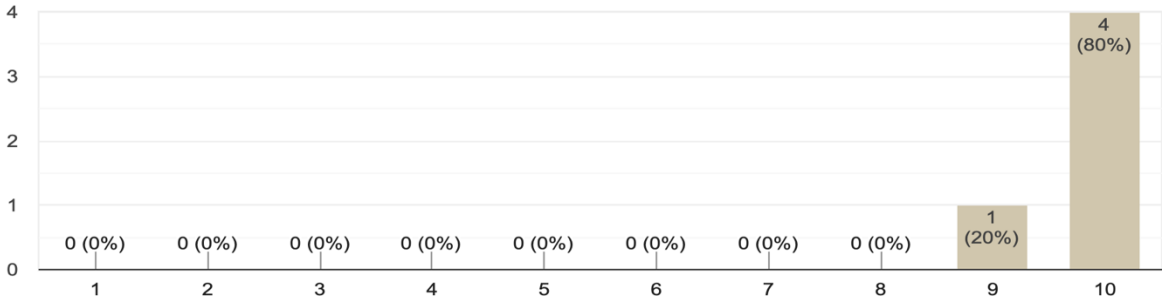
6. I could effectively complete the Training.

5 responses



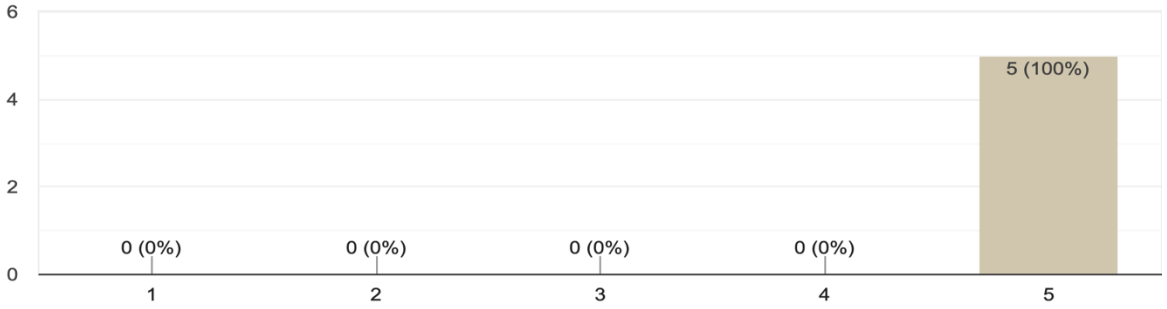

7. The training has a friendly tone.

5 responses



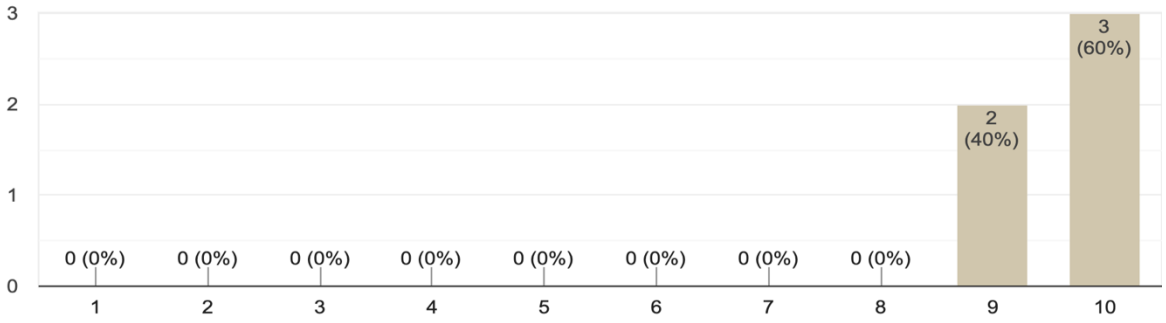

8. Voice narration assisted my understanding of the tools and their functions.

5 responses



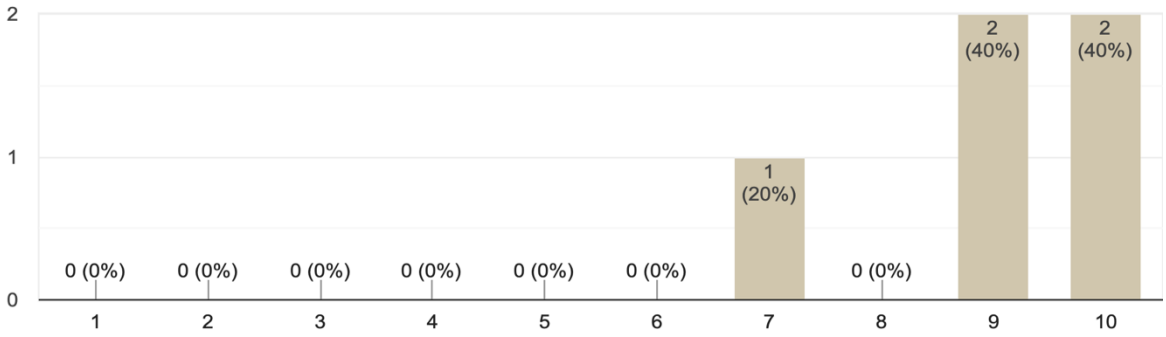
9. Text format and the font size was good to read.

5 responses



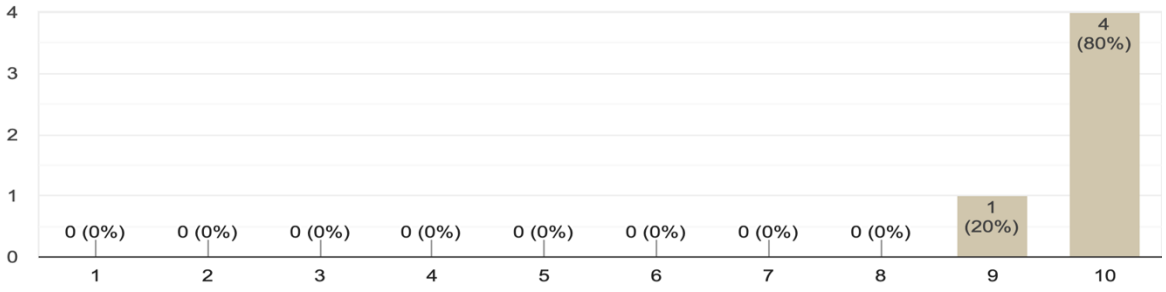

10. The training was new and taught me something new.

5 responses




11. How satisfied were you with the session content?

5 responses




12. What was the most confusing part in the training?

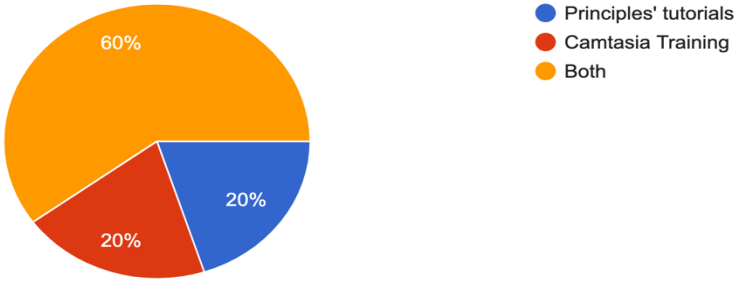
3 responses

- None

- Everything was clear.
- Was easy to follow

13. Which part of the training was close to your learning style.

5 responses




14. Any additional comments regarding the training ?3 responses

Educational, new and usable.

It was very interesting to learn about a new concept to teach effectively.

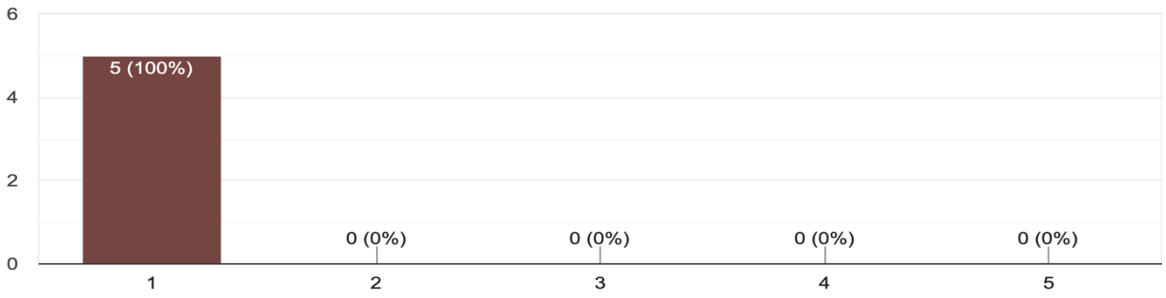
Thanks! the narration was very good and made it easy to follow. great application of the principles.

# Appendix B

## Pre-attitude survey

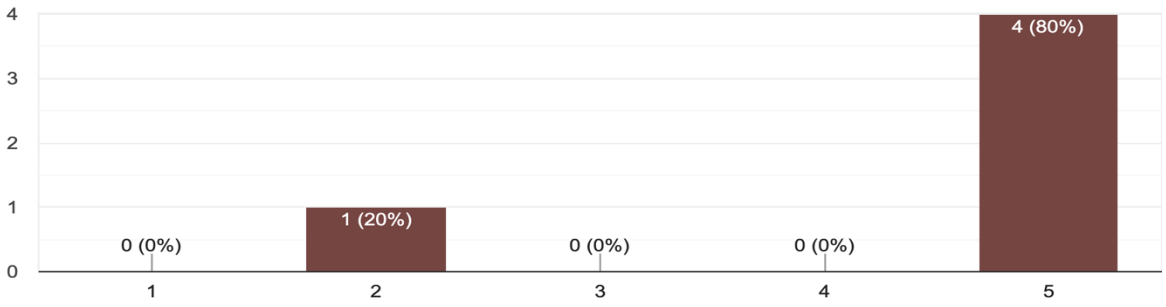
1. I use Camtasia software to prepare my listening.

5 responses



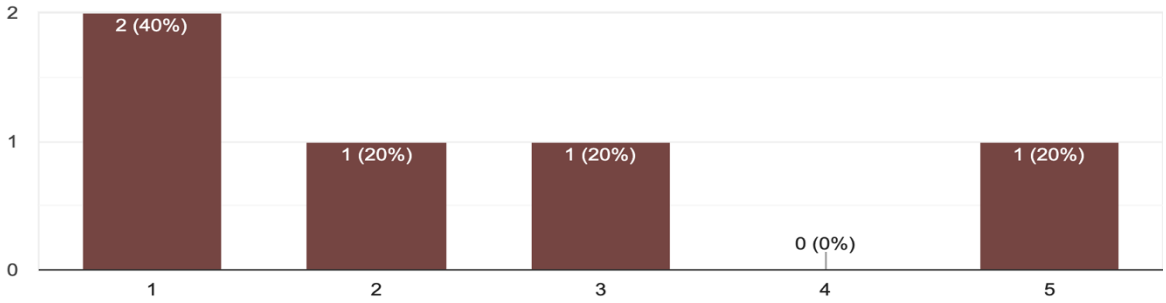

2. I use YouTube video to prepare authentic listening material.

5 responses



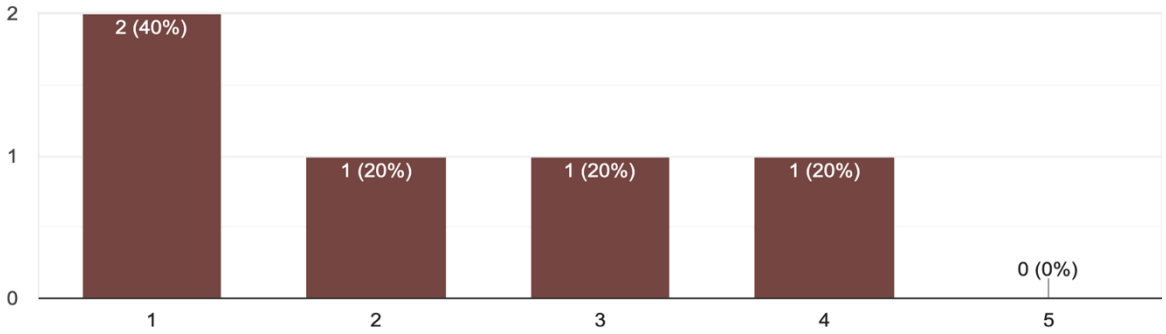

3. I use copyright free YouTube video.

5 responses



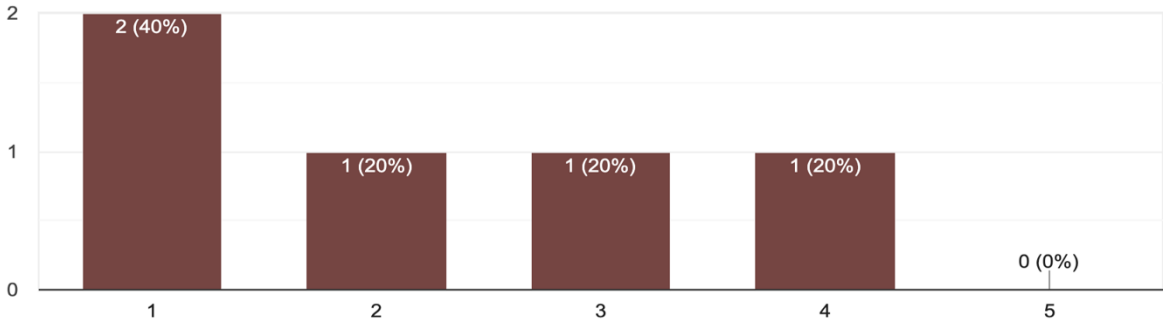
4. I have basic knowledge about Multimedia Principles.

5 responses



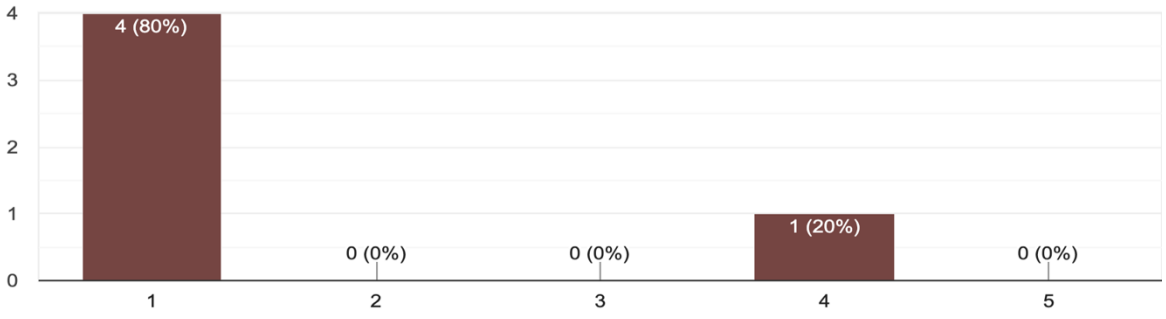

5. I have basic knowledge about Contiguity Principle.

5 responses



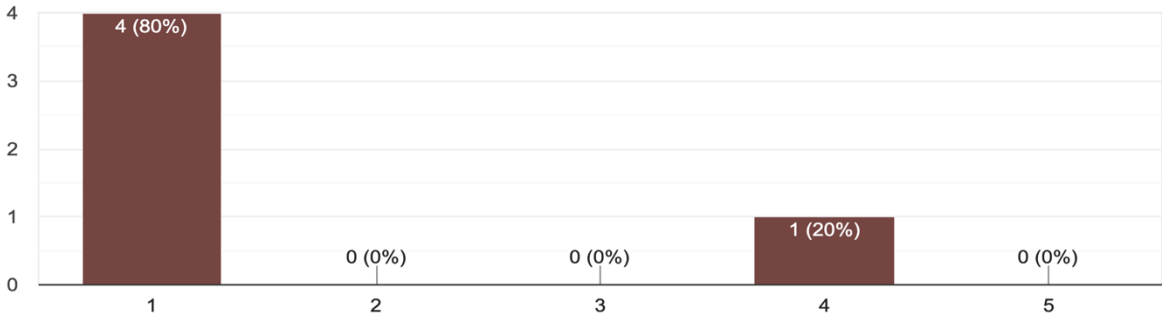

6. I have basic knowledge about Signaling Principle.

5 responses



7. I implement Multimedia, Contiguity, and Signaling principles while developing authentic listening activities.

5 responses

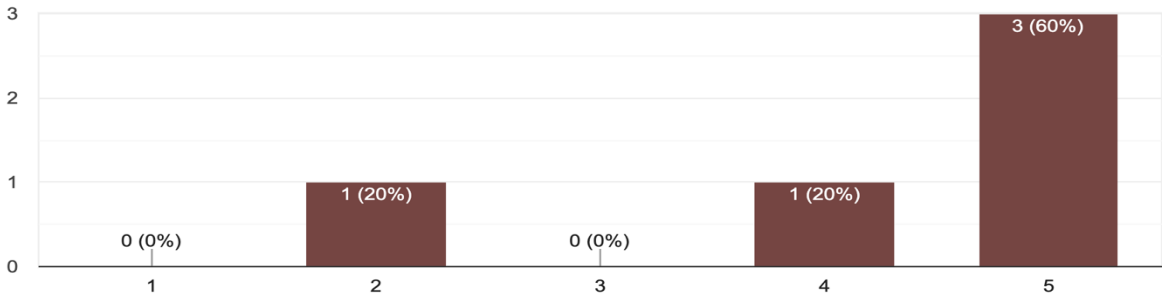


# Appendix C

## Post-attitude survey

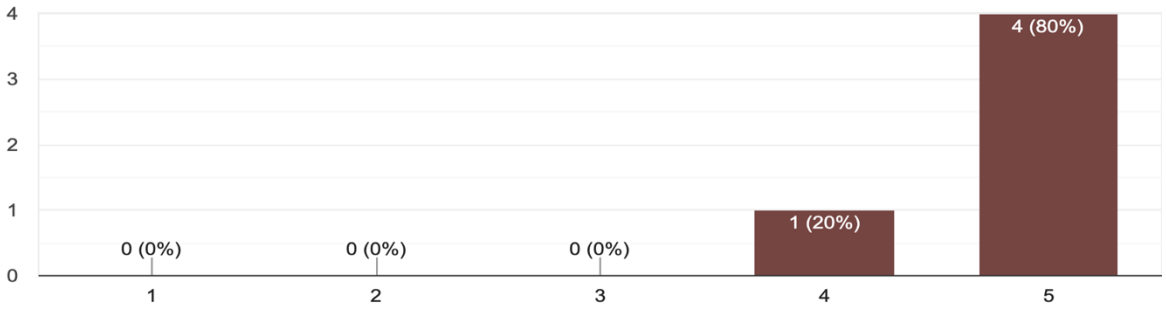
1. I will be using Camtasia software to prepare my listening.

5 responses



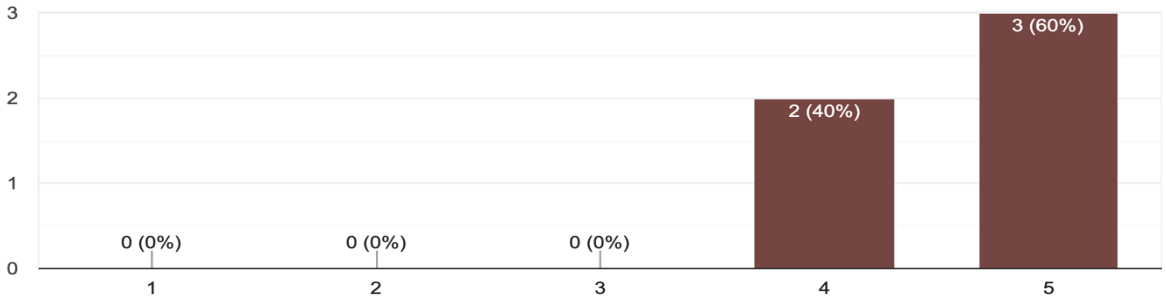

2. I use YouTube video to prepare authentic listening material.

5 responses



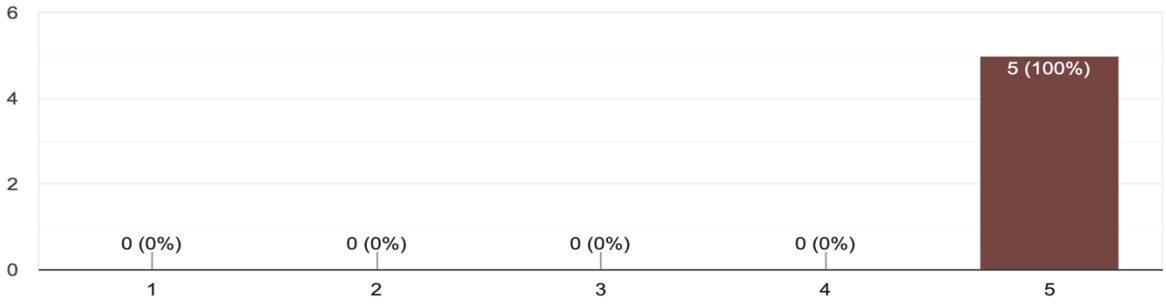
3. I use copyright free YouTube video.

5 responses



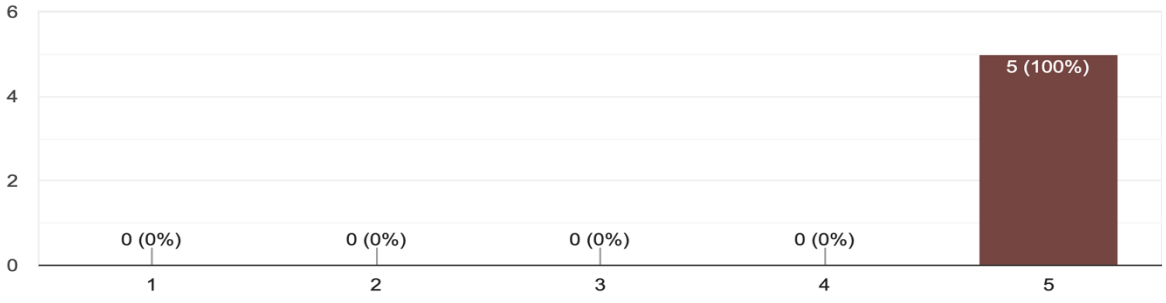

4. I have basic knowledge about Multimedia Principles.

5 responses



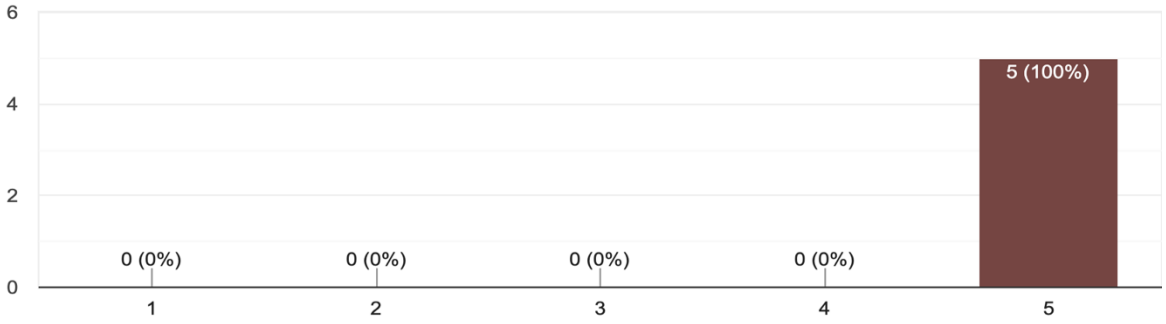

5. I have basic knowledge about Contiguity Principle.

5 responses



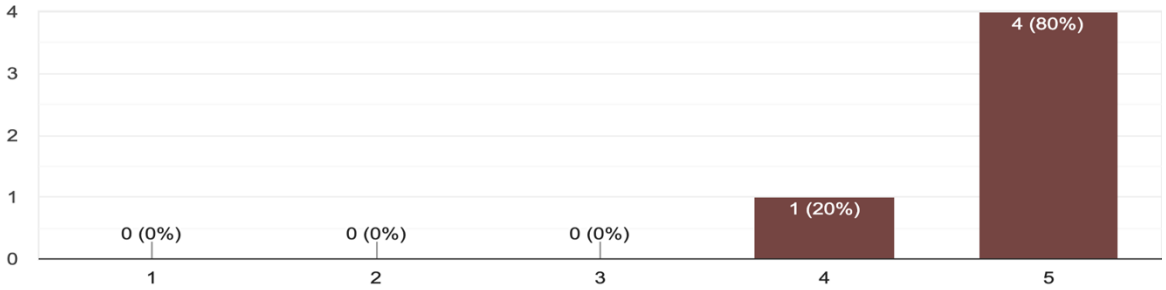
6. I have basic knowledge about Signaling Principle.

5 responses




7. I implement Multimedia, Contiguity, and Signaling principles while developing authentic listening activities.

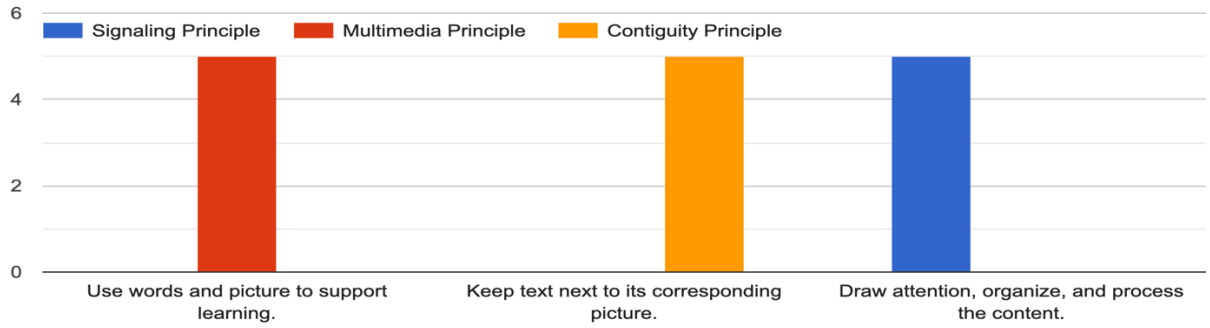
5 responses



# Appendix D

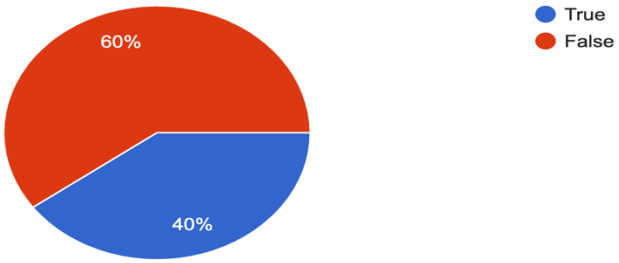
## Pre and Post-Test

1-Match each definition with its proper principle.



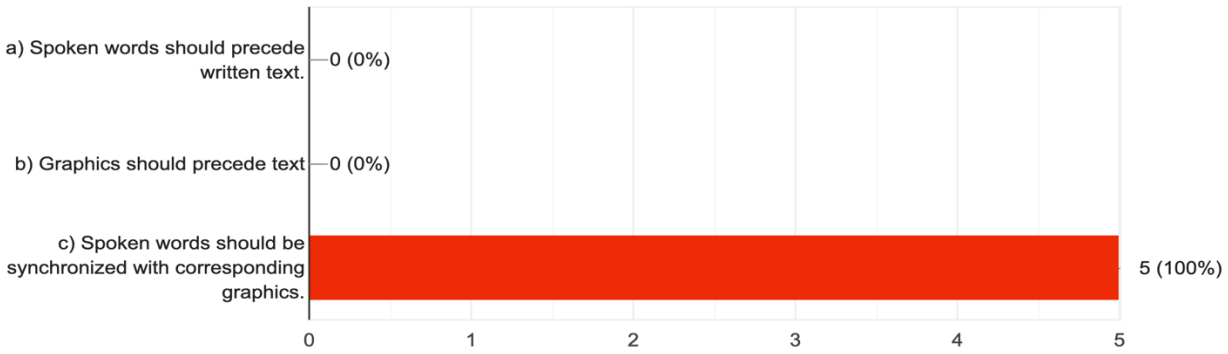

2-Applying the Contiguity principle, a teacher explaining a grammar lesson to her students, her approach was to make the lesson easy, she illustrat...on and written text. the teacher did the right job!

5 responses



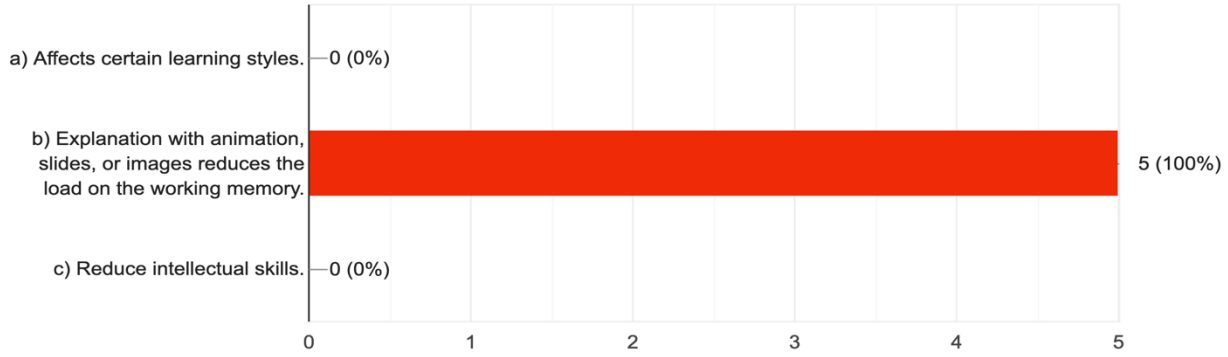
3-Contiguity Principle states that:

5 responses



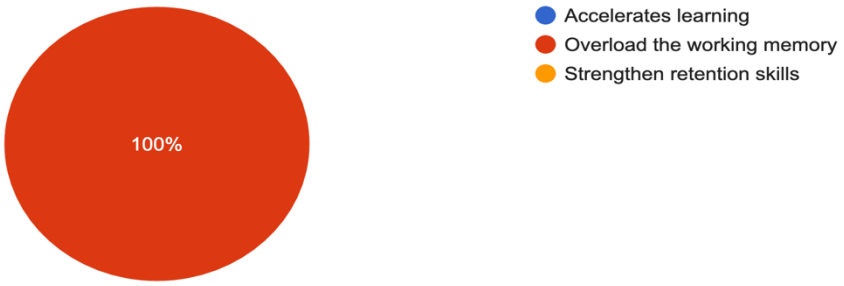

4-The benefits behind using visual aids:

5 responses




5-Too much information on our working memory:

5 responses

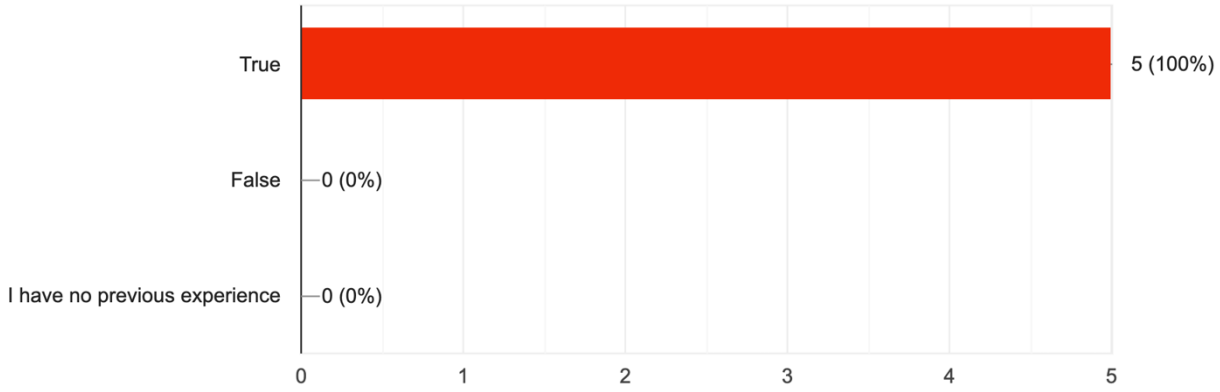


6- While developing listening materials for your language learners, which principle should you use to help students organize information and remember the new vocabulary?5 responses

Signaling Principle
Signaling Principle
Contiguity
Signaling principle
Signaling

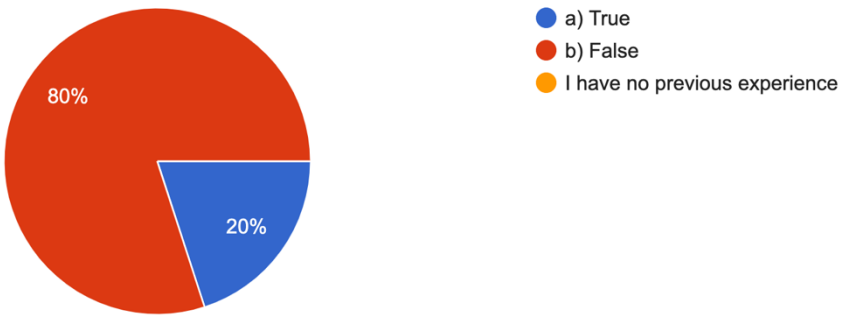
7-The steps to select a copyrighted free YouTube video, after typing your topic in the search bar, click Filter, then Creative commons.

5 responses



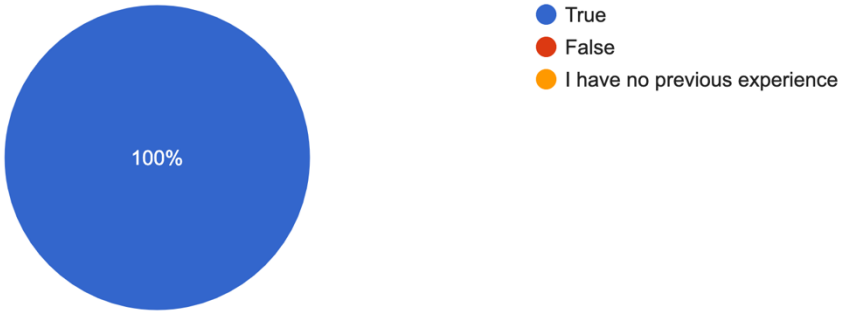

8-Callouts on Camtasia can be found under Curser effects.

5 responses



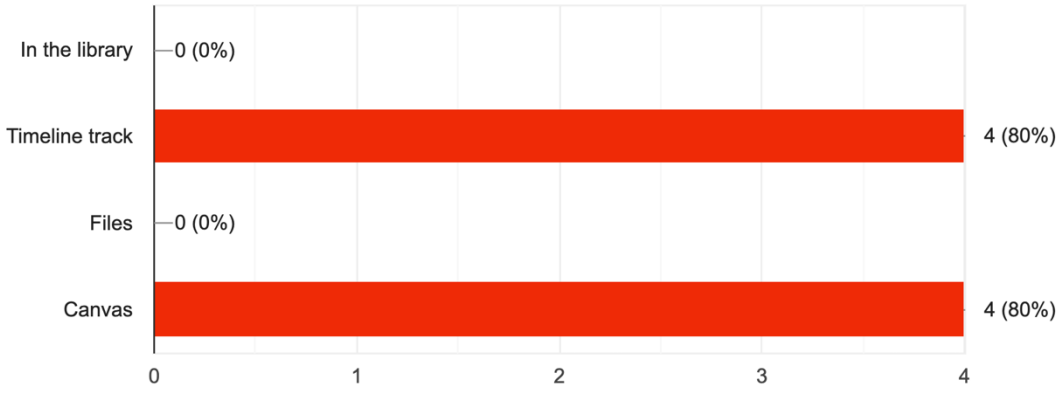
9-On Camtasia, click quiz pop-up button to add it to the timeline.

5 responses



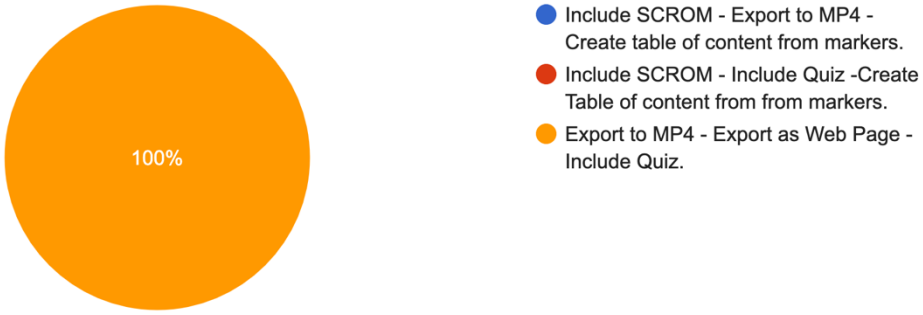

10-After you drag the Callouts where do you drop them?

5 responses




11- Before exporting Video to Local files we should check that the following options are checked:

5 responses



## Appendix E

### Production Rubric

| | Description | Checked |
|---|---|---|
| 1 | Video Implements Contiguity principle by placing vocabulary next to the picture corresponding to it. | Checked |
| 2 | Video implements the Signaling principle by putting vocabulary in frames with a background color. | Checked |
| 3 | The video includes at least three quiz questions with feedback on each one. | Checked |
| 4 | Create a Screencast instructional 15-20 seconds video the topic you want. | Checked |
| 5 | Provide link for your copyright free YouTube video. | Checked |