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Do Pop Quizzes Have a Positive Effect on Exam Grades?

Victoria V. Frisch
Otterbein University, vfrisch@otterbein.edu

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Otterbein University

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Dr. Clare Kilbane Advisor	_____ Signature	_____ Date
Dr. Dee Knoblauch Second Reader	_____ Signature	_____ Date
Dr. Paul Wendel Third Reader	_____ Signature	_____ Date

VITA

Teaching Experience

2005-Present	ASL Adjunct Instructor Otterbein University Westerville, Ohio
1992-1995	Substitute Teacher Columbus City School District Columbus, Ohio
1991-1992	Substitute Kindergarten Teacher St. Paul Lutheran Church, Chuckery, Milford Center, Ohio
1989-1991	Russian Teacher Campus East Magnet School Buffalo, New York

Education

2018	Master of Arts in Education Curriculum and Instruction Concentration Otterbein University Westerville, Ohio
2004	A.A.S., Magna Cum Laude Interpreting and American Sign Language Education Columbus State Community College Columbus, Ohio
1992	Licensure in Russian Language Education Pre-K – 12th Grade Ohio State University Columbus, Ohio

Education (continued)

1985	Study Abroad Russian Language Intensive Pushkin Russian Language Institute Moscow, USSR
1984	B.A. International Studies Majoring in the Soviet Union and Eastern Europe with a minor in Russian Language Ohio State University Columbus, Ohio

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TABLE OF CONTENTS

LIST OF TABLES

Abstract

A quasi-experimental study was conducted over a seven week period between two sections of a level two American Sign Language class to determine if pop quizzes better prepared students for their midterm exams than announced quizzes would. Data collected were four quiz scores and midterm grades. Analysis conducted consisted of calculating the mean of each assessment, and running a series of *t* tests to compare mean scores between the control group receiving pop quizzes, and the experimental group receiving announced quizzes. The analysis showed no significance between the two groups.

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SECTION ONE

Statement of the Problem

Throughout my entire ten-plus year career teaching two elementary levels of American Sign Language at a small, Midwestern liberal arts university to undergraduates, I have administered unannounced or "pop" quizzes. Although I could administer announced quizzes instead, research has shown that the pop quizzes make a difference in attendance, quiz scores, even midterm exam grades (Ruscio, 2001). The study conducted by Ruscio, found that pop quizzes impose pressure on students to read, practice, study and prepare for each class as if there *could* be a quiz that day. I think pop quizzes ultimately have a positive influence on student learning. I would like to find out if the pop type of quiz better prepares my students for their midterms than announced quizzes. Anecdotally, "A" students reveal to me that they have studied for their ASL classes as if expecting me to quiz them every class meeting, although the quizzes are given far less frequently than that. Very few students miss ASL class at all -let alone the two "allowed" unexcused absences- another positive effect of the unannounced type of quiz I administer, as an unexcused absence prohibits making up a quiz (explained quite clearly in the course syllabus). The majority of my ASL students come to class practiced and prepared, another positive outcome from the surprise style of quizzing. I have noticed, however, that a few students will plan their unexcused absences to fall after a pop quiz, rationalizing that I would not quiz them over two consecutive classes.

Since most majors at my university require two semesters of a modern language to satisfy their requirement, ASL I students tend to continue by taking ASL II. Vocabulary and grammar in

ASL II build upon the foundation of vocabulary and grammar set in ASL I, requiring a certain level of mastery to not only move on, but in order to simply do well and succeed in class. The two semester modern language requirement places even more emphasis on midterm success than a one semester course lacking any prerequisite would. Given the semester system in place at my university, I currently administer two midterm exams and one final, each covering about two units or chapters, from the textbook. Each of these exams take up an entire class period. I need to assess my students in between these lengthy, comprehensive exams without taking up a full class. For these reasons, I administer frequent pop quizzes (at least one per chapter of the textbook). However, at some point during the second semester, students that are more observant begin making the connection between the end of a chapter and their pop quiz.

Quizzes not only show the instructor—and the students themselves—if they have been studying, quizzes let a teacher know if students are ready for an exam, and if the instructor can move on to the next chapter or not. However, my students—forty to fifty in number each semester—constantly bemoaned the pop quizzes in my course evaluations. Historically, the pop quizzes I give have universally been the most complained about portion of my curriculum. The reaction to finger spelling "QUIZ" to my class (prior to an ASL command to clear their desks) is almost unanimous: grumbling and slumped shoulders, and in some cases, dropped jaws and the "deer caught in the headlights" look. I wonder if this style of quiz justifies the negative impact on my students' learning experience. After all, some students find ways to suss out either when a quiz will be "popped", or when it is all right to skip a class without missing a quiz and earning a zero score. I find myself asking, "Is there a legitimate pedagogical reason to continue giving pop quizzes? Would announced quizzes ready my students for their midterm exams as well as the pop variety?" If so, I find no reason to remain a villain in my ASL students' eyes.

Research indicates that pop quizzes have the effect of keeping students up to date on their studying and reading, but I want to know if pop quizzes have an additional positive effect on midterm scores. If the unannounced type of quizzes better prepare my students for their lengthier exams, I would be able to point to the research herein as an argument for continuing administering pop quizzes. One may not like the pop quiz, but if the data show pop quizzes to be more effective, then this particular bitter pill should be easier to swallow. In my capstone instructional inquiry project, I plan to investigate whether student exam scores are positively influenced by the type of quiz that undergraduate students take in my American Sign Language classes. The project will be guided by the following question.

Research Question

Do pop quizzes better prepare my students for midterm exams than do announced quizzes?

SECTION TWO

Literature Review

In my review of research conducted on quizzes, I will first define assessment, and then discuss the importance of assessments as well as how often studies have shown to administer tests. This is important background information as quizzes fall under the broader term "assessment" and quizzes tend to be administered more often than an exam or midterm. Specifically, I will review the analyses of modern language assessment, and then narrow my focus to inquiry of various types of quizzes, and finally, the effect of quizzes on student performance. My literature review will show that little research has been executed thus far within the realms of modern language education and any sort of quiz.

What is assessment?

Because assessment factors so prominently in this study, defining what assessment is, how teachers and students benefit from assessment, the different types of assessment, and popular methods for assessment in language instruction creates a solid foundation of understanding for the inquiry in this project. Assessment is understood across the profession as testing. In the field of education, there are many types of assessments. For the purpose of my study, I will discuss the two most relevant: formative and summative. All of us have experienced summative assessments as students- tests, exams, then midterms and finals, as we rose through the ranks. Summative assessments are used by a classroom teacher as indicators of progress within a subject area; to give a score of that progress, and ultimately as a way to average a student's grade for a specified time frame within an academic calendar. Formative assessment "sees the goal of assessment as an index to learning processes, and by extension to growth in learner ability" (Ross, 2005, p.317), in other words, formative assessments are as much for the students' benefit as the teachers, in letting both parties know how much the students comprehend

the material presented, prior to a summative assessment. Formative assessments are not graded in the same way summative assessments are, if at all. These different types of assessments are useful for different purposes. At the end of a chapter or unit, a summative kind of test is given. During the teaching of a unit or topic, a teacher might want to know how much and or how many of her students understand a concept or concepts within that unit, so she administers a formative assessment. This type of assessment will also let the students evaluate their own progress or understanding. The formative kind of evaluation gives the teacher information that she can then use to tweak a lesson plan, change her mode of presentation, or simply emphasize a point or two or review before moving on, and eventually giving a summative test. Assessment is useful across all teaching areas. Modern Language instruction is no different. In this area, assessment helps both the student and teacher gauge progress and ability. Common forms of language assessment are written exams involving comprehension and translation as well as a test of grammar and culture, and production (in spoken languages, an oral exam; in ASL, a video of the student signing).

What do we know about assessment and assessment practices in language classrooms?

Because of its importance in promoting more effective learning, much research on a variety of assessment practices has been done. A longitudinal study by Ross (2005), sought to determine if formative assessments in a language class were more effective than the summative variety. Results of the study were mixed. With reading skills, either kind of assessment yielded the same progress. However, in listening comprehension, the formative type of assessments made a greater impact. Overall, the researcher feels formative tests to be of value because students have more buy in and sense of accomplishment with this type of evaluation. Other research strove to discover if the formative type of assessments gave students the information

needed for self-improvement (McDowell, J. Smailes, K. Sambell, A. Sambell & Wakelin, 2008). McDowell et al. (2008) performed research to determine if assessments had a true effect on learning goals; the veracity of summative tests; how predictable exams were from both the educator and learners' points of view; and in what way formative computations were generating feedback for students in order to enhance their education. Their research uncovered the problem of students wanting more feedback, even when given evaluation. Another issue regarding verbiage used in tests, which is clear to instructors, may not be so for the learners. The researchers concluded that testing is too complicated and broad a topic to be able to fully study it with the use of one questionnaire (McDowell et al. 2008).

In a review of textbook trends by Davies (2008), skills and knowledge are not the only requirements of a good textbook today. One must incorporate principles in order to address correct utilization of exams, their integrity, and desire for high standards. He wrote that language educators have an obligation to their students to make principled decisions in regards to assessments, as well as the ramifications of said tests. Davies noticed that textbooks that are more recent mention various kinds of assessments including language aptitude, unbiased and biased appraisals, achievement and in-class ratings, to name a few. Davies' impetus for conducting such a thorough review is his observation of the uptick of expertise in the area of language assessment. According to Davies, all instructors have a duty to test fairly.

Research conducted to examine assessments and assessment practices highlight the importance of assessments, but cannot definitively state that one type of assessment is better or more useful than another. Investigations thus far point to the need for continued study of assessments.

What do we know about the impact of assessment?

Most educators would agree assessment (testing) of students to be necessary, if not required, and a recent study has said that assessment of comprehension in a modern language classroom is essential (de Saint Leger & Storch, 2013). Carroll stated in a 1967 presentation, "It is a truism that the types of tests and examinations set by the teacher are a prime means of communicating his aims to the students" (Carroll, 1968). Recent research has been conducted regarding the efficacy of different assessment methods. Offedahl and Tomanek (2011) in a longitudinal study of three biochemistry faculty, sought to discover how instructors view tests; if their viewpoints alter regarding assessments when different methods are tried; if the change in attitude towards testing affected the way the professors used assessments. Even though all instructors came to realize the benefits of formative assessments, none of them revised their educational strategy (Offendahl & Tomanek)!

Studying assessment in biology, Holt et al. (2015) administered pre and post quizzes in 15 biology classes to determine if students did better when post quizzes required higher-order cognitive skills, and which educational aspects improved those skills. They found that students' scores improved "regardless of the type of instruction" (p.11). The researchers did discover that one must use higher-order techniques often in order to become proficient at them.

Seeking to understand the various types of assessment used in teacher education, Rieg and Wilson (2009) reviewed testing strategies across two universities. Their study involved fifty-five teacher educators in Pennsylvania who were surveyed using a three level Likert scale that asked them to rate the effectiveness of a variety of assessments and indicate how often they used each type. Quizzes did not fare well. They ranked in the middle for prevalence, yet towards the bottom for perceived effectiveness. The educators surveyed indicated they themselves were not utilizing the methods they thought to be most powerful. The authors of this study encouraged the

readers to require teacher educators to practice the best methods in education. Reig and Wilson (2009) noted that there is a lack of any prerequisite in either educational experience or groundwork in teaching or assessment of students among teacher educators.

In several studies representing different academic disciplines, researchers found a positive effect for the use of reading quizzes (quizzes given on the day a reading assignment was to be completed) on exam scores (Johnson & Kiviniemi, 2009; Narloch, Garbin & Turnage, 2006; and Ruscio, 2001). Johnson and Kiviniemi (2009), studying in the field of psychology, asked students to complete online quizzes prior to the due date for reading assignments. Students could retake the quiz as often as they liked, and there was no time constraint during the quiz. The quizzes counted for 6% of the students' grade. Eight of the thirteen chapters required for reading had a corresponding quiz. The researchers found a positive relationship between questions from quizzes and correct answers on exams using the same questions. They also discovered that the more quizzes students took, the higher their exam scores.

Research completed on the impact of assessments is mixed. One study found quizzes to rank low on a scale of usefulness, yet other studies were able to relate taking a quiz and better yet, frequent quizzing, resulting in better exam scores.

What do we know about when and how often to assess?

Research also seemed to confirm that the quantity of quizzes taken forecast final class grades as well: the more students are quizzed, the better the material is retained, and the higher the course grade. Foss and Pirozzolo (2017) conducted a four-semester study with four variations to determine if the "testing effect" is an actual phenomenon. They wrote in their review of the research, that the more often one is assessed, the more likely one is liable to retrieve the information when needed, hence the term, "testing effect." Kang, et al (2011) in their research,

made note of "the testing effect," which is a boon of assessing in contrast to extended rumination.

After decades of research had been conducted regarding the frequency of testing and the benefits therein, said research showed that the greater number of assessments given, the more the information is remembered (Keys, 1934; H.P. Bahrick, L. E. Bahrick, A.S. Bahrick & P.E. Bahrick, 1993; Foss & Pirozzolo, 2017). Keys (1934) researched two large sections- 143 students in each- of an educational psychology course. He divided the semester into three equal parts. For the first third of the semester, the control group received information of the reading to be done over four weeks, and the date of their first midterm. The experimental group was given more detailed weekly assignments, as well as the dates of their weekly exams. In the second third of the period, both sections got weekly assignments, and the experimental section still was tested weekly, as opposed to one midterm at the end of the period. During the last third of the semester, the control group was given weekly assignments and this time, both groups had but one exam. Keys found a statistically significant difference between weekly and monthly testing in favor of the more numerous assessments. Students, unaware of the experiment, indicated a preference for exams more often. The only areas which did not show a positive effect of a greater number of tests, were those of final exam scores (the author mentions the typical cramming for a final) and the two types of reading assignments: monthly versus weekly.

Unique, longitudinal research profoundly revealed the benefit of repetitive assessments in the realm of modern language vocabulary recall. Bahrick, et al. (1993) conducted a study over the course of nine years to study the spacing effect of retaining foreign language vocabulary. Each of the four subjects rated 300 words on flash cards in a selected foreign language for difficulty. The words were studied over a period of nine years at varied rates in 50 word groups.

Not all of the words were learned at the end of the experiment. The longer the spacing, the better the recollection, but the worse acquisition of new words. Retrieval of words was best at the 56-day intermission, no matter the initial rating of difficulty of the word. The author also found no difference between an interval of one day or 56 days in terms of learning a new word. The author concludes that once learned, little repetition is needed after five years, and up to 25.

More than one study has been led in regard to quizzing and reading assignments, with mixed outcomes. Ruscio's (2001) quantitative research of his psychology classes, using random quizzes of the course readings, revealed that the quizzes motivated his students to complete their reading assignments. Anecdotally, Ruscio (2001) reported better in-class discourse, more zeal and improved queries from his students. Azorlosa and Renner (2006) conducted a quantitative study in four sections of a psychology of learning course over two semesters. One section was randomly selected each semester to receive announced quizzes between their first and second exam. They found that quizzes had a positive impact on students' presence. Amount of study time varied inexplicably from fall to spring semester in the quiz sections. The research did not reveal better exam grades among the quiz sections, however. Students in the study were surveyed, and the students receiving quizzes admitted to studying more and stated that the quizzes helped ready them for the midterm. The authors admitted that assigning a low value to the quizzes, and dropping the two lowest scores may have diminished the effectiveness of the quizzes.

Other research has been performed to determine if quizzing is better than not quizzing, and if one type of quiz is better than another. A quantitative study was done to discover the benefit of pre-lecture quizzes in a sensation and perception course over five semesters, comprised of 162 students (Narloch, et al., 2006). Two kinds of quizzes were used: fill-in-the-

blank, and matching. Quizzes were announced and worth 10% of the students' grade. Classes were recorded to determine the sorts of inquiries students made. Course evaluations were utilized to gather data on the nature and worth of class time. Two semesters had no quiz or matching quizzes, and the fifth semester, the fill-in-the-blank quizzes. The results showed no difference in exam scores between quiz types, and either quiz section had higher exam grades than the no quiz sections. The quizzed students self-reported distributed practice over time compared with the no quiz students. The instructor discovered by viewing the taped classes, that the quizzed students asked deeper questions than did the control groups. In addition, the quizzed sections did better on all types of exam questions, not just the multiple choice.

Another study wished to discover if creating quiz questions benefitted chiropractic students more than simply taking the quizzes would (Zhang & Henderson, 2015). Three classes were researched. One class wrote multiple choice quiz questions, and took quizzes based on questions they generated. The second class took the quizzes, but had no part in writing the questions. The third class did not take quizzes. The quizzes were formative- not part of their course grade. The question writers had to follow guidelines for creating their questions, and duplicate and invalid questions were deleted. Quizzes were weekly, and ranged from 6 to 26 questions in length. The analysis revealed there was no difference in exam grades between the quizzed classes. Thus, writing the questions did not benefit that class. The no quiz class had lower exam scores.

A different study wished to discover if the "testing effect" had a correlation to course grades. Foss and Pirozzolo (2017) randomly assigned each semester, two sections of a college research methods class to receive either two midterms or four midterms (and four pop quizzes) in the first semester, and eight midterms (some receiving no pop quizzes, other sections having a

subset of students quizzed, in the last study, the quizzes were announced, not pop) in three subsequent semesters. The same exams were used each semester and exams were not returned to students, however, following each exam, correct answers were given and queries about the exam were answered. Pop quizzes were reviewed the same class period. The results of the first semester's study did not show a correlation between frequency of midterms, and final exam scores. Subsequent studies, whether quizzed or not, found a positive relationship between repeated questions and exam scores, suggesting the "testing effect" hypothesis to be correct. The subject matter being tested varied from one study to the next, from abstract pairs of numbers, to modern language vocabulary. The period of examination also varied from one semester to nine years, with the same conclusion: frequent testing yields better results than studying alone for the same period, with an exam at the end of the time frame.

One can agree assessments to be of value at any grade level. Summative assessments, in particular, have an important role in education. At the college level, students will ask their grade, and summative assessments provide that information. The ongoing question for many researchers is how often to assess. Midterms are not practical to administer often, and quizzes fill the gap between larger, longer types of exams. Much research has been conducted regarding assessments, and specifically, quizzes. Various quiz types have been studied, from announced to pop, to random, and even quizzes where the students created their own questions. Most of the studies were completed in classes other than those of a modern language, however. The data collected typically indicates the phenomenon known as the "testing effect." Studies have suggested that not only does the "testing effect" exist, but that it has a positive relationship to overall course grades.

Modern Language Assessment

Although much is known about assessment in other disciplines, what is known about assessment in modern language instruction is of particular interest to this study. Lado (1961) wrote in 1961 of four skills in language testing: speaking, listening, reading and writing (reading and writing do not apply to ASL, as there is no written form of the language, other than an artificial means of recording it, called "glossing"). Lado (1961) also pointed out the scoring of a language test: the range is a vast gray area of mostly objective to mostly subjective, and argued the matter of choosing between an objective test being less valid and one that is valid but less objective. Along the same lines, Lado (1961) cautioned that a language test cannot also test intelligence, memory or another aspect which would abrogate the test's validity. Lado (1961) wrote of the necessity of at least two scores: a pretest and a post test, and proffered the relevance of more scores to test recall, which alludes to the "testing effect" (a term which was coined after Lado wrote) mentioned earlier, and the longitudinal study conducted decades later by Bahrick, et al. (1993).

In Carroll's presentation in 1967 (1968), he mentioned his Modern Language Aptitude Test that demonstrated the uniqueness of the ability to learn a modern language. He named four areas of ability necessary for a facility in learning another language: phonetic coding ability, grammatical sensitivity, rote learning ability and inductive language learning ability. Carroll mentioned the value of driven, progressive learning. The driving force can differ from student to student, as long as students have an impetus of their own. Motivation is key to modern language learning, because it takes time and repetition to learn another language. For some college students, that motivation is a good or excellent grade.

Anton (2009) researched dynamic assessment in third year Spanish majors, specifically, in terms of writing and an oral interview. Dynamic assessment varies from the standard

summative assessments in that the examiner collaborates with the student during the assessment in a pattern of assessing, interceding, and tweaking behavior in the learner. Five undergraduate third year Spanish majors were tested. No conventions were set for interceding, to give the tester leeway in the exchange. The study revealed that students elected to not ask the proctor questions during the writing portion of the test. The oral portion was recorded and scored using a rubric and ACTFL (American Council on the Teaching of Foreign Languages) guidelines. The results of the oral dynamic assessment showed an ability of the instructor to further negotiate and then differentiate the strengths and weaknesses of each speaker, as well as create a specific program to promote each student's growth in the Spanish language. The author admits this form of assessment to be "labor-intensive, time-consuming, and…difficult to carry out in large programs" (Anton, 2009, p. 592).

Given Carroll's (1968) ground-breaking work on modern language acquisition, the way one learns a modern language differs from all other disciplines. Four key abilities must be present for such mastery to occur. According to Carroll, grades can be the motivation for a modern language student. He stated that time and repetition are necessary elements in successful modern language acquisition- this mirrors much of the research conducted in other disciplines regarding testing. The "testing effect" is a byproduct of frequent, repeated assessment. It stands to reason that frequent testing in a modern language classroom aids in retention, as the study conducted by Bahrick, et al.(1993) suggested, and of which Lado (1961) wrote. Newer research by Anton (2009) unveiled a new type of assessment in the field of modern language education: dynamic, wherein instructor and student dialog to attain a higher score as the examination progresses. Certainly valuable and beneficial to the students, dynamic assessment is time-consuming, and pertains to students majoring in a modern language, not to those merely

fulfilling a language requirement. While most teachers of a modern language would agree that some sort of summative assessment is necessary, I could find no research on quizzing in a modern language class at the college level.

Quiz Types: Is There a Difference?

As an important form of assessment, quizzes are not only useful in many ways; there are also many types of quiz tools and means for administering them. Quizzes can be administered in a variety of ways: announced, "pop" or unannounced, online, random, anonymous, for extra credit, ungraded: formative (Bell, 1997; Ruscio, 2001; Wilder, Flood & Stromsnes, 2001; Azorlosa & Renner, 2006; Narloch, et al., 2006; Johnson & Kiviniemi, 2009; Rieg & Wilson, 2009; Johnson & Mrowka, 2010; Le, 2012; Khanna, 2015; Zhang & Henderson, 2015; and Naidoo, 2017). Bell (1997) found anonymous quizzes to be beneficial as a way to provide feedback not only to his students, but also for himself as an instructor. He consistently asked three questions: about course components, how he was presenting the class information, and an open-ended question, asking for student observations. Bell found the anonymous aspect a time-saving device, since no papers required marking nor grades to be logged. The researcher used such "quizzes" three to four times per semester, and was able to adapt lectures to review any information students misunderstood, based on "quiz" comments. As far as the course delivery question, Bell was able to use contradictory remarks by students to illustrate the accommodations he was making for his large classes, as well as undertake student concerns by empathizing with specific points. He discovered that both class and professor ratings increased "significantly" from years prior. Bell did state that he did not advise utilizing this type of quiz for every course.

Ruscio (2001) created a unique hybrid of an announced and pop quiz: a quiz was given by the flip of a coin and a (bad?) call of a volunteer in class. Ruscio (2001) wanted to ensure that

his psychology students were reading the textbook, so he let his students know to expect a quiz in every class, and a flip of a coin determined if that class will indeed have a quiz. Due to some course lectures being longer than others, quizzes were given less than half the time. He developed a quick grading system of 0 (absent), .33 (present, but no correct answer), .67 (partially correct answer), and one (correct answer). Only one question was given, constructed in such a way as to determine if the student actually read and understood the assignment. Three classes participated and data was collected on number of students, number of reading assignments, quiz scores and grade excluding quiz score. Ruscio (2001) found that the students who read the textbook had higher grades for the course. He was willing to admit that better students tend to do all of the assigned work, so both observations could hold water: the readers and better students were the ones scoring highest on exams. Ruscio (2001) also stated that more students read the book, and said that the random quizzes were a driving factor. As already mentioned earlier, Ruscio (2001) reported anecdotally of more eagerness, superior inquiries and deeper dialog on the part of his pupils.

Wilder, et al. (2001) studied arbitrary extra credit quizzes to see if they had an effect on student attendance. Thirty-two psychology students were studied over a portion of one semester (12 out of 16 weeks). The quizzes were administered for six weeks, and then a two week hiatus was in place, followed by four more weeks of quizzing. Students were to expect a quiz in any class meeting. The exact day of each quiz was randomly chosen. The instructor asked one question from the textbook, similar to Ruscio's (2001) study, albeit, a one word answer would suffice. Each quiz was worth two points: one for their name, one for a correct answer. The results showed that the quizzes boosted student presence by 10%. The authors of the study were quick to point out that although more students attending a course was good, that meant nothing unless

actual learning took place. The researchers also found that exam grades were slightly better for the periods of the quizzing. Almost all students said they liked the extra credit quizzes; two-thirds said the quizzes motivated them to come to class. More than half admitted that the quizzes encouraged them to keep up with reading assignments.

Azorlosa and Renner (2006) researched announced quizzes in psychology classes over two semesters, and surveyed the students for their opinion on quizzes. The authors realized and commented on the fact that faculty are hesitant to administer quizzes, especially the unannounced variety, due to students' distaste of them. The authors found that the quizzes enhanced class attendance, but as mentioned before, the second semester students did not report an uptick in reading the text. In addition, exam grades did not vary between the quiz and no quiz classes. The researchers supposed that the value of the quizzes was too low to affect student motivation in studying. Narloch, et al. (2006) decided to investigate the benefits of prelecture quizzing in a longitudinal study of sensation and perception classes over five semesters. The instructor wanted to encourage students to prepare for class by completing the readings thus enabling the instructor to further explain and enhance their initial grasp of the material. As has been mentioned, the type of quiz did not matter, and both quizzed sections experienced higher exam grades, regardless of the form of exam questions, as well as self-reported better study habits. Much as many of the previously mentioned researchers have done, Johnson and Kiviniemi (2009) analyzed online quiz types in undergraduate psychology classes, to see if they would encourage students to complete reading assignments ahead of class lectures. They found that the number of online quizzes taken directly correlated to not only test scores, but also course grade. The authors told readers to make the online quizzes a course expectation, and to give them a significant value of the total course grade, which would impel the students to complete them.

As discussed above, Rieg and Wilson (2009) have researched a plethora of assessment strategies used in higher education, and found quizzes to be the third most implemented, although, as already mentioned, near the bottom of the list for effectiveness.

Johnson and Mrowka (2010) investigated the relationship between quizzes and generative learning (making connections between what is read and one's own background or prior knowledge). They had two questions: does quizzing enhance learning, and does quizzing utilizing the generative process increase cognition more than comprehension quizzing. Johnson and Mrowka sampled 171 students enrolled in one of four communication courses. One section was a control, or no quiz section. A second section received in class comprehension quizzes, while the other two received either in class or out of class generative learning (open-ended) quizzes. Quizzes were unannounced, and students could use one page of notes, but not their textbook. The three lowest scores would be dropped. While some results were not statistically compelling, further analysis discovered a relationship between coming to class and course grade. Generative quiz takers scored better than did the comprehension quiz takers. There was some suggestion that the quizzes affected other course homework as well. A surprising discovery was that there was no difference between any of the groups on the second exam, even the no quiz group. Another interesting result was no difference in writing work between the two quiz sorts. As expected, the quiz groups performed better than did the no quiz cohort on writing assignments. The researchers declared that the quiz type is more important than the quiz itself in improving test scores. Johnson and Mrowka concluded that due to the positive effect of quizzing on other homework, instructors should strive to incorporate quizzes into their curriculum.

Le (2012) studied the effect of anonymous pop quizzes on learning. Survey Monkey was used to create short quizzes that took no more than five minutes of class time to complete at the

end of the first and second class of a library portion of a dental research class. The results allowed the librarian to review and modify the next lecture, as did Bell (1997), mentioned above, and the quiz answers were reviewed in the subsequent class. Due to a different exam used the prior year, and no control group, the researcher could not discover if the quizzes positively affected exam scores. However, course evaluations indicated that students found value in the quizzes. The author stated that this method of quizzing immediately after new information is given, supersedes studying alone or frequent studying.

Another type of quiz analysis is that of ungraded unannounced quizzes (Khanna, 2015). Khanna compared groups getting graded, ungraded, no quiz, and the final test grades of psychology students. Six multiple-choice quizzes were administered. Content tested was that of assigned reading and lecture material. She made certain that the final exam did not duplicate the quiz questions. The quizzed students were also surveyed about quizzes. All quizzes were pop and held the last 20 minutes of the lecture. Final test scores instead of final course grades were compared to quizzes so the quiz scores themselves were not factored in again. The findings showed that the ungraded quiz group resulted in a higher exam grade than either the graded or no quiz group. Students themselves revealed a more positive impression of the ungraded quizzes than did those who took the quiz for a grade. However, the graded section admitted to studying more than the ungraded section.

Zhang and Henderson (2015) allowed their chiropractic students to create quiz questions for themselves, and found that taking quizzes, whether self-generated or not, improved test scores, even when the quizzes were not graded.

With any type of testing comes anxiety, as England, Brigati and Schussler (2017) have shown. The question of how best to assess arises. Do pop quizzes generate higher levels of test

anxiety than announced quizzes? Naidoo (2017) found anecdotal evidence that indicates that despite the anxiety felt, students perceived pop quizzes as beneficial in the learning process. Foss, et al. utilized pop quizzes in their study to increase and award class attendance. Researchers have discovered two ways to reduce the anxiety of pop quizzes: do not grade them (Khanna, 2015) or make them anonymous (Le, 2012 and Bell, 1997). While either option may work as a formative assessment, anonymous or ungraded quizzes cannot be used as a summative assessment.

The research on quizzing can be divided into groups: pop quizzes versus announced quizzes, and graded versus ungraded/anonymous. Studies by Bell (1997), Le (2012), Khanna (2015), Zhang and Henderson (2015) on anonymous or ungraded quizzes found value in this type of quiz, whether the benefit was a higher exam score of the participating students, or better course evaluations of the teacher involved. Research conducted by Naidoo (2017), Johnson and Mrowka (2010) and Foss and Pirozzolo (2017) on pop quizzes, indicate value ranging from increased attendance to better quality writing assignments to self-reported benefits of learning. Studies were also conducted on the announced type of quiz by Azerlosa and Renner (2006), Narloch, et al. (2006) and Johnson and Kiviniemi (2009). Their findings were mixed. Azerlosa and Renner (2006) did not find a positive correlation between quizzing and higher exam scores, but the other researchers did. Ruscio (2001) stands alone with his hybrid "coin toss" quiz: students should expect a quiz every class, but whether one will be given or not is determined by a coin toss. Of the students who had done the reading, exam scores were high. Ruscio (2001) could not definitively connect the quizzes to better exam or course grades. Altogether, some form of quizzing can be beneficial, but the type of quiz yields mixed, some, or little to no benefit as far as exam or course grades are concerned.

It is clear from decades of research on assessing university students that said research concludes and makes an argument for frequent examination, particularly in a language course. A result of the research has me testing my students more frequently than two midterms and a final exam, particularly since a longitudinal study of modern language vocabulary showed repetition to benefit retention. The studies conducted thus far are why I quiz often in between midterm exams and the final: to keep new vocabulary and grammar in the forefront for my ASL students. Quizzes suit my foreign language classes which meet only twice per week over the course of a semester. However, no research has been held in any modern language classroom at the college level to determine if a pop quiz would benefit the students more than an announced quiz would, let alone has any research of this type been conducted in the setting of a sign language course. Since decades of research have upheld the value of frequent testing- specifically quizzing- in language classes, it stands to reason that a good instructor would want to know if one type of quiz benefits their students more than another, particularly if the pop style quiz elicits a higher level of test anxiety than an announced quiz would. I will conduct a study to discover if pop quizzes affect scores on midterm exams more positively than announced quizzes.

SECTION THREE

Method

Introduction

This section describes the information about the methods employed in this study to better understand the effect of pop quizzes on midterm grades. The characteristics of the participants in the sample are described as is the treatment to which they were exposed. Instrumentation used to measure the impact of quiz types are explained as well as the procedures for data collection and analysis.

Study Context

Data were collected over a seven-week period from the start of the semester to almost midway through a fifteen week long semester in two sections of an ASL class at a small, Midwest liberal arts university as part of a quasi-experimental study. Students were asked to fill out a quiz survey and to indicate, among other information, their GPA, gender, major and level of test anxiety. Data consist of four sets of quiz scores and midterm grades, as well as the information garnered from the survey. Analysis will consist of student quiz scores and midterm grade using a *t* test comparison of means. One section was randomly selected (via a roll of a die by a person who was not the course instructor) to continue with pop quizzes (Group 1, the control group), and the other would receive announced quizzes (Group 2).

The study was conducted at small, private Midwestern liberal arts university with students from two sections of American Sign Language (ASL), level II. According to the university website, about 87% of the students attending this university are in state. There is a relatively small community of about 51 international students at this university representing 14 countries. Roughly sixty-eight percent of the students are in the 18 to 22 year old age bracket.

The undergraduate population is comprised of 904 males and 1,439 females. It is below national average in both faculty and student diversity. According to the US News website, tuition and fees are $31,874.00 per year. Seventy-six percent of full-time undergraduates receive some kind of need-based financial aid, and the average need-based scholarship or grant award is $17,851. Sixty-four percent of the classes at this university have fewer than 20 students in them.

Participants

The sample used in this study was a convenience sample. Two sections of an intermediate-level ASL Sign Language class were chosen because they were representative of the group about which I wanted to inquire – my own students.

Each section had some important differences in composition, as well as some similarities between them. It is vital to report how the two groups varied from one another, as well as mention their likenesses. One section was randomly selected (via a roll of a die by a person who was not the course instructor) to continue with pop quizzes (Group 1, the control), and the other would receive announced quizzes (Group 2). Group 2, meeting at 2:00 pm two days a week, had 17 students (six of them male), and the pop quiz section, 17 (five of them male). Of the total number of 34 students, 25 had had me as their ASL I instructor. One student of mine had taken a year break between ASL I and II. Of the 9 who had a different ASL teacher for level I, three had also had a year or more hiatus from ASL I. Most students enrolled in the pop quiz section chose that section because it was the only ASL class that suited their schedule: meeting at 6:00 pm two nights per week. For ten students, their majors are in the science field, and labs prohibit them from taking any other section of ASL other than mine. Only one student athlete is in Group 1 section; six athletes are in Group 2. At this university, student athletes tend to have higher GPAs.

In Group 1 (the 6:00 pm section), three students had had a different instructor for ASL I, two of them female, one male. Of the seventeen students in Group 1, ten were majoring in a science, two in business, one art and one music major, two literature majors, and one public health major. All students were given a survey to rank their overall test anxiety, and specifically their exam and quiz anxiety for this course, using a Likert scale of one to four. Data analyses were performed, and no significance was found in terms of the three anxiety items between the two sections of ASL. Only three students in group one had had any ASL in high school: two had one year of ASL, and one had two years of ASL.

In Group 2 (the 2:00 pm section), six students had had a different ASL instructor: three of them female, three male. Three students were psychology majors; three communication majors; three business or marketing majors; four science majors; two history education; one theater and one art and women's studies major. On the same Likert scale of one to four, Group 2 rated their test anxieties. As mentioned before, a *t* test was run on each of the three anxiety items surveyed, and no significance among the three items was noted between the two classes. Only two students had had ASL in high school: one for one year, and another for two years. Two students in Group 2 had had a two year break between ASL I and ASL II; one had a one year break between classes. See table one for a complete list of participants.

Count of Gender			
Row Labels	F	M	Grand Total
Bio	1		1
Bio Molec, Bio	1		1
BioChem Molec	1		1
Business	1	1	2
Chem	2	1	3
Comm		1	1
Comm & PR		1	1
Cons Sci	1		1
Eng Lit		1	1
Enviro Sci	1	1	2
Eq Bus Mngmnt	1		1
Equine Pre-Vet	1		1
Health Comm	1		1
Hist AYA	1		1
Hist Ed		1	1
Lit Stds	1		1
Mktng	1	1	2
Music		1	1
Photo & WGSS	1		1
Psych	2	1	3
Pub Hlth, Psych	1		1
Studio Art		1	1
Theatre	1		1
Zoo & Bio	1		1
Zoo & Conserv	2		2
Zoo, Cons Sci	1		1
Grand Total	**23**	**11**	**34**

Table 1 *Participants' Majors sorted by Gender*

Data Sources/ Instruments

Several instruments were used to collect data in this study. The first was the participant survey (see Appendix A). The second were formal, summative assessments—the announced and pop quizzes and the first midterm. Data were collected over a period of seven weeks during the first half of the semester. Data consists of four sets of quiz scores, and one set of midterm scores,

broken into three separate scores. Two types of quizzes were administered: a reading quiz to discover if the students had read their assigned article, posted on the virtual learning environment, and a signed quiz wherein I signed either a list of vocabulary, or sentences in ASL, requiring students to translate what was signed to them. The signed quizzes also included a culture and/or a grammar component which students answered on their own after the signing portion concluded. I stated at the beginning of every quiz (and the midterm exam), that each sentence will be signed three times before moving on to the next one, and if students need more repetition, they may request it once all sections have been signed three times. Most, but not all quizzes had at least one bonus question, including the reading quizzes. The reading quizzes (quiz one and three) were identical. They both can be found in Appendix B. The first signed quiz was chronologically the second quiz administered, and is located in Appendix C. The last quiz, a signed quiz, is in Appendix D.

The midterm is divided into three portions: a signed video portion, in which the students were given an outline of a script to follow (see Appendix E); a written portion, the first part consisting of two instructor-signed elements. The second part, a combination of culture and grammar questions taking the form of true false questions, matching, fill in the blanks and short answer questions (see Appendix F for group one midterm and Appendix G for group two midterm). A third portion is administered online, and consists of answering two of three extended response questions in an open book timed exam via the virtual learning environment (see Appendix H), given on the same day as the other written portion, begun during the regular class time, and concluding an hour after the normal end time, for students needing additional time. The video midterm script was distributed a week or so before the three due dates (due dates are staggered more for my ease in accomplishing the grading more than for the students'

benefit). Students are encouraged to ask questions about syntax and style, as well as how best to deliver the video online. ASL Hours (simply office hours renamed and offered as group study sessions) are increased before the due dates, to allow for more question and answers, as well as practice in front of me for correction. The video midterm is weighted one third of the total midterm grade. A review day is set aside in the course schedule the class before the written exam in order to narrow the students' focus of which online readings to study, and to apprise them of the various forms the questions will take. The general themes of the essay questions are also given, so that students may prepare in advance for the timed extended responses. Students are made aware of the general topics I will sign to them, and time is allotted for review of vocabulary. During the ASL Hours leading up to the written midterm, I have a practice exam (as well as two variations, one for each section), and I sign the practice exam at least three times prior to the first midterm, so students can practice translating, and students new to me this semester get a feel for my style of testing. The written portions are weighted two thirds of the midterm total.

Study Design

A quasi-experimental design is used in this study. The performance of Group 1 and Group 2 on five measures were compared over time. The first day of class, in order to determine what effect academic achievement would have on quiz scores, I surveyed my students (see Appendix A).While this is not a study to determine the effects of test anxiety on student exam scores, since students had self-reported varying levels of test anxiety to me as a result of the pop style of quizzes, I felt it important to survey my students regarding their self-perceived levels of test anxiety in this class and in general. As mentioned earlier, no significance was found either between the two sections of ASL, or among the three types of exam anxieties.

At of the time of the data analysis, four quizzes were given, as well as one midterm. The announced quizzes were announced via a virtual learning environment and course management system used internally by the university. The method of quizzing was clearly spelled out in each section's syllabus. Students in both classes were aware of the kind of assessment they would receive. It was up to the students in Group 2 to check their course management system for an announcement of an upcoming quiz. To ensure that the quizzes in Group 1 were truly "pop," I administered them first, and announced to Group 2 their quiz utilizing the virtual learning environment and a timed release of the announcement to coincide with the end of the class receiving the pop quiz.

Hypothesis

My expectation was that pop quizzes will better prepare students for their midterm. Therefore my prediction was that students in Group 1 would have higher scores on their assessments than students in Group 2.

Alternative hypothesis

I realize that there are many factors that affect student learning--not just type of assessment—as a result, my alternative hypothesis will be that there will be no measurable difference in the performance of students in Group 1 and Group 2 on these assessments.

Procedure

The first day of class, in order to determine what effect academic achievement would have on quiz scores, I surveyed them for Grade Point Average; their expected grade in ASL; major; gender identification; whether they were taking ASL as an elective or required course; who they had as an instructor for ASL I; whether or not they took ASL in high school; overall test anxiety; and test anxiety in this class (see Appendix A). The second week of the semester, I

administered a first reading quiz (called Jigsaw Quiz, for the method of in-class discussion used. See Appendix B for both reading quizzes). For Group 1, the quiz was pop in style; for Group 2, the quiz was announced via a timed message in the virtual learning environment after Group 1 had dismissed. There was a span of 18 hours between the end of the class for Group 1, and the beginning of class for Group 2 for each series of quizzes. The second quiz, during week three, was a signed quiz (Appendix C) and Group 1 received that quiz first, then using the same timed release of an announcement in the virtual learning environment used by the campus, Group 2 was made aware of the quiz in their next class. Quiz three was again a reading quiz, given in week four, and administration followed the same pattern described earlier (see Appendix B for both reading quizzes). Quiz four was another signed quiz (refer to Appendix D), and Group 1 took the quiz first on week five, followed by Group 2, using the method of notification already discussed. All portions of the midterm exam are announced, not only in the course syllabi, but also in class, and during "ASL Hours" (office hours for group tutorial). Students received their video midterm script (refer to Appendix E) at least one week prior to the due date: this semester the due dates were late in week four, and the Monday of week five. Students should rehearse and videotape themselves, posting their video to an intra-campus online portfolio for viewing by their chosen due date. The written portions of the exam took place on one day over one class period and consisted of a comprehension section which I signed, and True/False, fill-in-the-blanks, matching and short answer questions (see Appendix F), as well as a bonus page of random questions relating to material covered in class. During that same class time, three essay questions are released into the virtual learning environment (Appendix G) for students to answer two of as open book, timed, extended responses. The written midterm was administered during week six of the semester.

Data Analysis

Student achievement on the quiz scores and midterm will be analyzed using a *t* test. This test will indicate whether there is a difference between Group 1 and Group 2 on the various quizzes. These *t* tests will allow me to understand group performance and answer my research questions. To provide additional understanding of the results of these tests, I plan to analyze the descriptive data from the participant survey that conveys student self-reported data on their GPA, major, gender, and level of test anxiety.

SECTION FOUR

Findings

Introduction

To understand the effects of different methods of assessment on the performance of students in ASL classes, the data from four quizzes and a midterm were analyzed. Descriptive statistics were used to better understand the quiz scores and midterm grades. Inferential statistics, specifically *t* tests, allowed the comparison of student performance in Group 1 and Group 2. To better understand the differences between the performance scores in the various groups, the mean for each set of tests was first calculated, then a *t* test was run between Groups 1 and 2 for each set of test scores (quizzes and midterms). The findings of each *t* test were statistically insignificant.

Consideration of group composition

N=34. Although the 6:00 pm section (Group 1) had an enrollment of 20 students, three were eliminated from the study for two reasons. The rationale for two students being eliminated were numerous absences which created empty cells in the data collection. The third student was eliminated because their failing grades indicated they may drop the course. For each class, *n*=17.

As Table 1 in Section 3 indicates, I was able to understand the extent to which the student populations involved in my sample represented common characteristics. This was important because the investigation of my hypothesis by comparing group means related to their performance on ASL course assessments hinged on the assumption that my two convenience samples were equivalent. Using the survey I administered, I was able to establish that the two groups had the same number of students and a similar male to female ratio. There were similar low numbers of students who had had ASL in high school. The range of self-reported GPA was similar between the two groups.

All students expressed some level of general test anxiety, ASL quiz or ASL exam anxiety. Concerned that testing anxiety might play a role in group performance, I ran a special *t* test to consider whether there was a difference in test anxiety between the two groups. I found there to be no statistical significance between the two classes regarding test anxiety. Test anxiety could be ruled out as a factor in any difference between the two groups.

However there were some differences in the composition of students in each group that might have had bearing on the results. There was a difference in the number of science majors between Group 1 and Group 2. Group 1 had ten science majors, while Group 2 had five. There was also difference in the instructor students had for the ASL I experience preceding the course in which this study was conducted. Group 1 had only three students who had not had me as their ASL I instructor, but Group 2 had twice that number. Another difference between the two groups was the number of students who took a year or more break between ASL I and ASL II. Group 1 had one such student, with a year gap, but Group 2 had three such students, two of them with a gap of two years between classes. Group 1 had a slightly higher self-reported GPA, although there was one student in Group 1 and three students from Group 2 who declined to report their GPA in their survey.

Understanding the differences and similarities between these two groups is important because *t* tests seek to compare group means and I wanted to understand the extent to which I might be able to attribute these differences in the group means (should they exist) to differences in the composition (student characteristics) of my two groups.

Consideration of differences in group performance

To better understand the difference in performance between the two groups, I ran *t* tests that compared each group's mean score on each assessment. I did this to gain greater insight into

the variation in performance within each group. I administered four quizzes and one mid-term. Table 2 demonstrates the results of these five *t* tests and presents descriptive statistics within group variation as well.

Exam name	Pop Mean	Pop Stand Dev	Ann. Mean	Ann. Stand Dev	*t*
S Quiz 1	84.6	10.2	80.4	10.6	0.24
Jig Quiz 1	75.5	42.8	91.3	45.4	0.3
Jig Quiz 2	93.1	35.9	111.9	22.0	0.07
S Quiz 2	83.6	24.6	75.2	11.4	0.21
Video Midterm	83.8	10.6	84.9	9.7	0.76
Written Midterm	90.8	12.2	83.5	8.8	0.05
Midterm total	88.4	10.6	84.0	7.9	0.18

Table 2 *Quiz and Midterm Means, Standard Deviations and t Test Results*

For the Signed Quiz 1, the *t* test for this assessment indicated there was no significant difference between Group 1 and Group 2, so they are statistically tied. The standard deviation for each group was also tied.

For the first Jigsaw (reading) Quiz, the mean for Group 1 was 75.5, and for Group 2, the mean was 91.3. The standard deviation of each group showed no difference. The *t* test for this quiz indicated no significance.

The third assessment was another Jigsaw Quiz. For Group 1, the mean was 93.1, and for Group 2, 111.9. The standard deviation for Group 1 was 35.9, and for Group 2, 22. Again, the *t* test was not significant.

The last quiz, another signed quiz, had a mean of 83.6 in Group 1, and 75.2 in Group 2. The standard deviation for Group 1 was 24.6, and for Group 2, 11.4. The *t* test showed no significance.

The video midterm portion mean for Group 1 was 83.8 and for Group 2, 84.9. The standard deviation of both groups was nearly identical. Since both groups had announced midterms, any variation seems natural, and not due to whether students knew about the exam or not, as all students were given the script and assigned a due date beforehand. Again, a *t* test was not significant.

The written portion mean for Group 1 was 90.8 and 83.5 for Group 2. I expected the same variation in scores for the written portion as I did for the video. The standard deviation for Group 1 was 12.2, and for Group 2, the standard deviation was 8.8. A *t* test on the written portion was not significant.

The total midterm mean for Group 1 was 88.4 and 84 for Group 2. The standard deviation for group 1 was 10.6, and for Group 2, the standard deviation was 7.9. The *t* test was not significant.

Analysis of findings

The data show that announcing quizzes benefits everyone for the reading (Jigsaw) quizzes, but not necessarily for the signed quizzes. I think this can be attributed to the preponderance of science majors in Group 1: these students are used to studying daily, and therefore were always ready for a signed quiz.

As I consider the findings from these individual *t* tests, I notice that there were no significant differences. This suggests that the type of assessment a group received did not have an impact on the mean of the group performance. It is also possible to say that it did not seem to have an impact on females. As mentioned earlier, Keys found a statistically significant difference between weekly and monthly testing in favor of the more numerous assessments (1934). Ruscio's (2001) research of his psychology classes, using random quizzes of the course readings,

revealed that the quizzes motivated his students to complete their reading assignments. The data for my classes shows no significance. Ruscio (2001) found that the students who read the textbook had higher grades for the course. He was willing to admit that better students tend to do all of the assigned work, so both alternatives could hold sway. Ruscio (2001) also stated that more students read the book, and said that the random quizzes were a driving factor. I did not find that the pop reading quiz scores were higher or the same as the announced reading quiz scores, so my own experience indicates that students will complete their reading assignment if they know they will be quizzed. I would also speculate as Ruscio did, that good students would complete the readings and study no matter what, as the insignificance between the scores of female students in each group I studied have indicated. Azorlosa and Renner (2006) found through their research, that exam grades did not vary between the quiz and no quiz classes. Similarly, my *t* test data show no significance between pop and announced quiz groups.

Given that my sample was one of convenience, and that the two groups had some similarities and just as many differences between them, I found no significance between the two groups regarding quiz scores.

SECTION FIVE

Discussion

Introduction

In this section I will review the study design and methods I used to gain insight about the impact pop quizzes have on student performance using assessment data collected from students in two different classes of Level II American Sign Language. I will also discuss my findings and what I learned about different types of assessments in a language classroom.

This quasi-experimental study was conducted at a small, Midwestern liberal arts university over the course of seven weeks, with a sample of convenience, my two second-semester Level II American Sign Language classes. To understand better the extent to which these groups were similar in composition, I surveyed my students to collect descriptive data about their GPA, gender, major and level of test anxiety. In order to understand how assessment type affects individual and group performance, I administered four quizzes: two reading quizzes and two comprehension and culture and/or grammar quizzes. One midterm was given on two separate days: a video take home assignment and a written midterm testing comprehension, culture and grammar. Data consist of four sets of quiz scores and midterm grades, as well as the information garnered from the survey. Analysis consisted of student quiz scores and midterm grades using a *t* test comparison of means. The *N* for each section was 17. See appendices for samples of the survey, quizzes and midterms. The video portion of the midterm is administered as a take home exam, and is given about one week before the in class written exams. The video is weighted one third of the total midterm grade. The written portions occur on the same day: the first portion consisting of comprehension of signed ASL, then culture and grammar questions,

followed by an open book online portion of a choice of extended response questions, the total of the two written portions weighted two thirds of the midterm grade.

While this is not a study to determine the effects of test anxiety on student exam scores, since students had self-reported varying levels of test anxiety to me as a result of the pop style of quizzes, I felt it important to survey my students regarding their self-perceived levels of test anxiety in this class and in general. As mentioned earlier, no significance was found either between the two sections of ASL, or among the three types of exam anxieties.

The announced quizzes were announced via a virtual learning environment and course management system used internally by the university. The method of quizzing was clearly spelled out in each section's syllabus. Students in both classes were aware of the kind of assessment they would receive. It was up to the students in the announced quiz class to check their course management system for an announcement of an upcoming quiz. To ensure that the quizzes in the unannounced class (Group 1) were truly "pop," I administered them first, and announced to the next class (Group 2) their quiz utilizing the virtual learning environment and a timed release of the announcement to coincide with the end of the class receiving the pop quiz (Group 1). In past years, I had only given the pop style of quizzes, thinking that a pop quiz would assure near perfect attendance: an unexcused absence resulting in a zero.

My hypothesis was that the group of students who were administered pop quizzes (Group 1) would perform better on these assessments. This would indicate that they were likely to be better prepared for their midterm assessment. My reasoning was that the risk of a pop quiz would affect my students' behavior (not just their attendance) and encourage them to keep up with their work and regularly spend time preparing for the possibility of a quiz that would assess their ASL knowledge. What I discovered was that this did not appear to be the case. Using multiple *t* tests,

one that compared each set of quizzes between groups, one that compared the video midterm between groups, another that compared the written portion between groups, and finally another comparing the total midterm scores between Groups 1 and 2, I did not find any statistical significance between groups. This indicates that the pop quiz group (group 1) and the group with scheduled assessments (group 2) performed at about the same level across each assessment.

Despite the lack of significance in *t* tests between the two groups, the findings were important to me. The data indicate no more value in administering pop quizzes to my ASL students over the announced type.

Discussion

My data indicate no significance between the pop section and announced section of my ASL classes. My review of the existing literature indicates two reasons for giving pop quizzes: to increase attendance and to ensure that students keep up with their reading assignments. (Bell, 1997; Ruscio, 2001; Wilder, Flood & Stromsnes, 2001; Azorlosa & Renner, 2006; Narloch, et al., 2006; Johnson & Kiviniemi, 2009; Rieg & Wilson, 2009; Johnson & Mrowka, 2010; Le, 2012; Khanna, 2015; Zhang & Henderson, 2015; and Naidoo, 2017). Since my attendance policy is strict (only two unexcused absences before one's final grade is reduced), I see no reason to continue administering pop quizzes to my ASL students. I would have considered keeping pop quizzing in place if I thought it would motivate students to attend more classes, but the class with the better overall attendance this semester was the announced quiz section. The insignificance of my findings gives me impetus to switch to announced quizzes in all sections of ASL.

Limitations of the study

There are several limitations of this study. The sample is one of convenience. A convenience sample does not accurately reflect the entire population, but it is fast, inexpensive

and facile. Since I teach two sections of intermediate ASL in the spring, my research leant itself to a control and an experimental group because the classes meet on different days and different times. Second semester classes tend to be smaller than first semester, and this was the case in this particular spring as well. My classes had 17 and 20-ultimately 19-students. I eliminated three from the larger group as outliers, discussed in the findings section. As mentioned before, a larger sample would more accurately depict the university population, or at least the population of students enrolled in ASL. The *N* is obviously small, and a more reliable study would be conducted among hundreds of ASL students, increasing the statistical power. A larger sample would enable me to determine better the equivalence of the two groups.

Time was a limitation of my study as well. I began my research at the beginning of spring semester in January, and needed to conclude the data gathering no later than the end of February, a mere seven weeks of a typical college semester. Ideally, having the ability to collect data over an entire semester, would easily garner twice the number of scores, as I administer two midterms and a final with typically a minimum of two quizzes in between exams. Would more data show greater variance or the same amount?

Another limitation of the study was the preponderance of science majors in the control group: ten. Science majors tend to have higher overall GPA's and better study habits. The announced quiz section had a wider variety of majors and more student athletes. Had each section been comprised of a variety of majors, or had each section had the same number of science majors or student athletes, the results could have been significant.

The control group had only one student with a mere year gap between ASL I and ASL II. The announced quiz section had three students with a year or more between semesters of ASL. The gap could have skewed results. Some of the students with a gap of a year or more in their

studies might only now feel caught up with their peers, halfway through the semester. There were three students in the control (pop) group who had taken a year or more of ASL in high school, compared to two in the announced quiz group. I doubt this information could be considered a limitation, since the numbers were so similar, although how much each student had retained from their prior study of ASL could have made a difference in the data.

Twice as many students in the announced quiz group had had a different teacher for ASL I. Their unfamiliarity with me could have caused them to study harder or more often than they would have with the same instructor they had for ASL I. One could say the same for their compatriots in the control group, but there were half the number in the same size class, perhaps having little or no effect on the scores. Again, for some or all of these students new to me, they may just now feel comfortable with my testing style and me after their first midterm.

Implications

My original hypothesis that pop quizzes will better prepare students for their midterm, was not supported by the data. Using multiple *t* tests, I did not find any statistical significance between the pop quiz and announced quiz groups. This indicates that the pop quiz group (Group 1) and the group with scheduled assessments (Group 2) performed at about the same level across each assessment. My alternative hypothesis of there being no difference between the effects of pop or announced quizzes on midterm grades, has been supported by the data and *t* tests. Much to the delight of my current and future ASL students, I see no logical reason behind continuing with pop quizzes.

While this was not a study to determine the effects of test anxiety on student exam scores, since students had self-reported varying levels of test anxiety to me as a result of the pop style of quizzes, I felt it important to survey my students regarding their self-perceived levels of test

anxiety in this class and in general. As mentioned earlier, no significance was found either between the two sections of ASL, or among the three types of exam anxieties, so test anxiety need not be considered a limitation, or even a factor, of the study. Pop quizzes increase levels of test anxiety, as my students have reported to me anecdotally. Since students self-reported some level of test anxiety, further exacerbated by my pop quiz style, I am happy to relieve them of at least some of their angst.

Corrections for further research

Given more time, I would like to conduct similar research among more sections of ASL, with various instructors, over a longer period to see if my initial findings can be duplicated.

Although the *t* tests were insignificant, the mean, median and modes of both signed quizzes favored the pop quiz group, which intrigues me, especially since the scores of the students' production of ASL (the video midterm), was better in the announced group. A study could be conducted wherein reading quiz scores are compared with signed quiz scores across gender and majors. Another study should be conducted to compare comprehension of ASL with level of production of ASL. Carroll (1968) mentions the importance of motivation in modern language learning, which might be a factor in some of the slight discrepancies in scores between the two groups.

Since concluding collection of data for this research, I noticed that students in Group 1 were anticipating a pop quiz. The timing was becoming predictable for some, "We just finished unit x. Time for a quiz", and some students were talking amongst themselves, "I told you we were having a quiz today", so the quizzes were no longer pop for some students in that group.

Professional outreach plan

The findings of my study were not only of extreme interest to me, but colleagues, peers in my Capstone class, practicing and retired teachers have all expressed an interest in the results. I had planned to present my findings during a common hour at my university, and my Capstone professor has suggested delivering a talk at a faculty conference.

Personally, I shall amend my course syllabi to reflect announced quizzes, as well as offer a regular variety of quizzes, so that students who can read and retain that material have a chance to score well, and students who comprehend ASL easily can do the same on a signed quiz. Students who suffer from test anxiety would benefit from announced quizzes since they will be able to prepare emotionally and scholastically for an upcoming assessment.

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Appendix A

Quiz Survey

_____**Name** (will be kept confidential)

1. My Grade Point Average is _____
2. My expected grade for this course is _____
3. My major is_____
4. My gender identification is _____
5. I am taking this course as: (circle one) a requirement an elective
6. I had _____ for ASL 1000 (write instructor's name in blank). **OR**, I tested into ASL 1100 _____ (mark with an X if you took the online proficiency exam in Blackboard, and were placed into ASL 1100 as a result)
7. I have had _____ years of ASL in high school.
8. On a scale of 1-4, with 1 being little to none, 2 being slight, 3 being some, and 4 being a lot to extreme, indicate how much anxiety you experience when taking tests, exams or quizzes in *any* class _____.
9. Using the same scale of 1-4 above, indicate your level of quiz anxiety in *this* class _____.
10. Using the same scale of 1-4, indicate your level of test anxiety during the course midterms and final _____ (think back to last semester, whether I was your instructor or not).

    Thank you!

Appendix B

Jigsaw Quiz **Name** _____

- Please write the number of the Jigsaw article you were to have read for today _____.

Bonus: Write the title of the article _____

_____

- *Either* summarize the article, *or* list the 3-5 main ideas you highlighted to share in Jigsaw group discussion:

V. Frisch, 2017

Jigsaw Quiz **Name** _____

- Please write the number of the Jigsaw article you were to have read for today _____.

Bonus: Write the title of the article _____

_____

- *Either* summarize the article, *or* list the 3-5 main ideas you highlighted to share in Jigsaw group discussion:

V. Frisch, 2017

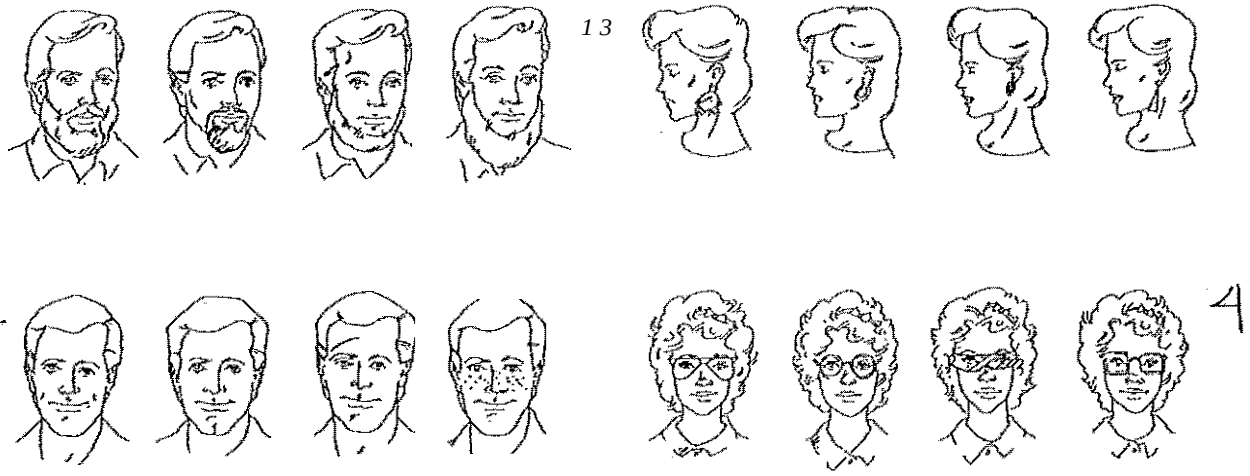
Appendix C

ASL 1100 Quiz #1

(Unit 8 • Describing people)

Name Date

Circle the person described. On the lines below, list the TWO facts about him/her. You do not need to write in sentences.



_____ _____

Watch your instructor describe a person. Make a list of the description words (in any order) and one *fact* about him/her. Do not write in sentences.

5. 6. 7.

8. What should you sign *first* when describing someone? _____

9. "Deaf people are so RUDE! They say things like, 'That person is fat' and, 'She has a big nose. I can't believe someone would actually say that. Deaf people don't have good social skills. I think they should be told this is inappropriate and rude and they should learn how to be more tactful." -Hearing person unaware of Deaf culture

Clearly the above statement reflects a degree of ignorance. On the back, respond to this comment. Be sure to mention some relevant differences between Deaf and Hearing culture. You may *want* to mention the two perspectives on deafness and *a* little bit about ASL. Finally, write a short paragraph (like the one above) describing what *Deaf* folks might say about us "hearing folk" if they were unaware of our cultural characteristics.

Appendix D

ASL 1100 Quiz 2

_____Name

Time and activities

Directions: Watch Victoria sign sentences with times and activities. Be certain to write the two times given, and the activity. Translate each sentence into English. Punctuation counts.

1.

2.

3.

Request types

Directions: Watch Victoria sign the three request types. Translate each sentence into English. Punctuation counts.

1.

2.

3.

Culture

1. Describe one accommodation a Deaf-Blind person needs to make in order to perform an everyday task.

2. Describe an article you read where a law was broken; how *should* the situation have played out (if the laws were followed)?

Bonus: Name signs: What is appropriate, and what isn't?

Bonus: List up to three *other* grammar points covered in Unit 8 that are *not* part of the sections above.

Appendix E

ASL II Video Midterm 1 Spring 2018

_____Name

Introduction: *Fingerspell* your first and last name. **15 points**

Part I Description **31 points**

Bring with you a wacky photo of yourself, a family member, friend, or simply a photo from a 'zine or the web. Describe the person using the *8 step process* we have practiced in class. End with how the person is related to you, then fingerspell their first and last name.

****

Part II Request types **54 points total**

A. Ask your friend to do ***three*** **(3)** of the following:
1. Bring you lunch or something to drink (your choice-be specific with item requested).
2. Go to the bank for you.
3. Buy a newspaper or magazine for you.
4. Turn on the TV for you.
5. Walk your dog for you.

B. Ask your instructor to do ***three*** **(3)** of the following:
1. Tap another student to get their attention.
2. Give the class a break.
3. Bring a snack (be specific!) for the class
4. Finish class early.
5. Give you the homework assignment.

C. Tell your younger sibling to do ***three*** **(3)** of the following:
1. Wash your car.
2. Sweep the floor.
3. Shut the door.
4. Clean their room.
5. Pick up their clothes.

Hints Use the appropriate ASL format, phrases and *affect* learned in class.

Use a body shift from one request type to another.

Appendix F

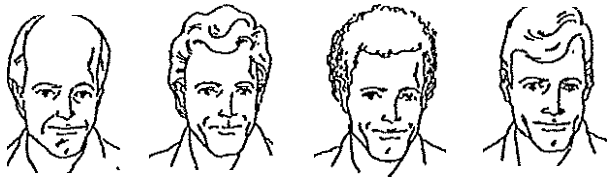
ASL 1100 Midterm 1, 6:00pm section Spring 2018

_____Na

me Part I: Comprehension

A. Descriptions **5-15 points each**

Directions: Watch Victoria describe four people. Circle the correct person. Then, write down the brief bits of information about each person in the blanks provided.



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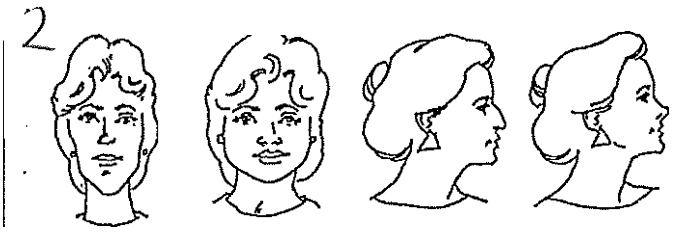

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_____

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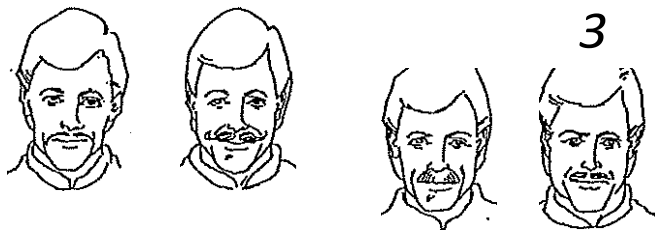

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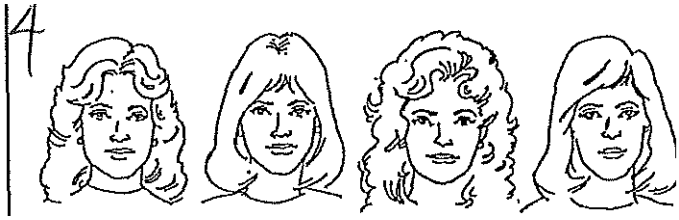


_____

_____

B.

Translation 10-25 points each

Directions: Watch me sign phrases in ASL. In your best *English*, write your translation below. Reread your translations to yourself to make sure they "sound right". Punctuation counts. Each sentence will be signed three times. If needed, you may ask me to repeat them.

1.

2.

3.

4.

5.

6.

Part II: Culture and Grammar

A. Ordering 2 points each

Directions: Correctly reorder the list to the right according to how one describes someone in ASL. **Rewrite** the *list* next to the numbers *provided.*

1,	Action/behavior
2,	Body type
3.	Clothing
4.	Facial Features
5.	Gender
6.	Haircolor
7.	Hairstyle
8.	Height
9.	Race (if distinctive in setting)

B. Matching **2 points each**

Directions: Match the terms below to their definitions.

A. Consecutive B. Interpreting C. Relay D. Sign to Voice
E. Simultaneous F. Translating G. Transliterating H. Voice to Sign

1. _____ Involves 2 forms of the same language.
2. _____ "Copy signing".
3. _____ Utilizes a lag time.
4. _____ Person speaks, interpreter signs.

C. Fill-In-the-blank **4 points each**

Directions: ***Clearly*** write in the missing word.

1. In the early years, interpreters were considered

_____

2, In the '8o's, the role changed again to that of a

"_____
_ or a
"_____" of communication.

3, In the ' 60's and '70's, the role of the interpreter changed to that of a
"_____"

True/False 2 points each

Directions: ***Clearly mark*** each statement either True or False.

2. _____ Interpreters shall function in a manner appropriate to the situation.
3. _____ Another CHIP guideline is that when the teacher leaves the classroom, the interpreter remains to supervise the deaf students and interpret conversations between students.
4. _____ Interpreters should strive to maintain high professional standards.
5. _____ A CHIP guideline for the classroom teacher is to address the student directly.
6. _____ Interpreters have to accept each and every assignment -a deaf person is relying upon them.

D. Short Answer **10 points each**

Directions: Answer ***four*** of the following five questions. Clearly mark which answers you want me to grade. More space is provided on the next pa e ·

1. What group was responsible for the longest sit-in protest in our nation's history, taking over a federal building? What was the result of the protest?
2. Name **five** sentence types in ASL, and gloss one of them in a five word sentence.
3. Choose between the two people profiled in Units 7 & 8 in your textbook. In your *opinion,* who had the larger impact on Deaf folks? Who had the larger footprint in Deaf History? *Why?* Give examples to support your stance.
4. Name **four** things OCRID does.
5. Name the 2 request types in ASL, and write out the complete syntax of each, including NMGS.

***Bonii ***

Why did we do the in-class exercise "The Gift" on the first day? (If you were absent, do not answer these questions.) Why was I adamant about no fingerspelling? How did it work out for you? What about guessing what your classmates received? Was this easy? Fun? Explain.

Who is "Mr. Rose Apple Nose"? What does this illustrate?

Explain the ethics in "The Deaf Bookkeeper" joke.

What does "Take a break, get smart" refer to?

How do Bob *and Michelle* communicate *with* each other?

How did Bob and Michelle meet?

Who admires Bob Smithdas (other than you, your classmates and me)?

Appendix G

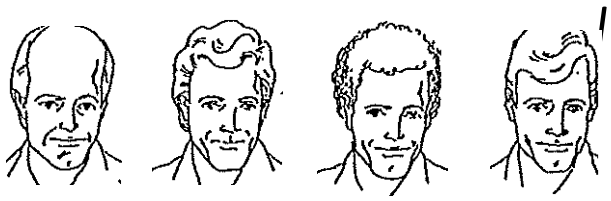
ASL 1100 Midterm 1, 2:00pm section Spring 2018

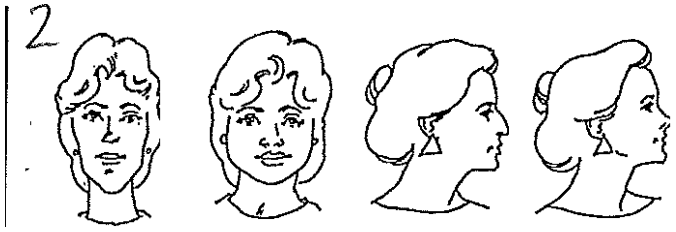
Name _____

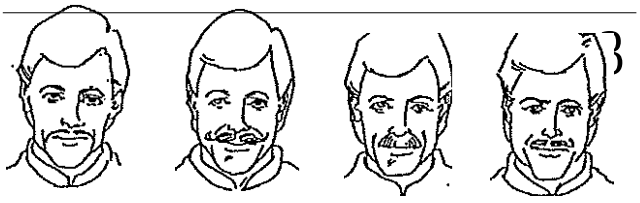
Part I: **Comprehension**

A, Descriptions **5-15 points each**

Directions: Watch Victoria describe four people. Circle the correct person. Then, write down the brief bits of information about each person in the blanks provided.







B. Translation **10-25 points each**

Directions: Watch me sign phrases in ASL. In your best *English*, write your translation below. Reread your translations to yourself to make sure they "sound right".

Punctuation counts. Each sentence will be signed three times. If needed, you may ask me to repeat them.

1,

2.

3.

4.

5.

6.

Part II: Culture and Grammar

A. True/False 2 points each

Directions: *Clearly* mark each statement either True or False.

1. _____Interpreters need not keep assignments confidential-how else will they get paid?
2. _____ A CHIP guideline for teachers is that interpreters will speak and sign in the first person as if they themselves were speaking.
3. _____Interpreters should not counsel, advise or interject personal opinions.

_____A CHIP guideline is that the interpreter handles the disciplining of Deaf students.

5. Interpreters may need to demand payment for services- bring in some muscle if needed!

B. Matching **2 points each**

Directions: Match the terms below to their definitions.

A. Consecutive B. Interpreting C. Relay D. Sign to Voice E. Simultaneous F. Translating G. Transliterating H. Voice to Sign

1.____ Involves 2 different languages.
2. ____ Involves 2 different *written* languages.
3. ____ Utilizes turn taking.
4. ____ Person signs, interpreter speaks.

C. Fill-in-the-blank 4 points each

Directions: ***Clearly*** write in the missing word.

1. In the '6o's and '7o's, the role of the interpreter changed to that of a "_____"
2. In the early years, interpreters were considered _____
3. In the '8o's, the role changed again to that of a "_____ _____"or a"_____" of communication.

D. *Ordering* *2 points each*

Directions: Correctly reorder the list to the right according to how one describes someone in ASL. **Rewrite** *the list* next to *the* numbers *provided.*

1.	Action/behavior
2,	Body type
3.	Clothing
4.	Facial Features
5.	Gender
6.	Hair color
7.	Hair style
8.	Height
9.	Race (if distinctive insetting)

E. Short Answer ***10 points each***

Directions: Answer ***four*** of the following five questions. Clearly mark which answers you want me to grade. More s12-a ce is provided on the ne11t pilge,

1. Name the 2 request types in ASL, and write out the complete syntax of each, including NMGS.
2. Name **four** things OCRID does.
3. Name **five** sentence types in ASL, and gloss one of them in a five word sentence.
4. What group was responsible for the longest sit-in protest in our nation's history, taking over a federal building? What was the result of the protest?
5. Choose between the two people profiled in Units 7 & 8 in your textbook. In your *opinion,* who had the larger impact on Deaf folks? Who had the larger footprint in Deaf History? *Why?* Give examples to support your stance.

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****Bonii****

Why did we do the in-class exercise "The Gift" on the first day? (If you were absent. do not answer theseriuestlons.) Why was I adamant about no fingerspelling? How did it work out for you? What about guessing what your classmates received? Was this easy? Fun? Explain.

Who is **"Mr.** Rose Apple Nose"? What does this illustrate?

Explain the ethics in "The Deaf Bookkeeper" joke.

What does "Take a break, get smart" refer to?

How do Bob and Michelle communicate with each other?

How did *Bob and* Michelle meet?

Who admires Bob Smithdas (other than you, your classmates and me)?

Appendix H

A. Essay Bank **50 points**

Directions: Answer ***two*** of the following three questions.

1. **Name** an article you read in which one or more laws were violated. *Briefly* describe what happened, *list* the laws that were violated, and then tell me what *should* have been done to prevent the need for the article in the first place. (2-3 paragraphs) [Used for Groups 1 and 2]

2. Name at least two diseases which can lead to Deaf-Blindness. Referring to your readings and the video we watched in class, describe how Deaf-Blind folks adapt in order to do ***four*** everyday things. ***Be specific, citing the article title and the Deaf-Blind person, or movie and D-B person.*** (4 short paragraphs, or one long one.)

   [Used for Groups 1 and 2]

3. *Explain this quote*: "Producing an effective interpretation requires more than simply remembering and regurgitating the source text. The speaker's goal must be understood and created in the target language with intention!" Give ***four*** examples from your readings and/or class discussions. (2-5 paragraphs. If five, they will be short.) [Used for Group 2]

4. *Explain this quote* from Claude Namy:"Interpreting…is not merely transposing from one language to another. It is, rather, throwing a semantic bridge between two different cultures, two different thought worlds." Give ***four*** examples from your readings and/or class discussions. (2-5 paragraphs. If five, they will be short.)

   [Used for Group 1]