Computer-Assisted Learning in Second-Year Latin[1]

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Abstract

This article describes a use of instructional technology in an intermediate-level college Latin class. Students were aided in their translations of Cicero's *Pro Archia* by the use of a tablet computer which recorded the process of parsing and translation in electronic files. The files were then available to students for use in reviewing, studying, and preparing for quizzes and exams. Students believed that the instructional technology helped them improve their understanding of the Latin text. Analysis of their outcomes shows that the technology primarily helped those students who came to class and used the materials for review.

Keywords

instructional technology, Latin, intermediate Latin, learning management systems, tablet computer, smart board

Introduction

Over the past few years I, like many instructors, have sensed the imperative to incorporate technology into my teaching. Indeed, American college students have been shown to be a highly connected population. A Pew Study on College Students and Technology from 2011 reports that 98% use the Internet, 96% own cell phones, and 88% use laptops (Smith, et al.). Even more intriguing, 73% say they cannot study without technology and seven in 10 take notes on keyboards instead of paper (Laird). Even in the world of Latin instruction – a field small compared to that of other world languages – there has been extensive development of tools for computer-assisted language learning: there are even Latin and Greek dictionary applications available for mobile devices. While classicists have been publishing survey articles of electronic resources for well over a decade (e.g., Reinhard), the pace of innovation in digital learning is simply dazzling. A teacher who wants to remain up-to-date must read blogs such as The Digital Classicist and eLatin eGreek eLearn.[2]

1 Above all, I wish to express my gratitude for the patience and humor of the students who allowed me to experiment with their learning. In the preparation of this analysis, I benefitted from the wisdom of Tim Spannaus, Larry Lombard, and the editors and anonymous referees for *TCL.* Sacip Toker, a PhD student in Instructional Technology at WSU, carried out the statistical analysis. The technology used in the project was funded and supported by the College of Liberal Arts and Sciences and the Foreign Language Technology Center of Wayne State University.

2 Teachers of Latin can also learn from digital pedagogies of modern language instruction; for example, CALICO Journal, produced by The Computer Assisted Language Instruction Consortium, and Language Learning and Technology focus primarily on modern languages, but have an occasional article on Latin, and the website MERLOT provides ideas on computer-assisted learning in its world languages area.

My preferred "technology" for teaching elementary and intermediate Latin has always been the overhead projector. Overhead projectors have many advantages. They are inexpensive, widely available, and do not become obsolete in a few years. An instructor can prepare a text ahead of time by printing or copying it on a transparency, and then can write on the transparency in real time while facing the class.

In the past, I have printed the text my Latin class was reading onto transparencies, and then, as we parsed and translated a passage in class, I wrote whatever clues the students needed with markers, taking advantage of the ability to use different colored pens to note different things (e.g. underlining all verbs in blue, or all direct objects in red). When a class session was done, however, the students lost access to the notes we had made on the transparencies. Now and then I had a student ask me for copies of the transparencies, but it was never practical nor economical to produce color copies of all the transparencies we used in a day.[3] The students therefore were left with only whatever notes they had taken themselves.

While I did not want to use computers simply for the sake of using computers,[4] I knew that students would benefit from having access to the notes and annotations that I made daily on transparencies, which recorded the thought process involved in translating instead of a translation itself.[5] Rather than straying far from my traditional mode of teaching, which had successfully prepared students to be able to translate, I used the computer to create a digital form of the decidedly analog marked-up transparency. The digital files would then be accessible via learning management software (we use Blackboard) so that students could review the material as often as needed. I thought that this was an ideal application of computer technology in that it would digitize a tried-and-true pedagogical method and allow students to have access to material that would certainly enhance their learning.

While my project focused on a college course, this adaptation of a traditional pedagogy, enhanced with digital resources made available via learning management software, could be employed at any level where Latin is taught, including elementary, middle, or high school.

Project Design

To test whether giving students access to the work we did in class would improve their learning, I designed a project around third-semester Latin (LAT 2010: Intermediate Latin I, hereafter referred to as the "target class") during the Fall semester of 2009. Third semester is a notoriously difficult one for many students as they make the transition from a textbook, with its artificial Latin, to Latin as it was written by the Romans.[6] Many have tried to address this very problem by developing a new methodology for teaching elementary Latin that would smooth the path to

3 Before finding the Tablet PC, I attempted to scan overhead projector transparencies, but this yielded poor results, as the scanner sometimes recorded slight curves in the transparencies themselves as well as ink smudges. Indeed, the ink often wiped off on the inside of the scanner.

4 "Technology for technology's sake is dangerous" is the first rule of The 7 Habits of Highly Effective Teachers Who Use Technology.

5 The software of Hollingsworth (2008) takes a similar approach to coaching students through Cicero's *In Cat. I* without providing a translation.

6 "It seems to be generally accepted by all who teach Latin and Greek that the most difficult learning period, for both students and teachers, is the intermediate level" (May 159). While the challenge of third-semester Latin is a perpetual complaint among instructors, there is remarkably little written on how to lead students through it successfully; still relevant is Riddering.

reading Classical Latin.[7] While teachers have now agreed upon standard student outcome goals for Latin learning (Standards for Classical Language Learning), no one has studied whether the traditional grammar/translation approach, the reading method, or oral Latin best prepares students to meet these goals.

At Wayne State University, Intermediate Latin I begins with the completion of a Latin textbook[8] and grammar review. Students then spend approximately two-thirds of the semester reading a prose author, either Cicero or Caesar. For the semester of this research project, students read Cicero's *Pro Archia*, which at the time was still part of the Latin AP curriculum and therefore was well represented in teaching materials. I taught the course as I had in the past, by assigning passages of increasing length for translation and grammatical analysis, while occasionally stepping back from the language to discuss the historical and cultural context of the speech.

Planning for the course began the summer before. Using an internal grant, I hired a student assistant who was knowledgeable in Latin.[9] The assistant divided the entire *Pro Archia* into individual sentences, each contained in a separate digital file. These were in Microsoft Word format so that they could be edited or combined as necessary. The text was graphically represented for clarity: it was written in a large font, placed on the page in landscape layout, and widely spaced, allowing plenty of room for the writing of comments at a later time by me or my students.[10] I formatted some sections of the text further to make clauses or phrases more graphically obvious to the students, a methodology suggested by Harrison. A sample page, containing *Pro Archia* 5, is displayed in Appendix 1.

To project and manipulate the files during class, I used a Dell Tablet PC, a laptop with a screen that can be rotated outward to form a tablet. The computer included a tablet PC version of Microsoft Word, which allows one to superimpose handwritten text atop a Word file using an electronic stylus. The stylus can write thin (pen-like) or thick (highlighter-like) lines, and the color of the "ink" can be changed as often as necessary.[11]

Students employed several resources to prepare their translations. Each of the files described above was available to the students on Blackboard; I preferred that they use these so that their pages would match the ones projected in class. Students used the notes and vocabulary in Cerutti's school text of the *Pro Archia* to prepare each lesson. I suggested that they purchase colored pencils or markers for working on their texts.

For each assignment, students read a passage and translated as well as they could on their own. I encouraged them to use their pages to mark clauses, connect words that agreed with each

7 Surveys of different pedagogies include Sebesta, Balme & Morwood, and Story.

8 At that time we used Shelmerdine.

9 My college generously granted funds for assistance.

10 I have observed over my years of teaching that students struggle less in reading Latin when the text is written in a large font and is generously spaced on the page.

11 A number of other devices and software packages would achieve the same results. Text files could be projected on a SMART Board, marked up using its digital tools, and saved as digital files. Paper copies of the files could be projected using a document camera, marked up with regular pens and highlighters, and saved via a computer connected to the document camera. Currently, the most innovative technology for this pedagogical technique would employ a computer and projector along with an iPad and the software package Doceri. This too would allow the text to be projected, but the marking would be done on the iPad with either a finger or a stylus. Because the iPad is wireless, it could easily be passed from student to student while they remained seated in their desks. It would also be possible to record not just screen shots of the finished pages, but the entire lesson, including audio, using any of these devices by incorporating software such as Camtasia.

other, and to note questions they had on the text; I strongly discouraged them from writing vocabulary crutches or writing out a full translation. During the next class, we would review the passage. I projected the same pages that they had worked on at home and annotated whatever was necessary. For example, in Appendix 2, I have marked *Pro Archia* 5 to explain a number of points of grammar, to break off clauses from each other, and to identify people represented by pronouns; I used a highlighter in this particular passage to identify the correlatives joining various elements in the sentences.

At the end of each class, I converted the marked computer files to PDF format and saved them to Blackboard. Students could then gain access to the files in order to review the text soon after class, or before a quiz or exam. On occasion, I also posted a podcast explaining a passage that we had rushed through, or which contained some particularly difficult grammar.

Students' learning was assessed regularly in this class. There was a weekly quiz which tested students' ability to analyze the grammar and translate the passages that were read most recently; the quiz on *Pro Archia* 5 is contained in Appendix 3. All the quizzes related directly to the material in the annotated text files. There were also three exams, evenly spaced throughout the semester, which asked similar questions in addition to reading comprehension and essay questions.

Participants

Like most Latin students, those enrolled in the class I studied were self-selecting. A majority of the undergraduates at the University are required to study three semesters of a foreign language; most study Spanish, and more than a dozen languages are available. The average enrollment in a Latin 1010 (Elementary Latin I) cohort is 33 each year, of which only a few will be Classics majors, and some will have taken some Latin in high school. By the third semester the number of students is considerably lower (average 12), as students drop because of poor performance or scheduling conflicts.

There are factors which can diminish student success even in a group that is self-selecting. Wayne State University's student body includes many non-traditional students, including adults who may be in their 40s or older and have never studied a foreign language. Both traditional and non-traditional students will often skip a year or more between taking first and second year Latin courses, and thereby forget what they have learned. Also, many students who are not particularly successful in first and second semester Latin will nevertheless continue through the sequence with systemic defects in their knowledge base. These students share the class with extremely strong students.

The target class included fourteen undergraduate students who completed the semester with passing grades; all of them had taken their entire Latin sequence at our university.[12] When measured against other students who started Latin at Wayne State University, this group was strong: their collective grade point average in Latin 1010 (first semester Latin) was 3.15, whereas the overall average for students who passed Latin 1010 (2000-2009) was 2.89.[13] The class included

12 The class also included three graduate students taking the course through a different registration rubric (LAT 5000: Latin for Graduate Students); these students were not included in any of the statistical analyses below, but their comments do appear as part of the survey results.

13 The collective grade point average for Latin 1010 students was calculated based only on those students who passed the class (excluding those who failed or withdrew) 2000-2009 (n = 279). Only such students would have continued to higher level classes.

one non-traditional student and one with learning disabilities. Four students had skipped at least a year between taking the first and third semesters of Latin.

Outcomes

Student Response

Students took an anonymous survey on Blackboard at the halfway point in the semester to provide their opinion on the use of the tablet computer. 15 of 17 students responded to the survey, and overall their response was quite positive, indicating that the students used the files and benefitted from their use. The complete survey and responses, including write-in responses to the open-ended questions, can be found in Appendix 4.

The first few questions focused on students' use of the files. Question 1 asked how often students downloaded marked-up files from Blackboard; more than half responded "always" or "often"; no students reported "never" downloading the files. The second question asked students whether they used these files "[t]o review the passage soon after…class," "[t]o review the passage for the quiz," or not at all; the vast majority (14 of 15) chose the first option, with one student reporting using them to study for quizzes. Question 3 was a free-response follow-up to Question 2, asking students to explain any other ways in which they used the files. Students described various scenarios they had devised for using the clean and marked sheets to review for quizzes and exams. Each process was detailed enough to suggest that students had been extremely mindful of the benefit of using the marked-up sheets.[14]

The second half of the survey asked students about the utility of the files. Overall, students seemed to find the files helpful. Question 4 asked students to compare the usefulness of the marked-up files with that of notes in the textbook. Ten students reported needing both; two preferred the textbook notes and three preferred the marked-up files. Moreover, thirteen of the fourteen students who responded to Question 5 agreed or strongly agreed that "[a]ll in all, the time, effort, and expense that go into the marked-up files are worth it." Only one student disagreed with this statement. The final question asked students for any other comments they might have on the value of the marked-up files in learning to read Cicero. Seven students responded to this open-ended question; six praised the methodology and thought that they had benefitted from it. One student was concerned about students who might not have internet access at home (Appendix 4).

Positive student response to the use of the tablet computer was also noted in my teaching evaluations for the semester. Voluntary student comments on the teaching evaluations were also overwhelmingly positive, with the exception of two students who voiced annoyance (and rightly so) about the times when the computer failed to work correctly[15]. Telling among the comments were: "I started out clueless and am now very confident in translation." "I think I finally get it." "I started out the semester claiming Latin was the bane of my existence, BUT now by changing my studying techniques [using the marked-up files] I am enjoying the class." [emphasis in original]

14 Student responses to the free-response questions from the survey are found in Appendix 4.

15 A design flaw in the Dell Tablet PC allows the cable connecting the computer to the project to disconnect easily. We also experienced computer freezes and power interruptions.

Statistical Analysis

In addition to student feedback, I employed a number of different quantitative measures to determine whether the use of the tablet computer enhanced student learning and outcomes in third-semester Latin:

- Collective grade point average (GPA) of the class;
- Distribution of grades in the class;
- Student persistence to the (voluntary) fourth-semester Latin course;
- Collective GPA in the fourth-semester class;
- Grades for students by number of times files were accessed.

The data studied included all students enrolled in LAT 2010 from 2000 through 2009. The first four metrics compared students in the target class with those in previous cohorts. I have included only the grades of those students who finished the class in determining class grade point averages.[16] Overall, the number of students included in the study is small (n=124); this course however does not enroll large numbers of students (the classes during this period ranged in size from 6 to 23, with an average enrollment of 12) and creating a larger sample would require looking across several decades, which might introduce biases that could affect the analysis.[17] I was not able to try computer-assisted instruction in LAT 2010 across several semesters because I am not always assigned to teach the class.

Class Grade Point Average

From 2000 through 2009, the average collective grade earned in Latin 2010 was 2.92. The target class earned an average of 2.81. This is slightly lower than the 10-year average but the difference is not statistically significant because the range of class GPAs was small (Appendix 5 & 6).[18] The GPA of the target class, whose members were instructed with technology, was lower than the average GPA among students who were taught in the traditional manner (the cohorts from 2000-2008, with an average GPA of 2.93), although this difference too is not statistically significant (Appendix 5). There is not enough evidence here to support a difference in learning in the 2009 cohort.

Grade Distribution

The grades in third-semester Latin classes tend to be high in relation to other classes because most weak students will have stopped studying Latin before reaching the third semester. Indeed, from 2000-2008, 71% of students earned an A or B as their final grade. One measure of improved student learning would be to have the grades distributed more evenly, with fewer stu-

16 Three students did not finish the class, but they stopped attending before the experiment started.

17 For example, the high school curriculum changes periodically, which might leave students with a better or worse understanding of language.

18 While it seems surprising that the target class scored worse than average in the third semester when they had done better than the average in the first semester, poor attendance may have played a role: six students in the class missed two or more weeks of class.

dents in the D range and more in the C and B ranges, i.e. that students who might have gotten a D or C would instead get a C or B.

The grade distribution in 2009 was indeed quite different than in previous years. As can be seen in the chart below (Appendix 7), a greater percentage of students earned As than in previous years (49% compared to 35%), and fewer students earned Bs (14% compared to 36%). This might imply that some students who, without the technology, may have earned a B instead improved their performance by using the technology and earned an A. The percentage of students earning Cs was nearly identical in the target group and previous semesters (21% vs 22%) . The number of Ds, however, rose substantially, from 7% in previous semesters to 21%. A possible explanation for the higher percentage of Ds might be found in the group's poor attendance. In all, this class missed 11% of classes; those students who missed five or more classes (19%+ of class time) were those who were most likely to earn Ds as a final grade. Thus, while good students may have been able to improve their grade by reviewing via the online materials, the materials did not prove to be an adequate substitute for the learning that went on in class.

Fourth-Semester Latin

In the past, because of low enrollments, all students at Wayne State University who went beyond third-semester Latin met together in a single class, although their assignments were tailored to their ability. This created an intimidating environment for fourth-semester students, so in Winter 2007, Wayne State University introduced an independent fourth-semester Latin course (LAT 2020, Intermediate Latin II) that would introduce students to Latin verse, just as LAT 2010 introduced them to prose. As of the winter semester of 2010, very few students had taken this course (n=14), but the statistics regarding their persistence and success merit examination.

On average, 27% of students who take Latin 2010 have taken Latin 2020. In Winter 2010, 28% of students moved from the third to fourth semester. Thus, although students believed that they were better equipped to read Latin, this did not persuade more of them to continue with the language.

While one might imagine that only the best Latin students would continue to study beyond the required third semester, that has not always been the case, and even some students who did well in previous semesters have not earned the highest possible grades. As a result, the collective GPA of fourth-semester students (2.98) is consistent with the average seen in third-semester Latin (2.92).

The students in the 2009 cohort (n=5), however, earned higher grades during the fourth semester than earlier groups. Their average (3.13) was more than one standard deviation above the average, even though no student earned an A, and one earned a C, which is a particularly low grade for a class such as this one. This is an interesting trend, but it could also be an anomaly given the extremely small number of students involved. This seems to indicate that students who were exposed to the tablet computer had better learning outcomes than those who had not.

File Access

The original design of this project included an analysis of whether access to the marked-up files would correlate to higher grades on individual quizzes. In other words, if a student accessed a particular marked-up file, did s/he do better on the quiz on that section of the text than a student who did not?

When the Fall 2009 semester was over, I compared the overall number of times a student accessed the online files ("hits") and his or her final grade (see Appendix 8). There appears to be no correlation between the two. Indeed, the number of times some of the students accessed the files seems unusually high, as a student had to access each file twice at most (once to study for the quiz, and a second time to study for the exam), and there were 61 files. Blackboard forces the user to download a file of this sort; it is possible that students did go back to the files more than once, and re-download them each time. Of course, the students with a lower number of hits might have downloaded the files once and viewed them without accessing them again on Blackboard, which would give a distorted picture.

Unfortunately, I am not able to investigate this further. The latest version of Blackboard does not allow the tracking of user statistics on individual items, as earlier versions had. This in itself is an object lesson for the problems of depending on technology.

Conclusions

This project sought to determine whether the use of a particular and new technology would improve student success in Intermediate Latin I. The project did not introduce new pedagogy, but rather digitized an old one by giving students access to digital files which recorded traditional class translation work. I personally have always found that marking up texts provides the best guide to review for understanding. I was careful in this project not to provide students with translations, lest they memorize the translation and not actually understand how the language is structured. In my experience students also respond well to any graphic enhancements to their Latin learning.

Based on student feedback, students seemed to appreciate the technology, and believed they were learning more because of it. I believe that two students, one non-traditional language learner, and one student with learning disabilities, may have benefitted the most from the technology. In these cases, as I worked closely with each student, I could see that they were using the marked-up files, and that their understanding improved because of it. Both students were highly motivated and put a great deal of time into being successful.

When some students from the 2009 cohort moved from the third to the fourth semester of Latin, they emphatically insisted that I use the tablet computer again. This is not surprising, given their belief that it gave them a better understanding of the material. These students scored collectively better in their fourth-semester class than earlier classes had, but the number of students analyzed is extremely small and the higher average may not be statistically significant in the long run. I did not repeat my use of the tablet PC after Winter 2010 because of the technical problems mentioned above, but in the future as I move a group of Latin students into reading sentences with multiple clauses, I intend to create marked-up files with Doceri, which is simpler to use and does not require specialized hardware.

Ultimately, the statistical analysis of student outcomes appears to show that students who attended class and used the marked-up files for review improved their grades through a more comprehensive understanding of the grammatical structures of Cicero. This finding is consistent with those in other fields of study; students who use online resources in blended courses benefit the most if the materials they access are linked to classroom work (Perera and Richardson, 296-97). The online marked-up files were not designed as a substitute for classwork, and they appear to have been of no assistance to students who did not struggle through the original grammatical and syntactical analyses in class. Indeed, if students who skipped class used the sheets without working through the text themselves first, they may have done worse on quizzes and tests. The technology

also helped the students in fourth semester, first because they were better prepared for the class, and also because they had learned to use the online files to their advantage the semester before.

The use of computer technology alone will not improve student-learning outcomes. This study confirms that blended-learning approaches may not improve student learning if students are not engaged with learning in class, and that students should not consider access to online materials as a substitute for attending class and the hard work that entails.

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Appendix 1

5.4 Nactus est primum consules eos

quorum alter res ad scribendum maximas, alter cum res gestas tum etiam studium atque auris adhibere posset.

5.5 Statim Luculli…

cum praetextatus etiam tum Archias esset,

…eum domum suam receperunt.

5.6 Dedit etiam hoc non solum lumen ingeni ac litterarum,

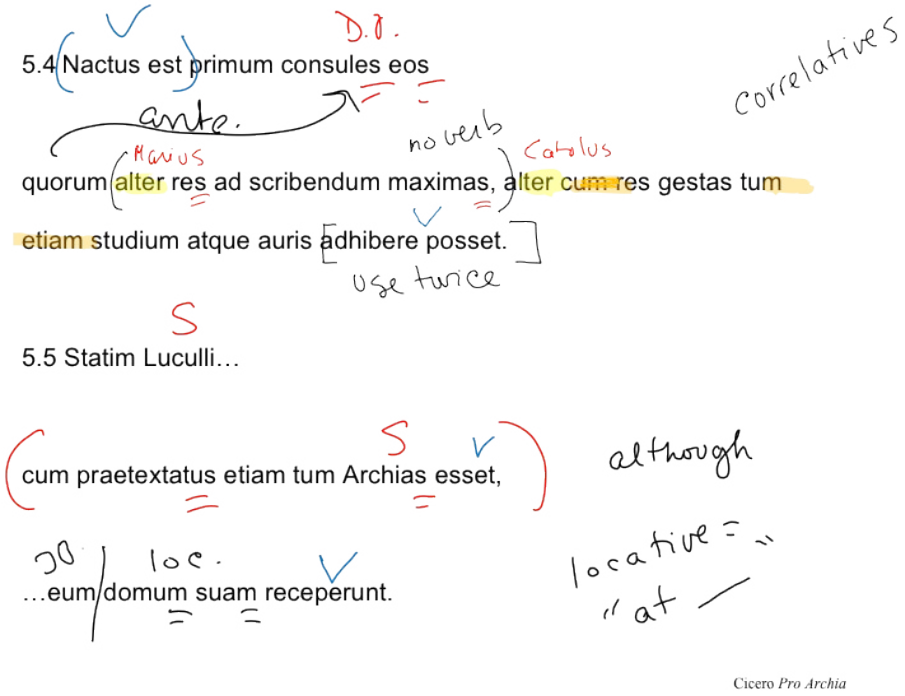
verum etiam naturae atque virtutis

ut domus…

quae huius adulescentiae prima favit,

…eadem esset familiarissima senectuti.

APPENDIX 2


5.4 Nactus est primum consules eos
ante.
quorum alter res ad scribendum maximas, alter cum res gestas tum
etiam studium atque auris adhibere posset.
5.5 Statim Luculli…
cum praetextatus etiam tum Archias esset,
…eum domum suam receperunt.
Cicero Pro Archia
5.6 Dedit etiam hoc non solum lumen ingeni ac litterarum,
verum etiam naturae atque virtutis
ut domus…
quae huius adulescentiae prima favit,
…eadem esset familiarissima senectuti.
Cicero Pro Archia

Appendix 3

Latin 2010
Fall 2009
Quiz on *Pro Archia* 5

Nactus est primum consules eos quorum alter res ad scribendum maximas, alter cum res gestas tum etiam studium atque auris adhibere posset.

To whom does the first *alter* refer? _____
To whom does the second *alter* refer? _____

Statim Luculli cum praetextatus etiam tum Archias esset, eum domum suam receperunt.

What is the function of *eum* in the sentence? _____

Translate the sentence:

Dedit etiam hoc non solum lumen ingeni ac litterarum, verum etiam naturae atque virtutis ut domus quae huius adulescentiae prima favit, eadem esset familiarissima senectuti.

The correlatives *non solum…verum etiam* connect which two words/phrases?

What is the subject of *esset*? _____

Translate the sentence:

Appendix 4

Responses to Student Survey Questions

Question 1: How often do you download the marked-up files from Blackboard?

Response	Number Responding	Percentage
Always	4	27%
Often	4	27%
Sometimes	4	27%
Infrequently	3	20%
Never	0	0%

Question 2: How do you use the marked-up files?

Response	Number Responding	Percentage
To review the passage soon after we've read it in class.	14	93%
To review the passage for the quiz.	1	7%
I don't use the marked-up files.	0	0%

Question 3: Explain any other use you have devised for the marked-up files

- Student A: "I mainly use the marked up files to help compile my study sheets for the exams. If I miss a day of class they are useful, as well."
- Student E: "I compare it with my own notes to see if I got everything correctly and to (sic)I also highlight sections in my notes to correspond with the marked up notes."
- Student F: "Honestly, I only use them to review for the quizzes or tests."
- Student H: "I print out two unmarked copies and one marked up copy. I use on (sic) unmarked for my rough translation and for in class discussions. Then, I use a marked copy and the previously used unmarked copy to review, before testing myself with the other unmarked copy, but sometimes I accidently print out more copies than I need, in which case they make good paper airplanes."
- Student I: "To replace my own sheets that I may have lost."
- Student K: "I use them sometimes if I think I missed marking something on my own paper, but I mostly use my own paper. I would use the marked-up file, if I were to miss a class."

- Student M: "I use both the unmarked and marked-up files to practice translating, to review passages after we've worked on them in class, and then to review for daily quizzes."

- Student O: "I use them to identify how I translated incorrectly, seeing what words go with which ones helped me see where I went wrong and helped me better understand the sentence."

Question 4: How much more useful do you find the marked-up files than the notes in the textbook?

Response	**Number Responding**	**Percentage**
I need both to get through the passages.	10	67%
The notes are more useful than the marked-up files.	2	13%
The marked-up files are more useful than the notes.	3	20%
At this time I don't really understand the passages even with the notes and marked-up files.	0	0%

Question 5: All in all, the time, effort, and expense that go into the marked-up files are worth it.

Response	**Number Responding**	**Percentage**
Strongly Agree	6	40%
Agree	7	47%
Neutral	0	0%
Disagree	1	7%
Strongly Disagree	0	0%

Question 6: Use this space to leave any further comments you have on the value of the marked-up files in learning Cicero

- Student B: "The marked-up files have helped me tremendously in learning Cicero. I'm able to actually look at and understand what the teacher is talking about. Also, anything I forget when I leave class (which is often), I can go right to the marked-up files and review them."

- Student D: "I think the marked up files are great and they are really helping me get through the class. They are really good for review after class and before the quizzes. They really help me in case I missed something during class and the markings really help with translating. This is a great idea and well worth all the time, money, and effort that goes into this project. I would recommend this for all language classes and I cannot imagine how this semester would have been without it.."

- Student H: "In reference to question 4, having both may not be absolutely necessary, but I feel that I gain a greater understanding of translating by seeing two different sets of information about the same passage. They seem to fill in the blanks for each other, or at least remedy any markings that I neglected to record in class. However, if implemented as required material for class, then this may be inconvenient for people without direct access to a computer (there are still people out there who don't have computers at home), since the libraries at Wayne are often crowded in any area with computer access."

- Student I: "The marked up files are incredibly helpful when doing the translations, however I believe the same function could be served using overheads that are then scanned into the computer for download."

- Student K: "I really like the podcast, it is nice because I can go back and re-listen to parts I missed, where as in class I cannot. The marked up files themselves are hard to understand, so them along with the podcast takes away the confusion."

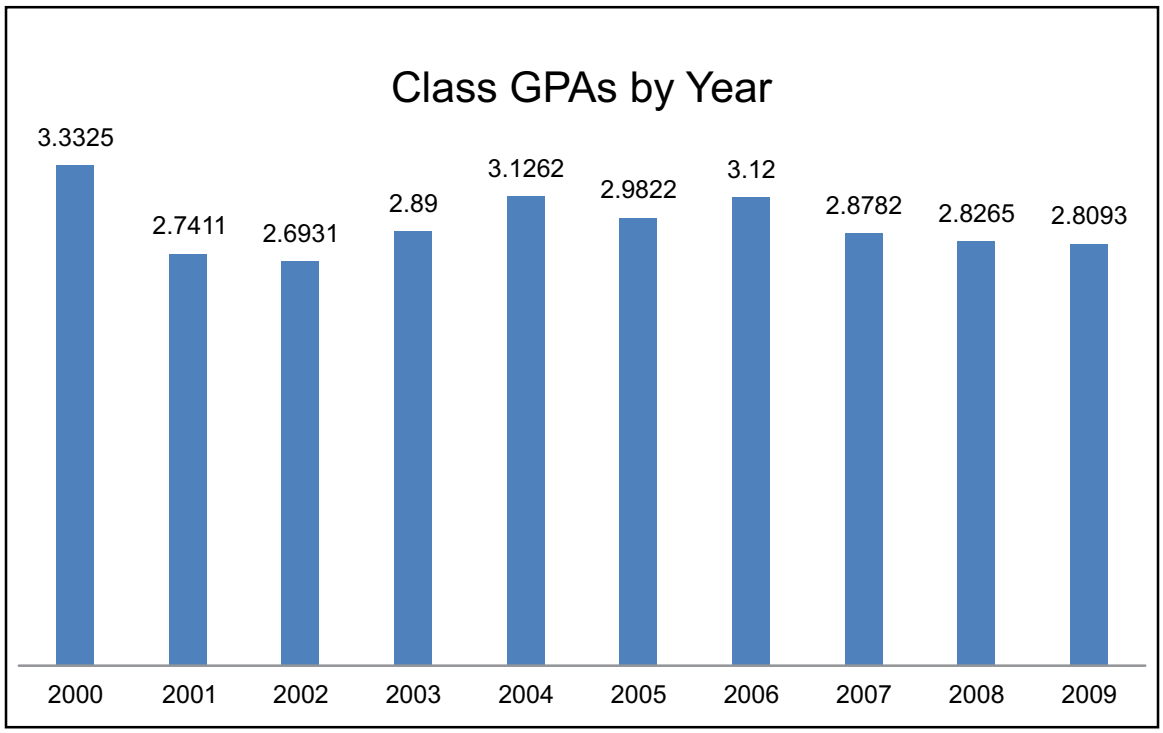
- Student M: "I find both the marked up copies and the notes in the textbook very helpful when trying to translate the text. In fact, I think I would have a much more difficult time, if I didn't use both options."

- Student N: "Cicero is really into himself! But the marked-up files help me deal with such a self intrested (sic) man."

Appendix 5

Latin 2010 Grade Point Averages

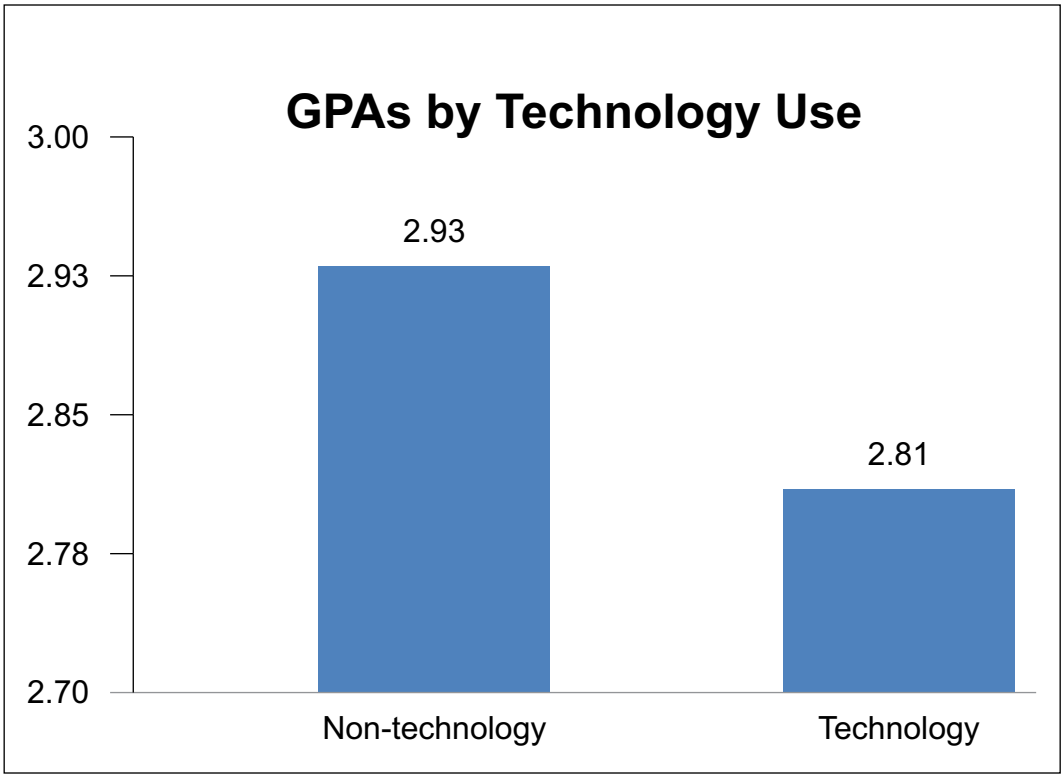
Class Year	Mean	Std. Deviation	N
2000	3.3325	.66858	8
2001	2.7411	.99632	9
2002	2.6931	.99573	13
2003	2.8900	1.22354	6
2004	3.1262	.50100	8
2005	2.9822	1.04447	18
2006	3.1200	.71184	14
2007	2.8782	.68615	11
2008	2.8265	1.00958	23
2009	2.8093	1.10847	14
Total	**2.9198**	**.92012**	**124**



Appendix 6

Grade Point Average by Technology Used[19]

Class Groups	Mean	Std. Deviation	N
Non-technology	2.9338	.89836	110
Technology	2.8093	1.10847	14
Total	**2.9198**	**.92012**	**124**

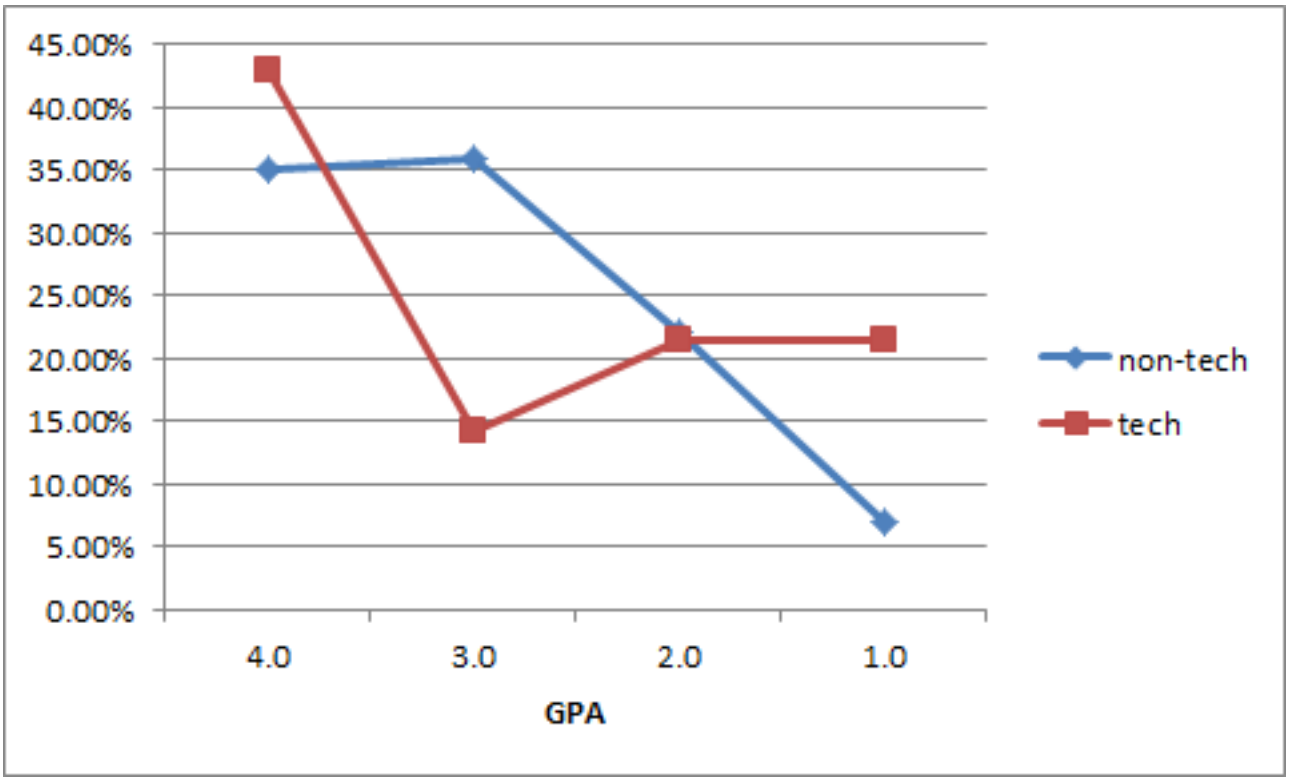


19 GPA scores of each year from 2000 to 2008 were compared one by one to 2009 GPA scores to examine the difference between regular and technology utilized instruction.

Appendix 7

Grade Distribution

Grade	**2000-2008 (non-technology)**	**2009 (technology)**
A	35%	43%
B	36%	14%
C	22%	21%
D	7%	21%



APPENDIX 8

Final Grade by Number of Hits

Number Of Hits	Final Grade
1309	A
1297	C+
1248	D+
975	A
878	A-
860	A-
845	D+
794	C
457	A
437	B
373	B
258	D+
234	C-
197	A