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A COMPARATIVE STUDY OF DEVELOPMENTAL OUTCOMES IN WEB-BASED AND CLASSROOM-BASED GERMAN LANGUAGE EDUCATION AT THE POST-SECONDARY LEVEL: VOCABULARY, GRAMMAR, LANGUAGE PROCESSING, AND ORAL PROFICIENCY DEVELOPMENT

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ABSTRACT

A number of universities offer fully web-based language courses. Many others are considering this option. Yet it remains unclear whether web-based courses can be as comprehensively effective as classroom-based courses. And, if so, what might an effective web-based language course look like? This dissertation considers the German Online at PSU program, a fully web-based basic language program (first through third semesters) that was introduced at the Pennsylvania State University in 2006. The first half of this dissertation outlines the program and its empirical underpinnings. The second half consists of a comparative, quasi-experimental study of developmental outcomes and learner characteristics. All participants (N = 33) were enrolled in a 15-week German course. Each week, classroom-based learners met with their instructors and classmates for four, fifty-minute sessions. These sessions included group study of text and audio, speaking activities, and dyadic and small group discussions. Web-based learners never met with their instructors or classmates face-to-face. Instead, they recorded weekly speaking assignments and completed two sixty-minute, text-based chats each week. All other aspects of the courses (e.g., automated grammar exercises and mobile immersion activities) were the same across the two conditions. Learner development was measured by a variety of pre- and post-tests, ranging from standardized assessment measures, such as the WebCAPE and the SOPI (rated according to a 50-point scale), to more experimental tasks typical of laboratory-based studies in cognitive processing (speeded translation recognition and speeded grammaticality judgment). Correlations between individual learner variables (age, SAT scores, semester standing, previous course grades, and phonological working memory) and development were also considered. On all measures, it was

found that web-based and classroom-based instruction supported statistically significant and comparable development. Some correlations between development and learner characteristics were found, but no correlations were found in both conditions at the same time, and the lack of repeated correlations between particular individual variables and all developmental outcomes suggests that no characteristic single-handedly determines the level of learner success in either environment. This dissertation provides quantitative evidence that web-based courses can constitute a viable and comprehensive alternative to classroom-based language instruction.

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Two laboratories at the Pennsylvania State University were used for participant testing. The first laboratory, the Foreign Languages (FL) Podcasting Studio and Studio Research Laboratory, was founded with funding from Education Technology Services and the Department of Germanic and Slavic Languages and Literatures. Students in both web-based and classroom-based courses also used this facility for podcast and vodcast recording. Special thanks go to Mr. Cole Camplese, Mr. Chris Millet, Mr. Tim Perry, Mr. Jaime Oberdick, Dr. Scott Payne, Dr. Richard Page, Dr. Adrian Wanner, Ms. JoElle Devinney, and Ms. Lynn Setzler for their work in establishing the FL Podcasting Studio and Research Lab. The second laboratory, the Second Language Acquisition Laboratory, is directed by Dr. Carrie Jackson. Dr. Jackson allowed me to use her laboratory while mine was still being set up and when I later needed additional testing space. Dr. Jackson also allowed me to use her translation recognition task and provided feedback on my pilot of the grammaticality judgment task.

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Chapter 1: Introduction

1.1 Distance language education: a viable and comprehensive alternative?

This dissertation deals with perhaps the most controversial issue in distance language education today, a question raised by educators, students, and administrators alike. Can distance approaches constitute a viable and comprehensive alternative to classroom instruction? Can distance language learners develop not only the abilities to read, write, and listen in the target language, but can they also learn to speak? Distance language education is hardly a new phenomenon (White, 2003, p.1), but as distance instruction in general becomes "an increasingly visible part of educational provision" (White), "[m]any language learners, language teachers and institutions are coming to distance education for the first time" (White). In the earliest days of distance language education, print-based approaches were suitable for achieving prevailing grammatical objectives, and again with the advent of audiolingualism, analog technologies could adequately mediate drill memorization and repetition. The crux of the present controversy is a persistent mismatch between one of the primary goals of modern language pedagogy – the oral communication objective – and successive distance approaches. Language educators at the UK's widely respected Open University state the issue as follows:

> For most of these learners the dominant feature of the learning environment is the limited contact they have with teachers or fellow learners. This, of course, is normal in distance learning. But in language learning, distance learning almost seems a contradiction – language is communication, how can you learn it in isolation? (Goodfellow, Manning, & Lamy, 1999, p. 267).

The development of oral proficiency has largely evaded the application of broadcast television, telephone, two-way satellite interaction, and even the most technologically advanced e-learning approaches. The mainstream consensus, despite continual, rapid advances in information and communications technologies [ICT], is that while "[s]peaking has been given prominence in communicative approaches…in this area it is arguable that ICT can assist relatively little in MFL [modern foreign language] teaching" (Bax, 2000, p. 214). The "speaking problem" (Felix, 2001, p. 348) has become the hallmark of distance language education. Consequently, in hybrid/blended language courses, the development of oral proficiency is reserved for classroom contact hours. Similarly, in some distance programs, such as those at the Open University, students are offered optional face-to-face tutorial hours. In cases where face-to-face contact is impossible due to geographic or temporal constraints, oral proficiency development is either consciously omitted from the course objectives (Warriner-Burke, 1990, p. 130) or discrete components of oral proficiency, such as pronunciation (Donahue, 2000), are trained in isolation. Such courses are then more narrowly promoted as a "stepping stone [sic] to the traditional classroom" (Warriner-Burke, 1990, p. 129), as a minor appendage to "regular" instruction (Moore, 1973, p. 676), or as refresher courses for students who have already developed some level of oral proficiency. Finally, for those distance learners who have never or will never experience the target language in a face-to-face setting, the "advocates of distance learning advance it almost exclusively as a better-than-nothing technology" (Warriner-Burke, 1990, p. 131). Yet as the incidence and popularity of distance learning surges, the language education profession must consider whether distance language education is indeed better than nothing and why better-than-nothing

pedagogy is acceptable (Warriner-Burke). It must be considered whether, in view of the contemporary communication objective, distance language education should be disregarded as "inimical to the [comprehensive] objectives of language learning today" (Warriner-Burke, p. 129).

1.2 Distance language education and this dissertation

1.2.1 Research goals

The primary objective of this dissertation is to answer the following question: (1): Is it possible to develop viable, comprehensive, fully at-a-distance language courses, that is, courses without any face-to-face contact hours? "Viable", according to the Merriam-Webster dictionary (*Merriam-Webster Online*), means "capable of working, functioning, or developing adequately…capable of existence and development as an independent unit". "Comprehensive" means "covering completely or broadly…having or exhibiting wide mental grasp". Thus distance language courses which are "viable" and "comprehensive" are (a) as developmentally effective as, or more effective than, classroom-based instruction, (b) neither a "stepping stone [sic] to the traditional classroom" (Warriner-Burke, 1990, p. 129) or an appendage to "regular" instruction (Moore, 1973, p. 676), and (c) address all of the objectives of a typical, classroom-based language course, including the oral communication objective. In this dissertation, the main research objective will be operationalized through the following series of sub-questions: (1): Do classroom-based and web-based learning contexts differentially support the development of vocabulary and grammar as measured by the German WebCAPE examination?: (2): Do classroom-based and web-based learning contexts differentially support the development of

language processing capabilities as measured by speeded translation recognition reading times?; (3): Do classroom-based and web-based learning contexts differentially support the development of language processing capabilities as measured by speeded grammaticality judgment reading times?; (4): Do classroom-based and web-based learning contexts differentially support the development of oral proficiency as measured by the Simulated Oral Proficiency Interview (SOPI), rated according to the Payne and Whitney (2002) 50-point scale?

The secondary objective of this dissertation is to answer the following question: (1): Do individual characteristics - namely age, semester standing, SAT scores (verbal, math, and total), previous course grades, and phonological working memory - and developmental outcomes correlate in either the web-based or classroom-based contexts and, if so, are these correlations similar or different in these two contexts? This secondary research objective will be operationalized through the following series of sub-questions: (1): Is the correlation between age and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (2): Is the correlation between semester standing and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (3): Is the correlation between SAT scores (verbal, math, and total) and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (4): Is the correlation between previous course grades and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (5): With regard to oral proficiency, is the positive correlation between phonological

working memory and development weaker in the web-based condition, as in the hybrid/blended condition in Payne and Whitney (2002)?

1.2.2 Outline of the dissertation

Chapter two presents the institutional and empirical underpinnings of the German Online at PSU program, a fully web-based German basic language program (first through third semesters) that was introduced at the Pennsylvania State University between January 2006 and August 2007. Each component of the courses is discussed, including the technologies and pedagogies that were employed. Chapter three describes the comparative, quasi-experimental research design that was used in a study of developmental outcomes and learner characteristics. Chapter three concludes with an overview of the study conditions (fully web-based instruction versus classroom-based instruction) and the experimental tasks. In chapters four and five, the research findings are presented and discussed. Chapter four discusses and compares the gains made by learners in the two conditions on the four developmental tasks (the WebCAPE, the translation recognition task, the grammaticality judgment task, and the speaking task). Chapter four concludes with student and educator comments on the courses. Sample syllabi, lesson plans, and course achievement diagnostics for both web-based and classroom-based courses are provided in appendices A through C. Chapter five presents the correlations between the various individual learner variables and the developmental variables, comparing these correlations across the two conditions. The dissertation concludes in chapter six, as each research question is revisited and findings are summarized and discussed. Chapter six offers implications for future design and research, including an example of how the technological

infrastructure developed in the German Online at PSU courses was complemented by a dynamic, web-based curriculum in first-, third-, and fourth-semester courses developed at the Sam Houston State University in 2008 and 2009. This final example demonstrates that although situated among post-secondary learners of German at the Pennsylvania State University, it is hoped that this dissertation will contribute to the trajectory of web-based language course development at other institutions, at other course levels, and across languages. It is hoped that other instructors and course designers will expand upon and improve the ideas that have been set down and researched here.

Chapter 2: German Online at PSU: institutional and empirical underpinnings

2.1 Institutional underpinnings

"Innovation" says Wagner (1991), "must be based on an analysis of teaching conditions in an institution, i.e., of official and less official goals connected to teaching and learning as social activity" (p. 305). Increased access to German language education and therewith increased enrollment were primary goals in implementing the German Online at PSU initiative. As European language departments struggle to build and even maintain enrollments (cf. Katz, 2008), ventures in web-based instruction are one way to diversify departmental offerings. For the Department of Germanic and Slavic Languages and Literatures at the Pennsylvania State University (University Park campus), the German Online at PSU initiative offered a curricular innovation that would increase access to German language study by offering students the flexibility of time- and location-independent learning for any or all courses in the basic language sequence.

The Pennsylvania State University has been a leader in U.S. distance education for the past century. In 1892, Penn State, along with the University of Wisconsin and the University of Chicago, introduced one of the first correspondence study programs in the nation, reaching out to isolated farmers via Rural Free Delivery (*Outreach Marketing and Communications*). Moving forward from humble but innovative beginnings, Penn State's distance education program, which became a separate "World Campus" in 1998 (*Outreach Marketing and Communications*), repeatedly capitalized on advances in technology and communication. With the dawning of radio communication in the 1920's, Penn State began offering radio courses to students as far away as California (*Outreach Marketing and Communications*). Televised courses

and satellite courses were added in the 1950's and late 1970's, and Penn State led the way in the use of interactive compressed video in the late 1980's (*Outreach Marketing and Communications*). By 2002, the Penn State World Campus served distance students from all 7 continents, all 50 US states, and 43 countries (*Outreach Marketing and Communications*). Currently, more than 7,000 students are enrolled in courses via the World Campus, which has become the second largest campus in the Penn State system, boasting an average annual enrollment growth of 25% (Harmon, 2008, p. 20). The following are some typical students:

> …military personnel serving in Iraq, overzealous high school kids looking to get a jump start on their college credits, international students hoping to earn a degree without leaving their home country, and students like Brian White, a New York City fire chief whose job – he works two 24-hour shifts a week – would never allow him to pursue a traditional degree (Harmon).

By the end of 2008, World Campus students will be able to select from 65 certificate and degree programs, including 14 at the master's level (Harmon).

Penn State's innovations in distance education extend to course content as well. In 1923, more than a half century before the first distance language courses would be introduced at Britain's reputed Open University, the Penn State German Department launched correspondence courses in elementary and intermediate German language and introductory German literature. First-, second-, and third-semester German language courses continued to be revised and offered until 2004. Despite the inclusion of multimedia curricular materials and optional telephonic or electronic instructor-student communication in later iterations, a default correspondence format was consciously maintained in order to maximize accessibility (Isenberg, 2006b). But

between 2004 and 2005, the Penn State World Campus determined that the content of the German language courses was becoming increasingly outdated. The course materials and syllabi were last revised in 1997 and would require significant changes in order to be maintained. It was decided that German language courses would be permanently removed from the World Campus offerings.

In fall 2005, while conducting a small-scale study of language learning motivation among distance learners of German, French, and Spanish at the World Campus (Isenberg, 2006b), I became aware of the state of the World Campus German courses and proposed the German Online at PSU initiative. Under the initiative, the standard 12-credit German basic language sequence offered at University Park (UP), the largest and flagship campus of the Penn State system, would be developed into three, fully web-based, location-independent courses. Each course would be designed in both 15-week full-semester and 6-week summer-session versions. Because the World Campus was not interested in commissioning the courses directly (given limited enrollments in recent years), I approached the Penn State College of the Liberal Arts, which chose to commission the courses. The Department of Germanic and Slavic Languages and Literatures and the College of the Liberal Arts approved the German Online at PSU initiative in spring 2006, and the first course of the sequence, German 001, was piloted in a 6-week version during the second summer session of 2006. German 001 became a permanent departmental offering for all subsequent semesters (fall, spring, and second summer session). German 002 and 003 were piloted in their 15-week versions in spring 2007 and were added to the permanent offerings in the second summer session of 2007. Initially, the courses were composed solely of traditional, residentially-based UP students. But as students from other Penn State

campuses and outside institutions learned of the courses (by word of mouth, the department homepage, and the university's schedule of courses), they, too, began enrolling, albeit as part-time UP students. As a result, in spring 2008, the courses were officially opened to students at select Penn State branch campuses, and in fall 2008, the courses were picked up by the World Campus, becoming part of their regular offerings. The web-based courses have thus come full circle, replacing their correspondence-style predecessors at the World Campus.

Figure 2.1 shows the total enrollment in the German basic language program at the Penn State's UP campus[1] from 2004, two years before the introduction of German Online at PSU, through 2007-2008 (the first academic year in which all three courses were offered every semester). Each bar represents the total enrollment over one academic year, including summer, fall, and spring semesters; for example, "2004-2005" represents summer 2004, fall 2004, and spring 2005.

[1] In spring 2008, the courses were opened to students at Penn State branch campuses which do not currently offer German basic language courses. Thus the bar for 2007-2008 includes some students enrolled through other campuses.

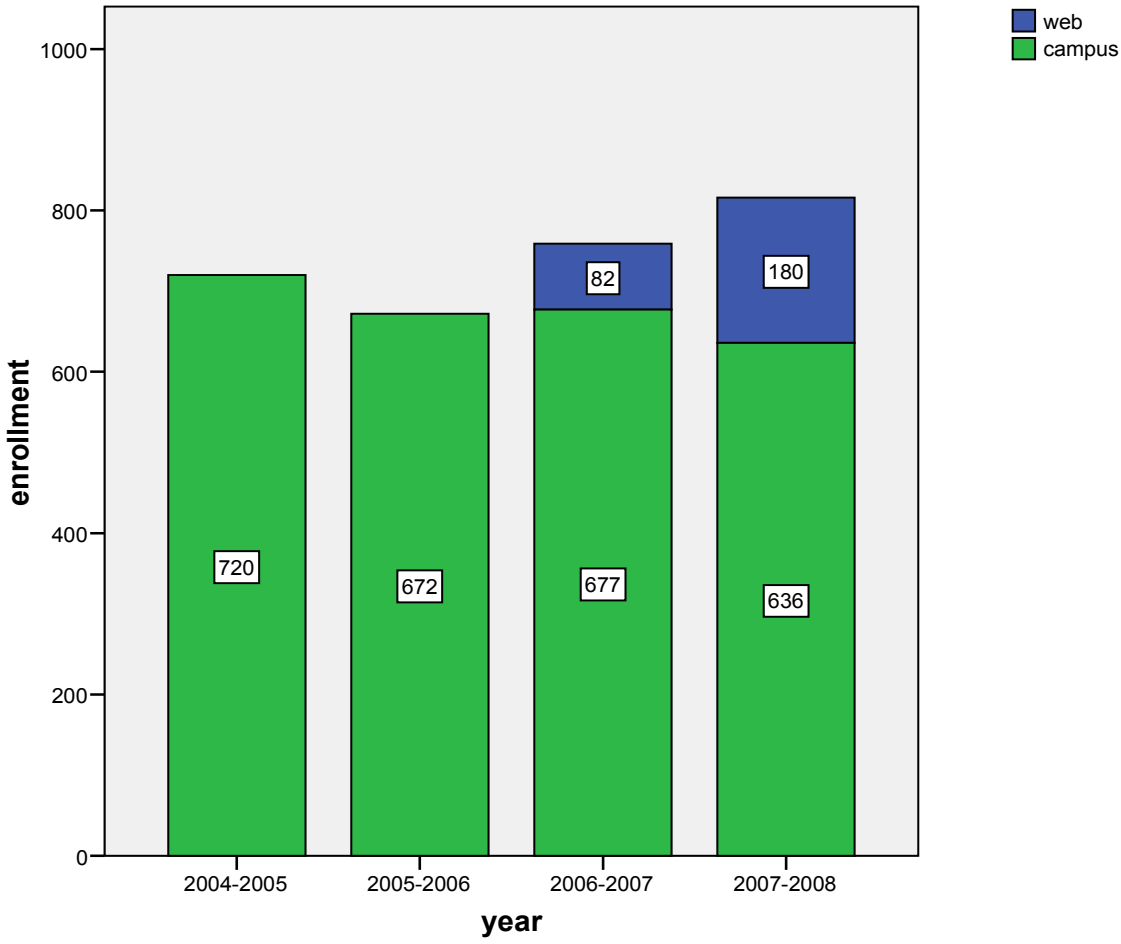

Figure 2.1: total enrollment, German basic language program

The bars representing 2004-2005 and 2005-2006 serve as a baseline, showing the enrollment in the classroom-based program prior to the introduction of German Online at PSU. During 2004-2005, classroom-based enrollment was 720. During 2005-2006, classroom-based enrollment dropped slightly, to 672. In order to render the pre- and post-initiative comparisons as accurate as possible, the average of the first two bars (696) was taken as the pre-initiative, baseline enrollment figure. The third bar (2006-2007) shows the combined enrollment for both programs (campus-

and web-based) during the academic year in which the first-semester, web-based course was introduced in the summer and fall semesters and in which one section of all three courses was offered in the spring semester. The fourth bar (2007-2008) shows the combined enrollment for both programs (campus- and web-based) during the first academic year in which all three web-based courses were offered in all three semesters. By a conservative estimate, which took into account an increase in campus-wide freshman enrollment in fall 2006 (Larchuk, 2006) and which used the average annual enrollment across 2004-2005 and 2005-2006 as the baseline, the German Online at PSU initiative increased annual program enrollment by approximately 11% in the first year of full implementation.[2] This is a remarkable increase, particularly given the slight decrease in program enrollments prior to the initiative, as well as the enrollment declines seen by German language programs elsewhere (see Katz, 2008 for a discussion of the closing of the German department at the University of Southern California). According to the latest report from the Modern Language Association (Furman, Goldberg, & Lusin, 2007), the average growth of German programs nationally has been only 3.5% over the four-year period of 2002-2006.

The largest growth can be seen in summer enrollments. This is understandable because the web-based courses allow students who are at home during the summer holiday to nevertheless work towards completing their language requirement. Figure

[2] According to Larchuk (2006), the incoming freshman class in fall 2008 numbered 8,422, an increase of over 1,500 from fall 2005. This represents a growth of 21.67% in the freshman class. If the total German basic language program enrollment prior to the German Online at PSU initiative was 696 and if one quarter of program enrollments (174) are freshman, this means that the program could be expected to gain up to 37.71 additional enrollments (174*21.67%) or 733.71 total enrollments. During the first full year of implementation of the German Online at PSU initiative, total enrollment was 816 – 82.29 enrollments beyond the projected enrollments as a result of the fall 2006 increase in the freshman class. Thus, by these calculations, the 2007-2008 figures include an unexplained increase of 11.21% (733.71*11.21% =82.29). An ultra-conservative calculation, made under the assumption that 50% of program enrollees are freshman, still yields an unexpected increase of 6%.

2.2 shows summer enrollment for 2004-2007. Again, the first two bars represent enrollment prior to the introduction of the German Online at PSU initiative. The third bar represents summer 2006, when the first web-based course (a section of 001) was introduced; total summer 2006 enrollment was 41, of which 14 enrollments were web-based. The fourth bar represents the summer 2007 enrollment, which increased over 45% compared to the average summer enrollment of the previous three summers.

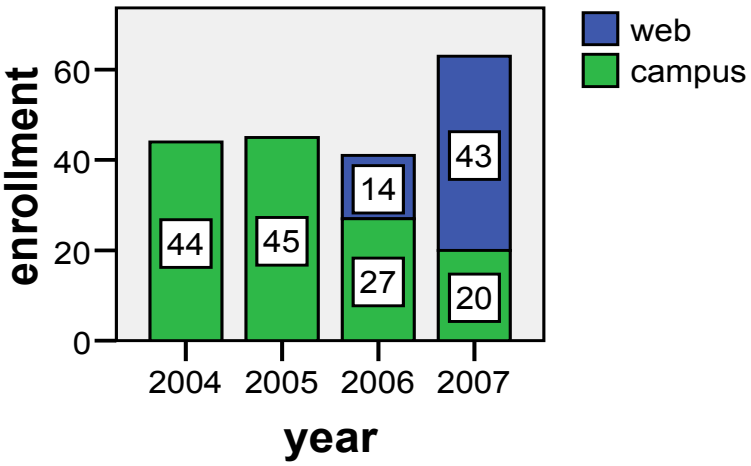

Figure 2.2: total summer enrollment, German basic language program

As the next series of figures illustrates, this growth can be even more specifically pinpointed to German 001 and German 003 summer enrollments. Figure 2.3 shows German 001 summer enrollment, figure 2.4 shows German 002 summer enrollment, and figure 2.5 shows German 003 summer enrollment. German 001 summer enrollment increased 100% the first year (2006) and remained at this level the

following year (2007). German 002 summer enrollment did not increase at all. German 003 summer enrollment increased approximately 57%.

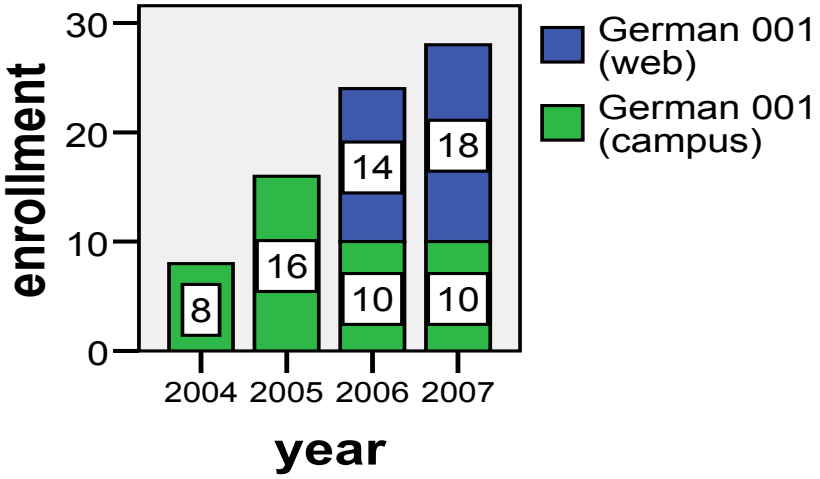

Figure 2.3: German 001 summer enrollment

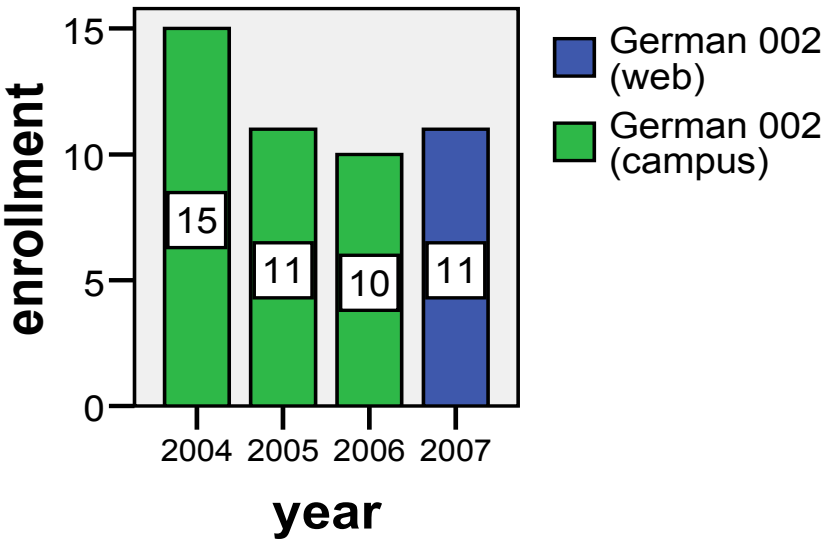

Figure 2.4: German 002 summer enrollment

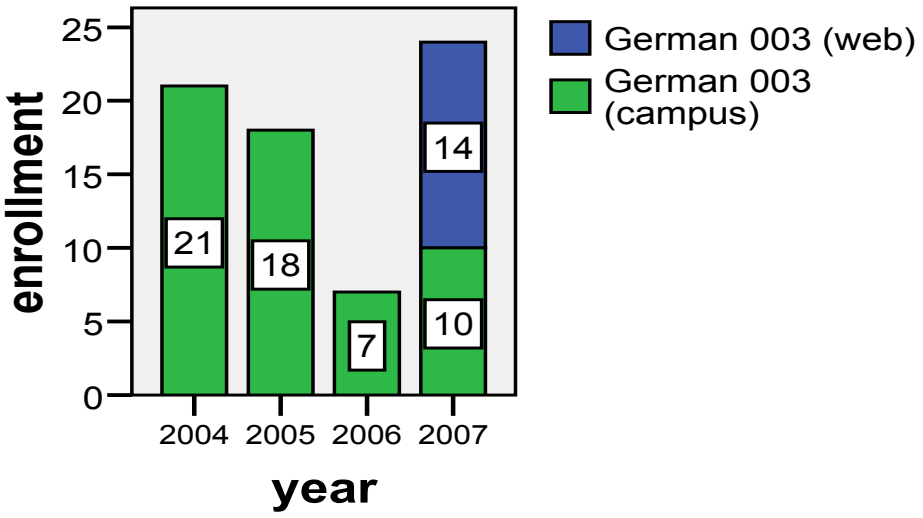

Figure 2.5: German 003 summer enrollment

The 100% increase in German 001 summer enrollment suggests that the summer web-based offerings primarily attract those students who use the summer session to get a head start on the language sequence, potentially allowing them to complete the entire sequence in one academic year (summer, fall, spring). In addition, the 57% increase in German 003 summer enrollment suggests that the web-based offerings attract students wishing to complete the sequence quickly, including those students intending to graduate at the end of the summer session.[3]

[3] This hypothesis was supported by my experience when teaching a summer German 003 web course; a number of students did graduate at the end of the summer session. Even if these students were in residence at University Park over the summer holiday, the web-based language course gave them more flexibility than the comparable classroom-based course, because the several hours of daily coursework could be completed in evenings and over weekends, leaving their daytime hours for discipline-specific courses.

2.2 Empirical underpinnings

2.2.1 Pedagogical effectiveness and sustainability in previous models

In addition to increasing access and enrollment, another primary goal – as evidenced by this dissertation – was to develop courses which were pedagogically effective and sustainable. As distance language education has moved beyond the first-generation, Correspondence Model (Taylor, 2000), successive models of distance education have often been based upon technological trends, rather than pedagogical considerations. Coincidentally, relatively few programs have proven pedagogically effective, even with regard to discrete areas of language development, and many of the programs that have been pedagogically effective have not been sustainable; they require greater amounts of learner or instructor time than classroom-based programs with the same objectives.

For example, the second-generation, Multimedia Model (Taylor, 2000), which includes audiotape, videotape, computer-based learning (including audio and video elements), interactive videodisk, and interactive videotape, can offer pedagogical effectiveness with regard to the development of translation skills, grammar, reading, and aural comprehension (Kataoka, 1986; Lightbown, Halter, White, & Horst, 2002), but pedagogical effectiveness is either bounded or predicated upon additional learning or teaching time. In their second-generation, elementary and secondary English program, Lightbown et al. (2002) report a plateau in development during the sixth year of instruction; learners in the audio- and videotape based program continued to perform as well learners from the audiolingual, classroom-based programs on measures of comprehension but were outperformed on measures of written

production and on some measures of oral production. In discussing his second-generation, post-secondary, Japanese program, Kataoka (1986) notes that, although pedagogically effective, the interactive videotape program includes one extra hour of learning time each week and requires inordinate investments of time on the part of the program coordinator. Thus, while the second-generation, Multimedia Model (Taylor, 2000) can be pedagogically effective with regard to some discrete language skills, it is not always as sustainable as a classroom-based program with comparable objectives.

The third-generation, Telelearning Model (Taylor, 2000), which includes audioteleconferencing, videoteleconferencing, audiographic communication, and broadcast TV/radio and audioteleconferencing, has been perhaps the most lauded model. Indeed, a few distance language programs designed within this model have proven to be slightly more effective than classroom-based programs in developing aural comprehension, oral word production, and oral phrase production (e.g., Twarog & Pereszlenyi-Pinter, 1988; Glisan, Dudt, & Howe, 1998). However, in all cases in which the model was pedagogically effective, the programs were relatively unsustainable; they required far greater amounts of learner and instructor time than classroom-based programs with the same objectives. In Twarog and Pereszlenyi-Pinter's (1988) third-generation, post-secondary, multi-language program, instructors spent hours conversing with individual learners via telephone. In Glisan, Dudt, and Howe's (1998) third-generation, elementary Spanish program, the distance learners who participated in classroom-based sessions via two-way video-teleconference engaged in extensive review with the remote site facilitators after each lesson. During

the session, the remote site facilitators also worked to ensure that learners stayed on task. As Yi and Majima (1993) conclude, in their case study of a Japanese satellite program at a US-American high school, the "facilitator's function to mediate between the remote teacher and the learner is a key factor in the successful operation of [these] distance learning language classes" (p. 21). Thus, once again, although the third-generation, Telelearning Model (Taylor, 2000) increases the potential for pedagogical effectiveness in distance language learning, sustainability continues to be an issue in this model.

The fourth-generation, Flexible Learning Model (Taylor, 2000) includes interactive multimedia, Internet-based access to worldwide web resources, and computer-mediated communication. The Flexible Learning Model (Taylor) has been the most pedagogically effective, particularly with regard to addressing "the speaking problem" (Felix, 2001, p. 348). In several hybrid/blended courses, in which course contact is divided between the classroom and the worldwide web, the Flexible Learning Model (Taylor, 2000) has supported oral proficiency development (Beauvois, 1998; Chenoweth & Murday, 2003; Chenoweth, Ushida, & Murday, 2006; Kost, 2004; Payne & Whitney, 2002). However, in these cases, it is impossible to ascertain whether oral proficiency development is a function of the classroom-based or web-based contact hours. Conversely, in Volle's (2005) fourth-generation, post-secondary Spanish course, the fully web-based learners made statistically significant progress on an oral proficiency measure which was based on ACTFL[4] proficiency guidelines. It must be noted that there was no control/classroom-based group, and the fully web-based learners did not improve on measures of oral accuracy or

[4] American Council on the Teaching of Foreign Languages

articulation. Thus it remains unclear whether programs designed within the Flexible Learning Model (Taylor, 2000) are as pedagogically effective as comparable classroom-based programs. The pedagogical sustainability of the Flexible Learning Model (Taylor) also remains relatively unexplored. In Beauvois (1998), learners in the treatment condition, who participated in text-based chats for one hour each week with classmates and a language assistant, self reported that they spent less time studying French than did their classroom-based counterparts (p. 286). In other cases, however, the pedagogical effectiveness of the Flexible Learning model still involves large investments of instructor time; Donahue (2000) discusses the use of the Flexible Learning model to hone pronunciation, but his program required large investments of instructor time.[5] In conclusion, the Flexible Learning Model (Taylor, 2000) contains many modalities that appear to be both pedagogically effective and sustainable. The key is for course designers to employ these modalities in ways that are both effective and sustainable.

Finally, the most recent model, the fifth-generation, Intelligent Flexible Learning Model (Taylor, 2000), directly addresses some of the sustainability issues of the fourth generation. The definitive feature of the Intelligent Flexible Learning model (Taylor) is automated modalities, such as automated speech recognition and automated grammar exercises. Automated grammar exercises have been shown to be particularly effective, fostering greater development of grammar and word order than non-automated, workbook-based exercises (e.g., Redfield & Campbell, 2005; Zapata

[5] Donahue (2000) claims that when modalities of the Flexible Learning Model (Taylor, 2000), including digital recording and waveform analysis, were used in his post-secondary English course during half of the course contact hours, pronunciation outcomes were comparable to the outcomes previously observed in his fully classroom-based courses. Unfortunately, this claim lacks any empirical support.

& Sagarra, 2007). However, there is no evidence that programs that are designed entirely within the Intelligent Flexible Learning Model (Taylor, 2000) are comprehensively effective; in such programs, learner-learner and learner-instructor interaction is replaced entirely by learner-computer interaction. While the Intelligent Flexible Learning Model (Taylor) is optimally sustainable, it would be imprudent to attain sustainability at the possible price of pedagogical effectiveness.

After reviewing the various models of distance course design, and their effectiveness and sustainability in distance language education, it was determined that the German Online at PSU program would employ modalities from within various generation models. Throughout the course design, the goal was to maintain a balance between effectiveness and sustainability. For example, while a program designed completely within the fifth-generation, Intelligent Flexible Learning Model (Taylor, 2000) would have been maximally sustainable, only the use of automated grammar exercises has been empirically shown to be pedagogically effective; automated grammar exercises support the development of grammar and word order as well as or better than traditional, classroom-based approaches.

2.2.2 An overview of the modalities of the German Online at PSU courses

Briefly, the German Online at PSU courses can be described as 6-week or 15-week[6] German-language courses which are conducted via a course management system (section 2.2.2.1). Each course utilizes a hard-copy textbook (section 2.2.2.2), and the courses progress week by week, as opposed to day by day, with weekly plans

[6] The 6-week versions were designed for use in summer sessions. The 15-week versions were designed for use in fall and spring sessions.

to guide students through the course activities (section 2.2.2.3). Each course includes (a) self-study of text, audio, and video materials (section 2.2.2.4); (b) reading, writing, grammar, and listening activities with automated feedback (section 2.2.2.5); (c) a weekly, web-based, large-group discussion forum, commonly know as an electronic message board (section 2.2.2.6); (d) mobile language immersion (listening to two German pop songs per week on a portable audio player such as an iPod) (section 2.2.2.7); (e) speaking assignments submitted to the instructor and shared with classmates as podcast episodes (section 2.2.2.8); (f) two, 50-minute text-based chats each week, in peer-to-peer small groups and dyads (section 2.2.2.9); (g) three final exam components (section 2.2.2.10); and (h) additional, supplementary websites (section 2.2.2.11). As a group course (see *World Campus 101*), students move through the lessons in lockstep, beginning and ending each week on the same days, albeit with maximal individual flexibility in between. Instructors also play a vital role in the German Online at PSU courses. Instructors' tasks include following step-by-step pedagogical instructions in the weekly instructor info folders and offering weekly virtual office hours (section 2.2.2.12); instructors are supported in their work by web-based coordination (section 2.2.2.12).

2.2.2.1 The ANGEL course management system: security, organization, and adaptability

The primary interface for each course is the university-supported course management system ANGEL, from Angel Learning (*Angel Learning*), a fourth-generation modality (Taylor, 2000). On Penn State's ANGEL web server, each

course, in both 6-week and 15-week versions, is housed in a Learning Object Repository (LOR) for that particular level – 001, 002, or 003. Before the semester begins, each instructor is given web space (one gigabyte) for their iteration of German 001, 002, or 003. Following step-by-step instructions (written and revised during multiple course pilots), the instructor imports the course from the LOR into their individual course space, and then personalizes some aspects, such as the section policy and a "meet your instructor" page.[7]

The decision to use the ANGEL course management system as the base location for each course reflects a "strong movement towards integrated multimedia where all kinds of materials are available from all kinds of channels in a single integrated workstation environment" (Sussex & White, 1996, p. 205). Even programs with extensive funding, such as the German 101 and 102 courses from the Victorian School of Languages, Melbourne, Australia, which shared a budget of 150,000 US-dollars (Sussex & White, p. 129), may opt to use course management software, not because they are unable to fund the creation of their own suite of communication tools, but because course management systems are secure, organized, and adaptable. In other words, course management systems are pedagogically sustainable.

The ANGEL course management system offers asynchronous discussion boards, synchronous text-based chatrooms, and a variety of testing tools. The German Online at PSU courses are configured so that other modalities that are not a part of the ANGEL suite of tools are still accessible via ANGEL. Penn State's common authentication and login interface allows students, once logged in to ANGEL, to

[7] Elements of the course which are to be personalized by the instructor are filled, in the template versions, by samples from previous instructors.

simply follow links to the non-ANGEL technologies without reauthenticating. This streamlined user experience is another, cognitive, benefit of course management systems (Goodwin-Jones, 2003, p. 45).

Palloff and Pratt (2001) observe that "the most critical issue in the use of a course created by another instructor is the ability to adjust it" (p. 96). Youngs' (2007) case study of web-based language instructors at Carnegie Mellon University confirms that familiarity with the course interface is imperative (p. 79). Although the need for adjustments may not be initially apparent to either the designer or the instructor, "the ability to make adjustments as the course progresses is…critical to successful delivery. An important consideration, then, is the flexibility of the software in use" (Palloff & Pratt, 2001, p. 96). The ANGEL course management system, like other such "authoring software[,] is very useful for allowing teachers access to the authoring process with very little training" (Chapelle & Douglas, 2006, p. 6). During the data collection phase of this dissertation project, I observed that instructors adapted not only the required course-specific elements, such as the section policy and the "meet your instructor" page, but also non-essential details such as the course page color scheme. Other instructors uploaded composition correct codes, supplemental website URLs, or supplemental handouts. The ability of instructors to make these adaptations on their own saves time, because it is not necessary for them to contact the program coordinator to place a work order. The ability to change course elements gives the receiving instructor more ownership of the course.

2.2.2.2 Textbooks: using *Deutsch Heute* and *Kaleidoskop* within a wrap-around model

White (2003) groups web-based curricula into three types, or models: (a) the content plus support model, (b) the wrap-around model, and (c) the integrated model (p. 219-222). In the content plus support model, the course package is mostly print-based, with some audio and video, and may be accessible either in hard-copy or on the web. Email and computer conferencing are available via a separate system, in which learner-learner interactions can occur, but, overall, "there may be a substantial epistemological gap between the two learning spaces" (White, 2003, p. 219). The content plus support model is a spin-off of the traditional, first-generation Correspondence Model (Taylor, 2000); in the content plus support model, postal-mail-based interaction is replaced by more timely computer-network-based interaction. A more recent development is the wrap-around model, which features a pre-existing core, such as textbooks, CD-ROMS, or commercial videos, accompanied by specially designed materials, such as a study guide, activities, and discussion (White, p. 220). White notes that "[i]n this model much of the learning takes place through online interactions and discussions, while working with the predetermined content takes up the remainder of the study time" (p. 221). Finally, the integrated model gives less emphasis to predetermined content and focuses instead on discussions and activities that unfold through collaboration among students (White). The challenge of the integrated model is to find a designer who can meld stability and flexibility or instructors who are willing to teach in a highly-adaptive style.

After three years of background research on other web-based courses and an analysis of the teaching and learning conditions in the Penn State community, it was determined that a wrap-around model represented the best balance of pedagogical effectiveness and sustainability and would therefore be used in the German Online at PSU courses. The wrap-around model avoids the epistemological gap (White, 2003, p. 219) that sometimes occurred in the content plus support model of the previous correspondence-style courses offered via the World Campus. Conversely, although the integrated model consists of constant, integrated communication and "has many promising aspects for distance language learners including the use of real-time events and an emphasis on the collaborative, task-oriented and discussion-based activities, along with opportunities for critical reflection within an online learning community" (White, p. 22), it also "present[s] considerable challenges in terms of what we know about orienting learners and teachers to working within the new learning spaces" (p. 222). When using an integrated model, the content of the course in each iteration is extremely variable, "determined to a substantial degree by what learners bring to it" (White). Such a course would require either a more experienced course designer, who was capable of engineering flexibility, or instructors familiar and comfortable with this style of teaching. In short, it was concluded that the integrated model, although desirable, would not be pedagogically sustainable in a program intended for long-term implementation by instructors with only basic technological know-how.[8] In addition, although the entire process of preliminary research, design, implementation, and evaluation spanned several years, the decision to use a pre-existing textbook and

[8] But given "the many promising aspects" (White, 2003, p. 219) of the integrated model, I am currently developing several German courses using this model. See chapter six for discussion of a one-year pilot at Penn State and the Sam Houston State University.

select ancillaries drastically reduced the design phase – to approximately 18 months. This is about half the time typically spent on language course development at the Open University (Hurd, 2004, p. 144).

For use within the wrap-around model, various curricula were considered. The curricula that were eventually selected are the same curricula currently in use in the classroom-based basic language program: *Deutsch Heute* (Moeller, Adolph, Hoecherl-Alden, Berger, & Lalande, 2005) for German 001 and German 002, and *Kaleidoskop* (Moeller, Adolph, Mabee, & Berger, 2007) for German 003. These curricula are familiar to the graduate instructors and allow for a seamless articulation between the classroom- and web-based programs. After a review of the textbooks and all ancillary materials, it was determined that for German 003, students would need to purchase only the *Kaleidoskop* textbook (Moeller et al., 2007); all other ancillary materials (audio, video, and grammar exercises) would be digitized and placed within ANGEL, accessible only to course registrants. For German 001 and 002, the students would need to purchase the textbook and an interactive, multimedia CD-ROM containing grammar and vocabulary games; the publisher agreed to package the CD-ROM with the textbook, resulting in a significant cost savings for students.

2.2.2.3 Weekly plans: guided didactic conversations that share pedagogical rationales

Education involves far more than access to course content. Merely placing materials online does not result in the creation of a quality online course. It is crucial to move beyond the delivery of static content and to foster interactivity and connectivity

through the course structure and activities (Felix, 2003). That is why, since the first-generation, Correspondence Model (Taylor, 2000), a hallmark of distance education has been the guided didactic conversation (Holmberg, 1995, p. 47), which fosters interactivity and connectivity even in courses in which there is no learner-learner interaction and all learner-instructor interactions are separated by both time and space.

After authenticating and logging in to the ANGEL system, students are confronted with a website with various tabs along the top edge. By clicking each tab, students are taken to different parts of the course, such as Communication, Lessons, Syllabus, etc. Under the Lessons tab, in a folder titled *Wochenpläne* (weekly plans), is a subfolder for each week: *Woche 1, Woche 2*, etc. Within these folders, the student sees the *Aufgaben* (assignment) sheet for that week, along with dropboxes for uploading assignments and message boards for that week's group communication activities. The *Aufgaben* sheet is the student's comprehensive guide to each week of the course, containing a numbered list of weekly activities and assignments, instructions for each, and links to materials, such as the URLs for audio and video clips stored on Penn State's streaming server. Sample *Aufgaben* sheets (lesson plans) are provided in appendix B.

In order to foster interactivity and connectivity, the *Aufgaben* sheets were designed according to seven widely-respected principles of general good practice in undergraduate education (Chickering & Gamson, 1987), which are as follows:

1. Encourage contact between students and faculty.
2. Develop reciprocity and cooperation among students.

3. Use active learning techniques.

4. Give prompt feedback.

5. Emphasize time on task.

6. Communicate high expectations.

7. Respect diverse talents and ways of learning.

In addition, the *Aufgaben* sheets were designed according to various principles of good distance practice, such as the formulation of instructions as guided didactic conversations (Holmberg, 1995, p. 47). Specifically, the *Aufgaben* sheets were worded in a friendly, simple rhetoric, so that the instructions were both easy to understand and easy to remember (Holmberg). In order to encourage feelings of personal relation (Holmberg), the pronoun "we" was frequently used on the *Aufgaben* sheets. The third-party reviewer who assessed the courses according to the Quality Matters benchmarks (*Quality Matters*) commented that the chatty, conversational style seemed fun, unique, and likely to appeal to students (personal communication). A German 001 student commented that "[t]he material is fairly hard (TONS of vocab), but the supplemental material [e.g. the guided didactic conversations] is excellent".

The guided didactic conversation for each activity walks the learner through each step of the learning process. Moore (1973) makes the following argument for this well-planned, step-by-step approach:

> …because of the distance, the events of teaching in independent learning and teaching situations must be especially carefully contrived. The contiguous

> teacher can hope to improvise…if he sense[s] that what he has tried to communicate has not been understood. The distant teacher cannot (p. 671).

In writing the guided didactic conversation for each activity, the course designer must imagine the conversation that might ensue if working with a learner who is challenged by the particular activity. What questions might this learner ask? What smaller goals could be explicitly stated (Holmberg, 1995, p. 47), to allow the learner to ascertain his or her progress at each step in the activity? Questions for use by the learner in assessing goal achievement serve a dual purpose. Because more advanced students may find extensive, guided conversations for each activity to be tedious and repetitive, occasional questions allow them to move quickly through the activity. They can skim through the initial portions of an activity and then begin to read more closely as new or more difficult concepts are introduced.

Finally, the *Aufgaben* sheets foster learner autonomy by sharing the pedagogical rationale for each activity type; the *Aufgaben* sheets briefly note the results of relevant research in second language acquisition (cf. Hoven, 1999, p. 158). In part, this type of direct discussion is needed because of the novelty of the web-based context. White (2003) notes that "[p]rior experiences of conventional classroom learning do not automatically equip distance learners with the skills and self-knowledge required to tackle the new demands of the distance language learning context" (p. 23). Of particular importance are the skills and self-knowledge involved in self-leadership. In the traditional classroom, the teacher is often "the sole determiner of the student experience" (Mason & Rennie, 2006, p. xxxvii). But in web-based distance education, "[t]he internet is too vast; the impact of student-to-

student communication too great; the asynchronicity of the environment too ephemeral to control" (Mason & Rennie). The learner is responsible for many novel decisions, such as when and where to engage in learning activities, which outside resources to consult, how to approach an activity, when to collaborate with classmates, etc. (Mason & Rennie).

In the German Online at PSU courses, many of these learner decisions are encouraged by the bottom line of points toward the final grade. Learners must log on in order to receive participation points (their logins are tracked by the ANGEL system), they must work through course materials at a particular weekly pace, they must sometimes cite certain materials, they are assigned to chat groups and must interact with certain individuals, and they must contribute a specified number of posts and sentences to each discussion forum. Nevertheless, self-leadership is still desirable as students pace themselves during the week given to them for each set of assignments, and on the micro level, as they pace themselves through each activity. But how is self-leadership to be fostered? Manz (1992) argues that "the secret to leading oneself is doing what one believes is worthwhile and doing so specifically because you believe in it and enjoy doing it" (p. 44). In order to inspire self-leadership, an instructor must "try to help them [learners] discover what it is that they see as worthwhile and the capability, interest, and desire within them to do it" (Manz). The instructor is "just a coordinator of sorts" (Manz). But if the instructor "can help them get themselves pointed in… [a] purposeful, exciting direction, there is an unleashing of a tremendous power for progress" (Manz). Manz and Sims (2001) recommend asking followers [learners] to provide their own directions, through

prompts such as “What’s next?” or “Where are you headed?” (p. 129). The instructor must also “[e]xpress confidence in a follower’s [learner’s] potential and capacity to achieve a specific goal or accomplish a specific task” (p. 129), and even “[a]sk followers [learners] if there are ways this job can be done more effectively” (p. 130); for example, instructors might ask learners if they can think of a study method that might better suit their individual learning style. But Manz and Sims (2001) also offer an important point of clarification. Empowerment does not mean permissiveness or a hands-off approach. Rather, inspiring self-leadership requires active involvement and interaction between leader and follower. Manz and Sims (2001) suggest that the manifestation of active involvement is “special language” (p. 130); on the *Aufgaben* sheets, this special language takes the form of guided didactic conversations (Holmberg, 1995, p. 47) that share pedagogical rationales.

2.2.2.4 Self-study of text, audio, and video materials

In keeping with Hook and Kahn’s (1990) “simple thesis” (p. 156) that “elementary German textbooks are too fat” (Hook & Kahn), I first went through each textbook, using a highlighter pen, and determined which assignments to include and which to skip. The selected readings from each chapter were then listed on the *Aufgaben* sheet, accompanied by links to related audio and video clips stored on Penn State’s streaming server. The audio and video clips are the ancillary digital files from the textbook publisher, reformatted for streaming. Also included in German 001 and German 002 is a supplemental pronunciation tutorial – a textbook appendix accompanied by audio files – provided as part of the *Deutsch Heute* (Moeller et al.,

2005) package. This tutorial was included in both the 001 and the 002 courses, since a frequent student criticism of web-based language teaching is the lack of pronunciation models (Felix, 2001, p. 348). For the intermediate, German 003 students, there are longer audio clips, including short stories read aloud, and the occasional video clip "offers scenarios to mimic and invites participation" (p. 157). As in the Bridges intermediate Chinese course, offered by the Melbourne Institute of Asian Languages and Societies at the University of Melbourne as part of their Graduate Certificate in Modern Standard Chinese (Felix, 2001, p. 151), the clips are "used in some practice exercises for surrender listening, dictation, context creation, articulation and fluency practice through repetition, or in spontaneous spoken practice requiring a creative response to a stimulus" (p. 152). Although there are no data to support the efficacy of the listening and viewing activities in the Bridges program, Lightbown et al. (2002) documented the pedagogical effectiveness of such listening and viewing activities in their second-generation, elementary and secondary program for learners of English.

In recent semesters, the pared-down "read and listen"/"read, listen, and watch" lists from the *Aufgaben* sheets, which are available to all German graduate instructors via Learning Object Repositories in ANGEL, have become popular, particularly among novice, classroom-based graduate instructors, who rely on these lists in determining how to "mak[e] a better match of teaching material to available class time" (Hook & Kahn, 1990, p. 156). The streamed audio and video clips are also convenient for use in classrooms with web-enabled podiums; it is not necessary for instructors to transport audio or video materials to class. Other classroom-based instructors post the

"read and listen"/"read, listen, and watch" lists in their individual course page, in ANGEL, so that students can listen to and watch, at home, segments which are typically read aloud/played only in class. For those students who wish it, this allows for listening practice *ad nauseum*, an opportunity with otherwise requires extreme amounts of teacher patience and time (Witt & Young, 1998, p. 25).

2.2.2.5 Reading, writing, grammar, and listening activities with automated feedback

In the German 001 and 002 courses, no video clips are included in the self-study materials because the video clips for each course are incorporated into the activities on an interactive, multimedia CD-ROM from the publisher, available in place of the hardcopy workbook. On the CD-ROM, a set of reading, writing, grammar, and listening activities based on audio, video, and written segments is available for each chapter in the textbook. Many of the activities are game-like, and when possible, they include automated feedback to each student response. Given the pedagogical effectiveness and sustainability of automated grammar exercises (Redfield & Campbell, 2005; Zapata & Sagarra, 2007), German 001 and 02 students complete all CD-ROM activities for each textbook chapter after reading and listening to the self-study materials. The CD-ROM generates a progress report, which lists the number of attempts made by the student on each activity, the number of items attempted within each activity, the number of correct items, and the final percentage grade for each activity. Students are permitted to repeat the CD-ROM activities an infinite number of times before submitting their progress report.

In German 003, no interactive, multimedia CD-ROM is available from the publisher. Thus the exercises found in the German 003 workbook (at the back of the textbook) were turned into automated grammar exercises within ANGEL. All exercises that could be automated (multiple choice, cloze texts, dictations, short free response) were built as web-based exercises using the ANGEL quiz tool. Whenever possible, however, multiple-choice type exercises were avoided. The author wished to avoid what Bangs (2001) describes as the "pedagogical poverty of the endless series of MCQ's [multiple choice questions] with three or four options, one distracter, always only one correct answer, and the only feedback a score of x/y" (p. 91). Heift (2003) reports, in *Drag or Type But Don't Click*, that multiple-choice exercises seem to be significantly less effective than other exercise types, such as completion or re-ordering, in supporting learner development. Re-ordering by means of a drag-and-drop interface was not an option in the ANGEL design interface, but since Heift (2003) found this type of exercise to be most effective, the author attempted to mimic the processes of Heift's re-ordering activity by sometimes giving students all elements of a sentence and then asking them to re-order the sentence by retyping the entire sentence. This activity combined the re-typing of completion-type exercises with the re-ordering of drag-and-drop type exercises. The design of the automated, web-based exercises was undoubtedly the most time-consuming aspect of the 003 design work, but the web-based exercises are now available for use by both web-based and classroom-based instructors and save hundreds of hours of grading time each semester, since all exercises are automatically graded, and these grades are then automatically entered in the ANGEL grade book.

2.2.2.6 Large-group discussion fora

Open-ended writing activities were addressed in weekly, large-group discussion fora, commonly known as message boards or as the "mainstay of CMC [computer-mediated communication] in L2 acquisition activities" (Lafford & Lafford, 2005, p. 685); discussion fora are a fourth-generation modality. In German Online at PSU, many of the discussion fora activities are based upon a writing prompt or combination of writing prompts from the textbooks. Almost all discussion fora are directly related to the activities from the chapter, but two discussion fora near the end of each course focus instead on viewing and then dictating several words and phrases from film trailers or clips of the student's choice. As noted by White (2003), discussion fora, and particularly those which require reference to outside sources such as film clips, represent fluid, as opposed to static, content (p. 201). She suggests that "[t]he contribution of fluid course elements to distance language learning environments is often overlooked" (White). In the German Online at PSU courses, the discussion fora are therefore one key example of design-based fluidity. The discussion fora activities also frequently include conscious reflection (Lamy & Goodfellow, 1999), as students code other students' posts for errors or correct and expand their own posts. Lamy and Goodfellow submit that "the medium of asynchronous conferencing is particularly well suited to such a combination as it is flexible with regard to place and pace, and able to support both monologue- and conversation-like forms of written language exchange" (p. 43). White (2003) also points out the potential "contribution of vicarious interaction [lurking] to distance learning processes" (p. 56), and the

discussion fora are undoubtedly more open to vicarious observation than the traditional paper-based writing assignments, seen only by the individual student and the instructor. Finally, unlike the discussion fora in many web-based courses, which are optional activities, or the fora in courses like the Bridges intermediate Chinese from the University of Melbourne, which are mandatory but ungraded (Felix, 2001, p. 151), the discussion fora activities in the German Online at PSU courses are mandatory and graded.

2.2.2.7 Mobile language immersion

As Cameron (1999) observes, "[t]here is surprising[ly] little attention paid to hearing in general. A huge percentage of the world's population wears spectacles to improve sight but comparatively few are helped with their hearing" (p. 6). Similarly, while oral proficiency is a hot topic in distance provision, listening should receive careful pedagogical attention, not only as an important skill in its own right, but also as a stepping-stone to oral proficiency development. The development of any aspect of linguistic expertise comes only with significant investments of time. Unfortunately, many learners who opt for non-contiguous provision do so precisely because of the time pressures of professional or personal responsibilities. For such learners, as well as the computer-savvy, multitasking-inclined Net Generation (Tapscott, 1998), mobile learning offers a convenient way to make a substantial deposit on the investment necessary to developing expertise in a language; mobile immersion improves pedagogical sustainability by fitting learning into daily life. Ally (2007) makes the following observation:

> …different sectors of society such as business, government, and entertainment are using mobile technology to provide services and to interact with their clients. These sectors understand the mobility of their clients and are changing their systems to meet their clients' needs. Education is behind the other sectors in the use of mobile technology to deliver learning materials and interact with students. (para. 1).

Each day, the average US-American spends 52 minutes commuting to and from work or school (*Omnibus Household Survey*). Each year, the average US-American spends 48 hours waiting in lines (Bazzoli, 2008). Each time the average US-American steps into the shower, he remains there for 12.5 minutes (*PERC Environmental Audit*, 1995). For the average US-American, simply listening to portable audio while commuting, waiting in line, and taking a shower would amount to nearly 350 gratuitous hours of aural practice each year. The Foreign Service Institute recommends only 240 hours of training in order for a learner of average aptitude to reach intermediate proficiency in a Group I language such as Spanish, French, or Italian (Liskin-Gasparro, 1982); the Council of Europe's Common European Framework suggests that a learner can reach level B1/Threshold in 350-400 learning hours (*CEFR and 'Can Do' – The Common European Framework of Reference*, 2009).

Portable audio devices and mobile learning are not new ideas in language education. Mueller, McCavana, Ramsden, and Shelly (1987) report on the use of Sony Walkman cassette players by learners of French at Harvard University. Kitay (2000) advocates radio as "the best choice for immersion" (p. 3) because it has the

unmistakable advantage of being portable…who wants to carry a computer on the back of a bicycle attached to a half mile of phone cord?" (Kitay). Pincas (2004) describes a program in which Sony Walkman minidisks, containing basic words and phrases in English-Greek, German-Greek, and Slovenian-Greek, were developed for tourists attending the 2004 Olympic Games in Greece. But unlike the Walkman cassette and minidisk players, the file space on portable digital audio players is much greater, and the content is flexible, since files can be added and removed. Unlike portable radios, portable audio players do not rely on broadcasted input. Most importantly, the current ubiquity of portable audio devices is unprecedented. Among US-American undergraduates, the ownership of portable audio devices has steadily increased from 37% in 2005 to 60.1% in 2006 to 74.7% in 2007 (Salaway & Caruso, 2007, p. 37). Among Penn State students, "about 37% own an iPod, about 13% own a portable MP3 player that can be used with Napster downloads, and about 17% own a portable player that is not an iPod and not compatible with Napster" (Hobbs, 2006, p. 7). The continual rise in the numbers of incoming students with portable audio devices can be seen in figures for iPod users alone. In 2006, iPods were owned by 33% of seniors, 38% of juniors, 41% of sophomores, and 49% of freshmen (Hobbs). Nevertheless, I anticipated that some learners might require the loan of a portable audio device, from Penn State's media services unit. However, each semester, the media services unit has fielded requests for only 1-2 devices, usually for use by instructors rather than learners. In short, never before have students been so able "[w]hen riding the bus or subway, walking across campus or through a shopping mall, …[to] create their own mobile immersion environments by opting to listen to

foreign language content either assigned as homework or selected based on personal interest" (see Thorne & Payne, 2005, p. 386).

In addition, mobility may physiologically facilitate learning. Neeper, Gómez-Pinilla, Choi, and Cotman (1998) report that physical exercise increases brain-derived neurotrophic factor (BDNF) gene expression in various brain regions, supporting general neuronal growth and function. Animal studies have also established a connection between elevated levels of FGF-2, a basic fibroblast growth factor, and enhanced learning/memory. Aside from facilitation of learning/memory through artificial infusions of FGF-2 into the brain, FGF-2 levels, being "regulated in an activity-dependent fashion" (Gómez-Pinilla, So, & Kesslak, 1998, p. 53) may also be non-invasively increased via physical activity, suggesting a molecular basis for the preservation of cognitive function associated with active lifestyles (Gómez-Pinilla, So, & Kesslak) as well as "new strategies to maximize the benefit of the natural trophic potential of the brain" (Gómez-Pinilla, So, & Kesslak, p. 59). The potential of physical exercise to expedite mental training has been directly considered in studies such as Fabre, Chamari, Mucci, Massé-Biron, and Préfaut (2002), which found that a combination of aerobic and mental training led to significantly greater improvement in cognitive function than did aerobic or mental training alone. In Fabre et al. (2002), the intensity of the aerobic training was individualized, however, to the heart rate corresponding to subjects' ventilatory thresholds, which likely does not typify commuting to work or walking around campus between classes but rather jogging around campus or working out at the gym. For this reason, the *Aufgaben* sheets sometimes suggested to students that they undertake rigorous exercise while listening

to their mobile immersion assignments. At other times, students were asked to listen to their mobile immersion assignments before falling asleep at night, in keeping with the sleep-memory consolidation hypothesis (e.g., Gais et al., 2007; Vyazovskiy, Cirelli, Pfister-Genskow, Faraguna, & Tononi, 2008; also cf. Barinaga, 1998).

In order to encourage the mobile, leisure-time use of portable audio devices in the German Online at PSU courses, I considered the optimal nature of the listening materials. First, because learners would be asked to listen as much as possible during their leisure moments, the self-selection of materials seemed likely to encourage voluntary listening. Second, Mueller et al. (1987), who implemented a very popular Walkman-based mobile listening program for post-secondary learners of French, recommend "[a]uthentic materials such as real conversations, excerpts from radio broadcasts, plays, poems and songs" (p. 590) because "[e]ven beginners can benefit from these, by becoming acquainted with the sound system and intonation pattern of the new language" (Mueller et al.) and "[m]ore advanced students may use the same materials as dictations, or they may write summaries, comments or compositions based upon them" (Mueller et al.). The following observation is also insightful:

> …if such language tapes [materials] are available to all, students may listen to them for the sheer pleasure of it. Such activities do not seem to require the structured environment of the language learning laboratory; in fact, they may be more profitable and enjoyable if students can engage in them at their leisure, with no outside pressure whatsoever (Mueller et al.).

Because real conversations, newscasts, plays, poems, and songs are now freely and readily available as podcasts, podcasts appeared to be the ideal choice. In German

Online at PSU, learners already use the iTunesU platform for submission of their speaking assignments (see section 2.2.2.8), so learning how to use a podcast syndicator like iTunes takes little, if any, extra time for students. Anecdotal evidence also suggests that language students do integrate podcast-style listening materials into their daily lives, listening on the bus, in their residences, and before going to bed (O'Bryan & Hegelheimer, 2007). Therefore, in the pilot versions of German 001, the mobile language immersion materials consisted of podcast episodes of the learners' choice.

But in the cyclical revision process, it was found that students' favorite aspects of the podcasted materials was music – German songs previewed in cultural newcasts or an individual's personal podcast or simply songs downloaded from iTunes or Napster. I realized what countless other language educators have as well: "Teenagers love music, they listen to it constantly!" (Adkins, 1997, p. 40). Moore (1973) has noted that one common barrier to non-contiguous pedagogy is the mobilization of learning objects and resources: "Concerned educators are faced with the practical problem of how to mobilize the resources of our traditional institutions…[of how] to apply these resources in a systematic way to meeting the needs of the large numbers of presently neglected learners" (Moore, p. 677). Certainly, a key aspect of mobilization concerns the technological elements. But even as the advent of mobile technologies and m-learning makes the anywhere/anyplace "aspect used to promote elearning…somewhat more realistic" (Mason & Rennie, 2006, p. xxxv), it must be remembered that pedagogy may also require adaptation. In the case of mobile language immersion, the choice of listening materials must be based upon the likely contexts of use. The

spoken word, which may require focused listening on the part of the language learner, fits well within the focused context of the classroom or textbook study (as in section 2.2.2.4). If the spoken word is to be used in mobile activities, the instructor may need to locate engaging, developmentally-appropriate segments, rather than leaving learners to find these on their own, which posed some difficulties for the absolute beginners in German 001. While there are podcasted materials which may make "you feel like jogging to grand unified theory instead of Grand Funk Railroad" (Howe, 2006, p. 64), these materials can be difficult for learners to find. In the German Online at PSU program, the goal was to maintain the self-selection aspect of the activity. The development of a library of podcast options from which students could select their materials, while another alternative, would have required more instructor time each semester. Thus music became the focus of the mobile language immersion component, since learners found music to be the most enjoyable leisure-time listening material. Although the concepts of enjoyment and education have sometimes been seen as incompatible, Purushomta (2005) submits that "[r]ather than seeing entertainment-focused media forms as adversarial to educational content, educators should instead embrace them" (p. 80).

Music is regularly included in language curricula for cultural reasons (e.g., Putnam, 2006). Many language educators incorporate music listening into lessons on vocabulary and grammar as well. González-Lloret (1995) describes an activity in which third-year Spanish learners each received a cassette tape of Spanish music and then transcribed the songs and shared individual lines of transcription with one another via a class e-mail discussion list. Serendipitously, listening to spoken texts set

to music may facilitate development more than listening to spoken texts alone. For example, Kouri and Winn (2006) report that when children with language delay and mild developmental delay were presented with either spoken or sung story scripts (*N* = 16), there were no significant differences in naming and comprehension of target lexical items in the two conditions, but there was a significant increase in the number of unsolicited target word productions among children who heard the sung story script. In the context of second language learning, Salcedo (2002) found that when beginning Spanish learners at Louisiana State University heard three texts either as speech or as songs, immediate text recall was higher among the text-as-song treatment group, with the advantage reaching significance for two of the three songs for both the non-context dependent, text-as-song treatment group, in which students did not hear the melody while testing, and for a context-dependent, text-as-song treatment group, in which students heard the melody from the text-as-song during testing.

Music appears to aid memory, perhaps by chunking more easily remembered tunes with new, more challenging words, even when the words are not directly set to the melody. De Groot (2006) reports that background music played during a paired-associated vocabulary learning task significantly improved non-context dependent memory. The learning of infrequent words increased 11.6% in the music condition; the learning of frequent words increased 5.8% in the music condition. The main effect did not appear, however, until the four-week delayed posttest and generalized across items but not across participants. The failure of the effect to generalize across participants suggests that "individual differences in neurological thresholds of arousal

in the brain" (p. 495) are differentially engaged by the coupling of music and new vocabulary. Thus mobile immersion using musical materials may benefit some students more than others. As already mentioned, students who choose to listen at the gym or during their daily jog may also be at an advantage. Emery, Hsiao, Hill, and Frid (2003) found short-term improvements in L1 verbal fluency when subjects were exposed to simultaneous exercise and music listening. There was no change in verbal fluency when subjects were exposed to exercise and no music listening (Emery et al., p. 370). They hypothesize that "music listening may influence cognitive functioning via alternate pathways" (Emery et al., p. 372), and "to the degree that exercise and music may have simultaneous effects on cognitive performance, the combination of exercise and music would serve to increase cognitive arousal while helping to organize the cognitive output" (Emery et al., p. 372).

To conclude, the mobile language immersion component supplemented the streaming audio from the *Deutsch Heute* (Moeller et al., 2005) and *Kaleidoskop* (Moeller et al., 2007) curricula with audio conducive to recreational, mobile listening. Each week, students downloaded and listened to two German-language songs of their choice, using a twenty-five dollar music card (for iTunes, Napster, or any other music service of the student's choice) included in the required course materials. Some weeks, students were instructed to seek out music conducive to aerobic activity. Other weeks, they were instructed to seek out music conducive to relaxed listening, e.g., while falling asleep at night. Every week, they were required to post the German lyrics, English lyrics, and/or reactions to the songs on a group discussion forum. Sometimes, students would be directed to select songs that classmates had selected

the previous week, in order to encourage students to listen to songs they might not have selected themselves and to foster a sense of community. In some pilot versions, learners also coupled text and sound, using iWriter software (*iWriter*) to create listening guides to accompany German-language songs (Millet, Chinn, Isenberg, & Tremblay, 2006). In measures of both implicit and explicit memory, bimodal presentation, as compared to single modality presentation, improves recognition memory of spoken words and nonwords for both native and non-native speakers (Bird & Williams, 2002). Given the small screens on most portable audio devices, the listening guides were intended as reference materials rather than regular study aids. As Thornton and Houser (2002) suggest, "despite the perception of the small screen as a disadvantage, educators can create materials that are effective on diminutive mobile displays" (p. 231). However, the learner development of portable listening guides, using the iWriter software, was removed from the final version of the courses, because the larger, university-wide pilot of the iWriter software did not result in university-wide implementation.

By encouraging and facilitating mobile listening, the mobile immersion activities pushed the German Online at PSU courses beyond current distance education models such as Rumble's (2001), which divide distance education into (1) correspondence education, (2) educational broadcasting, (3) multimedia approaches, and (4) e-education approaches. M-learning, when innovatively pursued, represents a novel pedagogical approach, particularly due to the unconventional contexts in which learning may take place. At present, only descriptive and impressionistic reports on the application of portable audio in language education are available (e.g., Mueller et.

al., 1987; Sanaoui, 1995; Kitay, 2000; Gu, 2003; Pincas, 2004; McCarty, 2005; and O'Bryan & Hegelheimer, 2007). Erben (1999) makes the following observation:

> …of the many so-called innovations which have occurred in the language education industry over the past 30 years, only two innovations have been credited with providing a unique contribution to the field. One is immersion pedagogy…and the other is computer-mediated online learning…However, while the benefits of immersion education and the uses of technology in education have been well documented, research into computer-mediated communication and *computer-mediated pedagogy in immersion settings* remain at best scant (p. 14, emphasis added).

Given the uncertain effects of technology-mediated immersion upon development, as well as a possible novelty/halo effect, the mobile immersion component was included in both the control (classroom-based) and treatment (web-based) conditions of the present study.

2.2.2.8 Speaking assignments shared as podcast episodes

Opportunities for non-spontaneous and spontaneous production were provided in speaking assignments submitted to a class podcast channel as individual episodes; while recording assignments have been part of distance provisions since the second-generation, Multimedia Model (Taylor, 2000), the digital nature of the recording activities in the German Online at PSU courses places these activities within the fourth-generation, Flexible Learning model (Taylor). Like the mobile immersion component, the speaking assignment component is part of a modular approach to

voice training (cf. Hardison & Sonchaeng, 2005). In the initial speaking assignments, students often read aloud, usually from textbook selections that the students had already read and heard in the self-study component (section 2.2.2.4). Other successful distance programs, such as the telephone-assisted distance program at Ohio State University, have used reading aloud as a way for students to practice non-spontaneous oral production (Twarog & Pereszlenyi-Pinter, 1988, p. 426). With time, the assignments come to require more spontaneous speech, such as extemporaneous description of a room in the student's home. Like the digital speaking assignments in the Syracuse Language Systems Spanish course, which are recorded digitally and uploaded by the student, downloaded by the instructor, and then critiqued (Rothenberg, 1998, p. 147), the German Online at PSU speaking assignments are recorded digitally, typically using the Audacity freeware (*Audacity*) and then uploaded to the iTunesU interface. Handouts and videos on installing and using Audacity, as well as assistance from the web-based course coordinator, are available the week before the speaking assignments begin, when students are asked to do a test recording. Videos on uploading files to iTunesU were also available.

The significant difference, however, between the Syracuse Language Systems course and the German Online at PSU courses was the uploading of the files into a podcast channel. At the beginning of the semester, each instructor subscribed to his or her class's podcast channel using a free syndicator such as iTunes. The podcast assignments, uploaded by each student, were then delivered to the instructors desktop automatically, each time the instructor opened the iTunes software (for a further description of podcasting technology and early applications to language learning, see

Goodwin-Jones, 2005, pp. 10-11). Much podcasting in education today is lecture-casting by instructors. But, increasingly, there are documented accounts of students submitting reports and journals in podcast form (Schroeder, 2007). In fact, the American Counsel on the Teaching of Foreign Languages (ACTFL) now sponsors an annual video podcasting contest (*ACTFL Video Contest*). The reasons for podcast-based submission of speaking assignments quickly became obvious to instructors, many of whom were initially skeptical of learning to use iTunesU, one of the few non-ANGEL technologies used in the German Online at PSU courses. Students can record and upload their foreign language lessons to their instructor's website [in this case, to the class iTunesU page, with password-protected podcast channels for each week]. The instructor can then listen to the lessons on their MP3 player at their convenience (Meng, 2005, p. 5).

Several instructors reported listening to the assignments, collected through the podcast channel and transferred to their portable audio devices by the iTunes syndicators, during their daily walk or drive to campus. Upon returning to classroom-based teaching, some of the web-based instructors choose to continue using podcast-based submission of student speaking assignments, because it saved such significant amounts of time and made the collection of oral assignments much more efficient than when cassettes or CDs are used. It became clear that the use of podcasting channels is more pedagogically sustainable than the use of cassettes or CDs. In addition, instructors who were initially concerned about the comfort-levels of their students, in podcasting their assignments found that, as Tapscott (1998) observes, "[t]oday's kids are so bathed in bits that they think it's all part of the natural

landscape. To them, the digital technology is no more intimidating than a VCR or toaster" (p. 1). Finally, the instructors found it very useful that students' assignments were visible to other students. Either out of general curiosity or uncertainty as to how to execute an assignment, students might listen to previous submissions before or while completing the assignment themselves. In several cases, students mentioned improving their own assignment before uploading because they had listened to another student's submission and realized ways to improve their own.

2.2.2.9 Text chat in peer-to-peer small groups and dyads

The final component in the modular approach to the development of oral proficiency is text-based chats, which allow students to engage in spontaneous, interactive communication. Each week, each student completes two chats: (a) a small group chat and (b) a partner chat. All chats are held within secure ANGEL chatrooms, are peer-to-peer/unsupervised and generally last 50 minutes, although the first few chats of the semester are shorter, so that students have time to become accustomed to chatting for this length of time. During the chats, students are not required to be physically located in any certain space, such as a computer lab at their local Penn State branch campus, local public library, or home study area.

Although studies such as Cahill and Catanzaro (1997) and Harker and Koutsantoni (2005) have clearly shown that text-based chatting fosters written proficiency, the cross-modal transfer of oral proficiency is more tenuous. Hampel and Hauck (2004), from the Open University, note the following:

> Some studies have shown that in written forms of computer-mediated communication (CMC), or so-called text chat, students produce a greater quantity of discourse than in an oral classroom…The question is, however, whether these communicative skills acquired in a written environment are transferable to oral communication. Most studies are tentative on this point and only go so far as to say that the written interactional competence may gradually be transferred to spoken discourse competence (p. 67).

In short-term studies, researchers often focus on isolated components of spoken competence, such as the retention of discrete vocabulary items or syntactic and lexical richness. Abrams (2003) reports that third-semester learners of German who prepared for oral discussions by engaging in a text-based chat session exhibited no significant difference in quantity of output or lexical and syntactic complexity during the oral discussion as compared to those who prepared in the face-to-face mode. Indeed, the groups which engaged in text-based chat preparation produced more output than groups in another treatment condition, in which learners engaged in asynchronous computer-mediated communication; practice in the text-based chat modality and practice in the face-to-face modality led to the most similar performance in the post-treatment oral discussions. Sykes (2005) notes similar, short-term developmental advantages for third-semester learners of Spanish who prepared for face-to-face discussions by engaging in one 30-minute text-based chat session. In the face-to-face post-test discussions, which were completed three days after the treatment sessions, the learners who prepared via text-based chat used more complex and varied pragmatic strategies than learners who prepared via face-to-face discussion

or voice-based chat. Employing a slightly more longitudinal design, Blake (2006) reports that in a two-week post-test of vocabulary acquisition and retention, treatment (text-based chat) and control (face-to-face) dyads of Spanish learners at the University of California at Davis and the University of California at Santa Cruz both improved, but the treatment subjects "involved in…specific online word negotiations registered a notable improvement…in vocabulary knowledge on the delayed posttest vis-à-vis the mean values exhibited by all other groups, both control groups and experimental" (p. 243)…"online negotiations [like face-to-face negotiations] create favorable conditions for vocabulary growth and begin to provide evidence to establish the connection between negotiations and acquisition" (p. 242). The assumption is that if text-based chat fosters developmental encounters and short-term, discrete-item results similar to those obtained as a result of face-to-face interaction, then, over longer periods of time, "written interaction competence may gradually be transferred to spoken discourse competence" (Hampel & Hauck, 2004, p. 67). But in the available studies of more longitudinal, semester-long interventions, results must be interpreted cautiously, due to the limited validity and/or reliability of the research designs.

In Volle (2005), first-semester, fully web-based post-secondary learners of Spanish (N = 19) who completed both text-based chats and weekly oral recording assignments made gains in oral proficiency on a pre- and post-test oral measure (r >.99, p = .05) which consisted of six conversational objectives adapted from the ACTFL proficiency guidelines and first-year course objectives (e.g., "Student can/cannot…identify and describe specific items (family, clothes, weather, etc.)." or

"Student can/cannot…talk about the future.") (p. 160). The positive gain scores suggest that learners did develop during the treatment, but the lack of a control group makes it unclear how this development compares to that obtained in a face-to-face class of similar duration and design. The lack of a control group, and the absence of any individual difference measures which could alternatively ascertain the similarities and differences between the treatment group sample and the general population of post-secondary learners of Spanish, also introduce the possibility that Volle's results may only represent those who self-select for non-contiguous study. In addition, Volle found no improvement on an oral articulation measure adapted from Koren (1995 as cited in Volle, 2005) or an oral accuracy measure adapted from Weir (1990 as cited in Volle, 2005). Again, Volle (2005) is notable for testing a fully web-based course and finding some cross-modal development in this context; indeed, it is the only such study located during the literature review for this dissertation. The research design, however, limits the value of the positive developmental results that were obtained. It is therefore necessary to consider research conducted in less valid contexts (e.g., hybrid/blended courses instead of fully web-based courses) but including more systematically-controlled treatment and learner variables.

In Beauvois (1998), classroom-based, second-year learners of French at the University of Tennessee-Knoxville ($N = 83$) were randomly assigned to treatment and control conditions, thus avoiding self-selection effects (p. 97). In the control condition ($N = 46$), all three weekly course sessions were conducted in the face-to-face mode. In the treatment condition ($N = 37$), one session was held in a computer lab with a local area network (LAN). The syllabus and curriculum were the same across all

sections, and two of the three instructors who taught treatment sections also taught control sections, lessening instructor effects (Beauvois). Three of the four classes included in the study met in the afternoon, decreasing time-of-day effects as well (Beauvois). Using this design, Beauvois found that the learners who engaged in one discussion each week via text-based chat achieved higher scores on two mid-term oral exams and one final oral exam (t = 2.20, p = 0.03) than did those learners who engaged only in face-to-face discussions. There are, however, two considerable limitations to these findings: the lack of a measure of previous development and a discrepancy in discussion group size between conditions. In the absence of a measure of previous development, it cannot be known whether the treatment group made more significant developmental gains or, despite random assignment, simply were a more proficient at the beginning of the study. Despite a common curriculum and syllabus, as well as equal amounts of interaction in each condition, the small group format used in the face-to-face control condition (Beauvois, p. 96) compared to the large group format (of 20 learners and one instructor) used in the text-based chat sessions of the experimental condition also confound the interpretation of the positive results. The positive results could be a function of either modality or discussion group size.

In Chenoweth and Murday (2003), learners in Elementary French I Online, the first hybrid/blended course to be offered in the Language Online initiative at Carnegie Mellon University, performed as well as classroom-based counterparts on various measures, including several measures of oral production. But, as in Beauvois (1998), the treatment condition was not fully web-based. Learners engaged in one hour of classroom-based instruction each week and attended a weekly, 20-minute individual

or small group meeting with the instructor or a language assistant (Chenoweth & Murday, p. 286). There were also no measures of previous development. Learners in the treatment condition, who participated in text-based chats for one hour each week with classmates and the language assistant (Chenoweth & Murday, p. 286), did report less time spent studying French than their classroom-based counterparts, but the individual 20-minute weekly meetings in the treatment condition may have given a significant advantage to the web-based students in this study. The potential variability in the efficacy of the hybrid/blended courses, as a function of teacher effects in both the one hour large-group sessions and the weekly 20-minute individual or small-group sessions, is demonstrated in Chenoweth, Ushida, and Murday (2006), which reassessed the effectiveness of several iterations of Carnegie Mellon's Language Online program in both elementary and intermediate French and Spanish. In this study, there were conflicting findings regarding oral proficiency development among various classes. There was one instance of a statistically significant advantage for a class of students in the hybrid/blended treatment condition; in one section of Elementary French II Online, gain scores on four aspects of oral performance (comprehensibility, vocabulary, syntax and grammar, and pronunciation, graded on 10-point scales taken from Payne and Whitney 2002) were significantly higher than in the classroom-based control sections (Chenoweth et al., p. 125). In this case, the classroom-based control sections and the hybrid/blended treatment section performed comparably on the oral production pre-test, but while the hybrid/blended group improved on several aspects of oral performance, the classroom-based group improved on pronunciation only (Chenoweth et al., p. 125). There was, however, also

one instance of a statistically significant disadvantage for a class of students in the hybrid/blended treatment condition; in one iteration of Intermediate Spanish I Online, learners in the treatment section performed significantly lower on three aspects of oral performance (oral fluency, comprehensibility, and control of syntax and grammar) than their counterparts in classroom-based sections (Chenoweth et al., p. 124). The positive interpretation of these conflicting results is that text-based chat has the potential to replace a portion of the course without impairing oral proficiency development. Indeed, in some instances, the hybrid/blended option may be more developmentally effective. The less positive interpretation, however, is that the face-to-face sessions, and the nature in which they are enacted (the confounding variable across the successful and unsuccessful iterations), are the deciding factors in the development or non-development of oral proficiency in the Language Online program.

In Kost (2004), learners in text-based chat and face-to-face conditions received comparable instructional time (as in Beauvois, 1998), and task groups for the two conditions were similar in size (as in Chenoweth & Murday, 2003 and Chenoweth, Ushida & Murday, 2006). The only limitation of Kost (2004) is that the distinctive portion of the pedagogical intervention in each of the two conditions was four to five times shorter than in Beauvois (1998), Chenoweth and Murday (2003), and Chenoweth, Ushida and Murday (2006). In the text-based chat condition, learners in two sections of classroom-based second-semester German at the University of Arizona (N = 34) completed weekly 15-20 minute role-plays using the LAN in a campus computer lab. In the face-to-face condition, learners in two additional

sections of classroom-based second-semester German (N = 34) completed the same weekly 15-20 minute role-plays in a traditional classroom. In the face-to-face condition, the instructors commented on mistakes and gave assistance while circling the room during oral role-plays, and in order to approximate the feedback of a regular classroom (Kost, p. 103), instructors in the text-based chat condition joined each chat channel for a short time during each role-play, offering suggestions and feedback. Like Chenoweth, Ushida and Murday (2006), Kost administered pre- and post-treatment measures, with the oral interview measure (rated with an analytic scale, p. 101) consisting of interview topics taken from the course textbook (pp. 104-105). Paired samples (matched) t-tests compared each group's performance before and after the semester-long treatment. Significance levels of $p < .001$ were reached by the oral role-play group for oral proficiency gain, and by the text-based chat group for both oral and written proficiency. There were no significant differences between groups on either oral or written proficiency gains, and like Abrams (2003), Kost also found no significant difference in lexical richness (diversity and density) due to treatment, in a multiple case study of a subset (N = 21) of participants representing the highest, median, and lowest oral and written scores in each section. A number of additional statistical analyses were included in the study, such as an ANCOVA analysis with post-treatment scores as the dependent variable and treatment as the fixed factor, which showed no differences in oral or written proficiency due to treatment (Kost, p. 211). Another ANCOVA analysis with "class" as a fixed factor ruled out any possible teacher effect (Kost, p. 133). Lastly, standard deviations, for both groups, on both measures (oral and written), suggest the following:

> …[there are] rather heterogeneous levels of proficiency within the different groups at the beginning and at the end of the semester…[but] [w]hile most groups show an increasing standard deviation between pre- and post-treatment score, the CMC [text-based chat] group (regarding oral proficiency) is the only one which is able to slightly decrease its standard deviation (Kost, pp. 131-132).

In the face-to-face role-play condition, the figures were as follows: pre-test oral mean = 50.18, *SD* = 8.92, post-test oral mean = 58.79, *SD* = 10.15; the heterogeneity in oral proficiency among the face-to-face learners increased by 1.23 standard deviations. In the text-based chat condition, the figures are as follows: pre-test oral mean = 48.17, *SD* = 10.36, post-test oral mean = 56.33, *SD* = 10.21; the heterogeneity in oral proficiency among the text-based chat learners decreased by 0.15 standard deviations. Kost concludes that although there was no significant difference by treatment in oral proficiency gains at the end of the intervention "[h]owever, perhaps due to the similarity between language used in the online discussions and oral speech, a possible leveling effect of the synchronous online discussions on students' oral performance was observed" (p. 212). Kost therefore recommends using text-based chat not only "as a time- and location-independent[9] opportunity to further practice language skills, thus freeing up class time for other activities" (p. 27) but also "as an opportunity to

[9] Absolute temporal independence can only be provided by non-synchronous modalities, such as discussion boards. By time-independent, Kost (2004) implies temporal flexibility relative to typical schedules for classroom-based courses. But in the terms used in this dissertation, text-based chat is only location-independent, not time-independent. Indeed, the location-independence of text-based chat will only increase with the spread of mobile technologies which separate text-based synchronous exchange from fixed-location machines. But regardless of the technology used, text-based chat will, by virtue of synchronicity, remain anchored in time.

provide learners with a medium that addresses different learning styles than might be addressed in a traditional classroom setting" (p. 27).

Payne and Whitney (2002) explicitly explore the possible leveling effects and individual difference affordances of the text-based chat modality. Most notably, they do so within a careful research design, with comparable instructional time in both conditions (as in Beauvois, 1998 and Kost, 2004), task groups of the same size in both conditions (as in Chenoweth & Murday, 2003; Kost, 2004; and Chenoweth, Ushida & Murday, 2006), balancing of instructor effects across conditions (as attempted in Beauvois 1998), and conditions with distinguishing portions that were twice as distinctive as those of any previous study. The study participants were 58 third-semester learners of Spanish at Washington State University, enrolled in two sections of fully classroom-based instruction (control condition, $N = 34$) and two sections of hybrid/blended instruction (treatment condition, $N = 24$) (Payne & Whitney, p. 15). Two instructors were involved, and each taught one control and one treatment section (Payne & Whitney, p. 16). In the treatment condition, two of the four weekly class sessions were held in a online chatroom, resulting in 21 chatroom sessions over the course of a 15-week semester (some chatroom sessions were cancelled during exam periods and lab-based training sessions for other aspects of the course) (Payne & Whitney, p. 15). Pedagogically separating the physiological mechanisms of articulation from the cognitive processes of speech planning, as suggested by Levelt's (1989) model of language production, Payne and Whitney tested the following hypothesis: can text-based chat develop the cognitive mechanisms underlying spontaneous speech, in the absence of the typical, overt

psychomotor involvement of the articulatory apparatus, in much the same way that a flight simulator develops the cognitive mechanisms underlying actual flight, in the absence of typical, overt changes in altitude and momentum? Such a hypothesis constitutes the inverse of Donahue's (2000) approach to teaching pronunciation via the web, in which he isolates the psychomotor mechanisms of pronunciation from the socio-cognitive processes of conversation. Donahue claims that this approach resulted in pronunciation training which was more effective than face-to-face, classroom-based instruction, but this hypothesis was not confirmed by developmental data. In contrast, Payne and Whitney report the results of pre- and post-tests of oral proficiency (an "Oral Production Interview" (p. 16; pp. 30-31), which was an adaptation of the oral proficiency interview (OPI) derived from the ACTFL Oral Proficiency Guidelines (p. 16) and which was in keeping with a view of oral proficiency as "an individual's ability to produce language that is comprehensible with syntax and vocabulary appropriate to the task, is grammatically accurate, and is pronounced in a manner that approximates the speech of a native speaker" (p. 16)). Payne and Whitney report not only cross-modality transfer (significant gains in oral proficiency among learners in the treatment condition ($p < .05$)), but also significantly greater gains in oral proficiency in the treatment condition than in the control condition ($p < .05$). While Beauvois (1998) and Chenoweth, Ushida, and Murday (2006) also report greater gain scores among some or all subjects in their treatment conditions, their results are weakened by flaws in the research designs. In Beauvois, there was no measure of previous development, and there were differently-sized discussion groups. In Chenoweth et al., who found greater oral proficiency gains in

only one section of Elementary French II Online, there appear to be likely teacher effects. In more carefully controlled studies, such as Kost (2004), gains in treatment and control conditions were similar; there was no "added value" (Bax, 2000, p. 209) as a result of technology-use in the treatment condition. If the criterion for the educational application of technology, as Bax proposes, is that "technology should not merely replace current practice for the sake of novelty, but must contribute to it and improve it" (p. 209), Payne and Whitney (2002) is the first study to warrant the application of text-based chat on pedagogical, as opposed to financial or geographical, grounds. Payne and Whitney make the following comment:

> The fact that the mean gain score of participants conducting half of their class time in the chatroom was higher than the control condition suggests that synchronous CMC may offer some unique benefits to second language learners that may be difficult to obtain in a conventional classroom (p. 20).

By administering individual difference measures as well (reading span (adapted from Daneman and Carpenter 1980), nonword repetition (aural presentation and visual recognition of pseudowords), and the Shipley verbal intelligence test), Payne and Whitney further determined that there was a modest correlation (r = .30) between oral proficiency gains and the nonword repetition task, a measure of phonological working memory (PWM) or the function of the Phonological Loop (Baddeley, 1986), which stores and maintains incoming utterances as they are being comprehended and outgoing utterances as they are being produced. As the final step, Payne and Whitney compared the correlation between oral proficiency gains in each condition, finding

only a weak correlation in the treatment condition (r = .23) but a modest correlation (r = .33) in the control condition. Payne and Whitney state the following:

> …learners with lower phonological buffering capacity were disadvantaged relative to others in the control group but were not so disadvantaged in the experimental [treatment] group. These results give a preliminary indication that the chatroom environment may be especially beneficial for students with lower ability to maintain verbal information in the Phonological Loop (p. 23).

Kost (2004) concurs: "these results appear particularly valuable in the light of possible curricular changes which strive to address different learners' needs" (p. 46).

In conclusion, although studies in fully distance contexts are either non-existent or limited by methodological or design issues (e.g., the lack of a control group in Volle, 1995), the design of the distinctive portion of the treatment condition in Payne and Whitney (2002) mirrors a typical distance-learning context; during the text-based chats, no more than four learners, and typically only two, were ever located in the same physical location (p. 18). "This location-independent design is important because it represents a significant difference from the majority of studies investigating the intersection of synchronous CMC and second language acquisition" (Payne & Whitney, p. 18). Most notably, Payne and Whitney demonstrated that when text-based chat exchanges, configured in a location-independent design typical of distance-learning contexts, constitute 50% of total instructional time in a traditional course, pedagogical effectiveness (as measured by oral proficiency development) was not only maintained but, in fact, increased. This finding suggests that by including text-based chat exchanges, distance courses may be rendered as effective, if not more

effective than, traditional courses. Although counter-intuitive, certain technical attributes (Salaberry, 2001) of text-based chat may simply offer unique benefits that can be difficult to obtain in a conventional classroom (Payne and Whitney, p. 20).

In addition, the peer-to-peer nature of the text-based chats in the German Online at PSU program makes this component pedagogically sustainable; it is not necessary for the instructor to attend several chat sessions each week. Tudini (2005) points out that accounts of unsupervised chats, in which learners are separated by distance and not directly supervised by an instructor, either physically or virtually, are rare. There is the concern that instructor immediacy is vital to students' full participation and resultant development. But Schutt (2007), in a study of high versus low instructor immediacy in audio/text chat and video/text chat formats in an undergraduate psychology course at San Diego State University (N = 433), reports that no significant difference was found between the four groups on the learning outcomes as indicated by their scores on the delayed posttest. Further, Ene, Görtler, and McBride's (2005) analysis of chat transcripts, student surveys, and teacher interviews suggests that the teacher's presence or absence had less of an effect upon learners' chat behavior than did the teachers' participation style when present. Specifically, a form-focused participation style of one teacher appeared to have an inhibitory effect on learner participation. If the presence or absence of the instructor inspires either no developmental difference or, potentially, an inhibitory difference, then why not save vast amounts of instructor time? Extensive amounts of interaction are more feasible if it is not necessary for the instructor to be a participant in each interaction (cf. the first-generation, Correspondence Model (Taylor, 2000)). Indeed, the instructors in the

German Online at PSU program, who are not discouraged from attending the small group chats, are instead relieved to learn that their presence is not necessary in the six or more group sessions and the six or more dyadic sessions that transpire each week; peer-to-peer/unsupervised chats warrant consideration as one way of simultaneously increasing the interactivity and the faculty acceptance of non-contiguous provision. Chats that take place at the location and time of the learner's choice also appear to foster greater learner participation. Sanders (2005a) found that when first-semester Spanish students completed chat activities outside of class, they engaged in significantly more total minutes of activity, turns, instances of Spanish words, instances of correctly spelled Spanish words (when accounting for accents and when not accounting for accents), socially appropriate comments, and original instances of Spanish vocabulary than when chatting while seated in a common computer lab during class time. In light of these findings, the text-based chats in the German Online at PSU courses were unsupervised and students were not required to be in any particular physical location while completing the chats.

Before being assigned to a chat group, students were asked as to their preferred days and times in which to complete a weekly, 50-minute text-based chat. The students were then assigned to small groups which would meet in the ANGEL chatroom at the same day and time each week. A set, small-group schedule allowed students who might miss their own weekly small-group chat to make up their missed chat by joining another group, although this practice was allowed only for excused absences or at the instructor's discretion. The chat dyads were also assigned, but a weekly day and time were not set. The dyadic chats were therefore maximally

convenient with regard to time, with the intention of maximizing learner participation (Sanders 2005a). Some dyads chatted on the same day and time each week. Others preferred to switch days and times each week.

Chat participation was not voluntary. There are two views on learner volition: (a) that learners should be given control over the extent, form, and very choice of interacting in the first place, and (b) that, conversely, interactions should be required. White (2003) offers the following rationale for required, graded interaction:

> …in the face of reluctance on the part of some language learners to contribute to CMC discussions, a number of teachers have adopted the approach of requiring regular – for example, weekly – contributions, and of assessing these as part of the grade for the course (White, 2003, p. 56).

The German Online at PSU courses were designed with this latter view in mind. Interaction, says Berge (1999), must be built into the instructional program. In the German Online at PSU program, not the end result, such as a summative assignment based upon the responses of group members, but rather the interaction itself is the assessed in the chat grade. Learners are told how long to interact, which concrete topics to discuss, which key phrases might be useful, and how much German and English to use. A mixture of German and English is allowed in the beginning, but students are quickly challenged to develop their ability to circumlocute and to express their ideas in as much German as possible, even in the first-semester course. Attention to these instructions is reflected in the chat grade. The presence of a chat grade is reflected in apparent learner motivation. Ushida (2005) reports on the motivation and attitudes of students enrolled in elementary hybrid French, elementary

hybrid Spanish, and intermediate hybrid Spanish courses at Carnegie Mellon University. In the elementary hybrid Spanish course, students met face-to-face for 50 minutes each week with the instructor, they met face-to-face individually each week with either the instructor or a teaching assistant, and they met in a chatroom three times each week for 10 minutes each time, predominantly with other students. In this course, unlike the other two, the chats were graded and had set tasks and topics (see p. 49 for chart comparing the course design of the three treatments/sections). Ushida (2005) notes the following:

> An interesting tendency for this class was that those students who had a relatively low level of motivation initially showed better learning behaviors than those who had a moderate level of motivation initially (p. 77)… Although [they] did not self-report their motivation level to be very high…their learning behaviors as evaluated by the teacher suggest that they were motivated language learners to some extent (p. 78).

Although all of us enjoy working with motivated, enthusiastic students, the reality is that we will always encounter at least a few students who are enrolled because they must complete the course to fulfill a requirement, not because they are intrinsically interested in the subject matter. Graded chats give credit to those students who do heavily invest in the activity and help to encourage those who are working toward a satisfactory grade in the course.

Grading the chats is one way of demonstrating to students that the chat activities are a key part of the course. This is particularly important given the synchronicity of the chat activity; White (2003) offers the following rationale:

> Once courses include synchronous learning opportunities, learners are likely to have more paced and structured encounters, analogous to scheduled weekly classes. We also now know that interactive and collaborative opportunities are likely to be resisted if they are experienced as tangential to the needs and individual aims of learners, or to the overall aims of the course (p. 229).

In addition to grading the chats, integrating them with all other aspects of the course was another method of assuring students of their importance. In the first few weeks of each course, both group and partner chat sessions are highly structured. The instructions outline each session, including which topics should be discussed and in what order. These topics are directly drawn from the week's self-study materials, and frequent reference to textbook page numbers allows students to use the textbook as resources while chatting. The outline further stipulates how much time should be spent on each individual topic and provides specific questions for students to pose to one another. Tasks are either open-ended, information-seeking activities (cf. Hauck and Hampel, 2005, p. 267) or, less frequently, games such as "I Spy" (appropriate for chapters dealing with describing one's surroundings) or "Rate meine Person" (similar to "I Spy", but involving the description of a person of historical or cultural significance and appropriate for chapters dealing with describing individuals' physical attributes and character traits). As the course progress, students are still told approximately how many minutes to spend on each topic, but they are increasingly required to produce their own questions, sometimes including specific grammatical structures as found on cited textbook pages. The questions may be formulated in advance, if the students prefer, but the instructions usually include an exact number of

how many such questions each student must pose to their partner(s), and students are reminded that the instructor will check the chat transcripts to see that these specifications are met. Topics for information-seeking tasks are related to themes from the current textbook unit but are always open-ended and of a personal nature, in order to increase students' investment in the interaction, stimulate negotiation of meaning, and ensure the generally purposeful nature of the chat activity. Hess (2006) argues as follows:

> E-Lernen ist also nur dann sinvoll, wenn es in den gesamten Lernvorgang bzw. das Lernumfeld eingebettet werden kann, also eine den Kernunterricht ergänzende Funktion erfüllt. Eine Erweiterung dieses Lernumfeldes hingegen [ist] nicht gewünscht[10] (p. 310).

In later weeks of each course, portions of the chats were occasionally designated as "open topic" or only general topical suggestions were given; these "open topic" times were included in order to gradually give the students increasing responsibility for autonomously initiating and sustaining a conversational exchange. Students often self-initiated games and topics that had been assigned in previous chats. "I Spy" was particularly popular, perhaps because it is seen as recreational. As one student said "Ich habe nie erwartet, dieses Spiel in [sic] Penn State zu spielen!"[11]

For the small group chats, optimal group size was considered. Larger groups mean that students each bear less of the conversational burden. Conversely, smaller groups mean more practice opportunities for each student. What then is the optimal

[10] "E-learning is only meaningful and expedient when it can be embedded into the entire learning process and environment, fulfilling a complementary function to the core lesson. An add-on to the learning environment is not desired."
[11] "I never expected to play this game in [sic] Penn State!"

size which makes a chat enjoyable yet beneficial for each student? Using a within-subjects design (N = 27), Böhlke (2003) compared student participation in face-to-face interaction and text-based chat. He found that participation in text-based synchronous interactions was more balanced and equal than participation in face-to-face conversations, but only for groups consisting of four students (p. 77). For groups consisting of five students per group, the chatroom participation was only slightly more balanced and equal than the participation in face-to-face conversations, and thus Böhkle stresses that group size is vital factor in the much touted equalizing effect of CMC. Therefore, whenever possible, the small groups consisted of four students.

Finally, chats were consciously implemented twice a week, for a total of 100 minutes per student, in order maximize the effects of this component. In the closing remarks to her study, Kost (2004) notes the following:

> …data indicated that learners in the treatment [chat] group…displayed similar results in oral and written proficiency at the end of the semester to the group that had more oral practice. While this is an indication that similar mechanisms might be developed when doing online discussions or when practicing oral speech, *the actual treatment (ca. 20 minutes per week) was too short* to gain more conclusive results…in order to find more support for the indicated tendency, it would be necessary to replicate this study with a treatment which distinguishes the two groups more clearly, i.e., *expanding the chat sessions to one or even two entire lessons per week* (p. 226, emphasis added).

For the purposes of the present study, a substantial chat component was needed in order to clearly define the two study conditions. For the purposes of the German Online at PSU program, a substantial chat component was desirable in order to encourage peer support, and thereby reduce isolation: "Interactions that learners initiate and manage for themselves…[are] one of the most useful and sustainable forms of learner-learner support" (White, 2003, p. 180).

2.2.2.10 Final exam components

The final examination for the German Online at PSU courses consists of three components: (a) a final listening examination, (b) a final podcast, and (c) a final culture project (see appendix C). The final listening exam consists of a sound file or files that the students download for listening while they complete a set of computer-based questions, presented using ANGEL's quiz tool. The final listening exam is unique, in that instructors are encouraged to either revise or completely rewrite the exam each semester. This task is first discussed with the instructors during week three of the 6-week course and week five of the 15-week course (see section 2.2.2.12), allowing the instructors ample time to develop their own final listening exams. By week three or week five, respectively, instructors are also likely to have settled into the routine of non-contiguous teaching and are ready for a foray into design work. While instructors are always encouraged to personalize and supplement the courses, particularly with group emails or additional web links, the focus on the final listening exam as the only design item requiring their complete attention insures that instructors will have sufficient time to devote to redeveloping it each semester, either

partially or completely. Some distance courses do require instructors to assign homework or develop assessment measures early in the semester, since, "[i]n a traditional class, some teachers give homework based on what was done in class that day" (Youngs, 2007, p. 79). But unless the instructor is already intimately familiar with the course content and schedule, this is impractical or even "impossible in an online course" (Youngs, p. 79). Nevertheless, since many instructors enjoy design work, the author attempted to build into the course spaces where instructors could shape the course, if desired. The final listening exam is a key example. The final podcasts and culture projects are also open to the instructor's influence, but in a different way. Each chat group determines a cultural topic of interest, submits it to the instructor for approval, and then begins developing a final culture project (a combination of a prose essay and pictures) using a Google Docs wiki (*Google Docs*). The use of a wiki for the final culture project is intended to encourage process writing and peer correction (cf. Kato & Rosen, 2007). Finally, each member of the group develops a final podcast based upon their aspect of the culture project. The podcast can take the form of a newscast, a monologue, a dialogue, a poem, a song, or any genre of the student's choice. Length is determined by course level. The students begin designing the final culture project mid-way through the semester, and they begin outlining their final podcast shortly thereafter. These outlines are submitted to a group discussion forum and detailed feedback is provided by the instructor, who can thus shape this project more than most assignments, since feedback has been offered at each stage of the writing process.

2.2.2.1.1 Additional websites: anticipatory materials

In addition to the *Wochenpläne* (weekly plans) folder, with its individual subfolders for each week of the course, another main folder, under the LESSONS tab, houses "Helpful websites". Here the learner can find links to references works, search engines, games, popular children's sites, newspapers and magazines, freeware, radio stations, and film clips. Each of these categories has its own subfolder that includes links and a message board on which students can leave their own recommendations for other students. Use of the links in the "Helpful websites" folder, as well as posting of recommendations, is not mandatory. The websites are provided an anticipatory materials. Moore (1973) explains: "in independent learning and teaching, teaching is, perhaps paradoxically, both responsive and anticipatory. Consider the analogy with dining." (p. 671). A child who normally sits at dining room table and is served a particular meal, suddenly enters a cafeteria for the first time. "His choice[s] may be nutritionally sound, or foolish." (Moore, p. 671). When offering courses which carry academic credit, educators are responsible for insuring basic nutritional choices through course requirements. But since some students may have a more ravenous appetite for the subject matter, anticipatory teaching involves making additional materials available.

2.2.2.12 Instructors: instructor information folders, virtual office hours, and web-based coordination

The final component of the German Online at PSU courses is the instructors. Labeling instructors a "component" and discussing their role last does not reflect that

this component is less important than the others. Rather, the role of the instructor is discussed last because it is this component that ties all of the other components together. While the role of the instructor in German Online at PSU is far too extensive to detail here, highlights have been given throughout the discussion of other components. Here, it is worth mentioning that the subfolder for each week also contains a hidden "instructor info" folder, which guides the instructor, step-by-step, through each lesson, the grading required for that week's assignments, and any preparations that need to be made for the following week or the final components, such as the final listening exam. Speaking on the basis of ten years of experience coordinating online English language teachers at the *Universitat Oberta de Catalunya* (Open University of Catalonia), Ernest and Hopkins (2006) recommend "documents for teachers in which their duties and responsibilities are defined clearly and concisely" (p. 565). Although the instructors are advised to read the *Aufgaben* sheet for each week, which allows them to learn the rationale for each activity type along with the students, the instructor info folder gives more detailed lists of duties and responsibilities relating to each assignment. Within the course, the other design element that directly involves the instructor is a dedicated chatroom built to serve as the instructor's virtual office. Each instructor is required to offer one hour per week of virtual office hours, as well as office hours by appointment, to accommodate working students. As part of their participation grade, students are required to attend virtual office hours twice each semester (cf. Aida, 1995).

Finally, it was determined that I, or, later, another doctoral student, would serve as the web-based program coordinator, analogous to the classroom-based basic language

program coordinator. Although the German Online at PSU courses are designed to be taught by novice web-based instructors, with extensive step-by-step instructions provided in weekly instructor info sheets, the web-based coordinator would be available to assist web-based instructors and their students with any technology-related issues which might arise. Also, in order to reduce the technology learning curve during the initial implementation phase, weekly technology workshops would be held. The goal of the weekly technology workshops was to discuss with the web-based instructors the rationale and relevance behind course activities. In addition to time pressures, Gillespie and Barr (2002) cite a lack of belief in course and activity relevance as one of the practical issues that most commonly results in staff resistance to web-based courses. The department was already fostering staff acceptance of the web-based courses by emphasizing that the opportunity to teach online is a valuable experience on the job market; the potential benefits to graduate instructors were a key topic of discussion during a departmental roundtable involving faculty and graduate students (Isenberg, 2006a). But the technology workshops offered more detailed discussion of how the German Online at PSU courses utilize various technologies in order to save instructor time. With the support of the classroom-based coordinator, the classroom-based graduate instructors were also required to attend the weekly technology workshops[12], in order to learn about basic technologies that are useful in both web-based and classroom-based modes, such as the web-based ANGEL grade book tool and the automated grammar exercises. Because both web-based and

[12] The weekly technology workshops were attended in lieu of a typical pedagogy workshop. The classroom-based coordinator, Dr. Hülya Yilmaz, was on hand for the technology workshops, in case any of the classroom-based instructors wished to consult her regarding issues specific to the classroom-based courses.

classroom-based instructors were in attendance, the weekly workshops doubled as a venue in which to synchronize the implementation of the curriculum across control (classroom-based) and treatment (web-based) sections. Further, by requiring the attendance of all basic language program instructors at the workshops, the entire graduate teaching staff became familiar with the rationale and relevance of the web-based courses. During the workshops and meetings, my goal was to serve as critical friend, leading instructors in reflection and analysis, a technique advocated by Lewis (2006), who recounts learning to teach French online at the Open University. Following the semester in which weekly technology workshops were held, web-based coordination has been conducted online, through email and ANGEL. D'Eça and González (2006) who discuss a teacher training initiative designed to move teachers from face-to-face teaching to online or blended teaching, say: "Our own experience has shown us that becoming an online student is the first step towards bridging that gap" (p. 569).

2.2.2.13 Final comments on the design work

In conclusion, the overarching design principle was to employ different media in a complementary fashion. Each medium has characteristics, such as ties to particular physical locations and synchronicity or asynchronicity, of which instructional designers need to be aware when choosing delivery systems (Berge, 1999). As Moore (1973) explains: "it is now known that there are specific teaching functions that each medium is best suited for" (p. 665). In the German Online at PSU initiative, the design process began with a needs analysis: what were the pedagogical objectives?

Then, the objectives noted in the needs analysis were matched to available tools, with the guiding question being: which tool or collection of tools empirically suggests themselves as successful mediators in the accomplishment of each objective? This sequence of design events is in keeping with Lynch's (2002) recommendation: "Too often, institutions begin their Web-based development process by selecting the tools first, then allowing the tools to determine the pedagogy…The selection of tools should come well after determining your need" (p. 101). Further, the German Online at PSU courses take a multi-system, multi-technology approach because "a distance language course is complex in totality. It involves interaction, guidance, feedback, support, the development of a learning environment…" (White, 2003, p. 39). To rely on a single system or technology would be equivalent to teaching a face-to-face course entirely in the oral mode – without a chalkboard, pencils and paper, textbooks, classroom furniture, an overhead projector, or the like. Of course, instruction can take place without these aids. But they undoubtedly make an instructor's job easier and the students' experience richer.

As a research project, the German Online at PSU courses were attempts to use "theory-driven design to generate complex interventions that can be improved through empirical study and that can contribute to more basic understanding of the underlying theory" (Baumgartner et al., 2003, p. 7). In the remainder of this dissertation, this theoretically-derived, technology-enabled pedagogical intervention will be gauged by its ability to achieve comprehensive language learning objectives, including oral proficiency development. The next chapter begins by presenting the design of the research.

Chapter 3: Research design

3.1 Introduction

As stated in section 1.2.1, the main objective of this dissertation is to answer the following research question: (1) Is it possible to develop viable, comprehensive, fully at-a-distance language courses, that is, courses without any face-to-face contact hours? Related to this first question is an additional question: (2) Do individual characteristics - namely age, semester standing, SAT scores (verbal, math, and total), previous course grades, and phonological working memory - and developmental outcomes correlate in either the classroom-based or web-based contexts and, if so, are these correlations similar or different in these two contexts? In order to address these questions, a quasi-experimental, design-based, developmental-outcomes-based study, involving individual differences and a range of developmental measures, was developed.

The study is quasi-experimental because the choice was made to use intact groups; participants were not randomly assigned to the treatment (web-based) and control (classroom-based) conditions. The study qualifies as design-based research because it acknowledges the complexity of the developmental ecosystem, including individual differences (chapter five) and modalities and consequent interactions (chapter two); the goal of design-based research "is to inquire more broadly into the nature of learning in a complex system and to refine generative or predictive theories" (Baumgartner et al., 2003, p. 7). Finally, the study looks directly at developmental outcomes. Studies of developmental outcomes are rare, as noted by Moore (1995) in the following observation:

> …the vast majority of research is atheoretical, and consequently of limited value. In this land of unbounded free speech, where every opinion is as weighty as any other, there remains a propensity for individuals to engage in ad hoc theorizing [sic], to offer fresh, naive descriptions in place of the more demanding work of filling in the theoretical spaces that have, over twenty years, become apparent. Of major importance, given the emergence of the new media, is the need to study course structures, dialogic procedures and learner behaviours [sic] when teleconferencing is used, with a view to refining or redefining the relationships between these variables that were established before these highly interactive media appeared (p. 36).

In other words, while the perceptions of learners and instructors are interesting and generally informative (Schlosser & Anderson, 1994, p. 23), perceptions may not accurately reflect development. Barr, Leakey, and Ranchoux (2005) compared two first-semester classes of conversational French; the control group met in a traditional classroom, while the treatment group met in a digital multimedia lab, in which they completed their course activities with minimal group discussion. Subject matter and teacher effect were controlled (Barr, Leakey, & Ranchoux, p. 69), and over a 10-week period, both groups made comparable gains in pronunciation, accent/intonation, content, fluency, accent, and grammar (p. 68). The treatment group reported very positive attitudes toward technology use, describing it as one of the most helpful, interesting aspects of the course (p. 71). However, these learners lagged behind the traditional learners with regard to content, fluency, and grammar (p. 67). Barr, Leakey, and Ranchoux conclude that "improving motivation on its own does not

mean that CALL is an effective pedagogical tool" (p. 71). Johnson and Buck (2007) report similar findings. Students in an introductory undergraduate psychology course were asked to complete the statement "I learned the case studies best when using X" with one of two options: synchronous or asynchronous discussion. Ironically, the students who felt that they learned best when practicing via synchronous chat had correctly answered fewer of the synchronously-discussed examination items than did students who reported a preference for asynchronous discussion. Perceptional surveys are particularly problematic when researching a novel technology. Reactions may be positively or negatively inflated, in a manner commonly referred to as "the implementation dip". In sum, it was decided that the best way to ascertain whether the German Online at PSU courses foster language development was to look at development directly. But since there is little consensus, even among language educators and researchers, as to what language proficiency is and which measures reflect it (cf. Bialystok, 1998), the present study assesses development by taking a core sample that cuts through varying methodologies and levels of observation.

3.2 Participants

3.2.1 Recruitment

Students enrolled in both web-based and classroom-based sections of basic German language at the Pennsylvania State University were invited to participate in the study. Each participant received a 1% increase in his or her final course grade for participation in the study as a whole. Students who did not wish to participate were offered an alternative assignment. Fifty-one students from the German basic language

program at the University Park campus were recruited.[13] All recruited students met the following selection criteria: (1) they had 20/20 or corrected to 20/20 vision, (2) they were between the ages of 18 and 25, and (3) they had not spent more than three weeks traveling in a German-speaking country.

3.2.2 Retention

Nine participants completed only the pre-treatment portion of the study. These participants failed to attend later appointments and were not responsive to emails and telephone calls to reschedule their appointments. Therefore, it was impossible to use data from these participants to ascertain developmental gains. One additional participant was asked to exit the study after the pre-treatment portion. During an initial appointment, it was discovered that this participant had, in fact, spent more than three weeks traveling in a German-speaking country. This participant was offered an alternative assignment.

3.3 Treatment (web-based) and control (classroom-based) conditions

The theoretically-derived pedagogical intervention has been described in detail in chapter two. To review, the treatment condition consisted of a fully web-based German-language course which included (a) self-study of text, audio, and video materials (section 2.2.2.4); (b) reading, writing, grammar, and listening activities with automated feedback (section 2.2.2.5); (c) a weekly, web-based, large-group discussion forum, commonly know as an electronic message board (section 2.2.2.6); (d) mobile language immersion (listening to two German pop songs per week on a

[13] The German basic language program at the University Park campus includes first-, second-, and third-semester courses.

portable audio player such as an iPod) (section 2.2.2.7); (e) speaking assignments submitted to the instructor and shared with classmates as podcast episodes (section 2.2.2.8); (f) two weekly 50-minute text-chat sessions, in peer-to-peer small groups and dyads (section 2.2.2.9); (g) three final exam components (section 2.2.2.10); (h) access to additional, supplementary websites (section 2.2.2.11); and (i) attendance at a minimum of two virtual office hours (2.2.2.12). In the control condition, the weekly speaking assignments and weekly text-chat sessions were replaced by four, 50-minute face-to-face sessions each week which included group study of the text and audio materials, speaking activities, and small group discussions. All other course components were identical across the two learning conditions. Sample syllabi for both conditions are provided in appendix A. For readers who wish to know more about the subject content of the courses, sample lessons are provided in appendix B, and achievement diagnostics are provided in appendix C.

Both the web-based and classroom-based courses lasted 15 weeks, making the study relatively longitudinal, in comparison to typical studies of technologically-enabled pedagogical interventions that range from a few hours to a few weeks in duration (Zhao, 2003, p. 13). All instructors attended the weekly technology workshops and agreed to conduct their sections in accordance with the study conditions, such that the only defining characteristics between the treatment (web-based) and control (classroom-based) sections were the weekly speaking assignments and text-based chat sessions in the treatment condition, and the face-to-face sessions in the control condition. None of the instructors knew which of their students participated in the research, since all research-related contact was handled by meor a

research assistant. In compliance with guidelines from the Office of Research Protections, I did not teach any of the sections.

3.4 Developmental measures

3.4.1 Introduction

The main research question, regarding the developmental efficacy of web-based provision, was operationalized through the following four sub-questions: (1): Do classroom-based and web-based learning contexts differentially support the development of vocabulary and grammar as measured by the German WebCAPE examination?: (2): Do classroom-based and web-based learning contexts differentially support the development of language processing capabilities as measured by speeded translation recognition reading times?; (3): Do classroom-based and web-based learning contexts differentially support the development of language processing capabilities as measured by speeded grammaticality judgment reading times?; (4): Do classroom-based and web-based learning contexts differentially support the development of oral proficiency as measured the Simulated Oral Proficiency Interview (SOPI), rated according to the Payne and Whitney (2002) 50-point scale? In order to answer these questions, four developmental tasks were administered pre- and post-treatment: the German version of the WebCAPE, a translation recognition task, a grammaticality judgment task, and a SOPI-based speaking task (the short version of the German Simulated Oral Proficiency Interview (*German Speaking Test*, 1995), rated according to Payne and Whitney's (2002) 50-point scale). The WebCAPE is a computer-adaptive placement examination designed at Brigham Young University and now routinely used as placement measure in post-

secondary basic-language programs worldwide (*Welcome to CAPE*). The translation recognition task, taken from the cognitive processing paradigm, requires participants to identify correct translations of German words. Also from the cognitive processing paradigm, the grammaticality judgment task requires participants to judge the grammatical correctness of various features of the German language. The German Simulated Oral Proficiency Interview (SOPI) is a performance-based, tape-mediated speaking test which has been validated as a reliable surrogate to the Oral Proficiency Interview (OPI) (Malone, 2000). The speech samples elicited on the short form of the SOPI were rated according to Payne and Whitney's (2002) 50-point scale (see appendix D).

3.4.2 WebCAPE task

In order to facilitate articulation between secondary and post-secondary language study, most post-secondary language programs administer placement tests to incoming students. As noted by Bernhardt, Rivera, and Kamil (2004), "the placement of students into courses in an effective and efficient manner is one of the primary challenges faced by large-scale university foreign language programs" (p. 356). One common solution is computer-based placement testing: "[l]arge mainframe computers have been used since the 1960's for analysis of test data and for the storage of items in databases, or item banks, as well as for producing reports of test results for test users" (Chapelle & Douglas, 2006, p. ix.). In the 1980's, computer-based testing was made more efficient by the development of computer-adaptive tests. One of the first adaptive, computer-based language placement tests, know as the Computer Adaptive

Placement Exam, or the CAPE, was authored and introduced at Brigham Young University (Chapelle & Douglas, p. 8). With the advent of the Internet, computer-adaptive tests became web-based; the CAPE became the WebCAPE.

Traditionally, issues of test taker access and administrative convenience and expense were associated with placement testing (Chapelle & Douglas, p. 25). Web-based testing, however, offers anytime, anywhere convenience for learners (Chapelle & Douglas, p. 107) and completely eliminates the instructor burdens of administration and grading, if the tests are unproctored and automated. For these reasons, many institutions have introduced web-based placement exams. In some instances, these exams are developed locally (e.g., Bernhardt, Rivera, & Kamil, 2004). Other institutions opt for externally-developed tests from reputable groups such as the Goethe Institute. At present, over 650 institutions, ranging from preparatory schools and public high schools to community colleges and Ivy-League universities, use the WebCAPE as their placement test (*Welcome to CAPE*). As of April 2005, the Spanish version had been administered 202,996 times, the French version 58, 499 times, and the German version 20, 875 times (*Welcome to CAPE*). The validity correlation coefficient for the German version, calculated using the MAPS test from ETS is 0.89, and the reliability (test-retest) coefficient is 0.80 (*Welcome to CAPE*).

The German version of the WebCAPE consists of a series of multiple-choice questions regarding vocabulary, grammar, and reading comprehension (Sanders, 2005b). The questions are drawn from an extensive test bank (Sanders). After the first six questions, which serve as "level checkers" (*Welcome to CAPE*), the remaining questions probe the

participant's capabilities by increasing or decreasing the level of difficultly of the question based upon the learner's response to the previous question. The task terminates if the participant incorrectly answers four questions at the same difficultly level or if the participant completes five questions at the highest possible difficultly level (*Welcome to the CAPE*).

3.4.3 Translation recognition task

Campbell, Dallaghan, Needleman, and Janosky (1997) argue that processing-dependent measures are crucial to reducing bias in language assessment. In their study of first-language abilities among 156 first-grade boys (67% African American, 31% White, 1% Asian, and 1% Native American), minority participants obtained significantly lower scores than majority participants on a knowledge- and experience-dependent test, but groups did not differ on any processing-dependent measures. In the present study, the translation recognition task offered one processing-dependent measure of learner development.

This particular translation recognition task was designed and piloted in spring 2006 by Dr. Carrie Jackson, a faculty member in the Department of Germanic and Slavic Languages and Literatures at University Park. The stimuli consisted of German words and their English translations (e.g., *Katze*/cat) or their non-translations (e.g., *Stadt*/star/circle/traffic/path/battle). All German words appeared in at least one well-known first-year German language textbook. There were 10 practice items, followed by 96 randomized task items. The task items included 48 German words and their correct translations (e.g., *Katze*/cat) and 48 German words and their non-translations

(e.g., *Stadt*/star/circle/traffic/path/battle/concert). The non-translations were lexical neighbors (e.g., *Stadt*/star), translation neighbors (e.g., *Stadt*/circle), semantic neighbors (e.g., *Stadt*/traffic), or an unrelated word (e.g., *Stadt*/path/battle/concert) which was, however, matched in length and Kucera-Francis written frequency (*MRC Psycholinguistic Database*) to one of the related non-translations (e.g., star/path, circle/battle, traffic/concert).

3.4.4 Grammaticality judgment task

Like the translation recognition task, the grammaticality judgment task offers a processing-dependent measure of learner development. This particular grammaticality judgment task was designed in fall 2006 and was piloted in late fall 2006 with learners at the end of their first- and third-semesters of study; it was designed specifically for this study. The stimuli consisted of short, three to four word German sentences. All words appeared in the first-year, introductory textbook *Deutsch: Na Klar!* (DiDonato, Clyde, & Vansant, 1999). There were two versions of the task, each containing 32 correct and 32 incorrect sentences. The sentences that were presented in their correct forms in version one of the task were presented in their incorrect forms in version two; the sentences that were presented in their incorrect forms in version one of the task were presented in their correct forms in version two. In both versions, there were eight practice sentences, followed by the 32 correct and 32 incorrect sentences. These 64 randomized items represented four conditions (cf. Van Hell, 2006), each containing a total of 16 items (eight correct and eight incorrect). The conditions are as follows (correct and incorrect examples of each are given in

parentheses): (1): condition one: number (singular/plural) agreement of determiners and nouns (Wir essen die Steaks./Wir essen eine Steaks.* - We eat the steaks./We eat a steaks.*); (2): condition two: subject/verb agreement (Katrin lernt Deutsch./Katrin lernen Deutsch.* - Katrin learns German./Katrin learn German.*); (3): condition three: word order (Ich muss Anna helfen./Ich muss helfen Anna.* - I must Anna help./I must help Anna.*); (4): condition four: gender agreement of determiners and noun (Die Tante ist klug./Das Tante ist klug. – The (feminine) aunt is clever./ The (neuter) aunt is clever.*). Conditions one and two represent grammatical parameters which are similar in English and German, although the morphology of subject/verb agreement in German is richer and thus more complex than the morphology of subject/verb agreement in English. Condition three represents a grammatical parameter – the second verb must be sentence final – which is in direct opposition to the English tendency for adjacency between the modal and the infinitive. Condition four represents a grammatical parameter which is not found in English.

3.4.5 SOPI-based speaking task

The German Speaking Test (GST), also known as the German Simulated Oral Proficiency Interview (SOPI) (*German Speaking Test*, 1995), is used by government agencies and the American Council on the Teaching of Foreign Languages (ACTFL) "to assess general speaking proficiency in a second language" (p. 5), by "elicit[ing] samples of speech that are ratable according to the ACTFL Guidelines" (p. 15). The SOPI, which is administered by cassette tape, is modeled on the more well-known Oral Proficiency Interview (OPI), which is administered in person. The SOPI was

selected for use in the present study because, like the WebCAPE, it is a widely used and recognized measure of oral proficiency development. In this study, however, the speech samples elicited on the tasks of the SOPI were rated according to Payne and Whitney's (2002) ten-point scale for the five categories of comprehension, fluency, vocabulary, syntax, grammar, and pronunciation (pp. 30-31).

As the final developmental measure, the SOPI-based speaking task is unique in three ways. First, it addresses an issue which is far more controversial than the first three measures: Do classroom-based and web-based learning contexts differentially support gains in oral proficiency? For many learners, educators, and administrators, the decision to accept or not to accept web-provision hinges on the response to this question. Second, the SOPI-based speaking task consists of items which simultaneously relate to all of the areas reflected in the previous three measures. The first developmental measure used in this study, the WebCAPE, consists of items relating to vocabulary, grammar, and comprehension; the WebCAPE assesses lexical, syntactic, morphological, and semantic development through item comprehension/recognition. The second measure used in this study, a speeded translation recognition task, consists of items relating to vocabulary and the speeded processing thereof; the translation recognition task assesses lexical development through speeded item comprehension/recognition. The third measure used in this study, a speeded grammaticality judgment task, consisted of items relating to grammar; the grammaticality judgment task assesses syntactic, morphological, and semantic development through speeded item comprehension/recognition. This final measure, the SOPI-based speaking task, consists of items relating to vocabulary,

grammar, comprehension, and processing, as well as additional areas such as pronunciation and fluency; the SOPI-based speaking task assesses lexical, syntactic, morphological, semantic, and phonological development. Finally, unlike any of the previous measures, the SOPI-based speaking task requires both comprehension/recognition (of aural prompts) and production. Gains on the first three developmental measures would show that a particular learning context supports a number of the components underlying oral production, but only this final measure – the SOPI-based speaking task – directly evaluates whether the learning context supports the synthesis of these and other abilities when learners are presented with the challenge of unrehearsed speech.

The SOPI-based speaking task consists of the 25-minute, short version of form A of the German SOPI (*German Speaking Test*, 1995). The task items, which are most often accompanied by a simple black-and-white illustration, require learners to ask basic questions or talk about everyday topics, such as school, family, friends, and daily routines. Instructions for each item are provided in English in the test booklet, but some items also included an aural prompt in German, which is not provided in written form in the test booklet. Thus, for these questions, the learner may glean a general idea about the nature of the item from the written English instructions, but he or she must also understand the aural German prompt in order to understand the specific details that are required in the response. The test booklet also notes how much time the learner will be given to prepare each answer (e.g., 0-20 seconds) and to produce each answer (e.g., 20-80 seconds).

As already noted, the speech samples elicited on the tasks of the SOPI were not rated according to the ACTFL scale (e.g., Novice-Low, Novice-Mid, Novice-High, Intermediate-Low, or Intermediate-Mid), because a preliminary analysis of the speaking task data revealed that a number of learners did not progress a full level on the ACTFL scale over the course of the semester. Thus Payne and Whitney's (2002) more fine-grained, 50-point scale, which focuses on the five categories of comprehensibility, fluency, vocabulary, syntax, grammar, and pronunciation (pp. 30-31), was used to rate the speaking task data. This 50-point scale is provided in appendix D. For each category, up to 10 points are possible; the highest possible score is 50 points, representing a perfect score in all five categories. Comprehensibility is operationalized as comprehensibility to a native speaker (Payne & Whitney, p. 30). Fluency is described in terms ranging from "very disjointed" to "some hesitations" to "hesitations only when appropriate" (Payne & Whitney, p. 30). Vocabulary usage is judged by breadth and appropriateness of terms (Payne & Whitney, p. 31). Syntax and grammar are described in terms ranging from "no systematic use of grammar and syntax rules" to "used few syntax structures, some grammar and syntax mistakes" to "used a variety of syntax and tenses" (Payne & Whitney, p. 31). Pronunciation is judged by general comprehensibility and the presence or absence of accent and errors. The rating of the speech samples according to Payne and Whitney's 50-point scale was done, by me, blindly and randomly, that is, all samples were mixed and then rated in no particular order.

Admittedly, the nature of the SOPI, and of the present SOPI-based task, only approximates live, spoken interaction. The shortcomings of the SOPI and the OPI are

an increasingly frequent topic of discussion among language educators (e.g., Mikhailova, 2007). Nevertheless, the OPI and SOPI continue to be recognized by most language programs as the premier measure of oral proficiency development. For this reason, and because of the convenience and low cost of the SOPI-based task, it was included in the present study.

3.5 Individual measures

3.5.1 Introduction

The second objective of this dissertation was to explore correlations between developmental outcomes and a range of individual characteristics in the fully web-based and fully classroom-based environments. The second objective was operationalized through the following five sub-questions: (1): Is the correlation between age and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (2): Is the correlation between semester standing and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (3): Is the correlation between SAT scores (verbal, math, and total) and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (4): Is the correlation between previous course grades and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (5): With regard to oral proficiency, is the positive correlation between phonological working memory and development weaker in the web-based condition, as in the hybrid/blended condition in Payne and

Whitney (2002)? In order to answer these questions, questionnaires on language background and technological background were administered. SAT scores (verbal, math, and total) were obtained from the undergraduate admissions office. Individual differences in working memory were ascertained through the nonword repetition task from Payne and Whitney (2002). The non word repetition task assesses working memory by measuring participants' ability to remember and manipulate sounds.

3.5.2 Age

Traditionally, many distance learners have been older, continuing adult students. Their maturity and self-discipline have often been cited as prerequisites to success in non-contiguous contexts. With the increasing incidence of non-contiguous study among the younger, 18-to-22-year-old demographic, the question arises whether age, as an index of maturity and self-discipline, is positively correlated to successful development and whether this correlation is stronger in a distance environment than in a classroom environment. The age data for the present study were collected as part of the biographical questionnaire. Participants were asked to provide their date of birth, from which their age, at the start of the semester, was calculated.

3.5.3 Semester standing

Like age, semester standing has been discussed as a possible prerequisite to successful non-contiguous study. Specifically, is it possible that more experienced students, that is, juniors and seniors, will be more successful in the stereotypically more challenging non-contiguous setting? If so, it would be expected that there exists

a positive correlation between semester standing and the developmental measures, such that as semester standing increases, development also increases. The semester standing data for the present study were collected as part of the background questionnaire administered at the beginning of the WebCAPE task. At both pre- and post-treatment administrations, participants were asked to select their current semester standing – freshman, sophomore, junior, or senior – from a drop-down list.

3.5.4 SAT scores

As every college-bound high school student in the United States knows, scores on the Scholastic Achievement Test, commonly known as the SAT, are a critical factor in one's acceptance into most post-secondary institutions. Whether these scores are directly related, however, to future achievement, is a separate question. If they were, it would be expected that a positive correlation could be observed between SAT scores and the developmental measures, such that as SAT scores increase, development also increases. The SAT data for the present study were obtained from university admission records, after obtaining participants' consent to access these data. For each participant, SAT math, SAT verbal, and SAT total scores were obtained.

3.5.5 Previous course grades

Like SAT scores and semester standing, previous course grades are sometimes considered to be indicators of future success, with high previous course grades serving as prerequisites to stereotypically more challenging non-contiguous learning

options. If previous course grades do relate to future developmental outcomes, one would expect to observe a positive correlation between the two variables. The previous course grade data for the present study were collected as part of the background questionnaire administered at the beginning of the WebCAPE task. At both pre- and post-treatment administrations, participants were asked to select their previous course grade from a drop-down list.

3.5.6 Phonological working memory

The final individual learner characteristic is phonological working memory, that is, the ability to cognitively maintain and manipulate phonological information. Payne and Whitney (2002) reported a stronger positive correlation between phonological working memory and oral proficiency development among classroom-based learners than among hybrid/blended learners. Thus, in the present study, phonological working memory was assessed in order to calculate this same correlation – between phonological working memory and speaking task gains.

The recognition-based, nonword repetition task used by Payne and Whitney (2002) consists of 24 English pseudo-words. This same task was used in the present study. In rating the test, each correctly identified stimulus was worth one point; the highest possible score was 24 points. Before the task begins, a research assistant reads aloud the task instructions, and the participant also reads the task instructions on the screen. Participants then listen to three sets of eight pseudo-words spaced with one second pauses. After each set has been read aloud, participants are presented with a computer screen containing the eight pseudo-words that they heard and eight additional

distractor pseudo-words. Participants are instructed to click on the pseudo-words that they heard and to disregard the additional words. Participants are instructed not to ask the research assistant for assistance unless a technical problem occurs.

Chapter 4: Developmental outcomes

4.1 Introduction

The primary objective of this dissertation is to ascertain whether it is possible to develop viable, comprehensive, full y at-a-distance language courses, that is, courses without any face-to-face contact hours. In order to consider this question, two treatment conditions were designed. The defining characteristic of the classroom-based (control) condition was the face-to-face sessions; there were four, 50-minute face-to-face sessions each week. The defining characteristics of the web-based (experimental) condition were (1) the text-based chats and (2) the podcast assignments; each week, there were two, 50-minute text-based chats and a single, one-to-three-minute recorded speaking assignment. Learners in the web-based condition had no face-to-face contact with instructors or peers, and learners in the classroom-based condition did not engage in any text-based chats and did not record weekly speaking assignments. The two conditions were identical in all other respects. Once the two conditions were designed, the primary objective was operationalized through the following four sub-questions: (1): Do classroom-based and web-based learning contexts differentially support the development of vocabulary and grammar as measured by the German WebCAPE examination?: (2): Do classroom-based and web-based learning contexts differentially support the development of language processing capabilities as measured by speeded translation recognition reading times?; (3): Do classroom-based and web-based learning contexts differentially support the development of language processing capabilities as measured by speeded grammaticality judgment reading times?; (4): Do classroom-based and web-based

learning contexts differentially support the development of oral proficiency as measured by the Simulated Oral Proficiency Interview (SOPI), rated according to the Payne and Whitney (2002) 50-point scale? In order to answer these questions, four developmental tasks were administered pre- and post-treatment: the German version of the WebCAPE, a translation recognition task, a grammaticality judgment task, and a SOPI-based speaking task (the short version of the German Simulated Oral Proficiency Interview (*German Speaking Test*, 1995), rated according to Payne and Whitney's (2002) 50-point scale).

This chapter consists of four sections (4.2 - 4.5). Each of the sections corresponds to one of the four, developmentally-related sub-questions. Each section begins with an overview of participants, materials, and procedures. The remainder of the section is devoted to task results, and these results are analyzed in order to ascertain whether statistically significant developmental gains occurred in each learning context and how those gains compare across the two contexts. First, the pre-test, post-test, and gain score distributions are shown in histogram form, described via descriptive statistics, and tested for normality and homogeneity. Second, the pre-test and post-test scores within each condition are compared by a dependent, one-tailed *t*-test or a Wilcoxon signed-rank test; these tests ascertain whether statistically significant development occurred in that learning context. Third, the gain scores from the two conditions are compared by an independent *t*-test, a Mann-Whitney *U* test, or an ANCOVA; these tests ascertain whether there is a statistically significant difference between the developmental gains achieved in the two learning contexts. The

conclusion of each section offers a summary of notable findings. The final section of this chapter offers a grand summary of all developmental results (section 4.6).

4.2 WebCAPE task

4.2.1 Method

4.2.1.1 Participants

The pre- and post-treatment WebCAPE tasks were completed by 35 participants. The gain scores of three participants were outliers to the overall gain score distribution and were excluded from the data set (see section 4.2.2.1.1). The WebCAPE data set thus consists of pre- and post-treatment data from 32 participants. The web-based group consisted of 16 students enrolled in German Online at PSU courses; nine participants were male, and seven participants were female. The classroom-based group consisted of 16 students enrolled in classroom-based courses; eight participants were male, and eight participants were female. Table 4.1 shows the minimum, maximum, mean, and median age and years of previous study of both groups.

variable	**condition**	***N***	**min**	**max**	***M***	***SD***	***Mdn***
age (in years)	web-based	16	18	22	20.38	1.20	20
	classroom-based	16	18	25	19.56	1.71	19
years of previous study	web-based	16	0	4.50	2.34	1.65	2.50
	classroom-based	16	0	4.50	2.75	1.69	3.50

Table 4.1: descriptive statistics, biographical information, WebCAPE task participants

The minimum ages are identical in the two groups. The maximum age observed in the classroom-based group (maximum = 25) is due to one 25-year-old participant. Otherwise, the maximum ages are identical in the two groups. Mean and median ages also appear to be similar across the two groups. The difference in mean ages is 0.82. The difference in median ages is one. Finally, the groups were statistically equivalent with regard to years of prior instruction (web-based: $M = 2.34$, $Mdn = 2.5$, $SD = 1.65$; classroom-based: $M = 2.75$, $Mdn = 3.50$, $SD = 1.69$). [14]

4.2.1.2 Materials

The German version of the WebCAPE consists of a series of multiple-choice questions regarding vocabulary, grammar, and reading comprehension (Sanders, 2005b). The questions are drawn from an extensive test bank (Sanders). After the first six questions, which serve as "level checkers" (*Welcome to CAPE*), the remaining questions probe the participant's capabilities by increasing or decreasing the level of difficultly of the question based upon the learner's response to the previous question. The task terminates if the participant incorrectly answers four questions at the same difficultly level or if the participant completes five questions at the highest possible difficultly level (*Welcome to the CAPE*).

[14] At the time of this study, placement issues within the German basic language program resulted in the blurring of distinct course levels. (These issues have since been corrected; instructors now confirm student placement decisions.) In the data collected for this study, it was found that course level was a meaningless individual variable, that is, course level groups were not distinct. In several cases, students enrolled in first-semester courses scored higher, on pre-test measures, than students in third-semester courses scored on the post-test measures. For example, on the speaking task, three first-semester students scored higher pre-treatment than did four of the third-semester students post-treatment. Thus, as in many studies of learning environments (e.g., Freed, Segalowitz, & Dewey, 2004; Segalowitz & Freed, 2004), the present study compares development across learning conditions without regard for course level but with regard for years of prior instruction (Freed, Segalowitz, & Dewey, 2004, pp. 281-282).

4.2.1.3 Procedures

The pre-treatment administration of the WebCAPE task occurred during weeks three through five of the 15-week semester. The post-treatment administration occurred during week 15 or the first two days of the final exam period (week 16). All administrations were individually proctored, in a quiet room. After listening to the research assistant read aloud a short description of the WebCAPE task, the participant completed a series of language background questions that are included at the beginning of the WebCAPE. After completing the background questions, the participants proceeded to the actual task questions. Participants were instructed not to ask the research assistant for assistance unless a technical problem occurred. Participants were informed that the task was not timed but that they were to work as quickly as possible, not spending too much time on any one item.

4.2.2 Results

4.2.2.1 Data analysis

4.2.2.1.1 Excluded participants

The pre- and post-treatment WebCAPE tasks were completed by 35 participants. During an initial exploration of the data, it was found that the gain scores of three participants were outliers to the overall gain score distribution. Figure 4.1 shows a boxplot of the WebCAPE gain scores, including the three outliers.

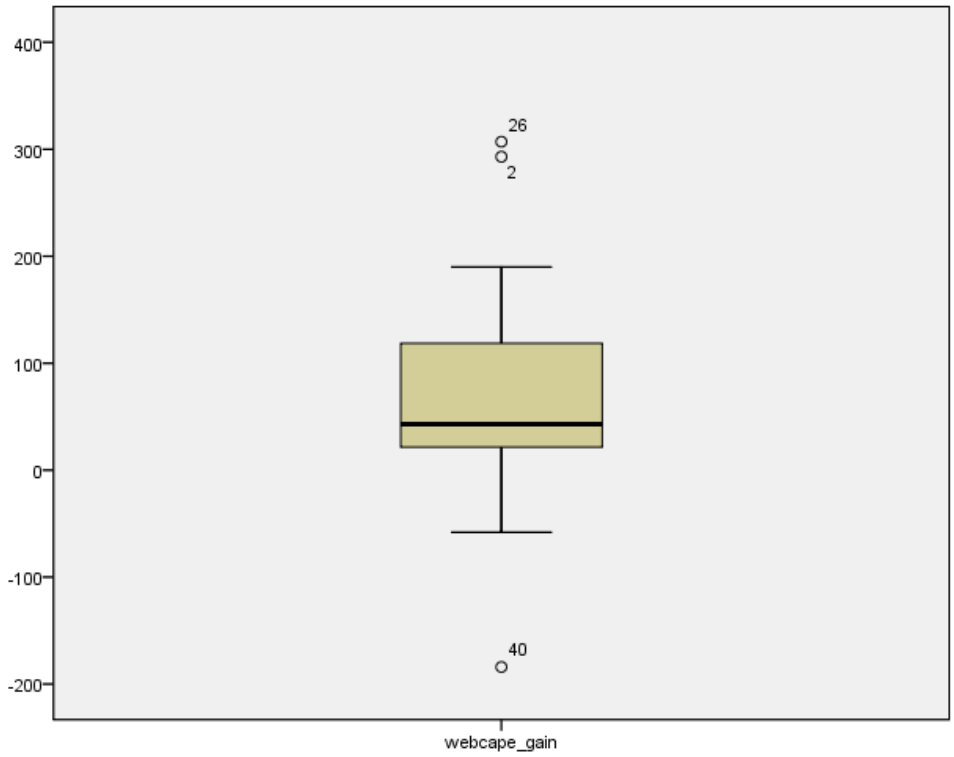

Figure 4.1: boxplot of WebCAPE gain scores for all participants

By biasing the mean and inflating the standard deviation, outliers weaken the statistical model that we fit to the data, greatly reducing the accuracy of our conclusions (Field, 2005, p. 67). For this reason, and because aberrant WebCAPE scores have been reported elsewhere (e.g., Kost 2004), the three outlying scores were trimmed (Field, 2005, pp. 78-79).

On a side note, the presence of only three outliers is excellent news for those language program coordinators and university administrators who are considering the use of the WebCAPE as a placement examination but who are concerned about the accuracy of the WebCAPE. In the present case, less than 9% of the gain scores were

outliers from the normal distribution. Looking at WebCAPE results in combination with the results of a second placement task would further reduce the potential for inaccurate placement.

Finally, in future studies, the ideal response to such outliers would be to do a qualitative case study of these participants. While it would not be possible to recognize outliers to the gain score distribution until the end of the treatment period, thus eliminating the possibility of asking a participant to retake the pre-test, it would be possible for a participant to retake the post-test. For those with negative gain scores (such as participant 40 in figure 4.1), if the raw post-test score was confirmed and the raw pre-test score appeared to be reliable (as compared to other performance data such as writing samples collected early in the semester), it would intriguing to explore why that particular learner regressed rather than progressed during the treatment period.

4.2.2.1.2 Histograms

Figure 4.2 shows the distribution of pre-test WebCAPE task scores for the web-based group. Figure 4.3 shows the distribution of pre-test WebCAPE task scores for the classroom-based group. Figure 4.4 shows the distribution of post-test WebCAPE task scores for the web-based group. Figure 4.5 shows the distribution of post-test WebCAPE task scores for the classroom-based group. Figure 4.6 shows the distribution of WebCAPE task gain scores for the web-based group. Figure 4.7 shows the distribution of WebCAPE task gain scores for the classroom-based group.

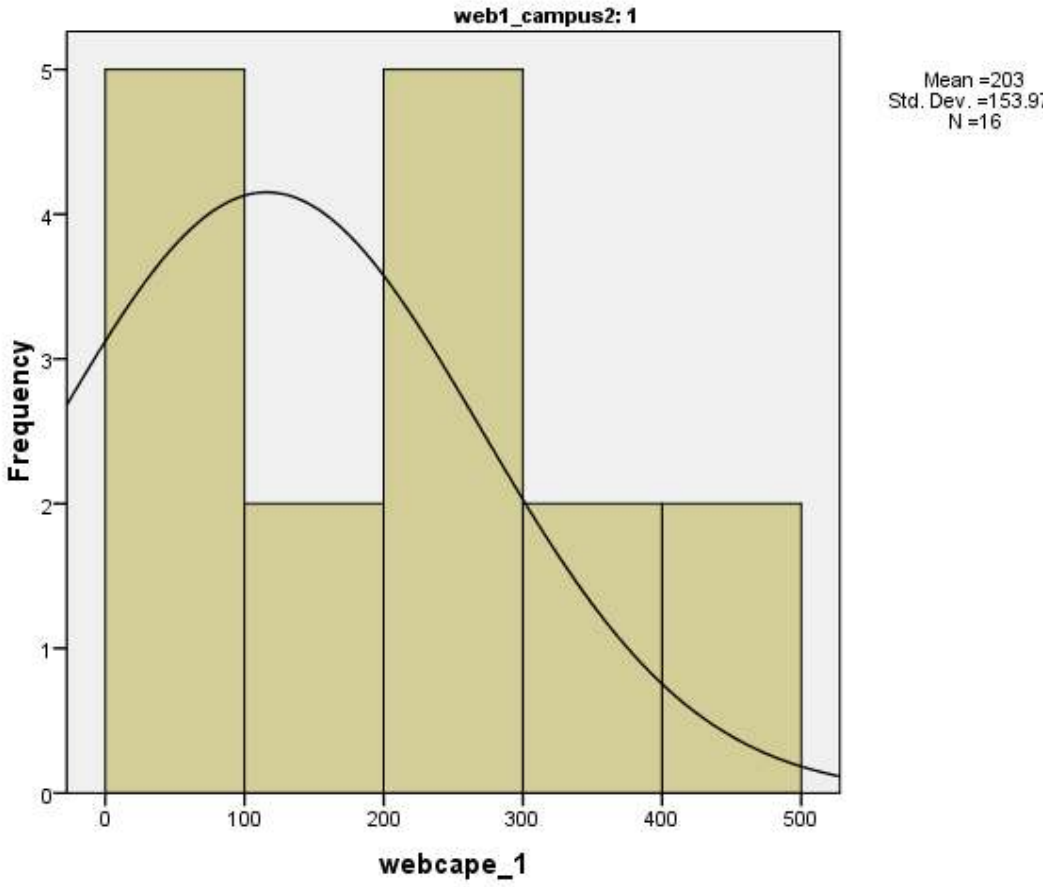

Figure 4.2: distribution of pre-test WebCAPE task scores, web-based group

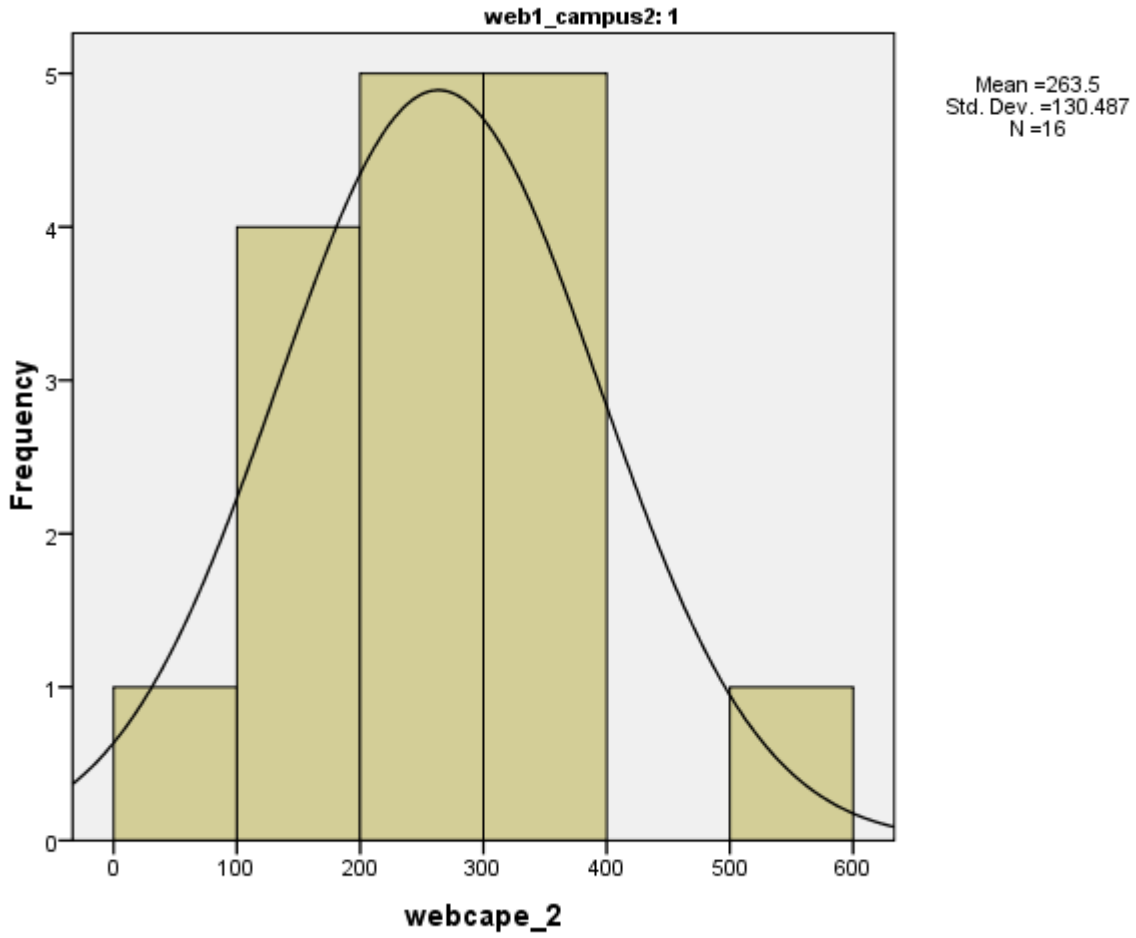

Figure 4.3: distribution of pre-test WebCAPE task scores, classroom-based group

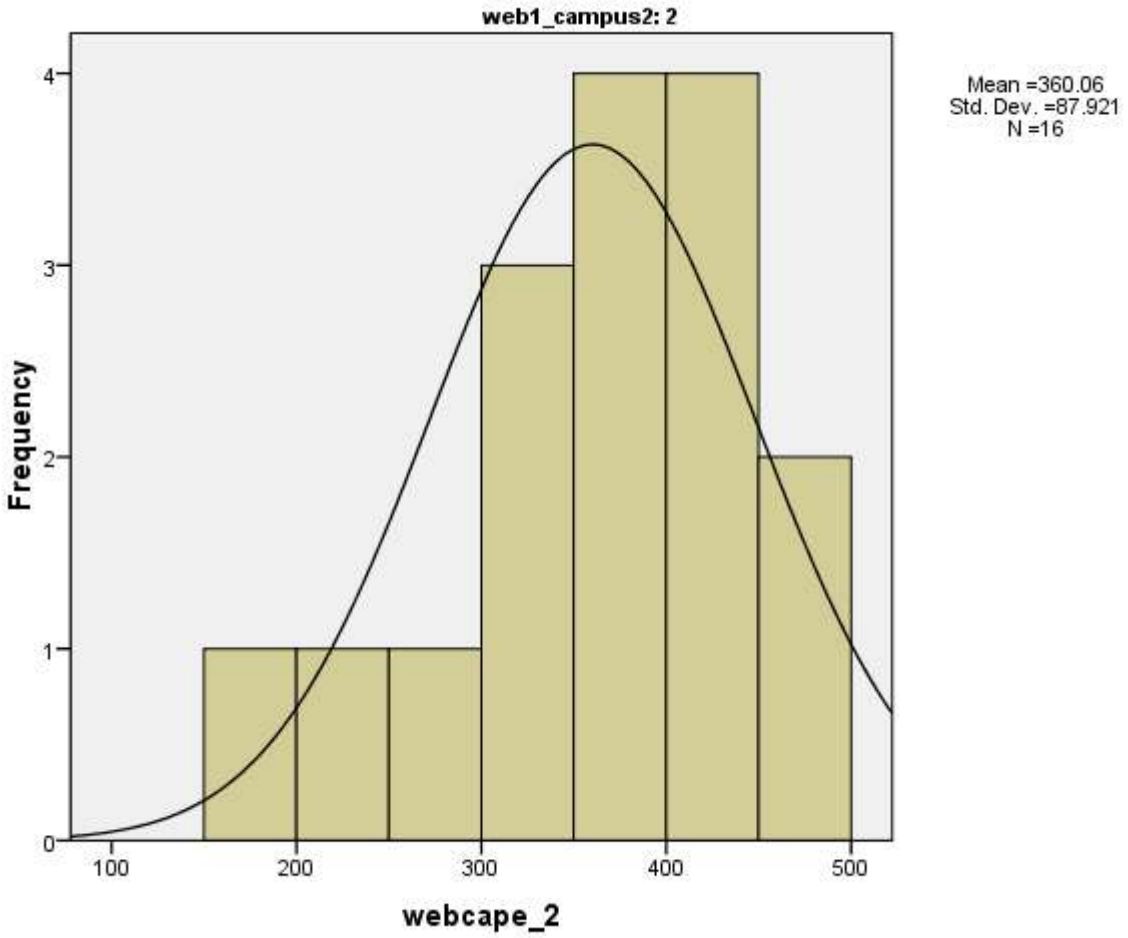

Figure 4.4: distribution of post-test WebCAPE task scores, web-based group

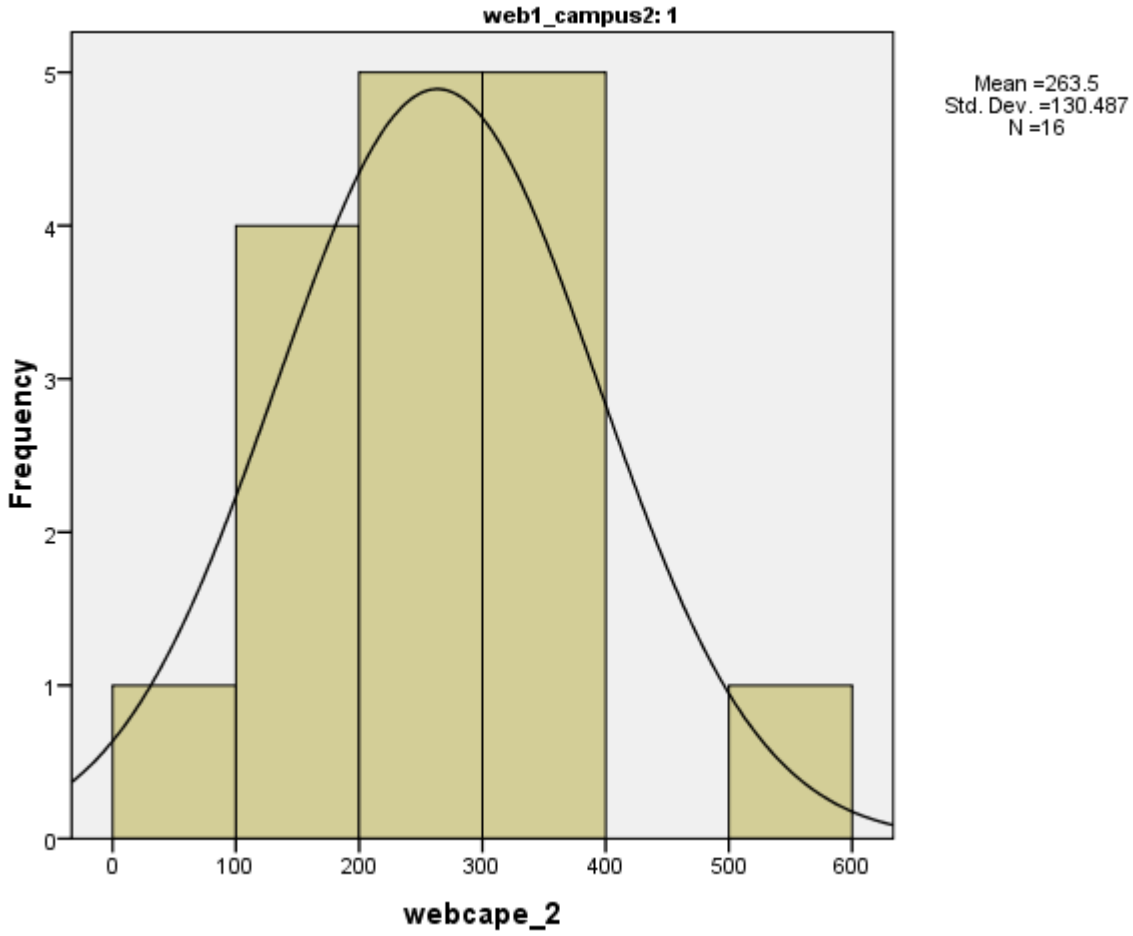

Figure 4.5: distribution of post-test WebCAPE task scores, classroom-based group

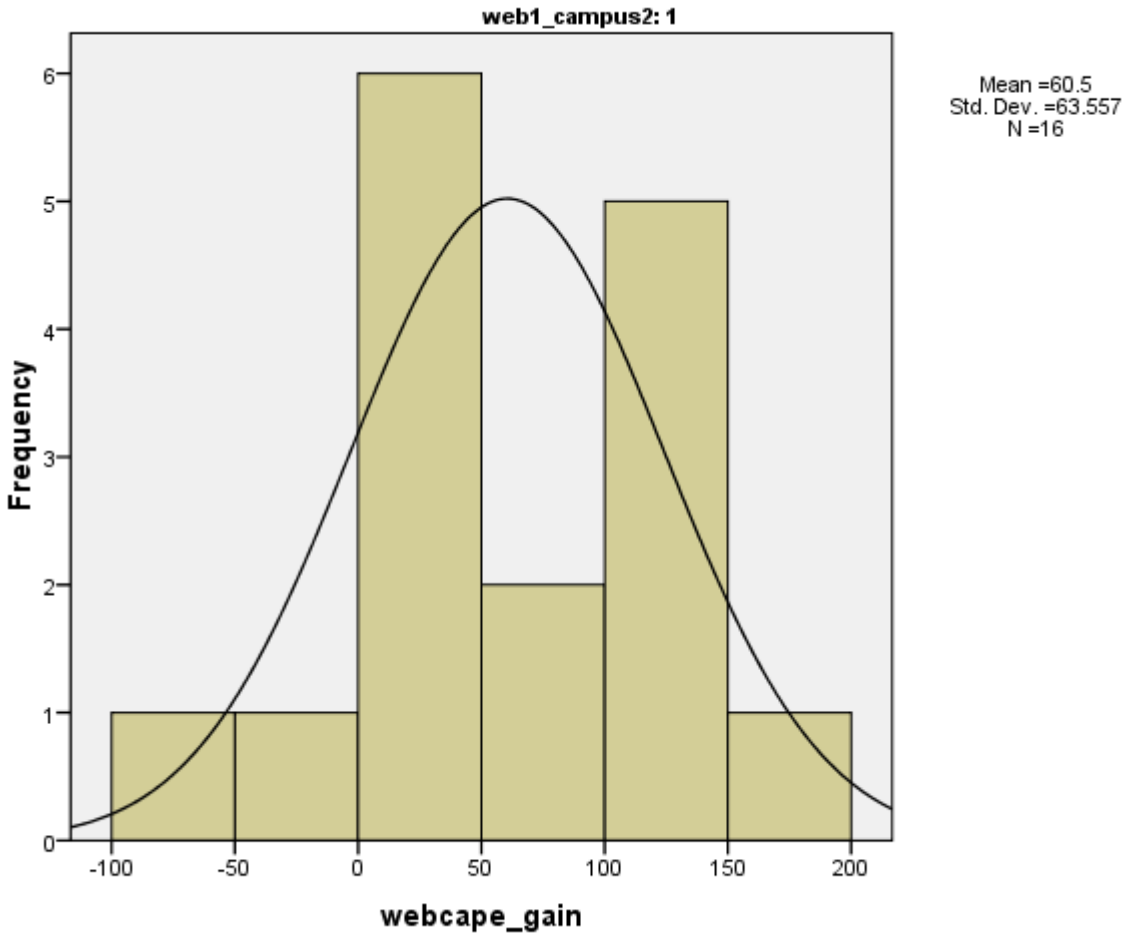

Figure 4.6: distribution of WebCAPE task gain scores, web-based group

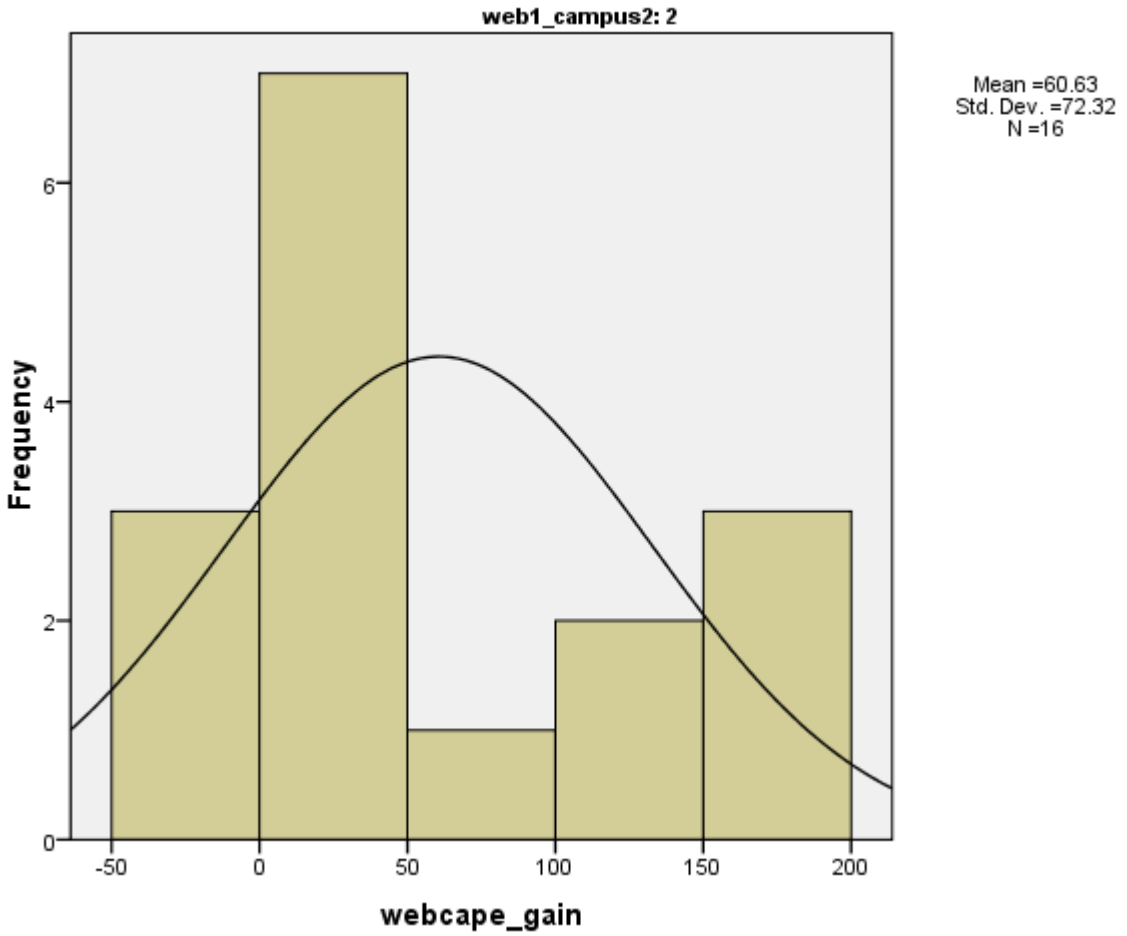

Figure 4.7: distribution of WebCAPE task gain scores, classroom-based group

4.2.2.1.3 Descriptive statistics

Table 4.2 shows the basic descriptive statistics (mean, standard error, median, and standard deviation) for the pre-test scores, the post-test scores, and the gain scores. The gain scores are noticeably similar across the two conditions. On average, web-based learners gained 60.50 points on the WebCAPE examination over the course of the semester. On average, classroom-based learners gained 60.62 points. Conversely,

the raw pre-test and post-test scores are less similar across the two conditions. Among web-based learners, the average pre-test score was 203.00. Among classroom-based learners, the average pre-test score was 299.44. This difference is statistically significant, suggesting that an ANCOVA, with post-test scores as the dependent variable, pre-test scores as the covariate, and learning context as the category/independent variable, would be best suited for the later comparison (section 4.2.2.1.6) of gain scores across the two conditions (cf. Payne & Whitney, 2002, p. 19).

Finally, although the standard deviations of the pre-test and post-scores are greater in the web-based condition (*SD* = 153.98 and 130.49, respectively) than in the classroom-based condition (*SD* = 107.18 and 87.92, respectively), the standard deviations of the gain scores are greater in the classroom-based condition (*SD* = 72.32) than in the web-based condition (*SD* = 63.53). This suggests that although the web-based learners began the semester at more varied starting points than did the classroom-based learners, each individual web-based learner made a more consistent gain than did each individual classroom-based learner.

variable / condition		*N*	Mean	Std. Error	Median	Std. Deviation
webcape 1	web	16	203.00	38.49	236.50	153.98
	classroom	16	299.44	26.80	344.00	107.18
webcape_2	web	16	263.50	32.62	281.00	130.49
	classroom	16	360.06	21.98	377.50	87.92
webcape_gain	web	16	60.50	15.89	45.00	63.56
	classroom	16	60.62	18.08	40.00	72.32

Table 4.2: descriptive statistics, WebCAPE data set

4.2.2.1.4 Tests of normality and homogeneity[15]

Table 4.3 shows tests of normality for the pre-test, post-test and gain scores for the web-based and classroom-based groups. These tests revealed that the distribution of pre-treatment (webcape_1) scores in the classroom-based condition is significantly non-normal ($D(11) = 0.327$, $p = .002$). Across the two conditions, Levene's test for equality of variances was not significant for the gain scores (webcape_gain).

[15] Tests of normality reveal whether data are normally distributed. If data are normally distributed, parametric tests – such as *t*-tests and ANCOVAs – may be used. Because the use of parametric tests is predicated upon the assumption of normally distributed data, the results of parametric tests are more powerful, that is, more robust, than the results obtained when non-parametric tests – such as Wilcoxon signed-rank tests and Mann-Whitney *U* tests – are conducted. Likewise, tests of homogeneity of variance check whether, when comparing between groups, the two data sets vary around the mean to the same degree, that is, whether "as you go through the levels of one variable, the variance of the other…[does] not change" (Field, 2005, p. 97). If the variances are homogenous, parametric tests may be used and more robust results achieved. If the variances are heterogeneous (and the data are not transformed to homogeneity), non-parametric tests will be used, and the results will be less robust (but more accurate than if a parametric test had been incorrectly conducted).

variable / condition		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
webcape_1	web	.156	16	.200*	.922	16	.180
	classroom	.327	11	.002	.801	11	.010
webcape_2	web	.156	16	.200*	.959	16	.639
	classroom	.200	11	.200*	.929	11	.405
webcape_gain	web	.138	16	.200*	.974	16	.897
	classroom	.234	11	.094	.902	11	.197
a. Lilliefors Significance Correction							
*. This is a lower bound of the true significance.							

Table 4.3: tests of normality, WebCAPE data set

4.2.2.1.5 Tests of development within conditions

Given the normality of the pre-treatment (webcape_1) and post-treatment (webcape_2) scores in the web-based condition, the changes within this condition were compared in a one-tailed, dependent *t*-test. Because four dependent comparisons were to be conducted (a comparison of pre-/post-treatment WebCAPE scores, a comparison of pre-/post-treatment translation recognition reading time scores, a comparison of pre-/post-treatment grammaticality judgment scores, and a comparison of pre-/post-treatment SOPI-based task scores in each condition), a Bonferroni correction of $\alpha = .05/4$ was made. Thus the significance at which each dependent

comparison was tested was $p < .013$.[16] The one-tailed, dependent *t*-test showed a significant, large improvement in WebCAPE scores in the web-based condition from the pre-treatment administration ($M = 203.00$, $SE = 38.49$) to the post-treatment administration ($M = 263.50$, $SE = 32.62$, $t(15) = -3.81$, $p = .004$, $r = .70$). Given the non-normality of the pre-treatment (webcape_1) scores in the classroom-based condition, the changes within this condition were compared using the dependent, non-parametric Wilcoxon signed-rank test. Once again, a Bonferroni correction of $\alpha = .05/4$ was made, and the comparison was tested at $p < .013$[17]. The one-tailed Wilcoxon signed-rank test revealed that despite the spreading and flattening of the post-treatment (webcape_2) scores in the classroom-based condition, there was still a significant, medium to large improvement in WebCAPE scores in the classroom-based condition from the pre-treatment administration ($Mdn = 344.00$) to the post-treatment administration ($Mdn = 377.50$), $T = 15$, $z = -2.74$, $p = .012$, $r = .48$.

4.2.2.1.6 Test comparing development between conditions

Given the significant difference in pre-test scores between the two groups, it was determined that an ANCOVA with post-test scores as the dependent variable and pre-test scores as the covariate was best suited to the comparison of gains across the two learning contexts (cf. Payne & Whitney, 2002, p. 19). Because four independent comparisons were to be conducted (a comparison of mean WebCAPE gain scores, a

[16] Bonferroni corrections were made to compensate for multiple comparisons, that is, repeated dependent tests of pre-/post-treatment scores derived from the same group of learners. The Bonferroni correction was chosen because it is the simplest such correction (Field, 2005, p. 339) and offers the greatest power when the number of comparisons is small (Field, p. 340).

[17] Again, Bonferroni corrections were made to compensate for multiple comparisons, that is, repeated independent tests of gain scores derived from the same two groups of learners.

comparison of mean translation recognition reading time decline scores, a comparison of mean grammaticality judgment reading time decline scores, and a comparison of mean oral proficiency gain scores across the two conditions), a Bonferroni correction of $\alpha = .05/4$ was made, and the comparison was tested at $p < .013$. Table 4.4 shows that the covariate, pre-test scores, was significantly related to the dependent variable, post-test scores, $F(1, 29) = 81.28$, $p = .00$, $r = .85$. There was no significant effect of treatment (learning context) on post-test score after controlling for the effect of pre-test score, $F(1, 29) = 1.53$, $p = .23$.

source of variation	**sum of squares**	***df***	**mean square**	***F***	**sig. of *F***
pre-test	273696.91	1	273696.92	81.28	.000
treatment	5159.61	1	5159.61	1.53	.226
error	97658.02	29	3367.52		
total	3556591.00	32			

a. *R* Squared = .781

Table 4.4: ANCOVA with post-test scores as the dependent variable and pre-test scores as the covariate, WebCAPE data set

4.2.2.2 Summary

Notable findings include the improvement in WebCAPE scores among learners in both conditions and the finding of no significant effect of treatment on post-test scores. The large effect sizes of both of these findings ($r = .70$ and $r = .85$, respectively) are also notable. The larger the effect size, the more likely that the variable under discussion (e.g., learning condition) accounts for the variance in performance (Field, 2005, p. 32). Therefore, the learning condition of participants in

this study (web-based or classroom-based) is very likely to account for variance in WebCAPE performance, and yet we see that learners in both environments perform equally well. This is excellent news for educators and administrators who are considering online provision. To conclude, the results from the WebCAPE data set suggest that the web-based environment of the German Online at PSU courses trains vocabulary, grammar, and reading comprehension as well as the classroom-based environment at Penn State's University Park campus. It should be noted that this conclusion extends Sanders' (2005b) finding of no significant difference between the post-treatment WebCAPE scores of learners in Brigham Young University's hybrid Spanish program and the post-treatment WebCAPE scores of their fully classroom-based counterparts.

4.3 Translation recognition task

4.3.1 Method

4.3.1.1 Participants

The pre- and post-treatment translation recognition tasks were completed by 33 participants. There were no outliers to the overall gain score distribution, but there was a discrepancy between the mean years of previous study of the two groups. For this task, the web-condition contained no participants with more than 4.0 years of previous study. Conversely, the classroom-based condition contained three learners each with 4.5 years of previous study. In order to match the groups and allow for an equivalent comparison, the data from these three participants was excluded (cf. Jackson, 2005, p. 57). The translation recognition data set thus consists of pre- and

post-treatment data from 30 participants. The web-based group consisted of 16 students enrolled in German Online at PSU courses; ten participants were male, and six participants were female. The classroom-based group consisted of 14 students enrolled in classroom-based courses; seven participants were male, and seven participants were female. Table 4.5 shows the minimum, maximum, mean, and median age and years of previous study of both groups.

variable	**condition**	***N***	**min**	**max**	***M***	***SD***	***Mdn***
age (in years)	web-based	16	18	22	20.31	1.20	20
	classroom-based	14	18	25	19.57	1.91	19
years of previous study	web-based	16	0	4.00	2.09	1.71	2.75
	classroom-based	14	0	4.00	2.71	1.40	3.50

Table 4.5: descriptive statistics, biographical information, translation recognition task participants

The minimum ages are identical in the two groups. The maximum age observed in the classroom-based group (max = 25) is due to one 25-year-old participant. Otherwise, the maximum ages are identical in the two groups. Mean and median ages also appear to be similar across the two groups. The difference in mean ages is 0.74. The difference in median ages is one. Finally, the groups were statistically equivalent with regard to years of prior instruction (web-based: $M = 2.09$, $Mdn = 2.75$, $SD = 1.71$; campus-based: $M = 2.71$, $Mdn = 3.50$, $SD = 1.40$).

4.3.1.2 Materials

The stimuli consisted of German words and their English translations (e.g., *Katze*/cat) or their non-translations (e.g., *Stadt*/star/circle/traffic/path/battle). All German words appeared in at least one well-known first-year German language textbook. There were 10 practice items, followed by 96 randomized task items. The task items included 48 German words and their correct translations (e.g., *Katze*/cat) and 48 German words and their non-translations (e.g., *Stadt*/star/circle/traffic/path/battle/concert). The non-translations were lexical neighbors (e.g., *Stadt*/star), translation neighbors (e.g., *Stadt*/circle), semantic neighbors (e.g., *Stadt*/traffic), or an unrelated word (e.g., *Stadt*/path/battle/concert) which was, however, matched in length and Kucera-Francis written frequency (*MRC Psycholinguistic Database*) to one of the related non-translations (e.g., star/path, circle/battle, traffic/concert).

4.3.1.3 Procedures

The pre-treatment administration of the translation recognition task occurred during weeks three through five of the 15-week semester. The post-treatment administration occurred during week 15 or the first two days of the final exam period (week 16). All administrations were computer-based and individually proctored in a quiet room. After listening to the research assistant read aloud a short description of the translation recognition task, the participant also read the task instructions on the screen. Participants were told that they would be presented with pairs of German-English words and were asked to press the blue "yes" button on the keyboard if the

second word was a translation of the first word or the red "no" button if the second word was not a translation of the first. The German word was always presented first in each pair. To begin, the participant completed a set of 10 practice items. After completing the set of 10 practice items, the participant was prompted to ask the research assistant any technical questions, and the research assistant reminded the participant to keep both hands on the response keys throughout the task. Participants then proceeded to the actual task questions. Participants were instructed not to ask the research assistant for assistance unless a technical problem occurred. Participants were asked to work as quickly as possible, not spending too much time on any one item. Like practice items, each actual trial began with the presentation, for 100 milliseconds (ms), of a blank, white screen, followed by the presentation of a black fixation mark (+). Upon pressing the space bar, the participant would be presented with the German stimulus for 400ms, followed by a blank, white screen for 50ms, followed by the second, English stimulus. The English stimulus remained on the screen until the participant pressed the "yes" or the "no" button. The entire sequence would then begin again, with the 100ms blank, white screen. The randomization and presentation of the items was done using the software program ePrime (*Psychology Software Tools*). The ePrime software program also recorded the accuracy and timing of the participant's responses, measuring reading time as the time from the onset of the second stimuli (the English translation or non-translation) to the pressing of the "yes" or the "no" button.

4.3.2 Results

4.3.2.1 Data analysis

4.3.2.1.1 Excluded participants

The pre- and post-treatment translation recognition tasks were completed by 33 participants. There were 16 web-based participants and 17 classroom-based participants. There were no outliers to the overall gain score distribution, but there was a discrepancy in the mean years of previous study of the two groups. For this task, the web-condition contained no participants with more than 4.0 years of previous study. Conversely, the classroom-based condition contained three learners each with 4.5 years of previous study. In order to match the groups and allow for an equivalent comparison, the data from these three participants was excluded (cf. Jackson, 2005, p. 57). The overall gain score distribution was checked once again, and there were no outliers.

4.3.2.1.2 Accuracy data

4.3.2.1.2.1 Introduction

For this dissertation, I have chosen to focus on the 48 items that were correct translations. The 48 "filler" items that were incorrect translations (e.g., *Stadt*/star/circle/traffic/path/battle/concert) were split between four conditions. Different variables (e.g., lexical relatedness, semantic relatedness) were manipulated within each "filler" condition, thus requiring that the twelve items for each of these conditions be considered separately (cf. Jackson, 2005, p. 61). The repeated measures ANOVA's that would be necessary to consider the items from these conditions

distinctly yet collectively are beyond the scope of this dissertation and would be suitable for a separate publication. In addition, although the accuracy data for the 48 items that were correct translations (e.g., *Katze*/cat) will be presented here, this is intended only as a brief overview. The present analysis focuses more on the processing-dependent reading time data, albeit for accurate items only.

4.3.2.1.2.2 Descriptive statistics

Table 4.6 shows the basic descriptive statistics (mean, median, standard error, and standard deviation) for the accurately identified, correct-translation items for both conditions. In table 4.6, "tr_acc1" stands for "translation recognition accuracy 1", "tr_acc2" stands for "translation recognition accuracy 2", and "tr_acc_gain" stands for "translation recognition accuracy gain".

variable	condition	*N*	min	max	*M*	*Mdn*	Std. Error	*SD*
tr_acc1	web-based	16	22.00	41.00	33.19	34.00	1.37	5.50
	classroom-based	14	27.00	47.00	38.29	38.00	1.61	6.01
tr_acc2	web-based	16	27.00	42.00	35.97	36.25	1.04	4.17
	classroom-based	14	25.00	42.00	37.21	37.75	1.22	4.56
tr_acc_gain	web-based	16	-1.00	13.00	2.78	1.25	0.99	3.97
	classroom-based	14	-6.50	11.00	-1.07	-2.25	1.29	4.81

Table 4.6: accuracy statistics, translation recognition task, 48 correct-translation items

On the pre-test, the average web-based participant was 69.15% accurate in identifying the correct-translation pairs. On the post-test, the average web-based participant was 74.94% accurate in identifying the correct-translation pairs. This means that there was

an average 5.79% increase in accuracy among web-based participants. Conversely, on the pre-test, the average classroom-based participant was 79.77% accurate in identifying the correct-translation pairs. On the post-test, the average classroom-based participant was 78.65% accurate in identifying the correct-translation pairs. This means that there was an average 1.12% decrease in accuracy among classroom-based participants. The accuracy gain among web-based participants will not be statistically compared to the accuracy decline among classroom-based learners in the present analysis, since accuracy in vocabulary has already been considered on the WebCAPE and the focus of the analysis of the translation recognition task data set is the processing-dependent reading times.[18]

4.3.2.1.3 Trimming procedures

In keeping with previous reading time research standards (cf. Jackson, 2005, p. 81), individual reading times that were less than 300 milliseconds and more than 3000 milliseconds were trimmed. A response that occurs in less than 300 milliseconds or more than 3000 milliseconds is likely to be the result of a momentary lapse of concentration (Jackson), a finger twitch, or a distraction in the laboratory setting.

[18] In addition, this translation recognition task accuracy information was added post hoc at the request of a reviewer. Because a number of other comparisons between the two conditions had already been completed, the addition of another statistical comparison (between changes in accuracy across the two conditions) would have required an adjustment to the Bonferroni correction across all tests and would have further decreased the power of each test, that is, increased the risk of Type II errors.

4.3.2.1.4 Reading time results

4.3.2.1.4.1 Histograms

Figure 4.8 shows the distribution of pre-test translation recognition task reading times for the web-based group. Figure 4.9 shows the distribution of pre-test translation recognition task scores for the classroom-based group. Figure 4.10 shows the distribution of post-test translation recognition task reading times for the web-based group. Figure 4.11 shows the distribution of post-test translation recognition task reading times for the classroom-based group. Figure 4.12 shows the distribution of declines in translation recognition task reading times for the web-based group. Figure 4.13 shows the distribution of declines in translation recognition task reading times for the classroom-based group.

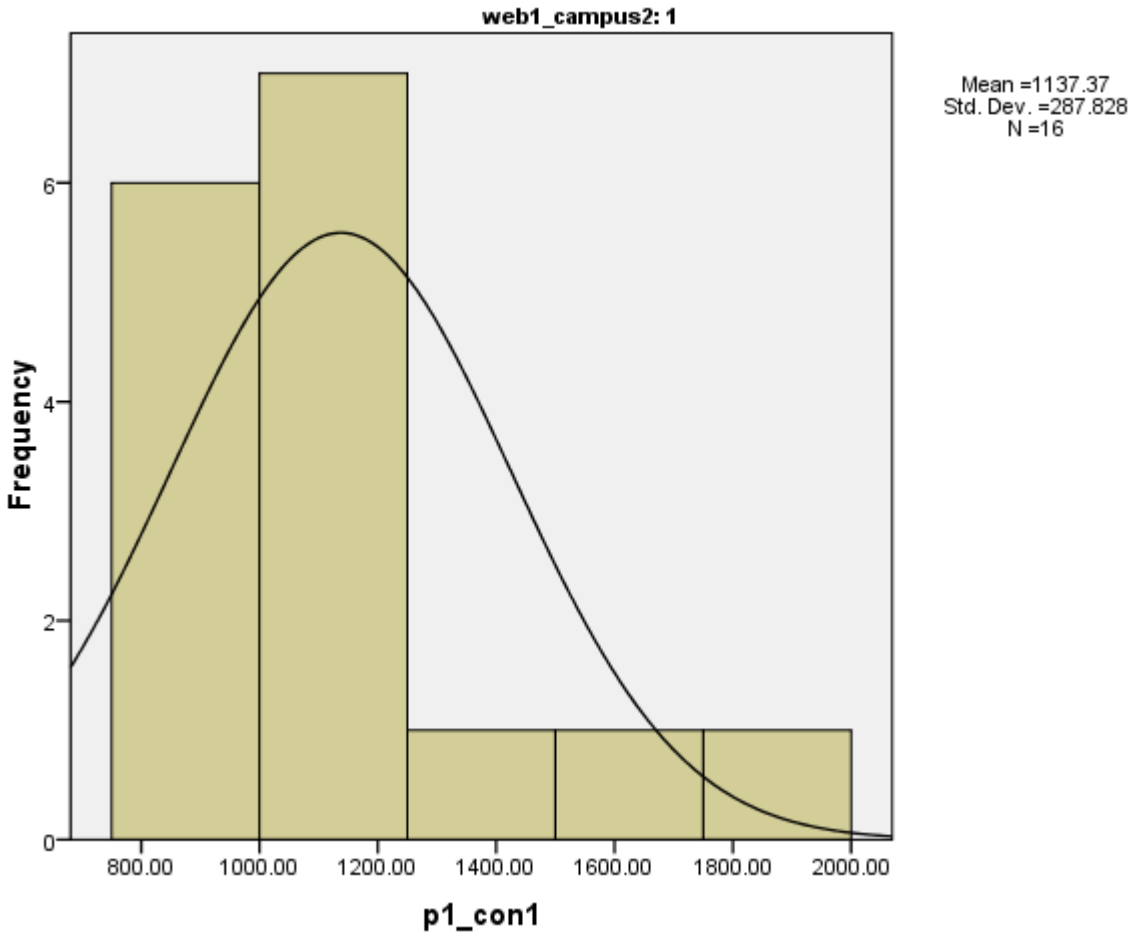

Figure 4.8: distribution of pre-test translation recognition task reading times, web-based group

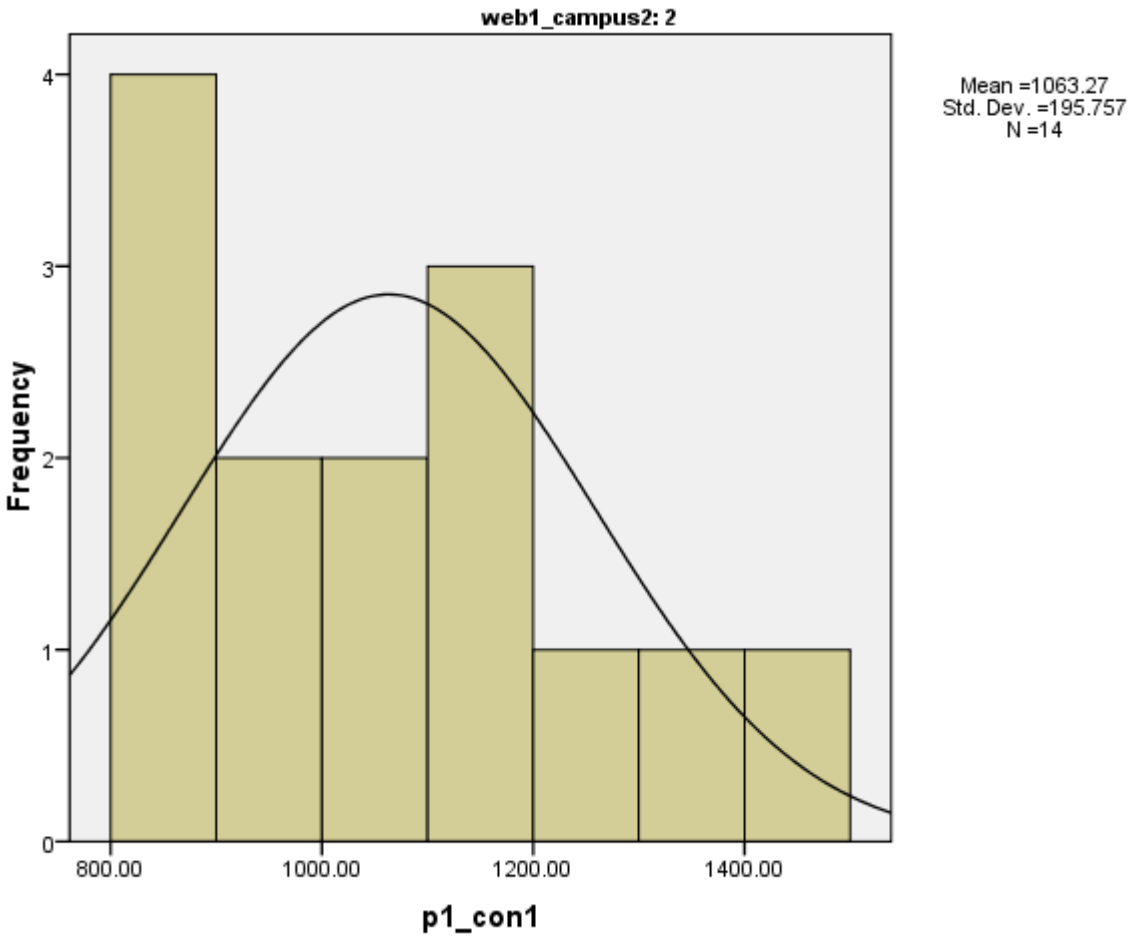

Figure 4.9: distribution of pre-test translation recognition task reading times, classroom-based group

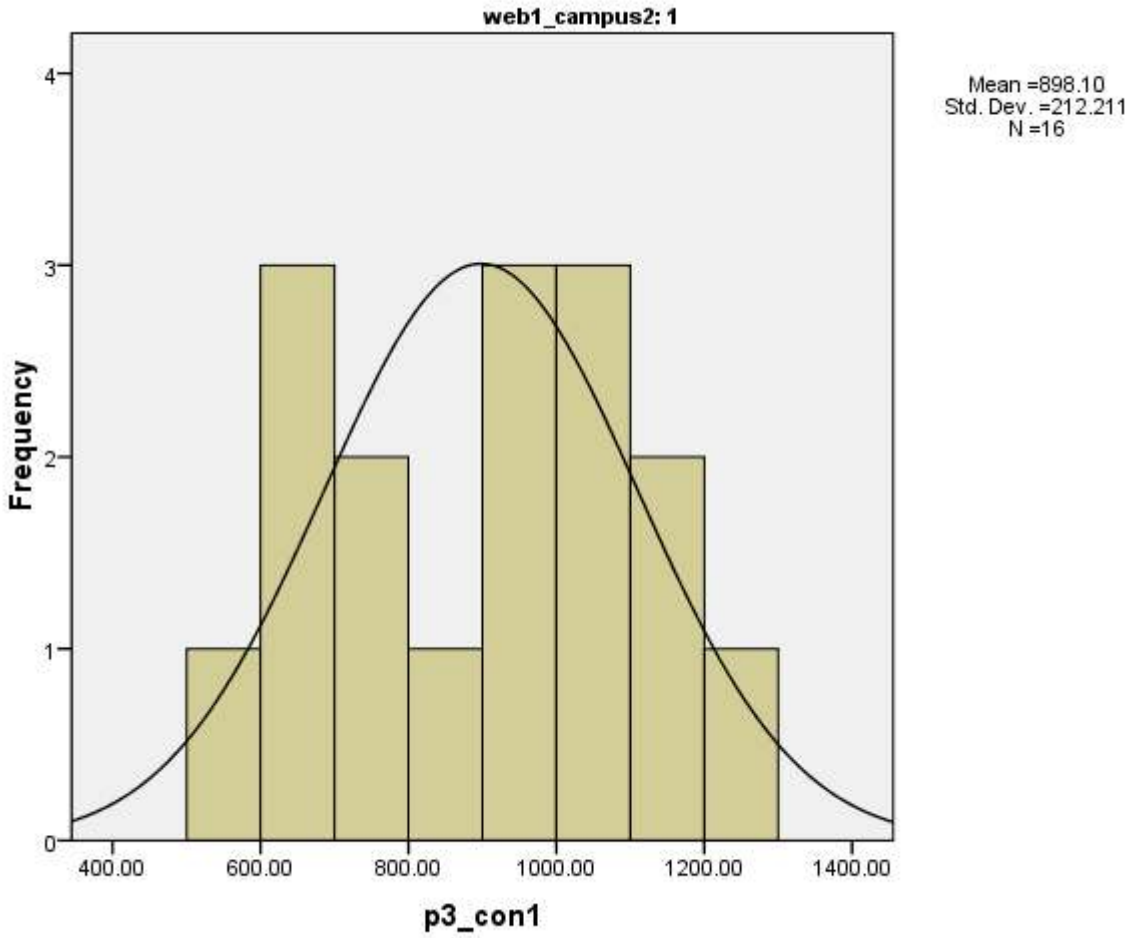

Figure 4.10: distribution of post-test translation recognition task reading times, web-based group

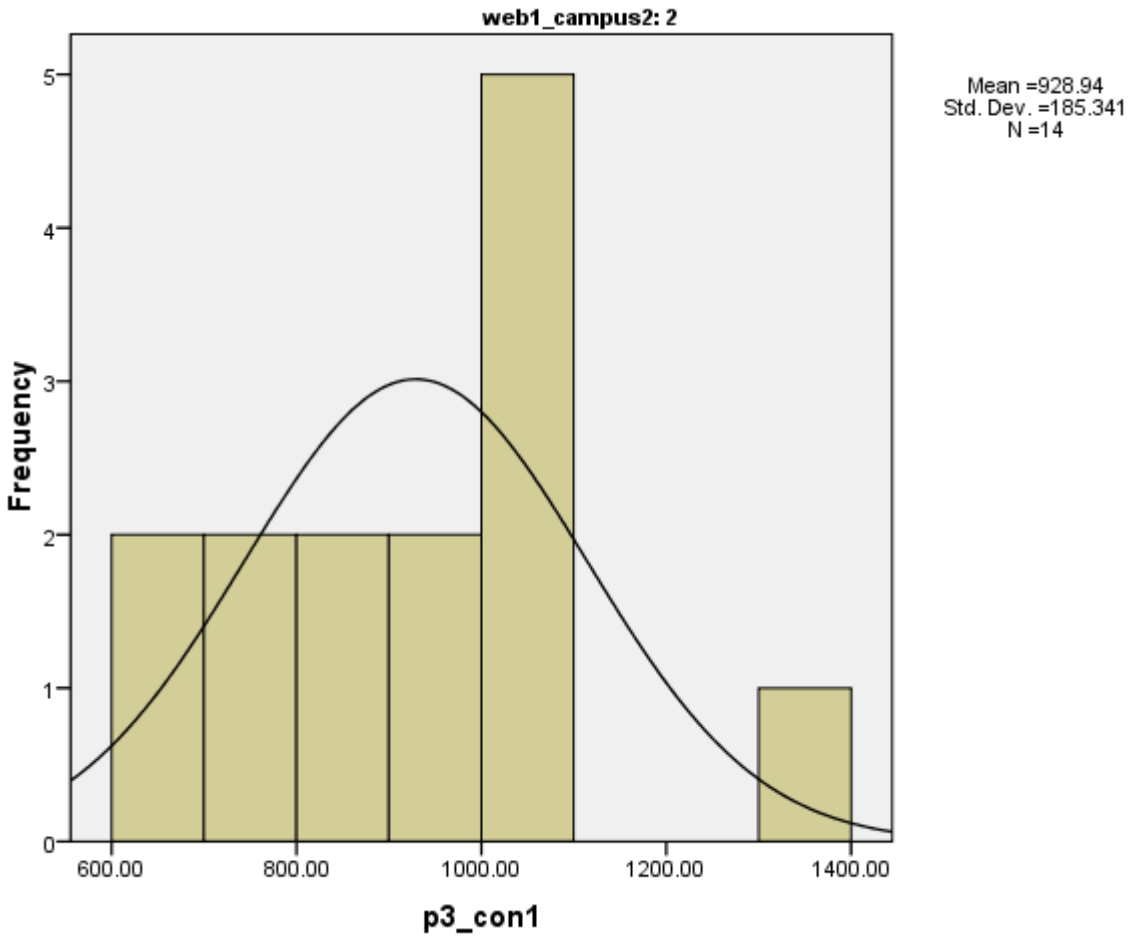

Figure 4.11: distribution of post-test translation recognition task reading times, classroom-based group

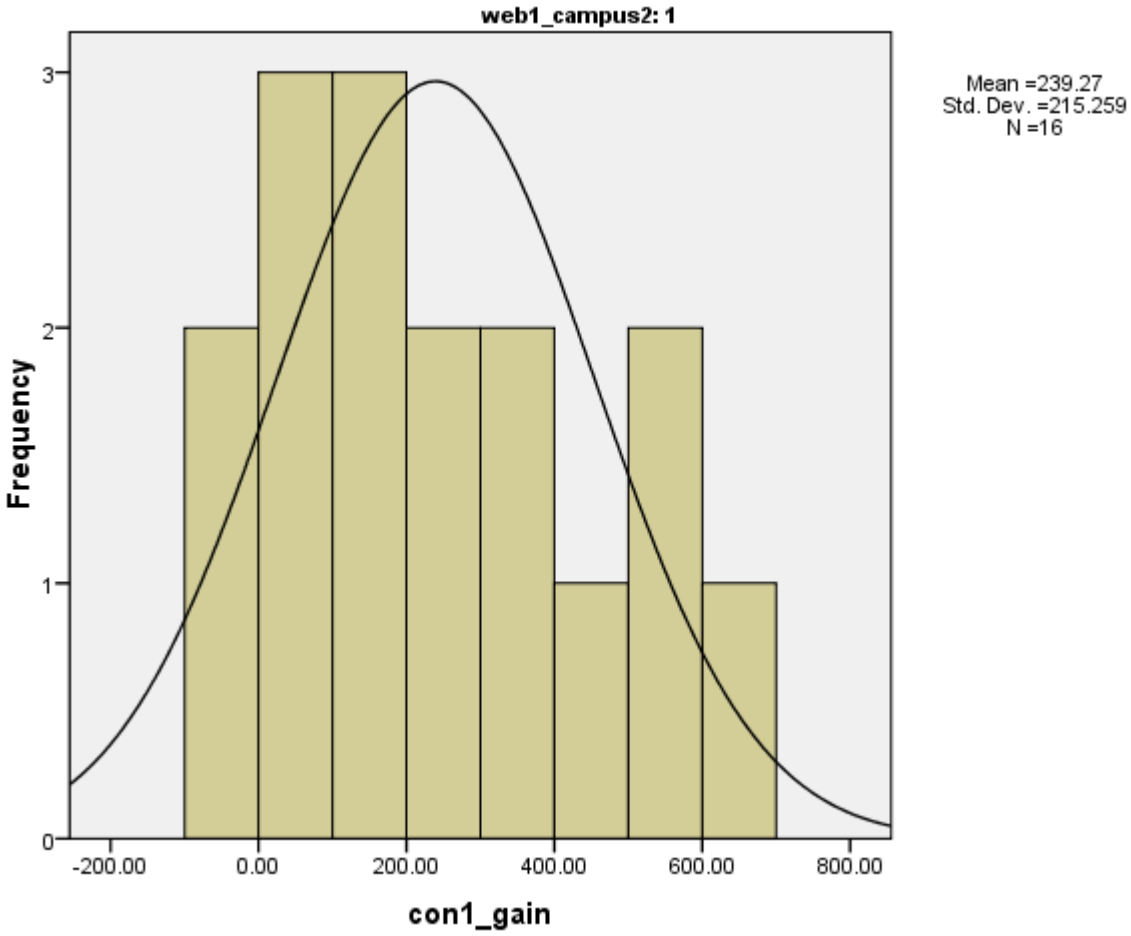

Figure 4.12: distribution of declines in translation recognition task reading times, web-based group

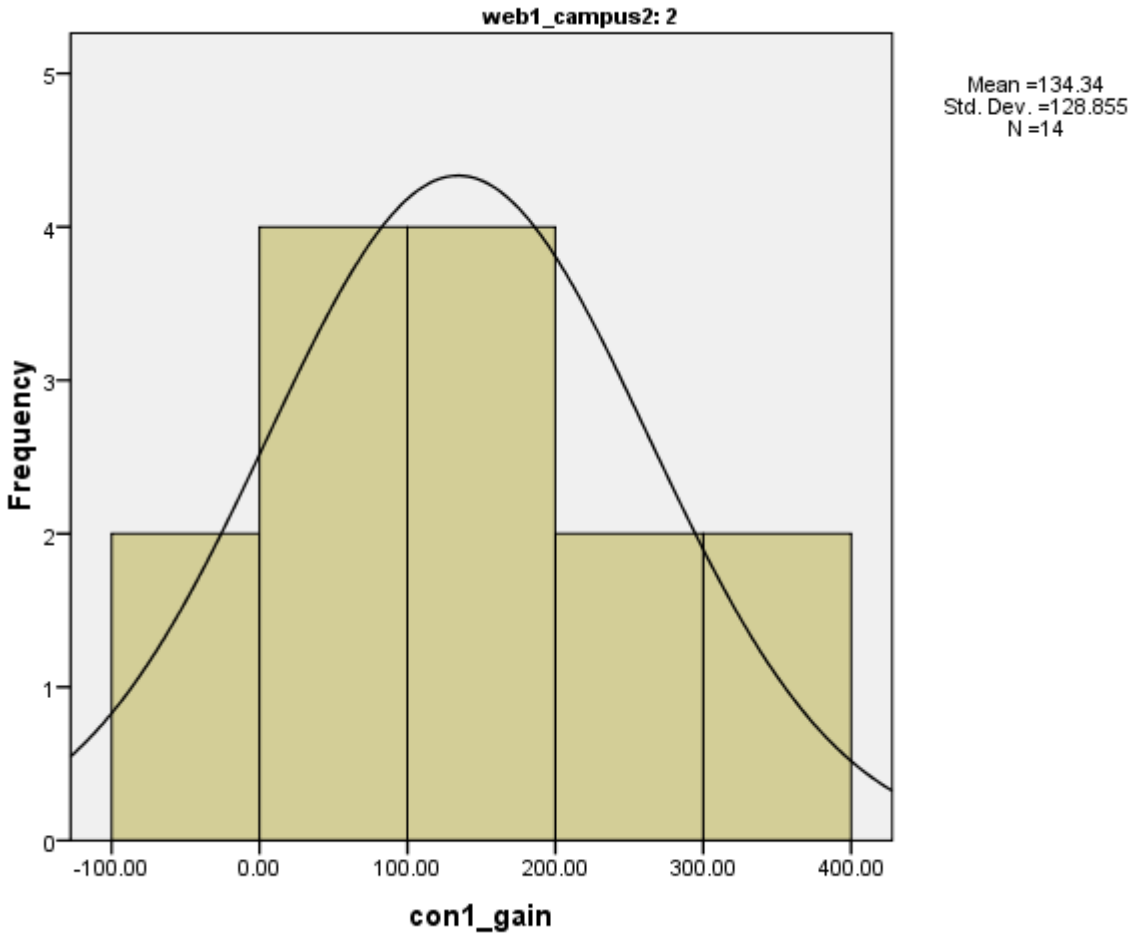

Figure 4.13: distribution of declines in translation recognition task reading times, classroom-based group

4.3.2.1.4.2 Descriptive statistics

Table 4.7 shows the grand mean, median, standard error, and standard deviation for pre-treatment reading times, post-treatment reading times, and declines in average reading time, for the web-based and classroom-based conditions. In table 4.7, "tr_rt1" stands for "translation recognition reading time 1", "tr_rt2" stands for "translation

recognition reading time 2", and "tr_rt_decline" stands for "translation recognition reading time decline".

condition / variable		*N*	Mean	Median	Std. Error	Std. Deviation
web	tr_rt1	16	1137.3661	1115.1783	71.95710	287.82841
	tr_rt2	16	898.0980	920.3111	53.05273	212.21090
	tr_rt_decline	16	239.2681	190.2203	53.81472	215.25889
classroom	tr_rt1	14	1063.2739	1042.2539	52.31825	195.75696
	tr_rt2	14	928.9362	992.7824	49.53455	185.34132
	tr_rt_decline	14	134.3377	112.8232	34.43804	128.85535

Table 4.7: descriptive statistics, translation recognition task data set

Declines appear to be slightly greater in the web-based condition (web-based condition: M = 239.27; classroom-based condition: M = 134.34). Pre-test scores for the two conditions also differ, but not significantly (web-based condition: M = 1137.37; classroom-based condition: M = 1063.27).

4.3.2.1.4.3 Tests of normality and homogeneity

Tests of normality (table 4.8) reveal that in the web-based condition, the distribution of pre-treatment scores is significantly non-normal ($D(16) = 0.249$, $p = 0.009$).

condition / variable		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
web	tr_rt1	.249	16	.009	.877	16	.035
	tr_rt2	.128	16	.200*	.952	16	.520
	tr_rt_decline	.141	16	.200*	.941	16	.364
classroom	tr_rt1	.130	14	.200*	.942	14	.445
	tr_rt2	.194	14	.162	.932	14	.326
	tr_rt_decline	.104	14	.200*	.969	14	.868

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Table 4.8: tests of normality, translation recognition task data set

Of interest, however, is the fact that the significant positive (left) skewness ($S = 2.51$, $p <. 05$) and significant positive (pointy) kurtosity ($K = 2.18$, $p <. 05$) of the pre-treatment scores in the web-based condition disappear by the time of the post-treatment administration. The distribution of post-treatment scores in the web-based condition is not significantly skewed ($S = .62$, $p > .05$) and tends toward significant negative (flat) kurtosity ($K = -1.12$, $p >. 05$). In other words, although web-based pre-treatment scores clustered around the lower end of the score distribution, the gains among the web-based participants were great enough to normalize the distribution by the time of the post-test. Across the two conditions, Levene's test for equality of

variances was significant for the gain (tr_rt_gain) scores (F = 5.22, p = .03), suggesting significantly greater variation in gains in the web-based condition.

4.3.2.1.4.4 Tests of development within conditions

Given the non-normality of the pre-treatment (tr_rt1) scores in the web-based condition, the changes within this condition were compared in a non-parametric, dependent Wilcoxon signed-rank test. The same Bonferroni correction of $\alpha = .05/4$ was made, and the comparison was tested at $p < .013$. The one-tailed Wilcoxon signed-rank test revealed, in keeping with the rightward spreading and flattening of the distribution of post-treatment scores (tr_rt2) in the web-based condition, that there was a significant, large decline in reading times in the web-based condition from the pre-treatment administration (Mdn = 1115.18) to the post-treatment administration (Mdn = 920.31), T = 7, z = -3.15, p = .001, r = .56. A one-tailed, dependent t-test also showed a significant, large decline in reading times in the classroom-based condition from the pre-treatment administration (M = 1063.27, SE = 52.32) to the post-treatment administration (M = 928.94, SE = 49.53, $t(13) = 3.90$, p = .001, r = .73).

4.3.2.1.4.5 Test comparing development between conditions

Because the reading time decline scores are not homogenous in their variances (F = 5.23, p = .03), the changes across conditions were compared with a Mann-Whitney U test. The same Bonferroni correction of $\alpha = .05/4$ was made, and the comparison was tested at $p < .013$. The Mann-Whitney U test of improvement scores revealed that there was no significant difference between declines in translation recognition reading

time in the web-based condition (*Mdn* = 190.22) and the classroom-based condition (*Mdn* = 112.82), *U* = 82.00, *p* = .106, *r* = .23.

4.3.2.2 Summary

Notable findings include the decline in reading times among learners in both conditions, the large effect size of this improvement in both conditions (web-based condition: *r* = .56; classroom-based condition: *r* = .73; cf. Sunderman, 2002, p. 73), and the finding of no significant difference in the reading time declines across the two conditions. Indeed, reading time declines are approximately one hundred points greater in the web-based condition (web-based condition: *M* = 239.27; classroom-based condition: *M* = 134.34). These findings collectively suggest that, like the classroom-based environment at Penn State's University Park campus, the web-based environment of the German Online at PSU courses trains deeper, processing-dependent abilities such as speeded translation recognition decisions, which are indices of proficiency (Sunderman).

4.4 Grammaticality judgment task

4.4.1 Method

4.4.1.1 Participants

The pre- and post-treatment grammaticality judgment tasks were completed by 35 participants. During data exploration, data from seven participants were trimmed (see section 4.4.2.1.1). The grammaticality judgment task data set thus consists of pre- and post-treatment data from 28 participants. There are three outliers to the distribution of

reading time decline scores, all representing participants with above-average declines in reading time. The outliers were not trimmed for several reasons. First, in keeping with previous research standards, individual reading times less than 1000 milliseconds and greater than 10,000 milliseconds had already been trimmed, eliminating the possibility that these outliers were the result of coincidentally accurate finger twitches or the like. Second, unlike the WebCAPE, this task was administered via ePrime and there is no record of occasionally aberrant responses due to technical errors on the part of the ePrime interface. Third, the laboratory notes and all coding were checked for human error, and no plausible causes for the three outliers were found (cf. the trimming of three WebCAPE scores in section 4.2.2.1.1). Finally, all outliers were in the same direction, and the two outliers belonging to the classroom-based condition were not, in fact, outliers to the distribution of decline scores for that condition, suggesting that they were not entirely unrepresentative.

The web-based group consisted of 11 students enrolled in German Online at PSU courses; six participants were male, and five participants were female. The classroom-based group consisted of 17 students enrolled in classroom-based courses; seven participants were male, and 10 participants were female. Table 4.9 shows the minimum, maximum, mean, and median age and years of previous study of both groups.

variable	condition	*N*	min	max	*M*	*SD*	*Mdn*
age (in years)	web-based	11	18	22	20.36	1.03	20
	classroom-based	17	18	25	19.59	1.80	19
years of previous study	web-based	11	0	4.00	2.41	1.79	3.50
	classroom-based	17	0	4.50	2.94	1.41	3.50

Table 4.9: descriptive statistics, biographical information, grammaticality judgment task participants

The minimum ages are identical in the two groups. The maximum age observed in the classroom-based group (max = 25) is due to one 25-year-old participant. Otherwise, the maximum ages are identical in the two groups. Mean and median ages also appear to be similar across the two groups. The difference in mean ages is 0.77. The difference in median ages is one. Finally, the groups were statistically equivalent with regard to years of prior instruction (web-based: $M = 2.41$, $Mdn = 3.50$, $SD = 1.79$; classroom-based: $M = 2.94$, $Mdn = 3.50$, $SD = 1.41$).

4.4.1.2 Materials

The stimuli consisted of short, three- to four-word German sentences. There were two versions of the task, each containing 32 correct and 32 incorrect sentences. The sentences that were presented in their correct forms in version one of the task were presented in their incorrect forms in version two; the sentences that were presented in their incorrect forms in version one of the task were presented in their correct forms in version two. In both versions, there were eight practice sentences, followed by the 32 correct and 32 incorrect sentences. These 64 randomized items represented four

conditions (cf. Van Hell, 2006), each containing a total of 16 items (eight correct and eight incorrect). The conditions are as follows (correct and incorrect examples of each are given in parentheses): (1): condition one: number (singular/plural) agreement of determiners and nouns (Wir essen die Steaks./Wir essen eine Steaks.* - We eat the steaks./We eat a steaks.*); (2): condition two: subject/verb agreement (Katrin lernt Deutsch./Katrin lernen Deutsch.* - Katrin learns German./Katrin learn German.*); (3): condition three: word order (Ich muss Anna helfen./Ich muss helfen Anna.* - I must Anna help./I must help Anna.*); (4): condition four: gender agreement of determiners and noun (Die Tante ist klug./Das Tante ist klug. – The (feminine) aunt is clever./ The (neuter) aunt is clever.*).

4.4.1.3 Procedures

The pre-treatment administration of the grammaticality judgment task occurred during weeks three through five of the 15-week semester. The post-treatment administration occurred during week 15 or the first two days of the final exam period (week 16). If the participant completed version one of the task during the pre-treatment administration, he or she completed version two during the post-treatment administration; if the participant completed version two of the task during the pre-treatment administration, he or she completed version one during the post-treatment administration. In this way, practice effects were minimized. All administrations were computer-based and individually proctored in a quiet room. After listening to the research assistant read aloud a short description of the grammaticality judgment task, the participant also read the task instructions on the screen. Participants were told that

they would be presented with German sentences and were asked to press the blue "*richtig*[19]" button on the keyboard if the sentence was grammatical or the red "*falsch*[20]" button if the sentence was ungrammatical. To begin, the participant completed a set of eight practice items. After completing the set of eight practice items, the participant was permitted to ask the research assistant any technical questions, and the research assistant reminded the participant to keep both hands on the response keys throughout the task. Participants then proceeded to the actual task questions. Participants were instructed not to ask the research assistant for help unless a technical problem occurred. Participants were asked to work as quickly as possible, not spending too much time on any one item. Upon pressing the space bar to begin the task, the participant would be presented with the first German sentence. Each sentence remained on the screen until the participant pressed the "*richtig*" or the "*falsch*" button. The randomization and presentation of the items was done using the software program ePrime (*Psychology Software Tools*). The ePrime software program also recorded the accuracy and timing of the participant's responses, measuring reading time as the time from the onset of the stimuli to the pressing of the "*richtig*" or the "*falsch*" button.

[19] "correct"
[20] "incorrect"

4.4.2 Results

4.4.2.1 Data analysis

4.4.2.1.1 Excluded participants

The pre- and post-treatment grammaticality judgment tasks were completed by 35 participants. Initial statistical tests yielded puzzling and sometimes contradictory results. The data were explored qualitatively. Qualitative analysis revealed that, in both conditions, there were four types of participants: (1) participants who improved in both accuracy and reading time; (2) participants who improved in accuracy but stagnated or regressed with regard to reading time; (3) participants who improved in reading time but stagnated or regressed with regard to accuracy; (4) and participants who improved in neither accuracy or reading time. While type one is ideal, as an instructor and as a language acquisition researcher, type two strikes me as particularly intriguing. Noticing is a vital component of language development. Yet, the reading times from the type two participants, when interpreted through a linear, one-dimensional approach to development (e.g., increased processing speed equals development), suggested developmental regression. Specifically, the type two participants would be viewed as developmentally regressing, while the type three participants would be viewed as developmentally successful and the type four learners, assuming they did not regress, would be viewed as merely stagnant. Ideally then, the statistical model used with this data set would simultaneously take into consideration accuracy and reading time in order to ascertain whether development had occurred. Such a sophisticated model and analyses were beyond the scope of this dissertation. Participants who regressed with regard to reading time were therefore

excluded from the present analysis; seven participants were excluded. The grammaticality judgment task data set thus consists of pre- and post-treatment data from 28 participants. There are three outliers to the distribution of reading time decline scores. The outliers were not trimmed for several reasons (see section 4.4.2.1.1). The exploratory analyses that were undertaken while determining how to trim the data for this dissertation suggest that an in-depth and more sophisticated exploration of the complete data set in a future publication may be very enlightening, offering a fine-grained view of developmental stages as mediated by learning condition and learner characteristics. The more modest goal of this analysis is to determine whether, among web-based learners who did improve their reading times, the improvement was statistically significant, and whether their improvements were comparable to improvements made in the classroom-based condition.

4.4.2.1.2 Accuracy data

4.4.2.1.2.1 Introduction

There were 32 grammatical and 32 ungrammatical sentences in the grammaticality judgment task. The highest possible accuracy was therefore 64/64, which meant that a participant accurately identified the 32 grammatical items as grammatical and the 32 ungrammatical items as ungrammatical. It future analyses, it would be useful to consider accuracy for grammatical and ungrammatical items separately, but the intention of the present analysis is merely to give a brief overview of the accuracy data. The present analysis focuses more upon the processing-dependent reading time data, albeit for accurate items only.

4.4.2.1.2.2 Descriptive statistics

Table 4.10 shows the basic descriptive statistics (mean, median, standard error, and standard deviation) for the accurately identified items for both conditions. In table 4.10, "gjt_acc1" stands for "grammaticality judgment task accuracy 1", "gjt_acc2" stands for "grammaticality judgment task accuracy 2", and "gjt_acc_gain" stands for "grammaticality judgment task accuracy gain".

variable	condition	*N*	min	max	*M*	*Mdn*	Std. Error	*SD*
gjt_acc1	web-based	11	29	53	42.09	43.00	2.68	8.89
	classroom-based	17	29	61	47.88	48.00	2.20	9.08
gjt_acc2	web-based	11	23	61	42.64	43.00	3.40	11.29
	classroom-based	17	36	64	53.47	55.00	2.01	8.29
gjt_acc_gain	web-based	11	-20	16	0.55	1.00	2.83	9.37
	classroom-based	17	-3	22	5.59	7.00	1.50	6.19

Table 4.10: accuracy statistics, grammaticality judgment task, 64 items

On the pre-test, the average web-based participant was 65.77% accurate in judging the grammaticality of the sentences. On the post-test, the average web-based participant was 66.63% accurate in judging the grammaticality of the sentences. This means that there was a 0.86% increase in accuracy among web-based participants. Conversely, on the pre-test, the average classroom-based participant was 74.81% accurate in judging the grammaticality of the sentences. On the post-test, the average classroom-based participant was 83.55% accurate in judging the grammaticality of the sentences. This means that there was an average 8.74% increase in accuracy

among classroom-based participants. The accuracy gain among web-based participants will not be statistically compared to the accuracy gain among classroom-based learners in the present analysis, since accuracy in grammar has already been considered on the WebCAPE and the focus of the analysis of the grammaticality judgment task data set is the processing-dependent reading times.[21] However, there do appear to be some clear differences with regard to pre-treatment accuracy as well as accuracy gains, and one possibility for a future publication would be a more fine-grained analysis of the accuracy data.

4.4.2.1.3 Trimming procedures

In keeping with previous reading time research standards (cf. Jackson, 2005, p. 81), individual reading times that were less than 1000 milliseconds and more than 10,000 milliseconds were trimmed. A response that occurs in less than 1000 milliseconds or more than 10,000 milliseconds is likely to be the result of a momentary lapse of concentration (Jackson), a finger twitch, or a distraction in the laboratory setting.

4.4.2.1.4 Reading time results

4.4.2.1.4.1 Histograms

Figure 4.14 shows the distribution of pre-test grammaticality judgment task reading times for the web-based group. Figure 4.15 shows the distribution of pre-test

[21] In addition, this grammaticality judgment task accuracy information was added post hoc at the request of a reviewer. Because a number of other comparisons between the two conditions had already been completed, the addition of another statistical comparison (between changes in accuracy across the two conditions) would have required an adjustment to the Bonferroni correction across all tests and would have further decreased the power of each test, that is, increased the risk of Type II errors.

grammaticality judgment task scores for the classroom-based group. Figure 4.16 shows the distribution of post-test grammaticality judgment task reading times for the web-based group. Figure 4.17 shows the distribution of post-test grammaticality judgment task reading times for the classroom-based group. Figure 4.18 shows the distribution of declines in grammaticality judgment task reading times for the web-based group. Figure 4.19 shows the distribution of declines in grammaticality judgment task reading times for the classroom-based group.

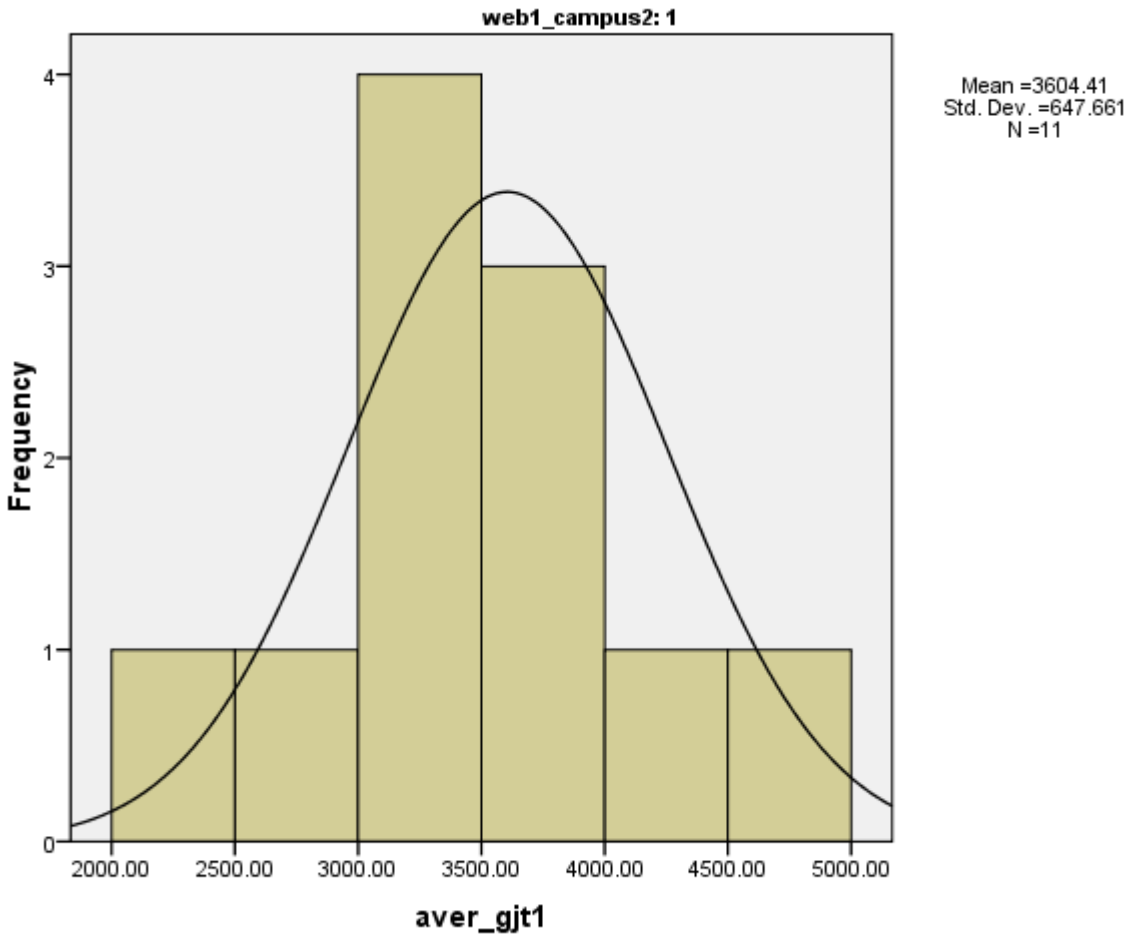

Figure 4.14: distribution of pre-test grammaticality judgment task reading times, web-based group

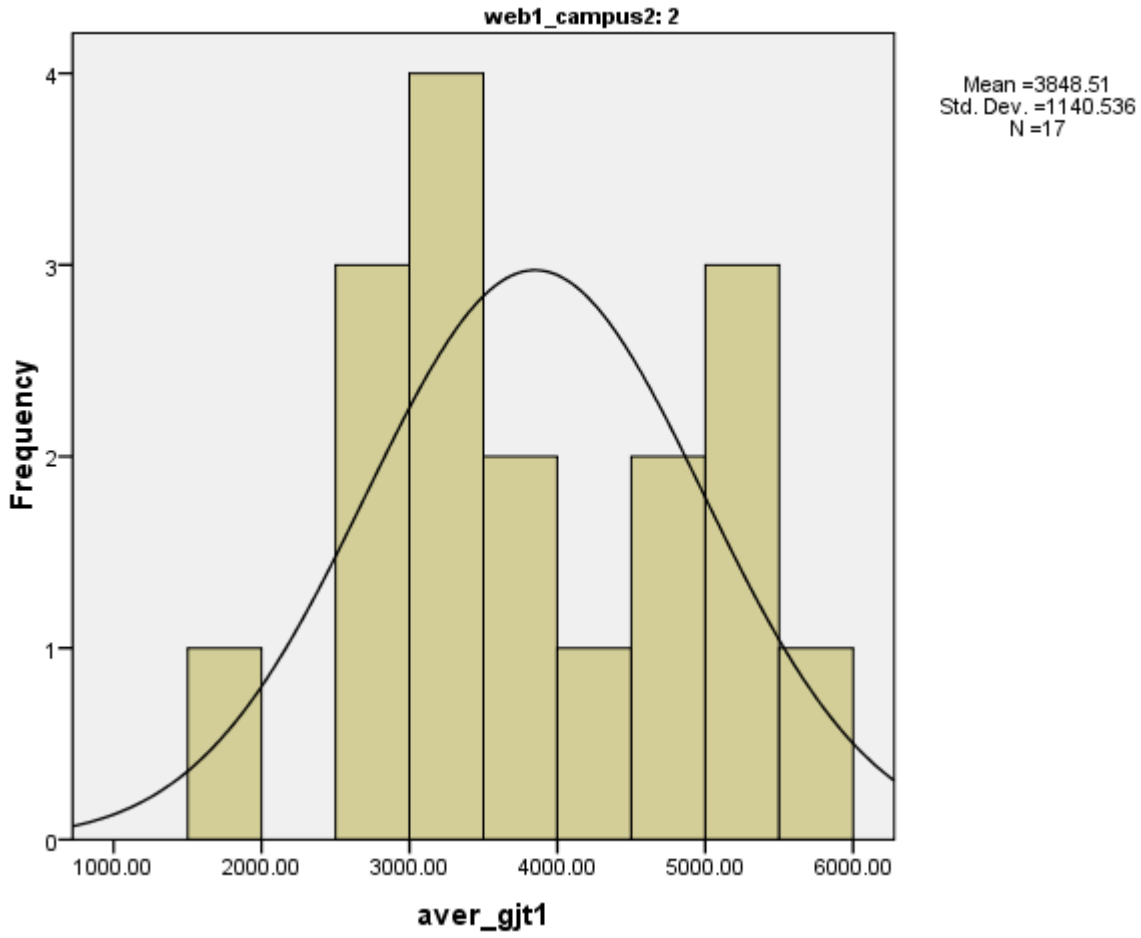

Figure 4.15: distribution of pre-test grammaticality judgment task reading times, classroom-based group

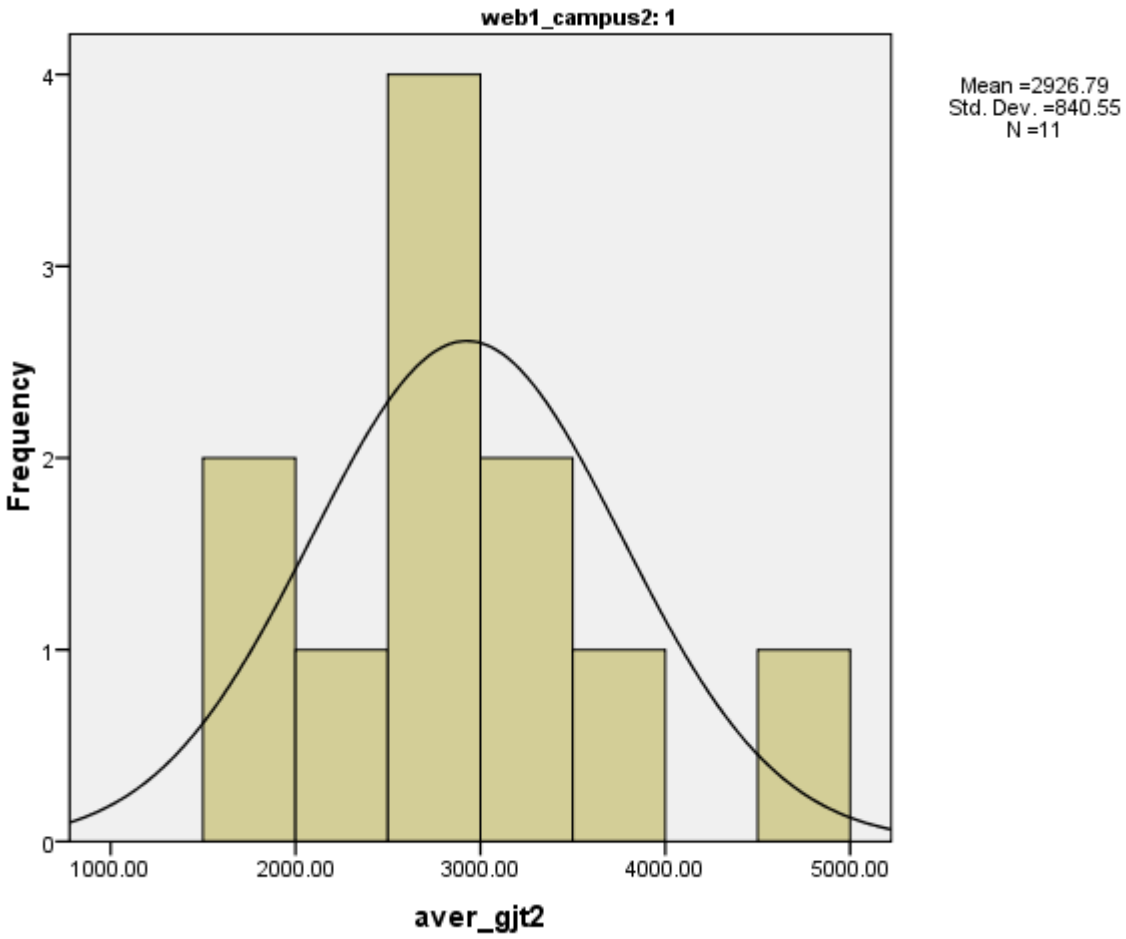

Figure 4.16: distribution of post-test grammaticality judgment task reading times, web-based group

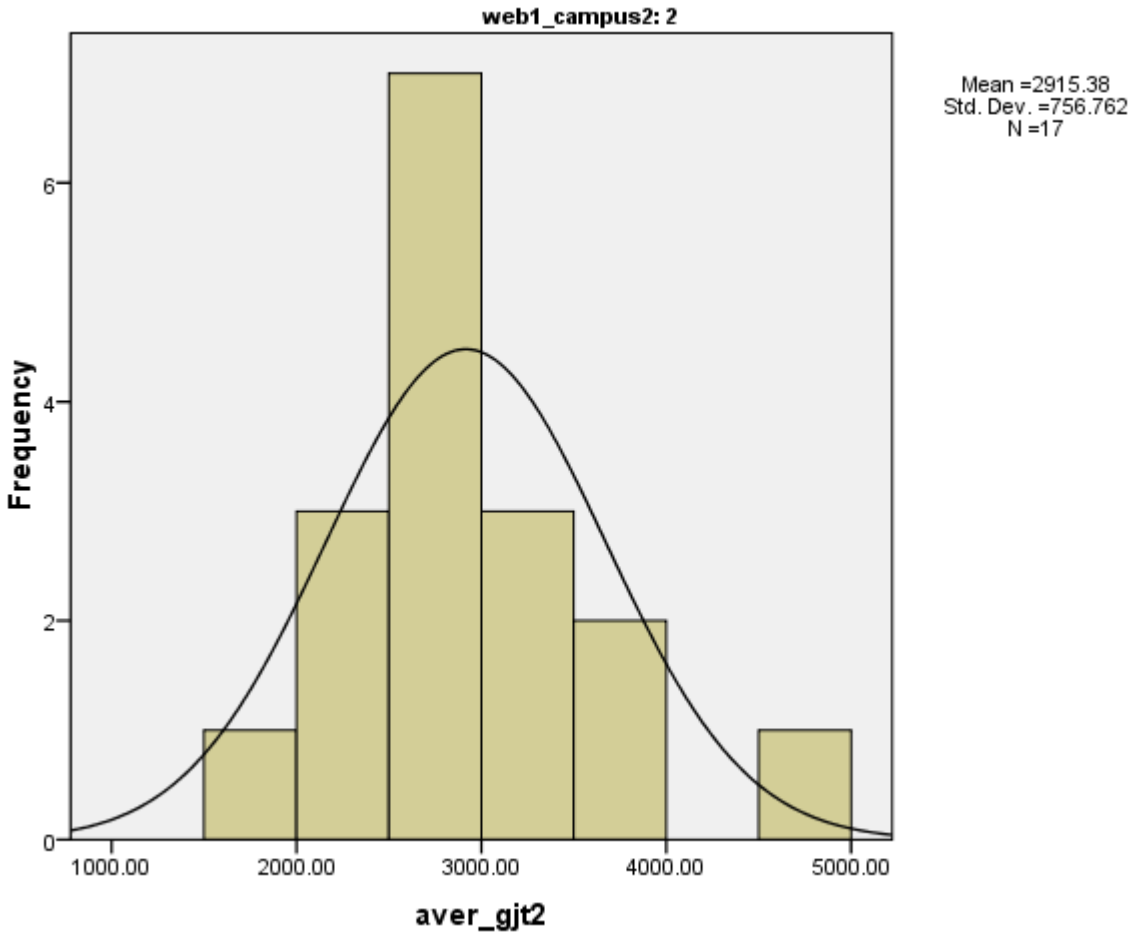

Figure 4.17: distribution of post-test grammaticality judgment task reading times, classroom-based group

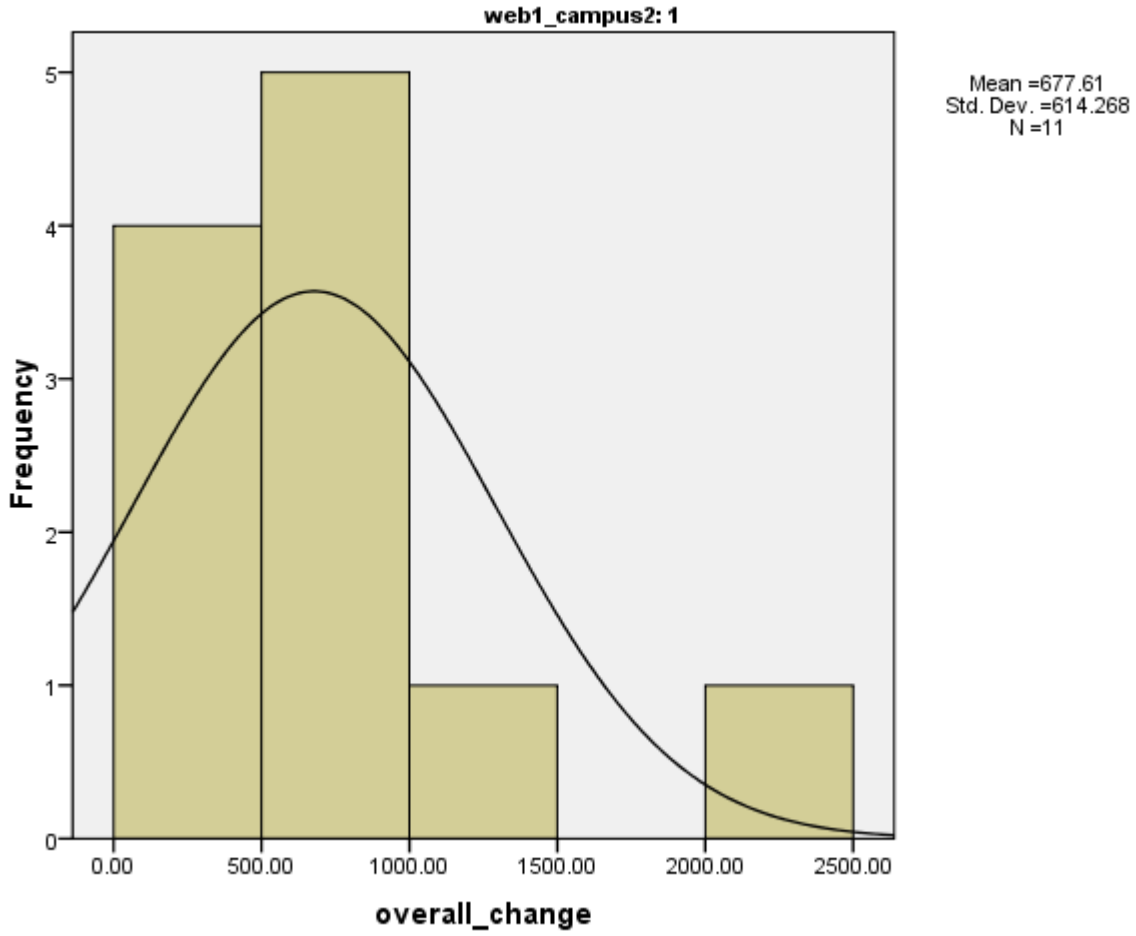

Figure 4.18: distribution of declines in grammaticality judgment task reading times, web-based group

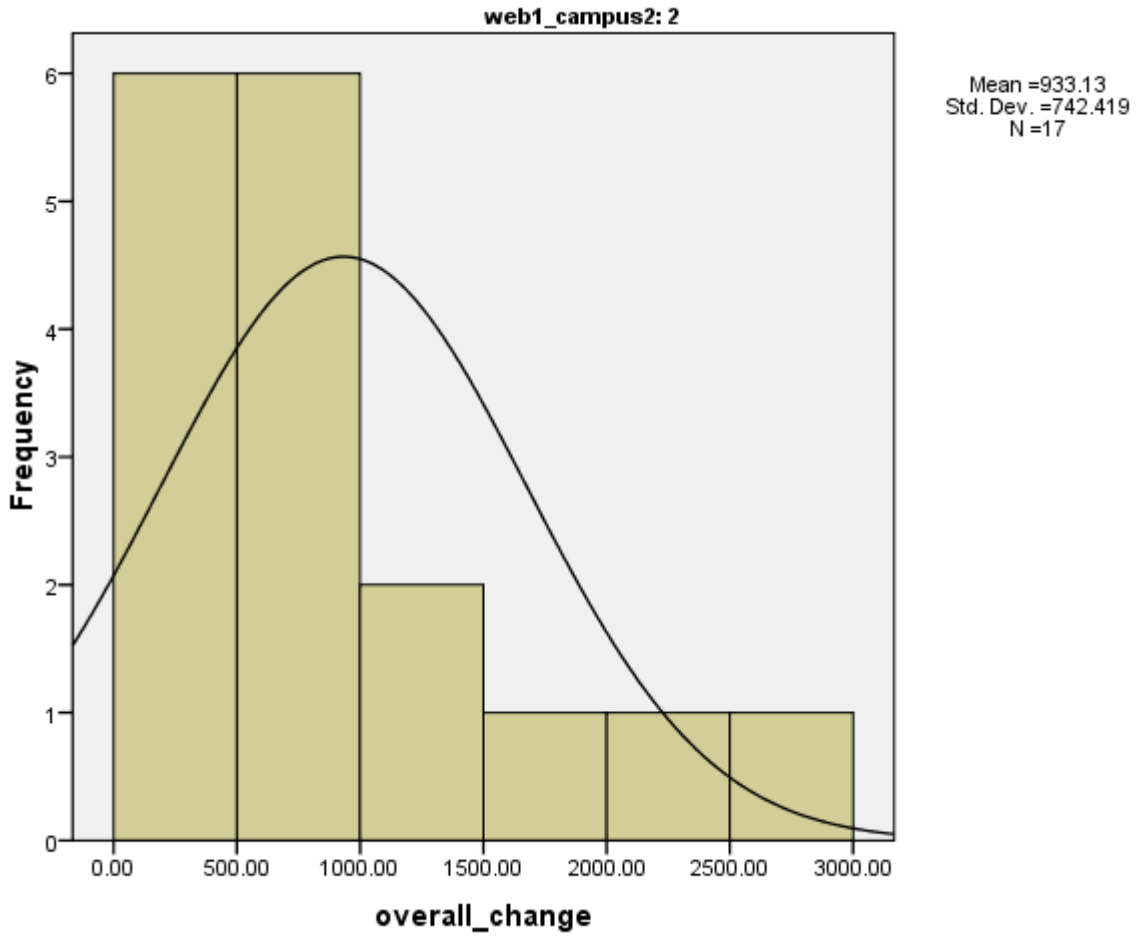

Figure 4.19: distribution of declines in grammaticality judgment task reading times, classroom-based group

4.4.2.1.4.2 Descriptive statistics

Table 4.11 shows the grand mean, standard error, median, and standard deviation for pre-treatment reading times, post-treatment reading times, and declines in average reading time, for the web-based and classroom-based conditions. In table 4.11, "gjt_rt1" stands for "grammaticality judgment reading time 1", "gjt_rt2" stands for "grammaticality judgment reading time 2", and "gjt_rt_decline" stands for

"grammaticality judgment reading time decline". In the present analysis, as already noted, each participant's average reading time, at each administration, is based only on sentences that the participant accurately identified as grammatical or ungrammatical.

Declines appear to be greater in the classroom-based condition (web-based condition: M = 677.61; classroom-based condition: M = 933.13). Pre-test scores for the two conditions also differ, but not significantly (web-based condition: M = 3604.41; classroom-based condition: M = 3848.51).

variable /	condition	*N*	Mean	Std. Error	Median	Std. Deviation
gjt_rt1	web	11	3604.4088	195.27721	3459.0281	647.66124
	classroom	17	3848.5091	276.62070	3502.5918	1140.53637
gjt_rt2	web	11	2926.7945	253.43542	2855.8936	840.55019
	classroom	17	2915.3771	183.54168	2839.4688	756.76174
gjt_rt_decline	web	11	677.6143	185.20891	533.3768	614.26847
	classroom	17	933.1320	180.06317	661.2582	742.41946

Table 4.11: descriptive statistics, grammaticality judgment task data set

4.4.2.1.4.3 Tests of normality and homogeneity

Tests of normality (table 4.12) revealed that the scores for each test and condition are normally distributed. In addition, Levene's test for equality of variances was not significant for the decline scores (gjt_rt_decline) across the two conditions.

variable / condition		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
aver_gjt1	web	.155	11	.200*	.968	11	.868
	classroom	.183	17	.132	.938	17	.299
aver_gjt2	web	.141	11	.200*	.948	11	.614
	classroom	.133	17	.200*	.957	17	.568
overall_change	web	.233	11	.098	.823	11	.019
	classroom	.188	17	.112	.838	17	.007

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Table 4.12: tests of normality, grammaticality judgment task data set

4.4.2.1.4.4 Tests of development within conditions

Given the normality of the pre-treatment (gjt_rt1) and post-treatment (gjt_rt2) scores in both the web-based and classroom-based conditions, the changes within each condition were compared in one-tailed dependent *t*-tests. The same Bonferroni

correction of α = .05/4 was made, and the comparison was tested at $p < .013$. In the web-based condition, the one-tailed, dependent *t*-test showed that there was a significant, large decline in reading times from the pre-treatment administration (M = 3604.41, SE = 195.28) to the post-treatment administration (M = 2926.79, SE = 253.44, $t(10) = 3.66$, $p = .002$, $r = .76$). In the classroom-based condition, the one-tailed, dependent *t*-test showed that there was a significant, large decline in reading times from the pre-treatment administration (M = 3848.51, SE =276.52) to the post-treatment administration (M = 2915.38, SE = 183.54, $t(16) = 5.18$, $p = .00$, $r = .79$).

4.4.2.1.4.5 Test comparing development between conditions

Because the decline scores for both groups are normally distributed and homogenous in variance, they were compared with an independent *t*-test. The same Bonferroni correction of α = .05/4 was made, and the comparison was tested at $p < .013$. The independent *t*-test revealed that there was no significant difference between grammaticality judgment declines in the web-based condition (M = 677.61, SE = 185.21) and the classroom-based condition (M = 933.13, SE = 180.06, $t(26) = -.949$, $p = .1755$, $r = .18$), although the small effect size is to be noted.

4.4.2.2 Summary

Notable findings include the decline in reading times among learners in both conditions, the large effect size of this improvement in both conditions (web-based: $r = .76$; classroom-based: $r = .79$), and the finding of no significant difference in reading time declines across the two conditions. These findings collectively suggest that, like the classroom-based environment at Penn State's University Park campus,

the web-based environment of the German Online at PSU courses trains deeper, processing-dependent abilities such as speeded grammaticality judgments.

4.5 SOPI-based speaking task

4.5.1 Methods

4.5.1.1 Participants

The pre- and post-treatment SOPI-based tasks were completed by 33 participants. There were no outliers to the overall gain score distribution. The SOPI-based task data set thus consists of pre- and post-treatment data from all 33 participants. The web-based group consisted of 16 students enrolled in German Online at PSU courses; nine participants were male, and seven participants were female. The classroom-based group consisted of 17 students enrolled in classroom-based courses; eight participants were male, and nine participants were female. Table 4.13 shows the minimum, maximum, mean, and median age and years of previous study of both groups.

variable	condition	*N*	min	max	*M*	*SD*	*Mdn*
age (in years)	web-based	16	18	22	20.38	1.20	20
	classroom-based	17	18	25	19.41	1.66	19
years of previous study	web-based	16	0	4.00	2.16	1.77	3.00
	classroom-based	17	0	4.50	2.82	1.61	3.50

Table 4.13: descriptive statistics, biographical information, SOPI-based task participants

The minimum ages are identical in the two groups. The maximum age observed in the classroom-based group (maximum = 25) is due to one 25-year-old participant. Otherwise, the maximum ages are identical in the two groups. Mean and median ages also appear to be similar across the two groups. The difference in mean ages is 0.97. The difference in median ages is one. Finally, the groups were statistically equivalent with regard to years of prior instruction (web-based: M = 2.16, Mdn = 3.00, SD = 1.77; classroom-based: M = 2.82, Mdn = 3.50, SD = 1.61).

4.5.1.2 Materials

The SOPI-based task consists of the 25-minute, short version of form A of the German SOPI (*German Speaking Test*, 1995). The task items, which are most often accompanied by a simple black-and-white illustration, require learners to ask basic questions or talk about everyday topics, such as school, family, friends, and daily routines. Instructions for each item are provided in English in the test booklet, but some items also included an aural prompt in German, which is not provided in written form in the test booklet. The test booklet also notes how much time the learner will be given to prepare each answer (e.g., 0-20 seconds) and to produce each answer (e.g., 20-80 seconds).

4.5.1.3 Procedures

The pre-treatment administration of the SOPI-based task occurred during weeks three through five of the 15-week semester. The post-treatment administration occurred during week 15 or the first two days of the final exam period (week 16). All

administrations took place individually, in a quiet room. After the research assistant read aloud a short description of the SOPI-based task, the assistant started the cassette-based exam for the participant and launched the digital recording program, Audacity (*Audacity*). The research assistant then left the testing room and waited for 25 minutes in a nearby room. Participants were instructed not to leave the room to ask the research assistant for assistance unless a technical problem occurred.

4.5.2 Results

4.5.2.1 Data analysis

4.5.2.1.1 Excluded participants

The pre- and post-treatment SOPI-based tasks were completed by 33 participants. There were no outliers to the overall gain score distribution. The SOPI-based task data set thus consists of pre- and post-treatment data from all 33 participants.

4.5.2.1.2 Histograms

Figure 4.20 shows the distribution of pre-test SOPI-based task scores for the web-based group. Figure 4.21 shows the distribution of pre-test SOPI-based task scores for the classroom-based group. Figure 4.22 shows the distribution of post-test SOPI-based task scores for the web-based group. Figure 4.23 shows the distribution of post-test SOPI-based task scores for the classroom-based group. Figure 4.24 shows the distribution of SOPI-based task gain scores for the web-based group. Figure 4.25 shows the distribution of SOPI-based task gain scores for the classroom-based group.

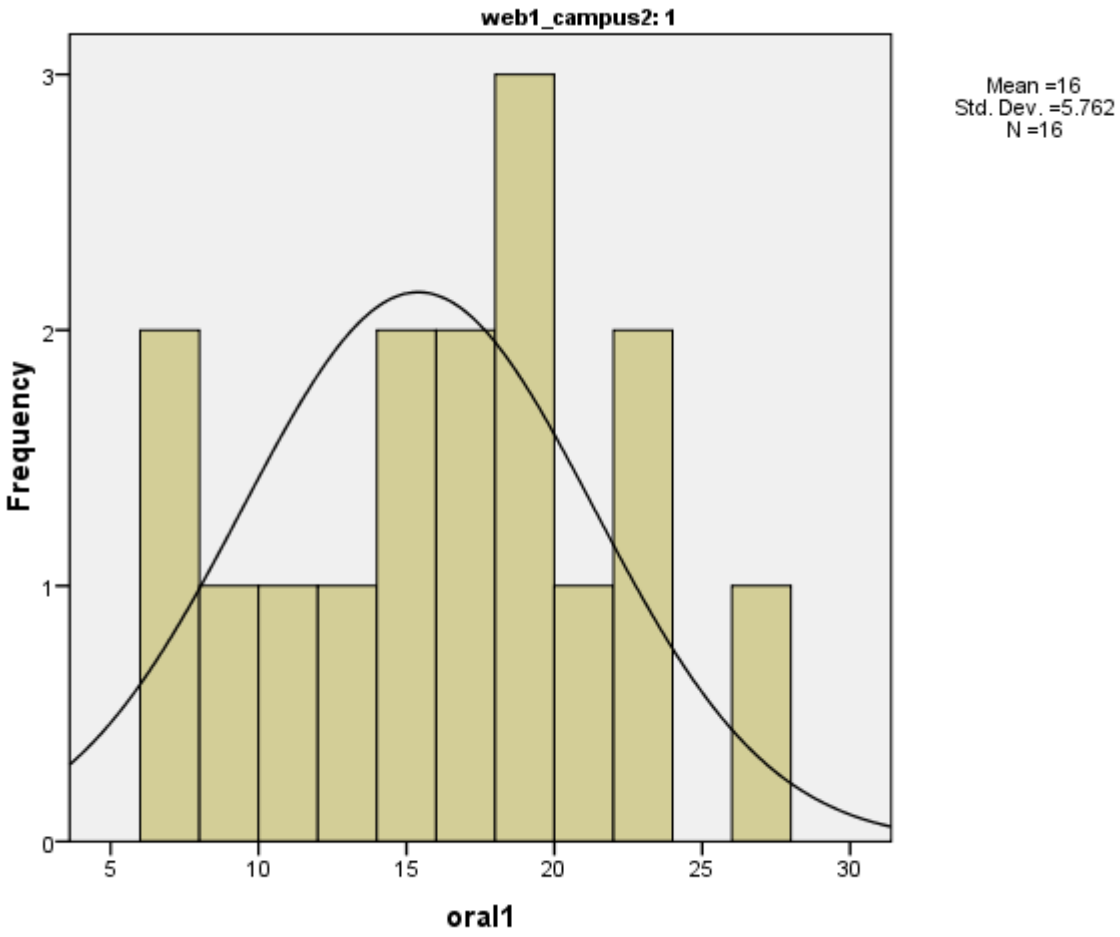

Figure 4.20: distribution of pre-test SOPI-based task scores, web-based group

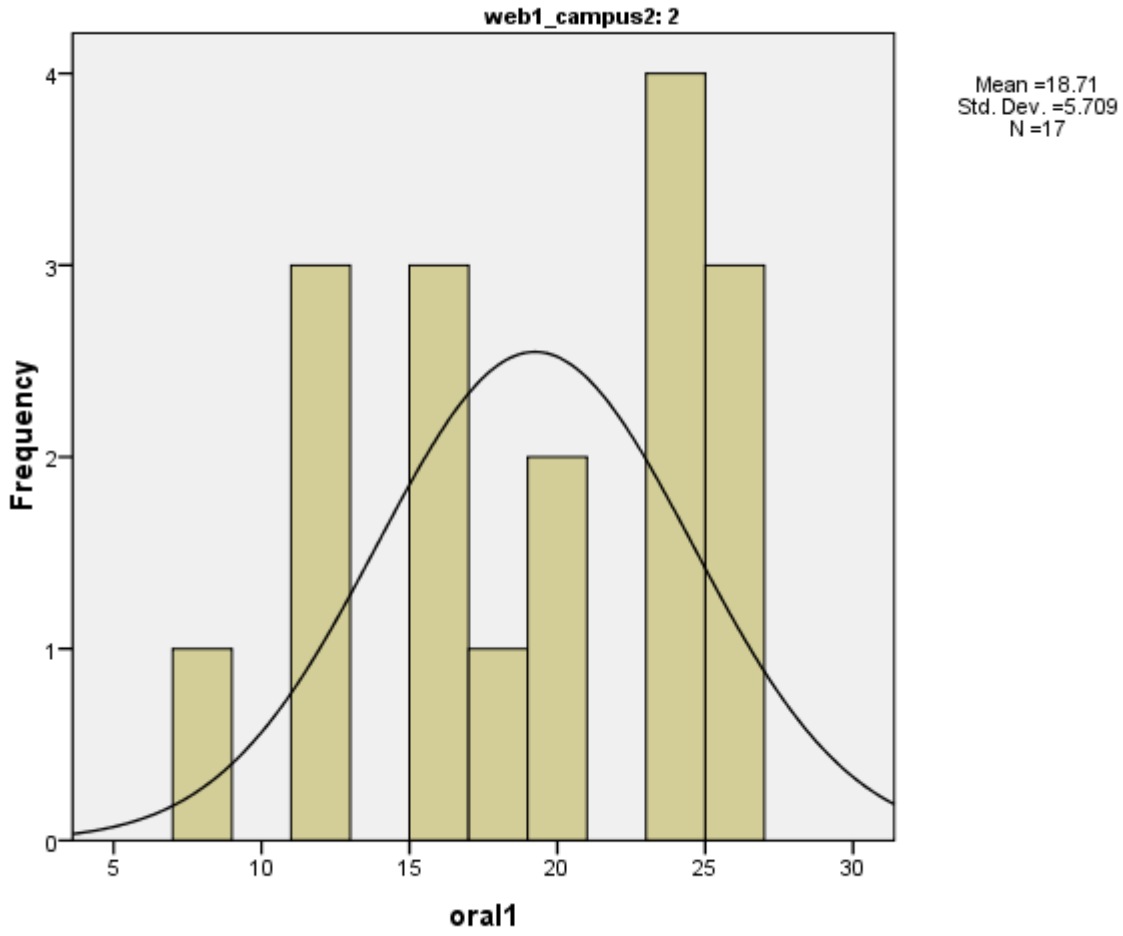

Figure 4.21: distribution of pre-test SOPI-based task scores, classroom-based group

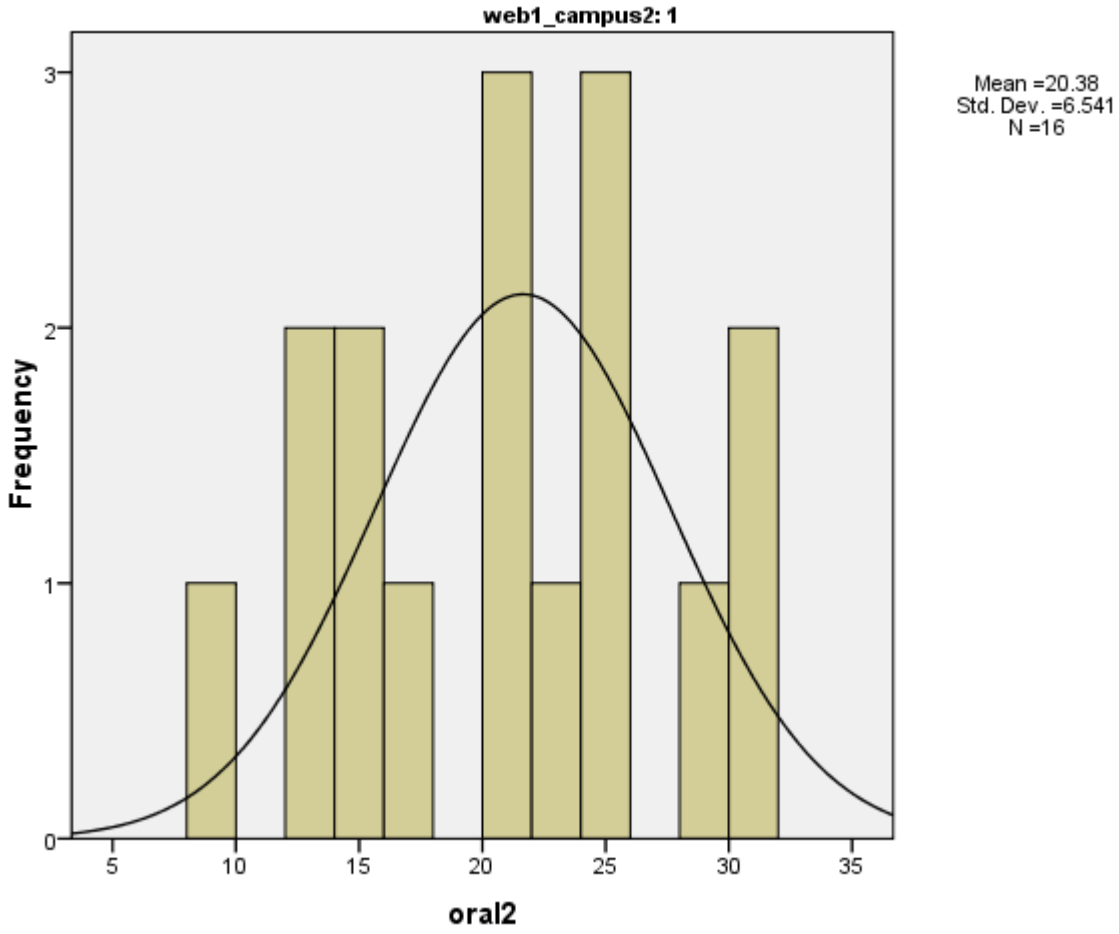

Figure 4.22: distribution of post-test SOPI-based task scores, web-based group

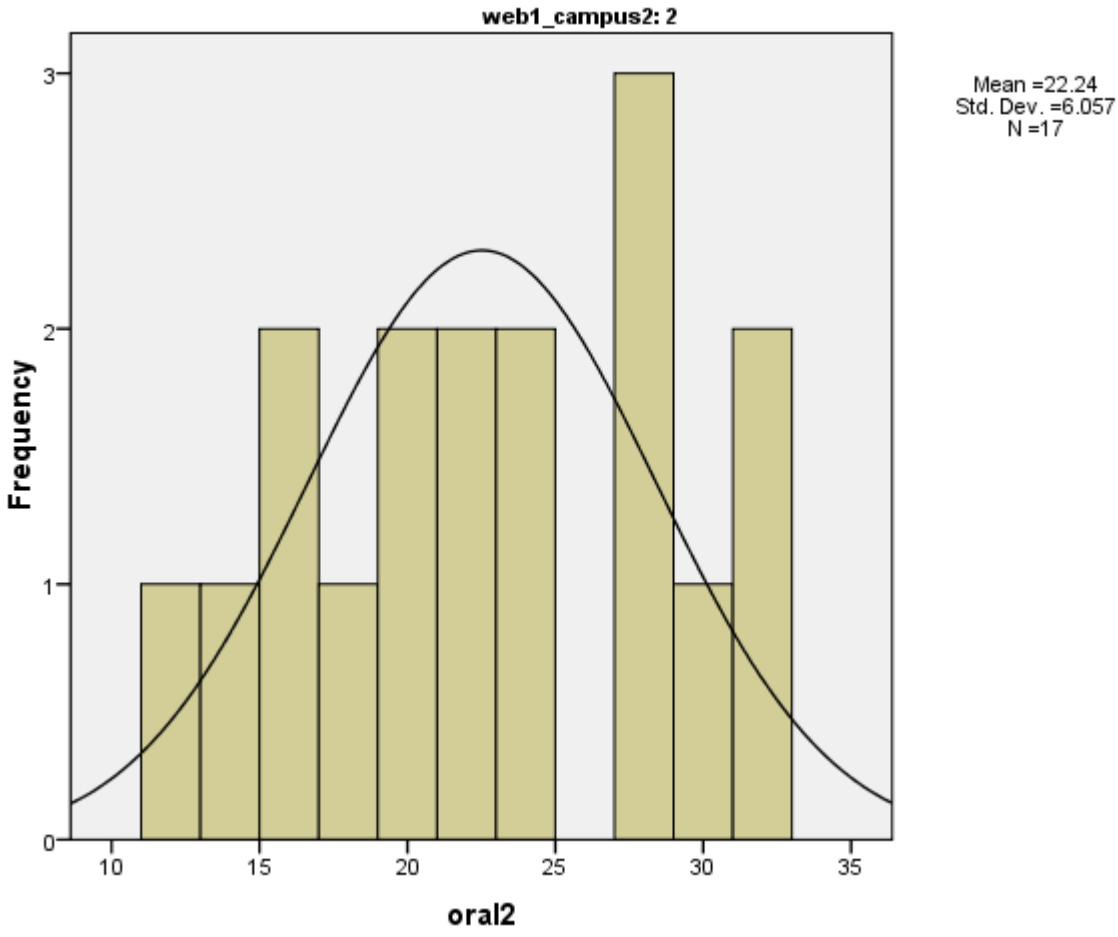

Figure 4.23: distribution of post-test SOPI-based task scores, classroom-based group

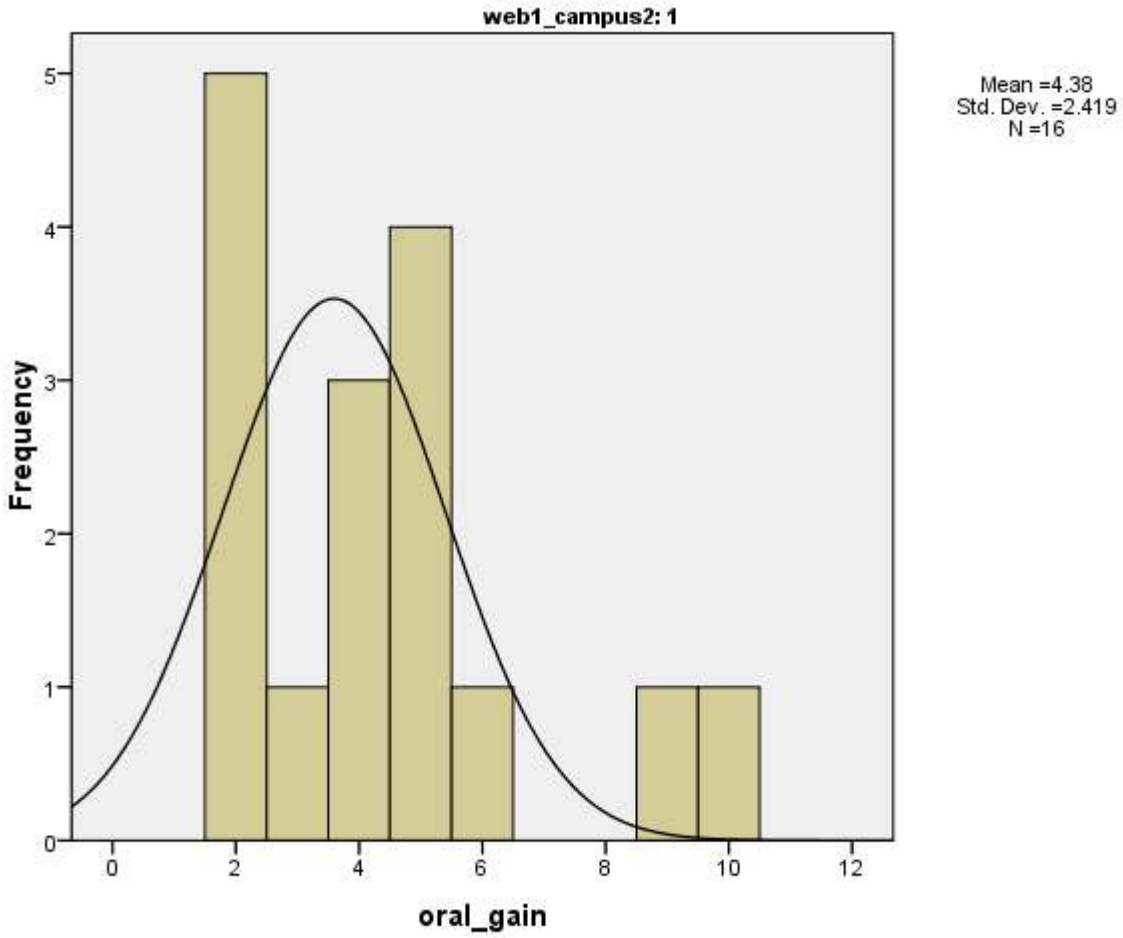

Figure 4.24: distribution of SOPI-based task gain scores, web-based group

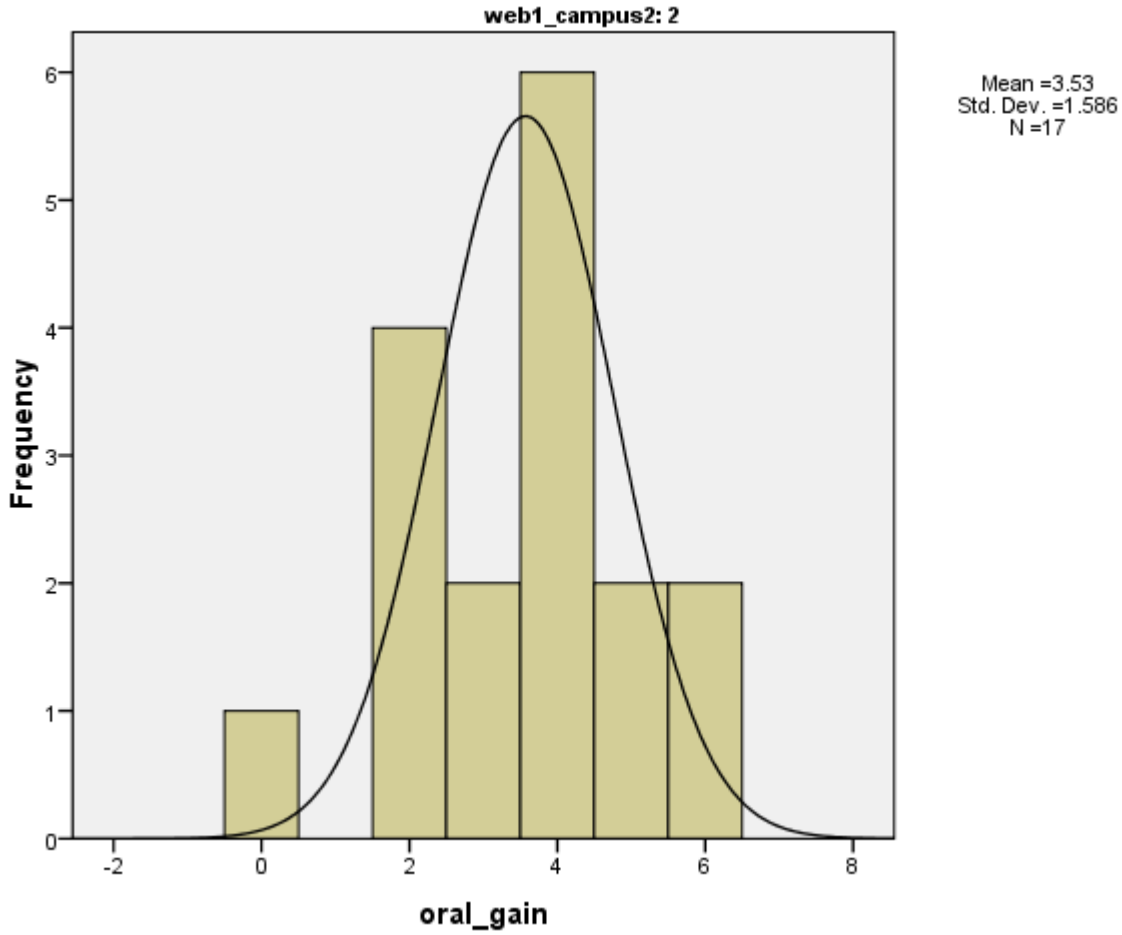

Figure 4.25: distribution of SOPI-based task gain scores, classroom-based group

4.5.2.1.3 Descriptive statistics

Table 4.14 shows the mean, standard error, median and standard deviation for the web-based and classroom-based groups for the pre-treatment SOPI-based task, the post-treatment SOPI-based task, and the SOPI-based task gain scores. Gains appear to be slightly greater in the web-based condition (web-based condition: M = 4.38; classroom-based condition: M = 3.53). Pre-test scores for the two conditions also

differ, but not significantly (web-based condition: M = 16.00; classroom-based condition: M = 20.38; cf. Payne & Whitney, 2002, p. 19).

variable /	condition						
		N	Missing	Mean	Std. Error	Median	Std. Deviation
oral1	web	16	0	16.00	1.44	16.50	5.76
	classroom	17	0	18.71	1.39	20.00	5.71
oral2	web	16	0	20.38	1.64	20.50	6.54
	classroom	17	0	22.24	1.47	22.00	6.06
oral_gain	web	16	0	4.38	.61	4.00	2.42
	classroom	17	0	3.53	.39	4.00	1.59

Table 4.14: descriptive statistics, SOPI-based task data set

4.5.2.1.4 Tests of normality and homogeneity

Tests of normality (table 4.15) revealed that the distributions of the SOPI-based task gain scores approach non-normality in both conditions according to the Kolmogorov-Smirnov test (web-based and classroom-based: p = .056), with the SOPI-based task gain scores in the web-based condition reaching significant non-normality on the Shapiro-Wilk test (p = .013). In the classroom-based condition, neither the skewness or kurtosis z-scores are individually significant. In the web-

based condition, however, there is significant positive (right) skewness ($S = 2.03$, $p < .05$), as a result of a particularly dedicated learner who gained a remarkable 10 points between the pre- and post-administrations; were this data point to be removed, the positive skewness would disappear and the distribution would, in fact, be slightly, although not significantly, negatively (leftward) skewed ($S = -.69$, *ns*).

variable /	condition	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
oral1	web	.105	16	.200*	.964	16	.728
	classroom	.186	17	.122	.923	17	.165
oral2	web	.135	16	.200*	.955	16	.566
	classroom	.137	17	.200*	.950	17	.457
oral_gain	web	.211	16	.056	.849	16	.013
	classroom	.205	17	.056	.936	17	.272

a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

Table 4.15: tests of normality, SOPI-based task data set

4.5.2.1.5 Tests of development within conditions

Given the normality of the pre-and post-treatment SOPI-based task scores (oral1 and oral2) in both the web-based and classroom-based conditions, the changes within each condition were compared in one-tailed dependent *t*-tests. The same Bonferroni

correction of α = .05/4 was made, and the comparison was tested at $p < .013$. In the web-based condition, the one-tailed, dependent *t*-test showed a significant, medium increase in SOPI-based task scores from the pre-treatment administration ($M = 16.00$, $SE = 1.44$) to the post-treatment administration ($M = 20.38$, $SE = 1.64$, $t(15) = -7.24$, $p < .001$, $r = .39$). In the classroom-based condition, the one-tailed, dependent *t*-test showed a significant, large increase in SOPI-based task scores from the pre-treatment administration ($M = 18.71$, $SE = 1.39$) to the post-treatment administration ($M = 22.24$, $SE = 1.47$, $t(16) = -9.18$, $p < .001$, $r = .84$).

4.5.2.1.6 Test comparing development between conditions

Given the non-normality of the SOPI-based task gains scores in the web-based condition, the gain scores across conditions were compared with a Mann-Whitney *U* test. The same Bonferroni correction of α = .05/4 was made, and the comparison was tested at $p < .013$. The Mann-Whitney *U* test revealed that there was no significant difference in SOPI-based task gains between the web-based condition ($Mdn = 4$) and the classroom-based condition ($Mdn = 4$, $U = 115.00$, $p = .219$, $r = .13$).

4.5.2.2 Summary

Notable findings include the statistically significant gains in SOPI-based task scores among learners in both conditions, the medium effect size of this improvement in the web-based condition ($r = .39$), the large effect size of this improvement in the classroom-based condition ($r = .84$), and the finding of no significant difference in SOPI-based task gain scores between the two conditions. Indeed, gains are slightly

greater in the web-based condition (web-based condition: $M = 4.38$; classroom-based condition: $M = 3.53$). The effect size is larger in the classroom-based condition, due to a smaller range (minimum = 0, maximum = 6) than in the web-based condition (minimum = 2, maximum = 10). However, the higher minimum and maximum scores in the web-based condition are notable. Together, these findings address the "speaking problem" (Felix, 2001, p. 348) that has traditionally hindered non-contiguous language learning and underscore the results of Payne and Whitney (2002). In that study, learners spending half of their course hours in a synchronous, text-based online environment and half in a synchronous, oral environment, that is, the classroom, developed greater oral proficiency than a fully classroom-based control group. In the present study, a similar classroom-based condition and a novel web-based condition were utilized. The SOPI-based task data were rated by the author, rather than by a third party (c.f. Payne & Whitney, 2002), but the rating was conducted blindly, without regard for the identity of the participant or the time of the test (pre-treatment or post-treatment). In the present web-based condition, learners still spent 100 minutes per week in text-based exchanges, but there were no additional face-to-face sessions. Thus the amount of time spent in text-based chat exchanges was roughly equivalent across the experimental conditions in both Payne and Whitney (2002) and the present study. But the experimental condition in Payne and Whitney (2002) also included synchronous, oral exchange; the experimental condition was bimodal. This bimodality may be the key to the statistically significant oral proficiency advantage seen in Payne and Whitney's hybrid condition (as opposed to the merely statistically equivalent development seen in the web-based condition in

the present study). Future research will be needed in order to ascertain whether bimodal chat in distance language learning (e.g., Blake, 2005) also facilitates greater oral proficiency than conditions in which opportunities to practice synchronous exchange are unimodal, that is, only oral or only text-based.

4.6 Summary

The previous four sections provide quantitative evidence that it is indeed possible to develop viable, comprehensive, fully at-a-distance language courses, that is, courses without any face-to-face contact hours. On all four tasks, statistically significant development was found, from pre-test to post-test, in the web-based condition. Further, the improvements seen in the web-based condition were in all cases statistically equivalent to the improvements seen in the classroom-based condition; classroom-based and web-based learning contexts equally support gains on the German WebCAPE examination, declines in speeded translation recognition reading times, declines in speeded grammaticality judgment reading times, and gains on the SOPI-based task, that is, the Simulated Oral Proficiency Interview (SOPI) rated according to the Payne and Whitney (2002) 50-point scale. Indeed, declines in translation recognition reading times were slightly, although not significantly, greater in the treatment/web-based condition (web-based condition: $M = 239.27$; classroom-based condition: $M = 134.34$) and gains in oral proficiency were slightly, although not significantly, greater in the web-based condition (web-based condition: $M = 4.38$; classroom-based condition: $M = 3.53$).

In sum, it may be concluded that distance language learning is no longer "a better-than-nothing technology" (Warriner-Burke 1990, p. 131), a "stepping stone [sic] to the traditional classroom" (p. 129), or a minor appendage to "regular" instruction (Moore 1973, p. 676). However, the findings of this dissertation do fall just short of the criteria of "added value" (Bax, 2000, p. 209) through the use of technology (cf. Payne & Whitney, 2002); the advantages observed in the web-based condition (slightly greater improvement on the translation recognition task and the SOPI-based task) did not reach statistical significance. I therefore the following conclusion:

> Web-based language courses aren't necessarily better than classroom-based courses. They're just another option for the 21st century language learner…It's like taking notes in class with a laptop or with a pen and paper. Some people really prefer one or the other. Most people just use whichever is available (Isenberg as cited in Gauntt, 2008).

Finally, like many studies of learning environments (e.g. Freed, Segalowitz, & Dewey, 2004; Segalowitz & Freed, 2004), the present study compares development across learning conditions after balancing years of prior instruction but without regard to course level. One interesting direction for future research, however, might be to refine the present study by comparing development between course levels within each environment (again, after years of prior instruction have been balanced by placement checks).[22] Consideration of developmental outcomes according to individual learner characteristics may also add insights to the present findings. The following chapter presents correlation analyses that explore the relationships between development and

[22] See again footnote 14. Such a study would require a research context in which course levels are distinct.

age, development and semester standing, development and SAT scores, development and previous course grades, and oral proficiency development and phonological working memory.

Chapter 5: Individual learner characteristics: correlations with developmental outcomes in different learning environments

5.1 Introduction

The second objective of this dissertation was to explore correlations between developmental outcomes and a range of individual characteristics in the fully web-based and fully classroom-based environments. The second objective was operationalized through the following five sub-questions: (1): Is the correlation between age and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (2): Is the correlation between semester standing and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (3): Is the correlation between SAT scores (verbal, math, and total) and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (4): Is the correlation between previous course grades and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (5): With regard to oral proficiency, is the positive correlation between phonological working memory and development weaker in the web-based condition, as in the hybrid/blended condition in Payne and Whitney (2002)? This chapter consists of five sections (5.2-5.6), each section corresponding to one of the above questions. A summary of notable findings for the entire chapter is given in the conclusion (section 5.7).

5.2 Age

5.2.1 Introduction

Traditionally, many distance learners have been older, continuing adult students. Their maturity and self-discipline have often been cited as prerequisites to success in non-contiguous contexts. With the increasing incidence of non-contiguous study among the younger, 18-to-22-year-old demographic, the question arises whether age, as an index of maturity and self-discipline, is positively correlated to successful development and whether this correlation is stronger in a distance environment than in a classroom environment. The age data for the present study were collected as part of the biographical questionnaire. Participants were asked to provide their date of birth, from which their age, at the start of the semester, was calculated.

5.2.2 Histograms

Figure 5.1 shows the age distribution for the web-based group ($N = 17$). Figure 5.2 shows the age distribution for the classroom-based group ($N = 22$). The ranges of the two distributions are similar, aside from the single 25-year old student in the classroom-based group. In the web-based group, it appears that most participants are between 20 and 21 years of age. In the classroom-based group, it appears that most participants are between 18 and 20 years of age. Because the age ranges are extremely narrow, the following analyses are merely exploratory; in the future, it would be useful to conduct a study with broader age ranges.

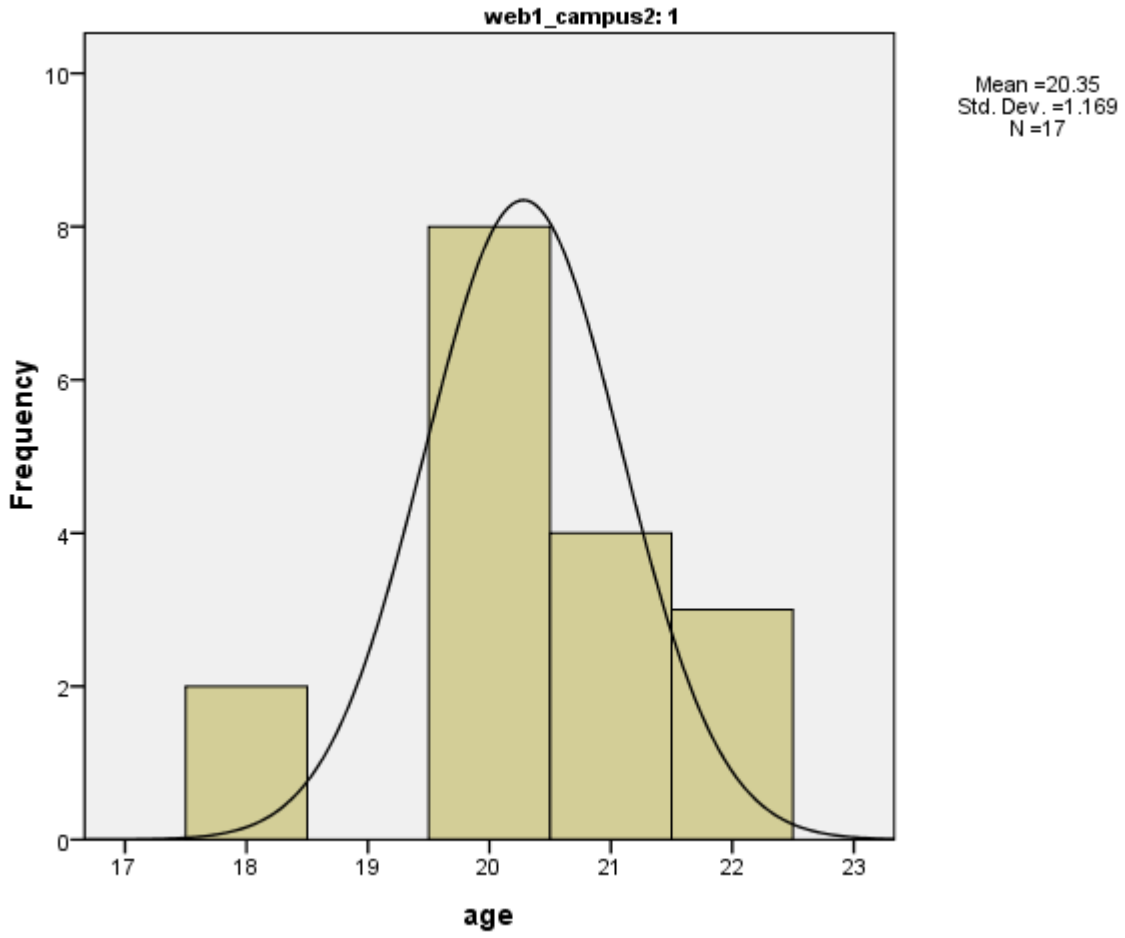

Figure 5.1: age distribution, web-based group

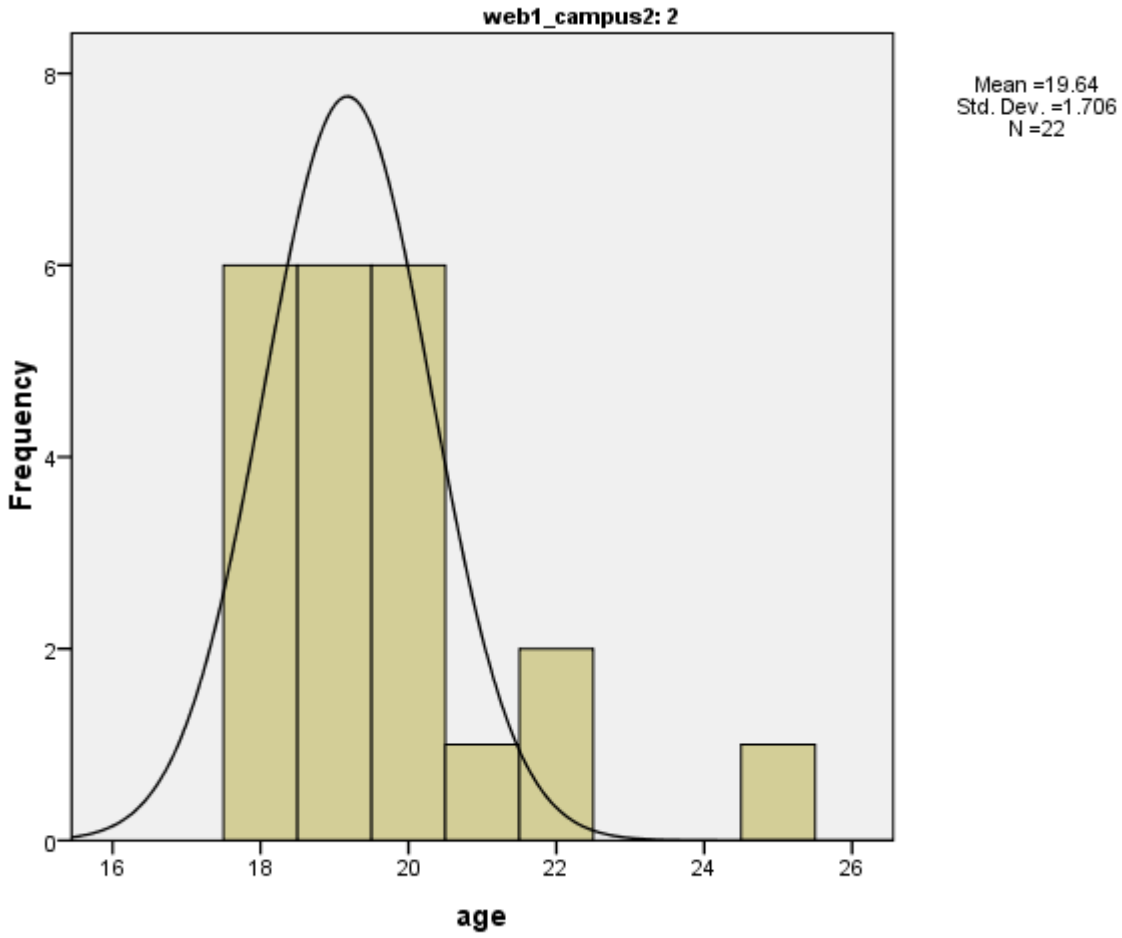

Figure 5.2: age distribution, classroom-based group

5.2.3 Normality of distributions

The age distributions were significantly non-normal in both conditions and for all four developmental outcomes (WebCAPE task: web-based condition: $D(16) = .25$, $p = .007$, classroom-based condition: $D(16) = .27$, $p = .002$; translation recognition task: web-based condition: $D(16) = .27$, $p = .003$, classroom-based condition: $D(14) = .27$, $p = .007$; grammaticality judgment task: web-based condition: $D(11) = .27$, $p = .024$,

classroom-based condition: $D(17) = .23$, $p = .015$; SOPI-based speaking task: web-based condition: $D(16) = .25$, $p = .007$, classroom-based condition: $D(17) = .30$, $p = .00$). The SOPI-based speaking task gain distributions were also significantly non-normal in both conditions (web-based condition: $D(16) = .21$, $p = .056$; classroom-based condition: $D(17) = .21$, $p = .056$). Because age distributions were significantly non-normal in both conditions and for all four developmental measures, non-parametric Spearman and Kendall correlations were calculated.

5.2.4 Correlations

Because of the very narrow range of ages in both conditions, results must be interpreted with caution. In both conditions, there were no statistically significant correlations, on either test, between age and WebCAPE task gains ($N_1 = 16$; $N_2 = 16$)[23], between age and declines in grammaticality judgment task reading times ($N_1 = 11$; $N_2 = 17$), or between age and SOPI-based task gains ($N_1 = 16$; $N_2 = 17$). In the classroom-based condition, there was also no statistically significant correlation between age and declines in translation recognition task reading times ($N_2 = 14$). In the web-based condition, however, there was a significant, positive, medium correlation between age and declines in translation recognition task reading times ($N_1 = 16$), $r_s = .35$, p (one-tailed) = .044, $\tau = .43$, p (one-tailed) = .05. A scatterplot showing this correlation is provided in figure 5.3.

[23] Throughout this chapter, "N_1" is used when giving the web-based sample size and "N_2" is used when giving the classroom-based sample size. Sample sizes vary because not all participants chose to provide all requested biographical information.

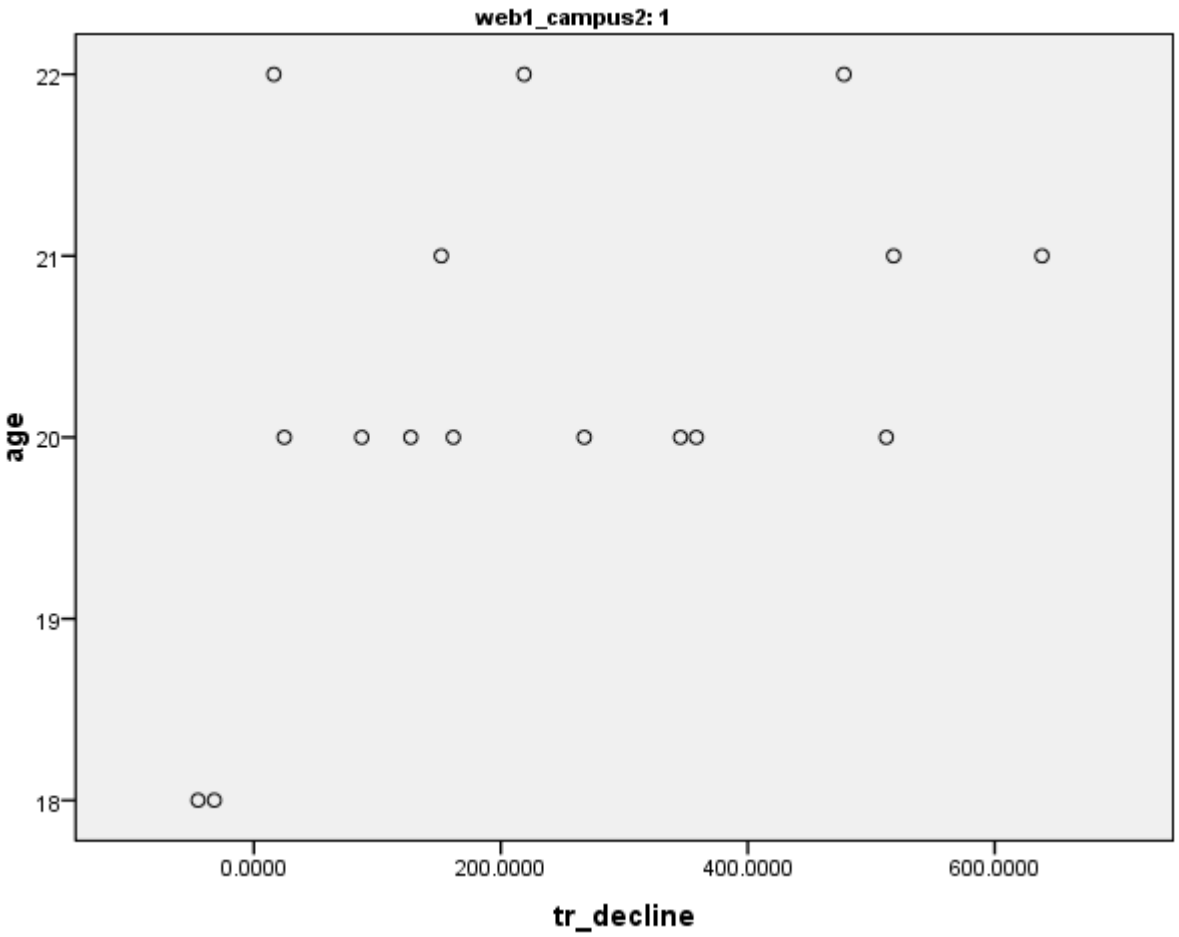

Figure 5.3: declines in translation recognition task reading time plotted against age, web-based condition

5.2.5 Summary

Because of the very narrow range of ages in both conditions, the present analyses were merely exploratory; the results should be interpreted with caution. The correlation analyses suggest that there is no simple and direct relationship between age and WebCAPE task gains, declines in grammaticality judgment task reading times, or SOPI-based speaking task gains, in either the web-based or classroom-based

German language courses at Penn State's University Park campus. The correlation analyses also suggest that there is no relationship between age and declines in translation recognition task reading times, in the classroom-based courses. In the web-based courses, however, the correlation analyses suggest a medium, positive correlation between age and declines in translation recognition task reading times. However, the true significance of any of these results is questionable. In the future, it would be useful to repeat these analyses with broader age ranges.

5.3 Semester standing

5.3.1 Introduction

Like age, semester standing has been discussed as a possible prerequisite to successful non-contiguous study. Specifically, is it possible that more experienced students, that is, juniors and seniors, will be more successful in the stereotypically more challenging non-contiguous setting? If so, it would be expected that there exists a positive correlation between semester standing and the developmental measures, such that as semester standing increases, development also increases. The semester standing data for the present study were collected as part of the background questionnaire administered at the beginning of the WebCAPE task. At both pre- and post-treatment administrations, participants were asked to select their current semester standing – freshman, sophomore, junior, or senior – from a drop-down list.

5.3.2 Histograms

Figure 5.4 shows the semester standing distribution for the web-based group. Figure 5.5 shows the semester standing distribution for the classroom-based group. The range of the two distributions is identical. In the web-based condition, it appears that there are relatively fewer freshman than there are sophomores, juniors, and seniors. Conversely, in the classroom-based condition, it appears that there is a preponderance of freshman and sophomores. However, it should be noted that semester standing data was available from more classroom-based ($N = 22$) than web-based ($N = 17$) participants.

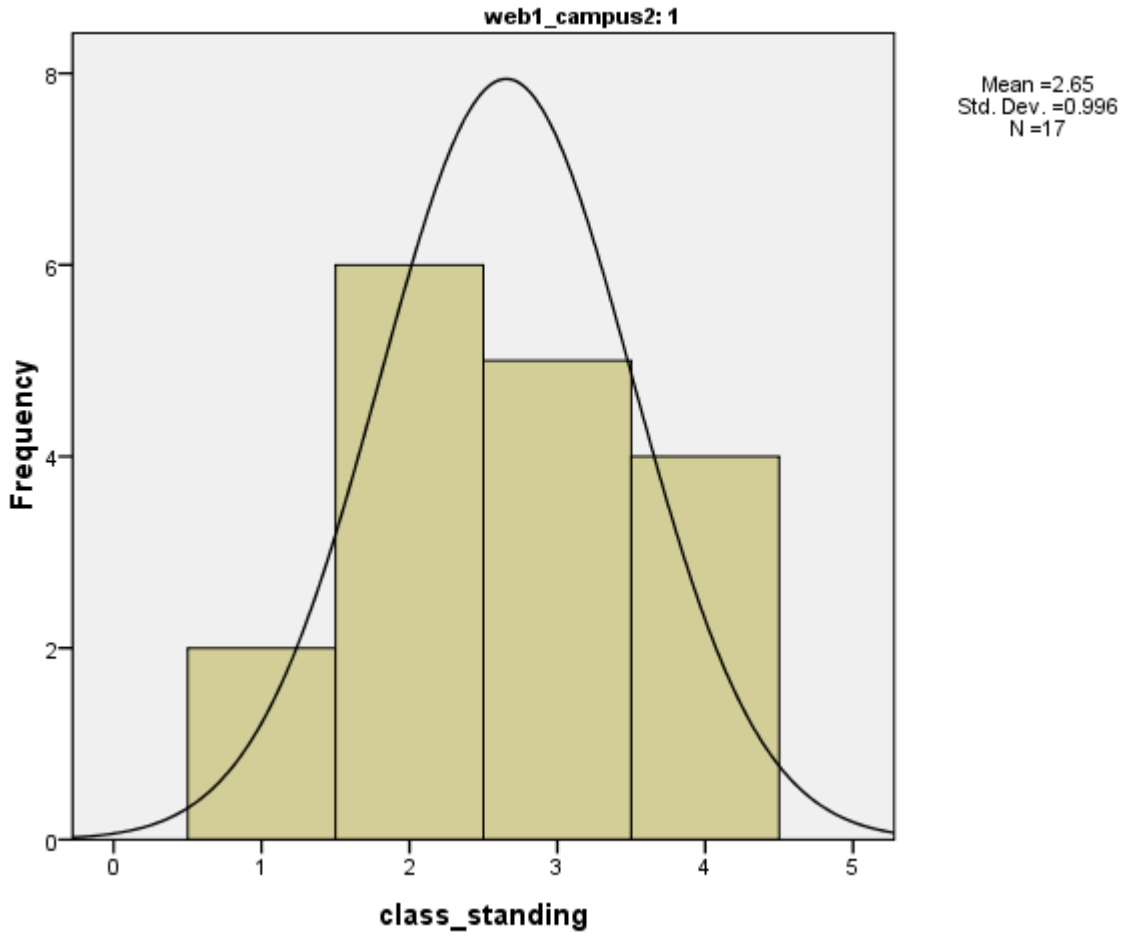

Figure 5.4: semester standing distribution, web-based group

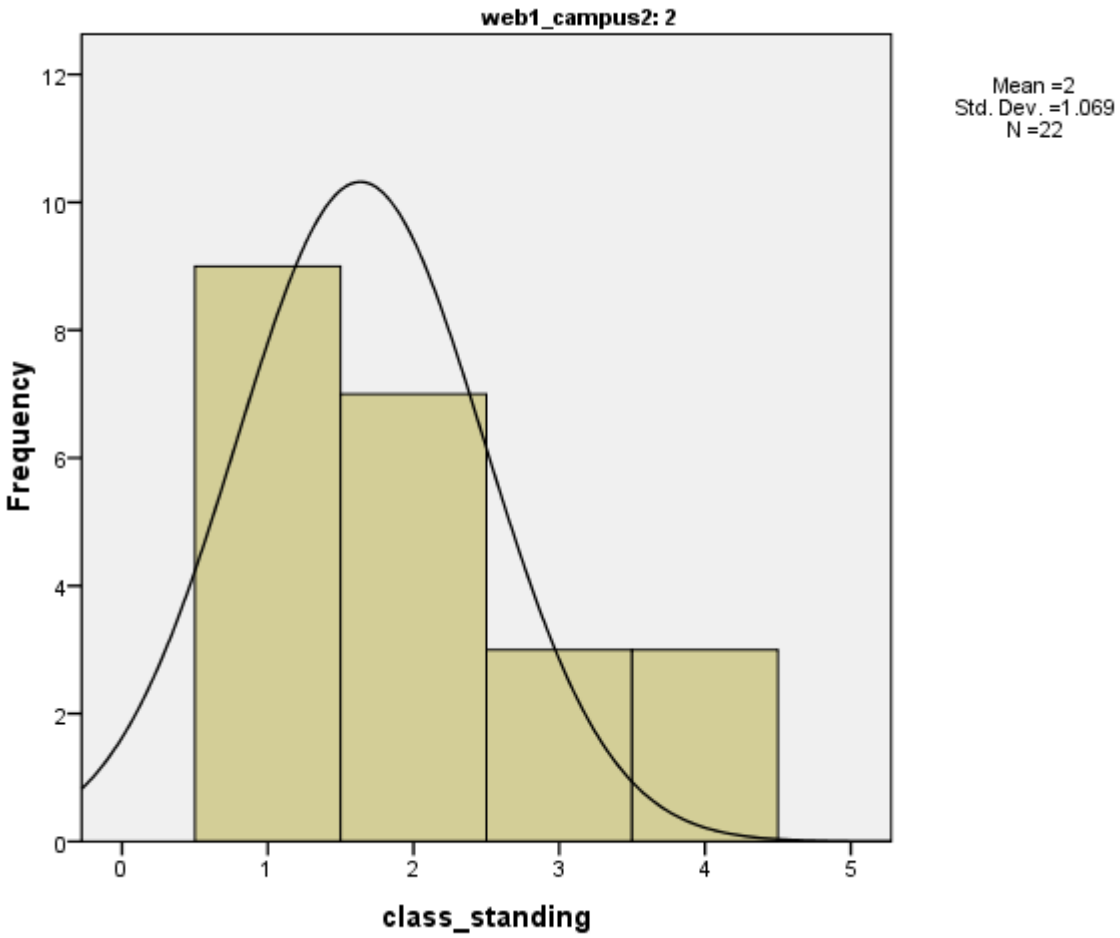

Figure 5.5: semester standing distribution, classroom-based group

5.3.3 Normality of distributions

The semester standing distributions were significantly non-normal in the classroom-based for the WebCAPE task, $D(16) = .26$, $p = .006$, in both conditions for the translation recognition task (web-based condition: $D(16) = .23$, $p = .025$; classroom-based condition: $D(14) = .25$, $p = .022$), in both conditions for the grammaticality judgment task (web-based condition: $D(11) = .27$, $p = .029$;

classroom-based condition: $D(17) = .27$, $p = .002$), and in the classroom-based condition for the SOPI-based speaking task, $D(17) = .26$, $p = .004$. The SOPI-based speaking task gain distributions were also significantly non-normal in both conditions (web-based condition: $D(16) = .21$, $p = .056$; classroom-based condition: $D(17) = .21$, $p = .056$). Non-parametric Spearman and Kendall correlations were calculated whenever non-normal distributions were involved. Pearson correlations were calculated in all cases in which both the semester standing distribution and the developmental outcome distribution were normal.

5.3.4 Correlations

In both conditions, there were no statistically significant correlations, on either test, between semester standing and WebCAPE task gains ($N_1 = 16$; $N_2 = 16$), between semester standing and declines in translation recognition task reading times ($N_1 = 16$; $N_2 = 14$), between semester standing and declines in grammaticality judgment task reading times ($N_1 = 11$; $N_2 = 17$), or between semester standing and SOPI-based speaking task gains ($N_1 = 16$; $N_2 = 17$).

5.3.5 Summary

These findings suggest that there is no simple and direct relationship between semester standing and WebCAPE task gains, declines in translation recognition task reading times, declines in grammaticality judgment task reading times, or SOPI-based speaking task gains in either the web-based or classroom-based German language courses at Penn State's University Park campus. The findings of the present analysis therefore suggest that overall success in web-based language learning contexts is not

based upon semester standing. However, because of the small number of participants in both conditions, these findings must be interpreted with caution.

5.4 SAT scores

5.4.1 Introduction

As every college-bound high school student in the United States knows, scores on the Scholastic Achievement Test, commonly known as the SAT, are a critical factor in one's acceptance into most post-secondary institutions. Whether these scores are directly related, however, to future achievement, is a separate question. If they were, it would be expected that a positive correlation could be observed between SAT scores and developmental gains. The SAT data for the present study were obtained from university admission records, after obtaining participants' consent to access these data. For each participant, SAT math, SAT verbal, and SAT total scores were obtained.

5.4.2 Histograms

Figure 5.6 shows the SAT math distribution for the web-based group. Figure 5.7 shows the SAT math distribution for the classroom-based group. Figure 5.8 shows the SAT verbal distribution for the web-based group. Figure 5.9 shows the SAT verbal distribution for the classroom-based group. Figure 5.10 shows the SAT total distribution for the web-based group. Figure 5.11 shows the SAT total distribution for the classroom-based group. The ranges of all distributions are slightly larger in the classroom-based condition, but it should be noted that SAT data was available from more classroom-based (N = 19-20) than web-based (N = 11) participants.

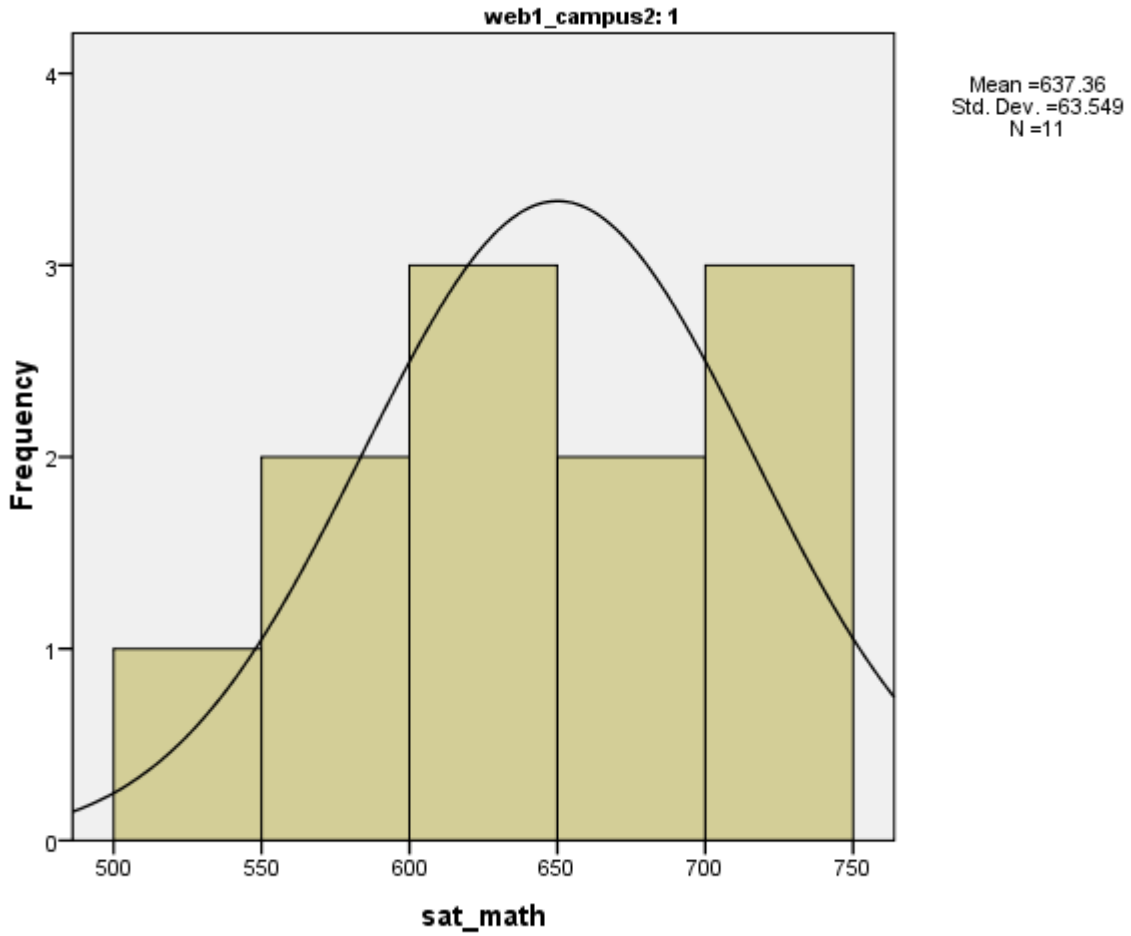

Figure 5.6: SAT math distribution, web-based group

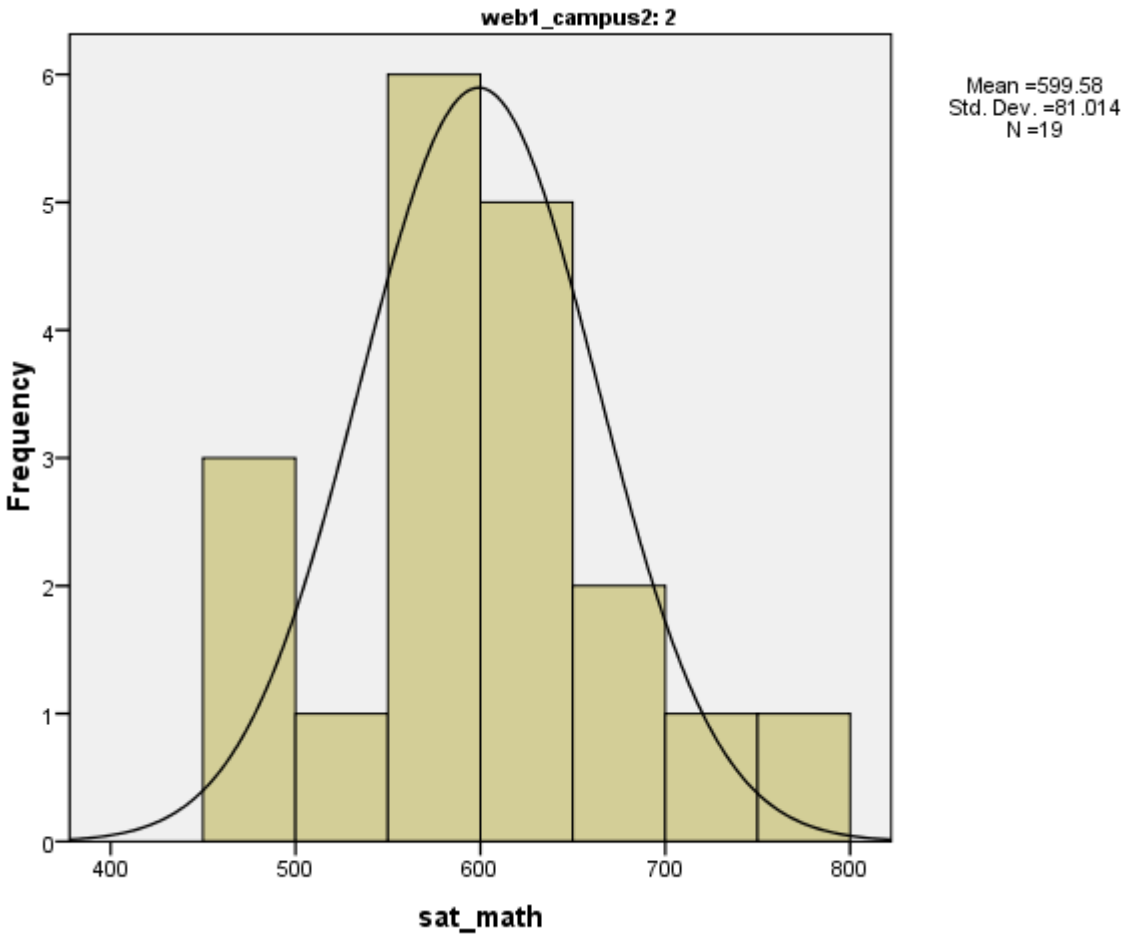

Figure 5.7: SAT math distribution, classroom-based group

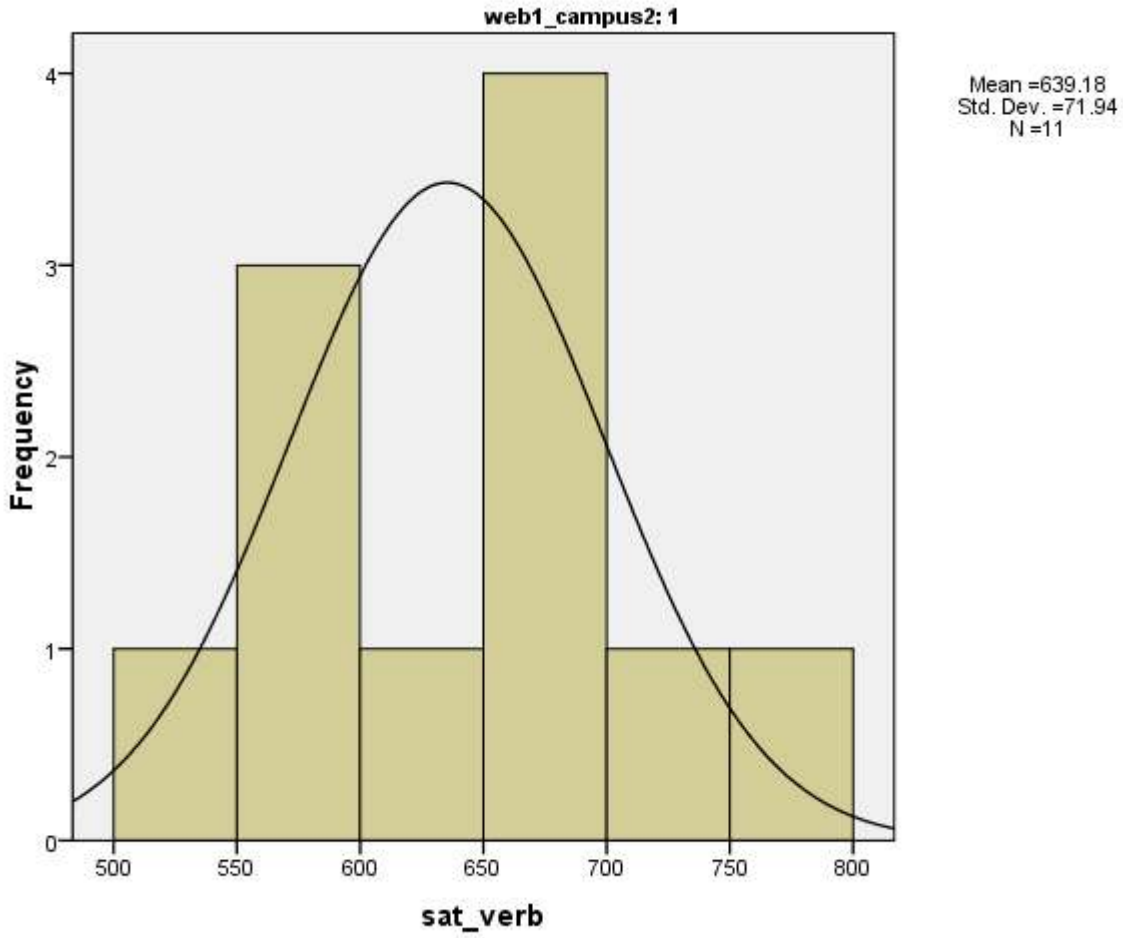

Figure 5.8: SAT verbal distribution, web-based group

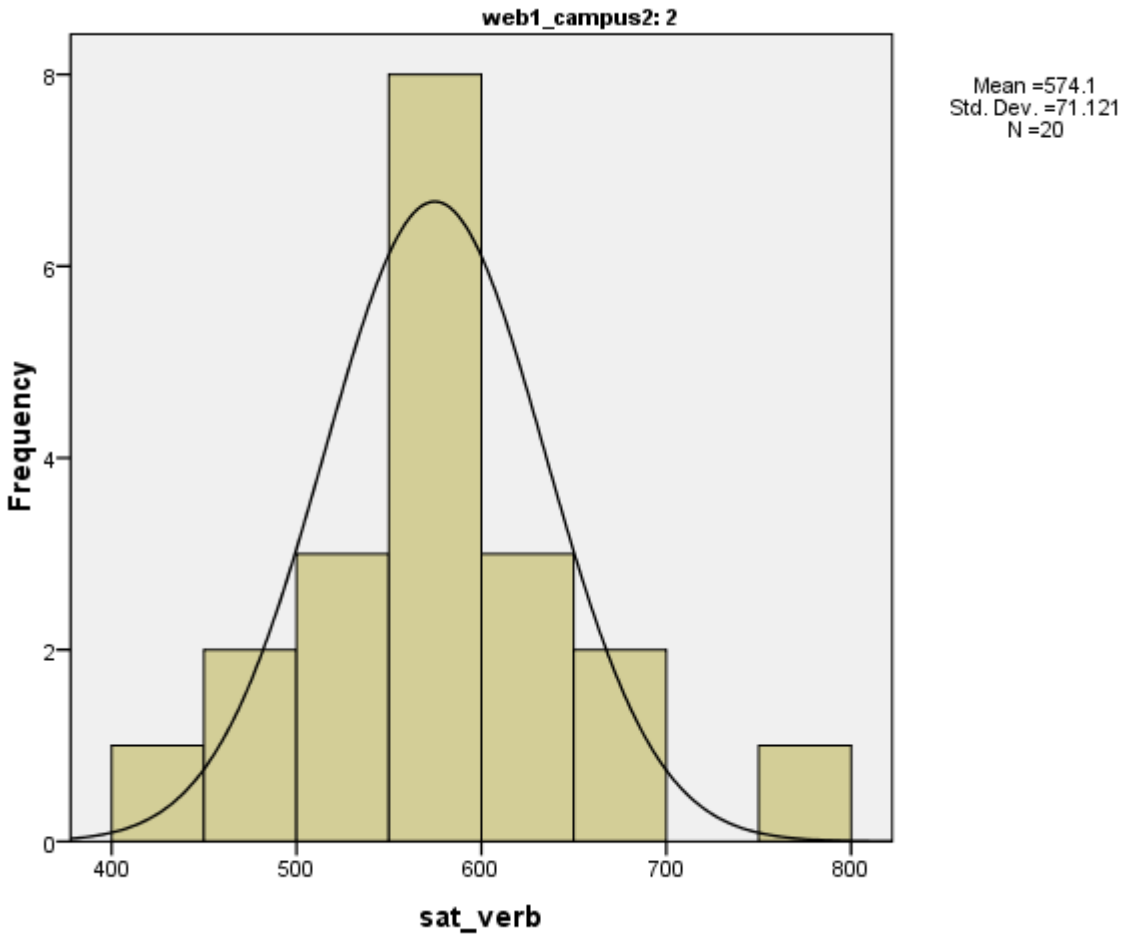

Figure 5.9: SAT verbal distribution, classroom-based group

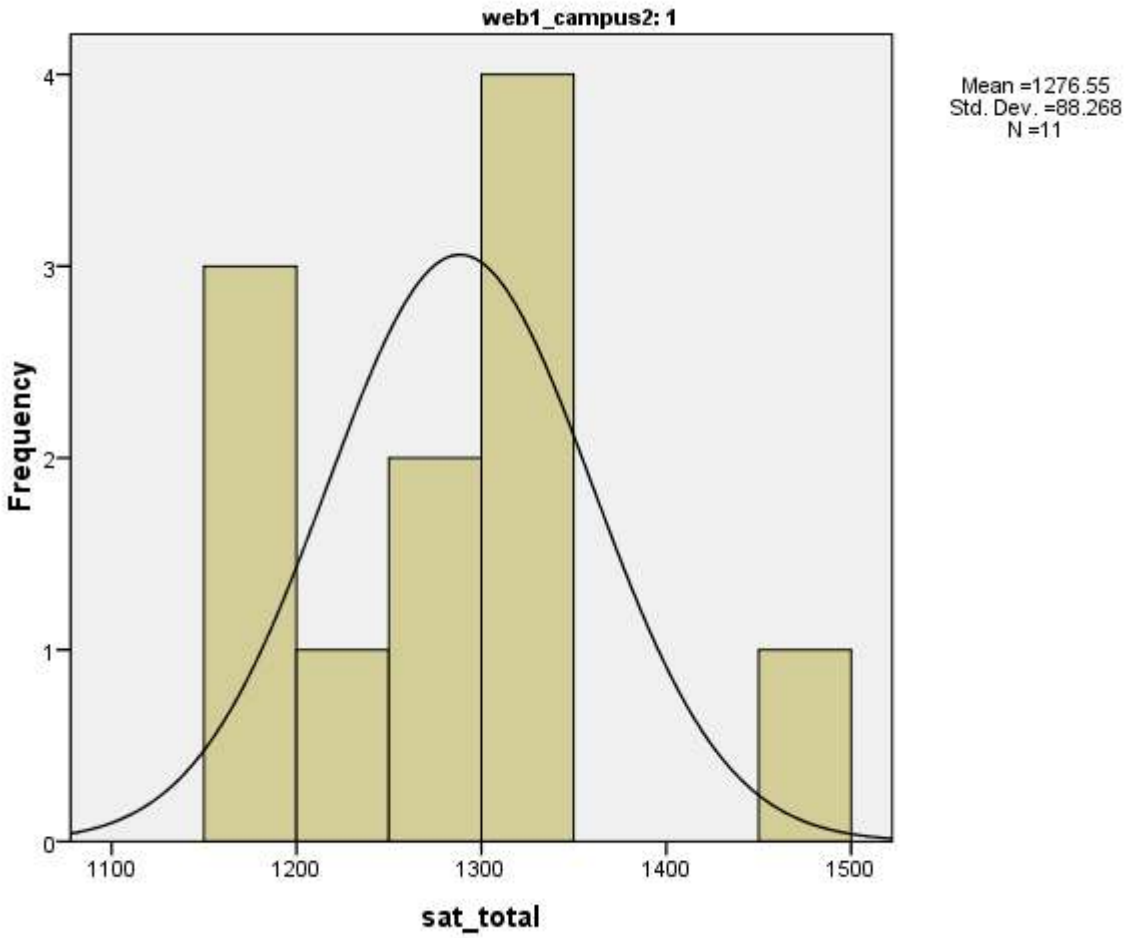

Figure 5.10: SAT total distribution, web-based group

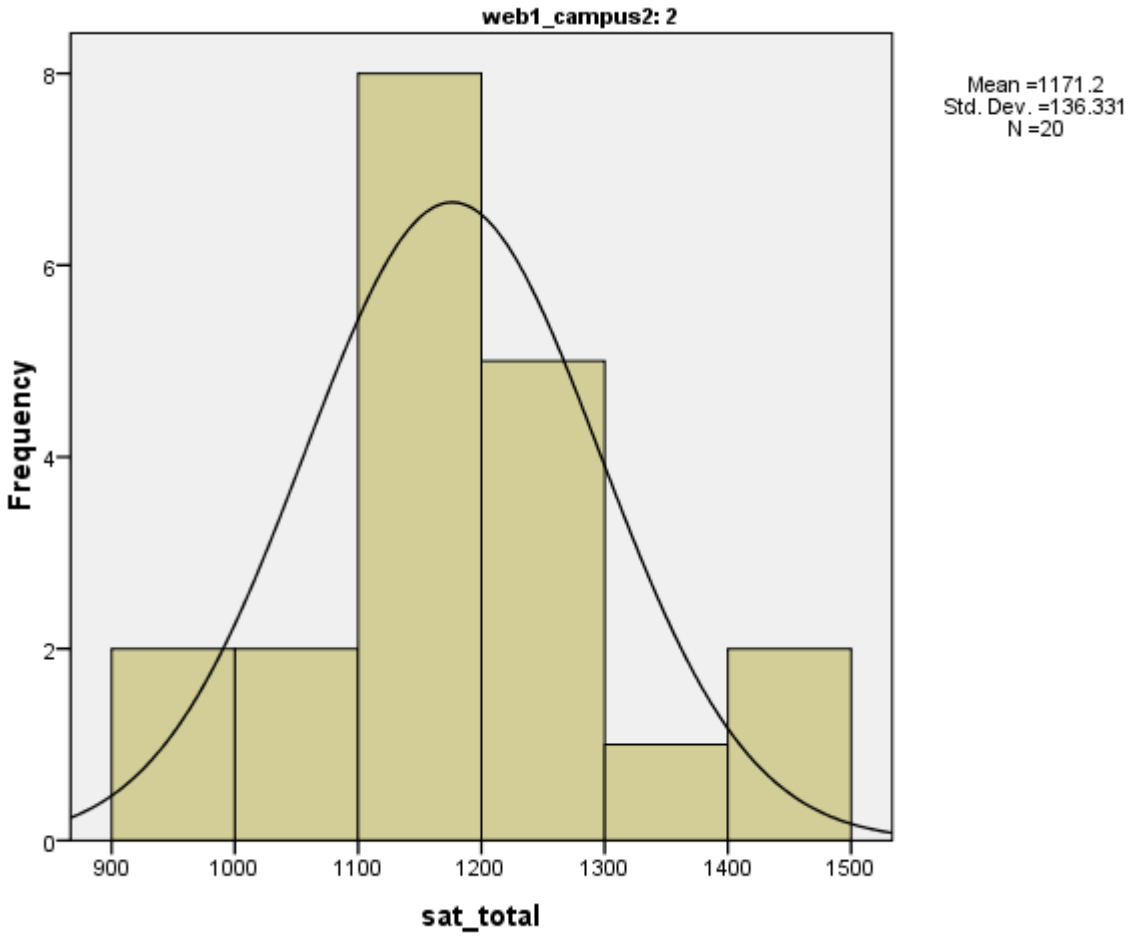

Figure 5.11: SAT total distribution, classroom-based group

5.4.3 Normality of distributions

The only non-normal distribution among the SAT math, SAT verbal, and SAT total distributions was the SAT verbal distribution in the classroom-based condition for the SOPI-based speaking task, $D(15) = .23$, $p = .033$. The SOPI-based speaking task gain distributions were also significantly non-normal in both conditions (web-based condition: $D(16) = .21$, $p = .056$; classroom-based condition: $D(17) = .21$, $p = .056$).

Non-parametric Spearman and Kendall correlations were calculated whenever non-normal distributions were involved. Pearson correlations were calculated in all cases in which both the SAT distribution and the developmental outcome distribution were normal.

5.4.4 Correlations

In both conditions, there were no statistically significant correlations between SAT math scores and WebCAPE task gains (N_1 = 11; N_2 = 13), between SAT math scores and declines in translation recognition task reading times (N_1 = 10; N_2 = 12), or between SAT math scores and SOPI-based speaking task gains (N_1 = 11; N_2 = 14). In the classroom-based condition, there was also no statistically significant correlation between SAT math scores and declines in grammaticality judgment task reading times (N_2 = 14). In the web-based condition, however, there was a significant, positive, large correlation between SAT math scores and declines in grammaticality judgment task reading times (N_1 = 8), r = .79, p (one-tailed) = .01. A scatterplot showing this correlation is provided in figure 5.12.

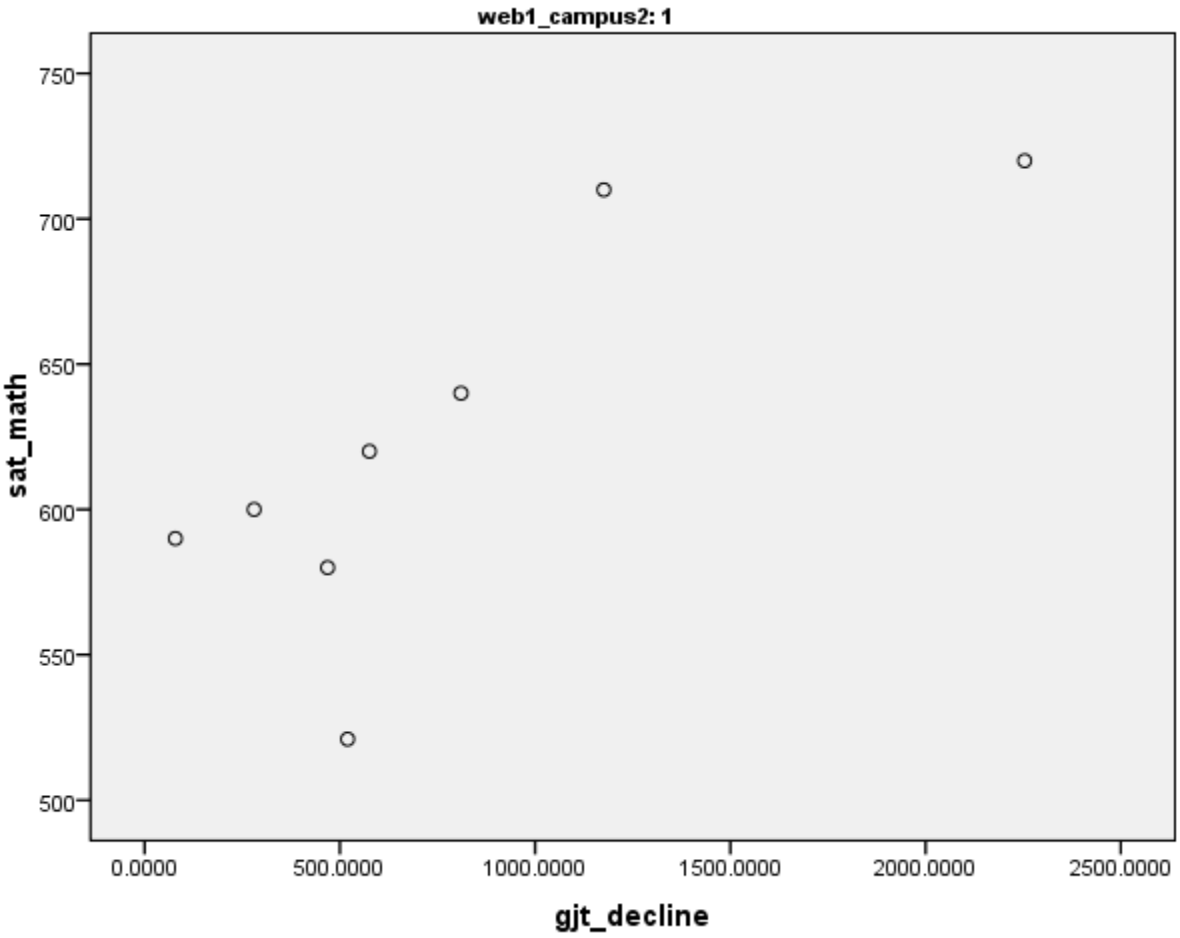

Figure 5.12: declines in grammaticality judgment task reading time plotted against SAT math scores, web-based condition

In both conditions, there were no statistically significant correlations between SAT verbal scores and WebCAPE task gains (N_1 = 11; N_2 = 14), between SAT verbal scores and declines in translation recognition task reading times (N_1 = 10; N_2 = 12), between SAT verbal scores and declines in grammaticality judgment task reading times (N_1 = 8; N_2 = 15), or between SAT verbal scores and SOPI-based speaking task gains (N_1 = 11; N_2 = 15).

In both conditions, there were no statistically significant correlations between SAT total scores and WebCAPE task gains (N_1 = 11; N_2 = 14), between SAT total scores and declines in translation recognition task reading times (N_1 = 10; N_2 = 12), or between SAT total scores and SOPI-based speaking task gains (N_1 = 11; N_2 = 15). In the classroom-based condition, there was also no statistically significant correlation between SAT total scores and declines in grammaticality judgment task reading times (N_2 = 15). In the web-based condition, however, there was a significant, positive, large correlation between SAT total scores and declines in grammaticality judgment reading times (N_1 = 8), r = .80, p (one-tailed) = .009. A scatterplot showing this correlation is provided in figure 5.13.

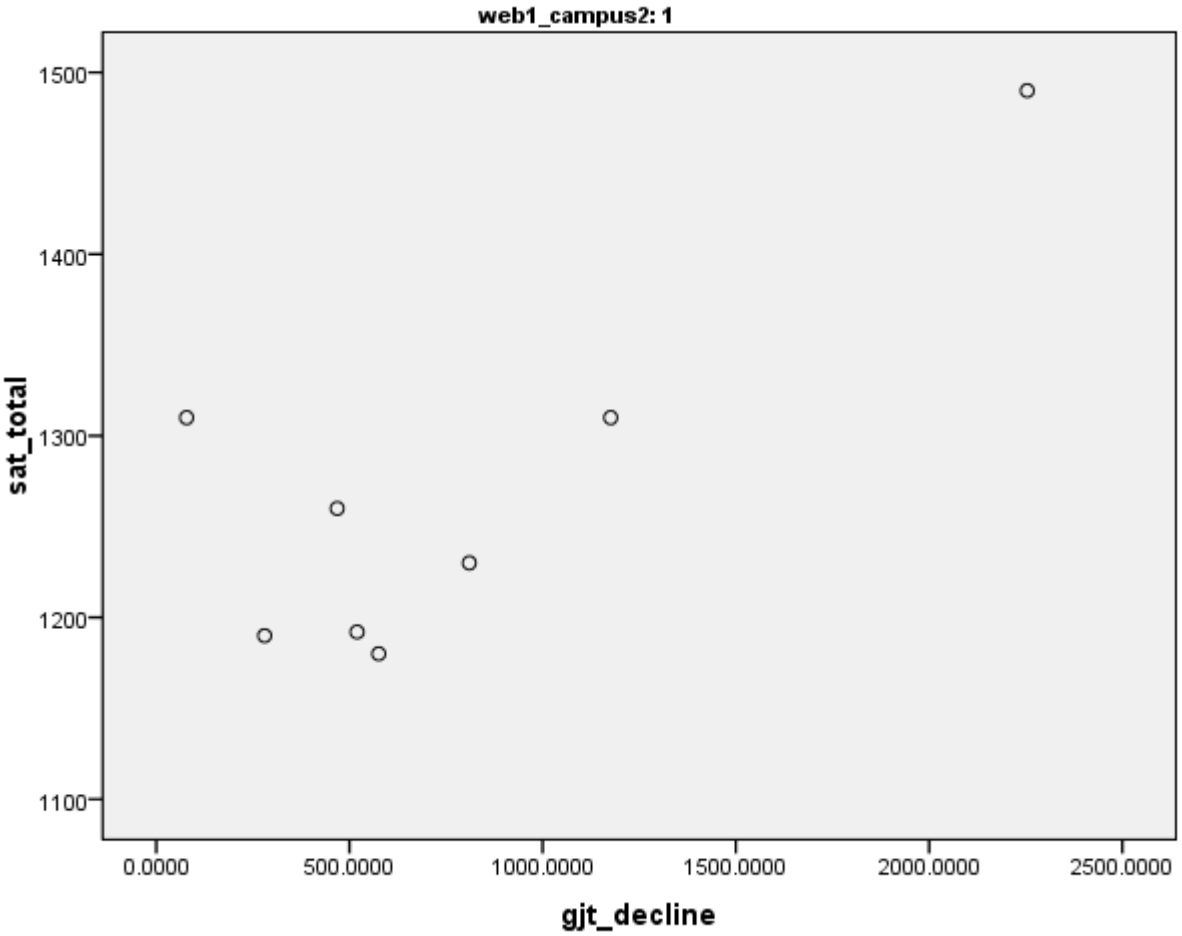

Figure 5.13: declines in grammaticality judgment task reading time plotted against SAT total scores, web-based condition

5.4.5 Summary

These findings suggest that, in most instances, there are no statistically significant correlations between SAT verbal, math, or total scores and developmental/outcome measures. Two notable exceptions, however, are the apparent correlations between SAT math/total scores and declines in grammaticality judgment task reading times in the web-based condition. The apparent correlations between SAT math/total scores

and grammaticality judgment task reading times in the web-based condition, but not in the classroom-based condition, suggest that either the classroom-based context weakens this relationship in some way which the web-based context does not or the web-based context promotes learning by way of analytical skills (as measured by SAT math scores), while the classroom-based context does not. The findings of the present analyses therefore suggest that overall success in web-based language learning contexts is not based upon SAT scores. However, because of the small number of participants in both conditions, these findings must be interpreted with caution.

5.5 Previous course grades

5.5.1 Introduction

Like SAT scores and semester standing, previous course grades are sometimes considered to be indicators of future success, with high previous course grades serving as prerequisites to stereotypically more challenging non-contiguous learning options. If previous courses do relate to future developmental outcomes, one would expect to observe a positive correlation between the two variables. The previous course grade data for the present study were collected as part of the background questionnaire administered at the beginning of the WebCAPE task. At both pre- and post-treatment administrations, participants were asked to select their previous course grade from a drop-down list.

5.5.2 Histograms

Figure 5.14 shows the previous course grade distribution for the web-based group. Figure 5.15 shows the previous course grade distribution for the classroom-based group. The ranges of both distributions are identical. It should be noted that previous course grade data was available from more classroom-based (N = 20) than web-based (N = 12) participants.

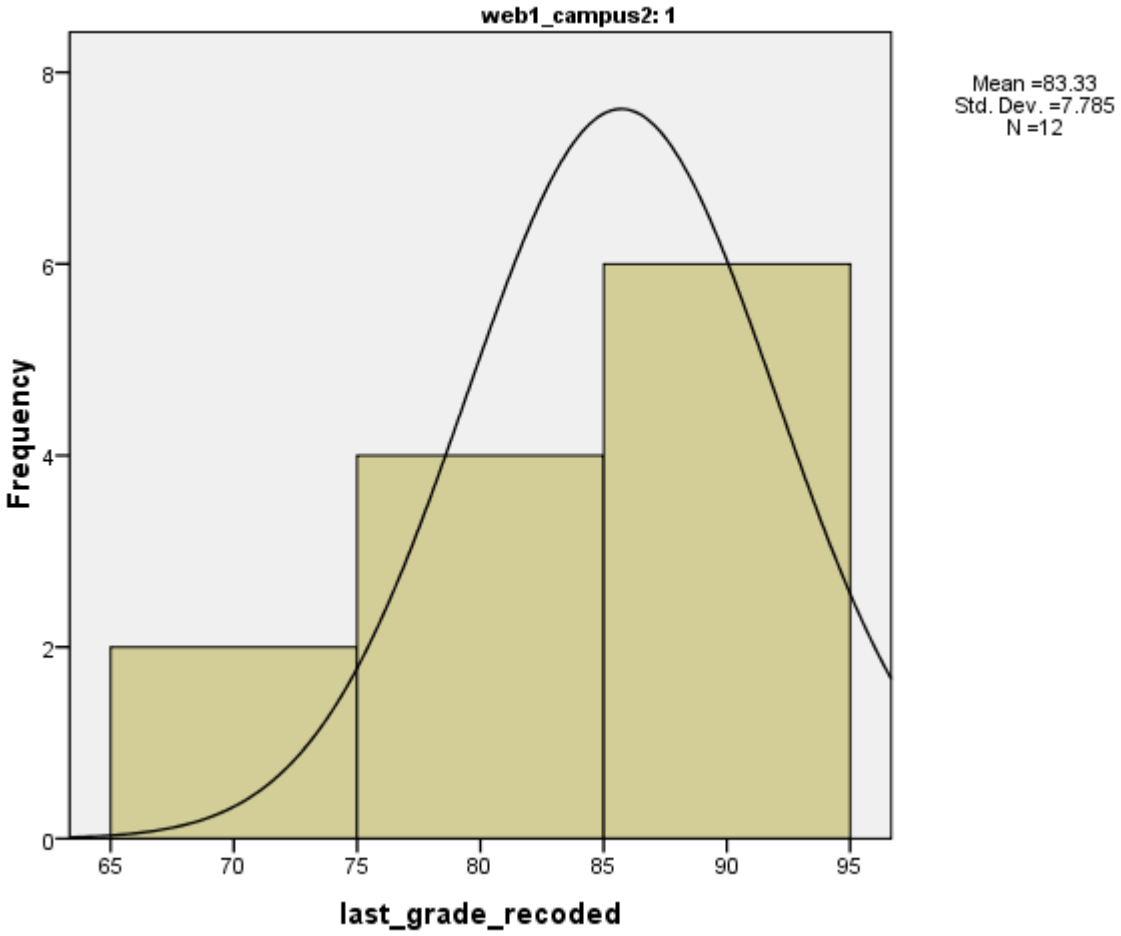

Figure 5.14: previous course grade distribution, web-based group

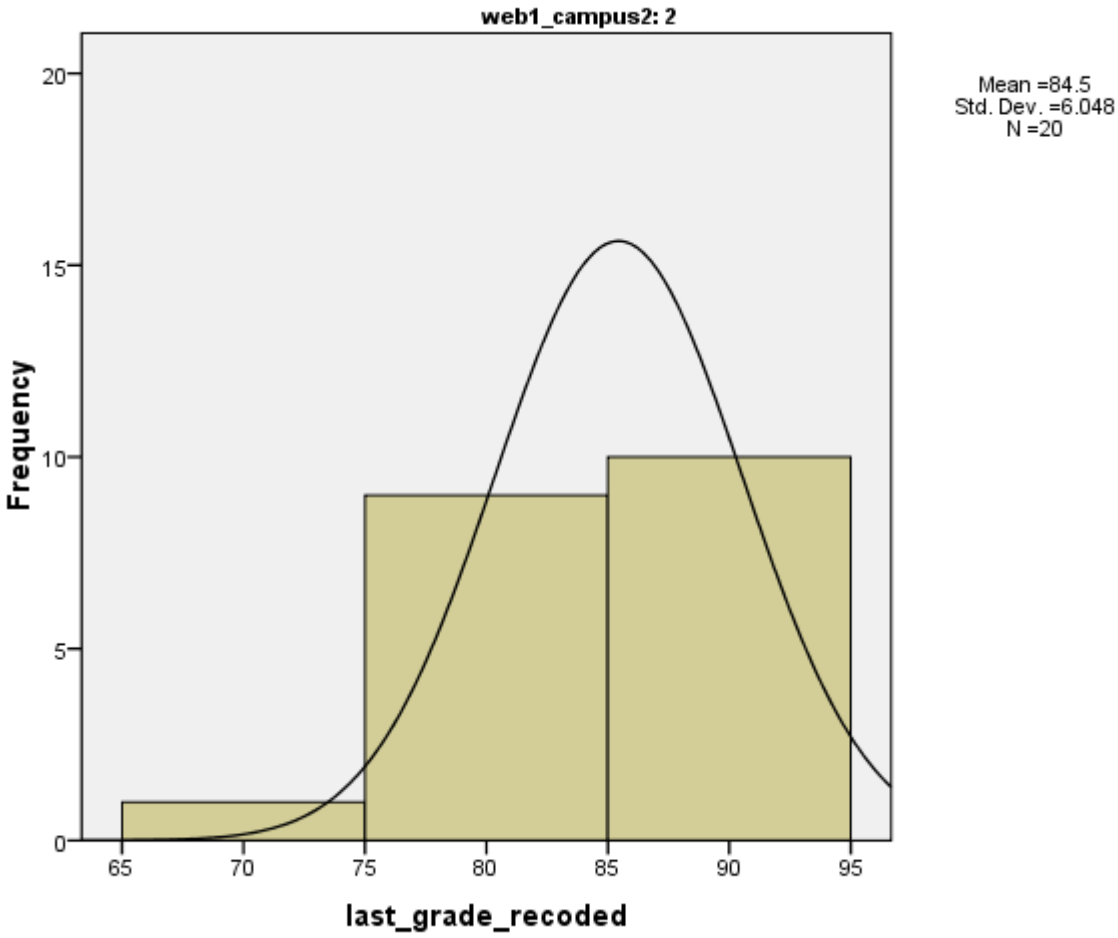

Figure 5.15: previous course grade distribution, classroom-based group

5.5.3 Normality of distributions

Because the previous course grade data were in the form of a letter-grade, rather than points/percentages, the following recoding was performed: A = 90%, B = 80%, C = 70%. These percentages corresponded to the lowest values of the A-range, B-range, and C-range letter grades, respectively, of the percentage grading scale used in both the web-based and classroom-based German language courses at the Penn State

University Park campus. The previous course grade distributions were significantly non-normal in both conditions and for all four developmental outcomes (WebCAPE task: web-based condition: $D(11) = .332$, $p = .001$, classroom-based condition: $D(15) = .385$, $p = .000$; translation recognition task: web-based condition: $D(11) = .28$, $p = .018$, classroom-based condition: $D(13) = .37$, $p = .00$; grammaticality judgment task: web-based condition: $D(8) = .30$, $p = .031$, classroom-based condition: $D(16) = .35$, $p = .00$; SOPI-based speaking task: web-based condition: $D(11) = .28$, $p = .018$, classroom-based condition: $D(15) = .37$, $p = .00$). The SOPI-based speaking task gain distributions were also significantly non-normal in both conditions (web-based condition: $D(16) = .21$, $p = .056$; classroom-based condition: $D(17) = .21$, $p = .056$). Because course grade distributions were significantly non-normal in both conditions and for all four developmental measures, non-parametric Spearman and Kendall correlations were calculated.

5.5.4 Correlations

In both conditions, there were no statistically significant correlations, on either test, between previous course grades and declines in translation recognition task reading times ($N_1 = 11$; $N_2 = 13$), between previous course grades and grammaticality judgment task reading times ($N_1 = 8$; $N_2 = 16$), or between previous course grades and SOPI-based speaking task gains ($N_1 = 11$; $N_2 = 15$). In the web-based condition, there was also no statistically significant correlation between previous course grade and WebCAPE task gains ($N_1 = 11$). In the classroom-based condition, however, there was a significant, negative, medium correlation between previous course grade and

WebCAPE task gains (N_2 = 15), r_s = -.37, p (one-tailed) = .049, τ = -.44, p (one-tailed) = .05. A scatterplot showing this correlation is provided in figure 5.16.

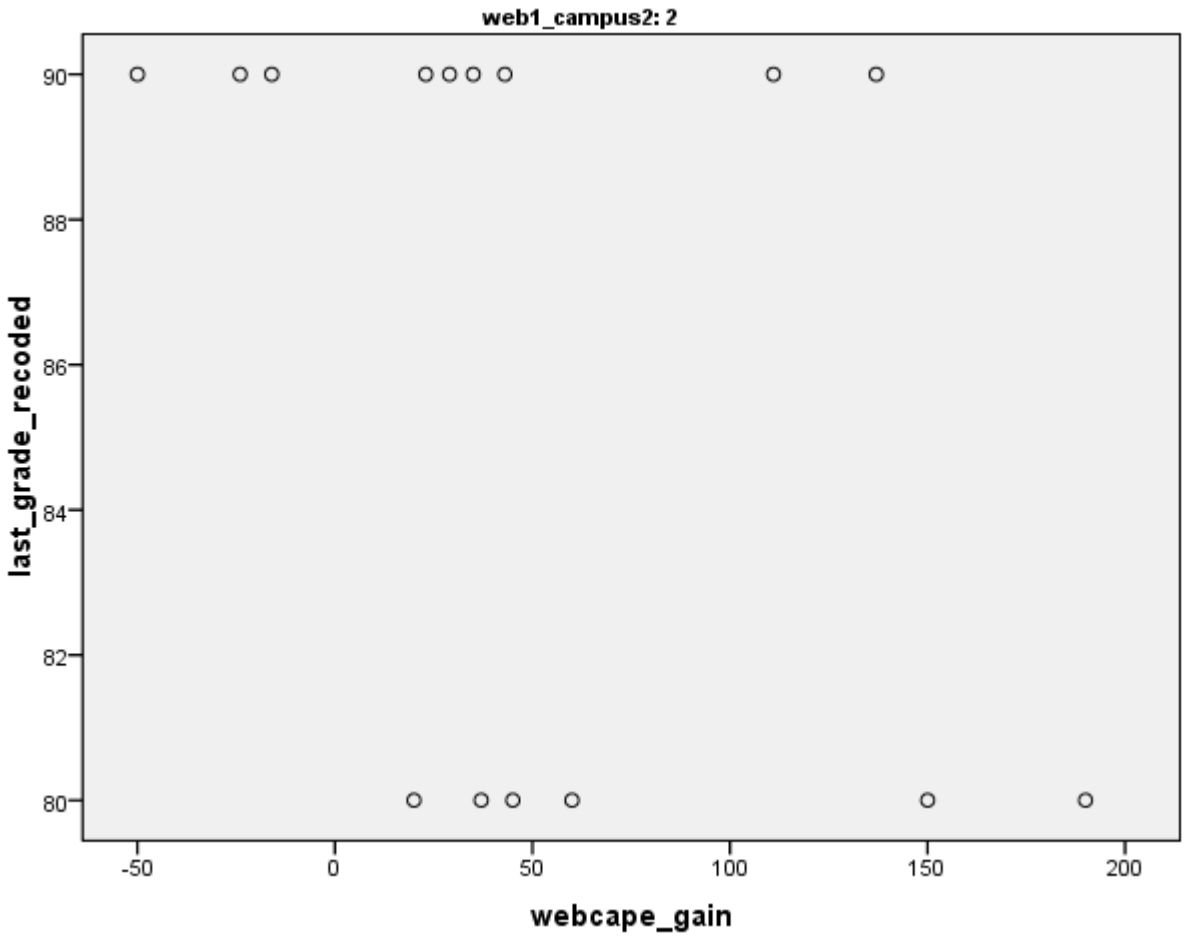

Figure 5.16: gains on WebCAPE task plotted against previous course grades, classroom-based condition

5.5.5 Summary

These findings suggest that there is no simple and direct relationship between previous course grades and declines in translation recognition task reading times, declines in grammaticality judgment task reading times, or SOPI-based speaking task

gains, in either the web-based or classroom-based German language courses at Penn State's University Park campus. There also appears to be no relationship between previous course grades and WebCAPE task gains, in the web-based courses. In the classroom-based courses, however, there appears to be a negative, medium correlation between previous course grades and WebCAPE task gains. The findings of the present analysis therefore suggest that overall success in web-based language learning contexts is not based upon previous course grades. However, because of the small number of participants in both conditions, these findings must be interpreted with caution.

5.6 Phonological working memory

5.6.1 Introduction

The final individual learner characteristic is phonological working memory, that is, the ability to cognitively maintain and manipulate phonological information. Payne and Whitney (2002) reported a stronger positive correlation between phonological working memory and oral proficiency development among classroom-based learners than among hybrid/blended learners. Thus, in the present study, phonological working memory was assessed in order to calculate this same correlation between phonological working memory and SOPI-based speaking task gains.

The recognition-based, nonword repetition task used by Payne and Whitney (2002) consists of 24 English pseudo-words. This same task was used in the present study. In rating the test, each correctly identified stimulus was worth one point; the highest possible score was 24 points. Before the task begins, a research assistant reads aloud

the task instructions, and the participant also reads the task instructions on the screen. Participants then listen to three sets of eight pseudo-words spaced with one second pauses. After each set has been read aloud, participants are presented with a computer screen containing the eight pseudo-words that they heard and eight additional distractor pseudo-words. Participants are instructed to click on the pseudo-words that they heard and to disregard the additional words. Participants are instructed not to ask the research assistant for assistance unless a technical problem occurs. The nonword task was administered during week 14 or the first two days of week 15 of the 15-week semester. All administrations of the nonword task were computer-based and individually proctored, in a quiet room.

5.6.2 Histograms

Figure 5.17 shows the nonword repetition task score distribution for the web-based group. Figure 5.18 shows the nonword repetition task score distribution for the classroom-based group. The range of the web-based distribution is larger than the range of the classroom-based distribution.

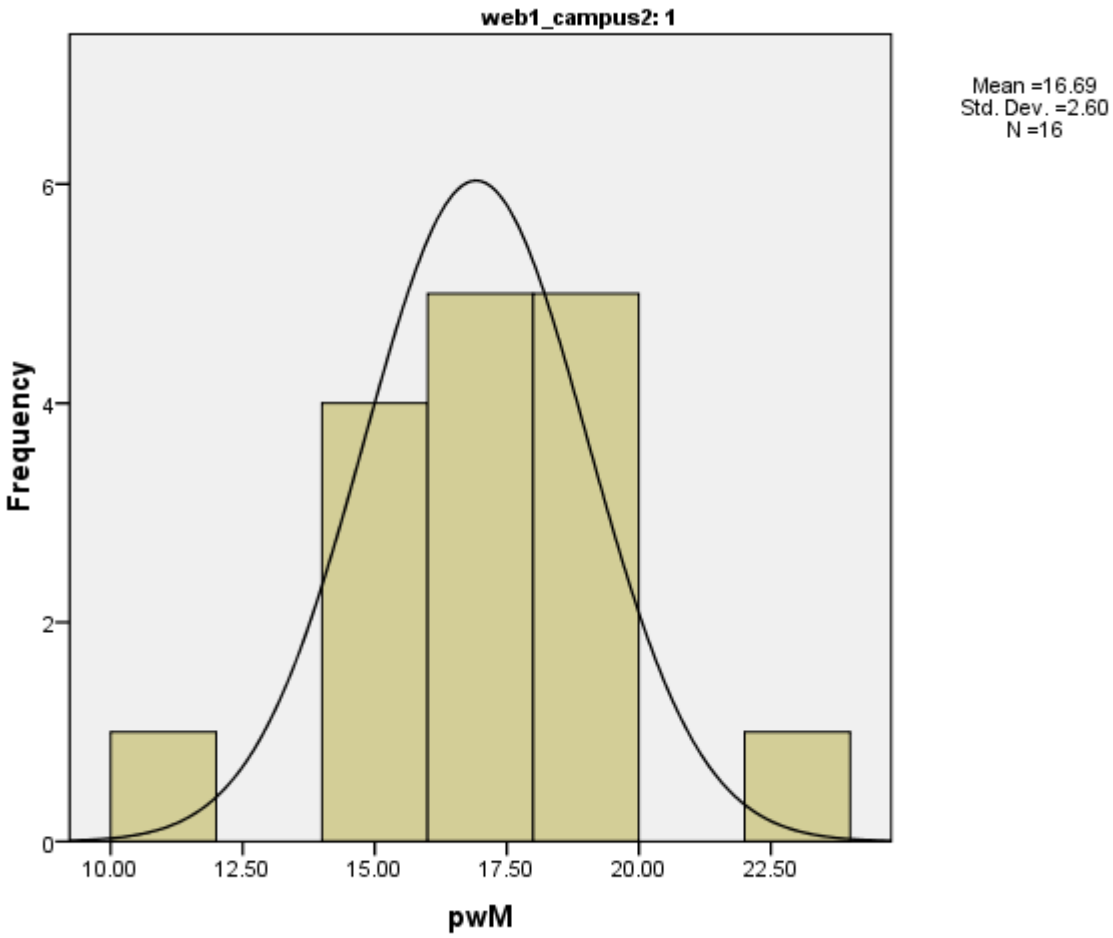

Figure 5.17: nonword repetition task score distribution, web-based group

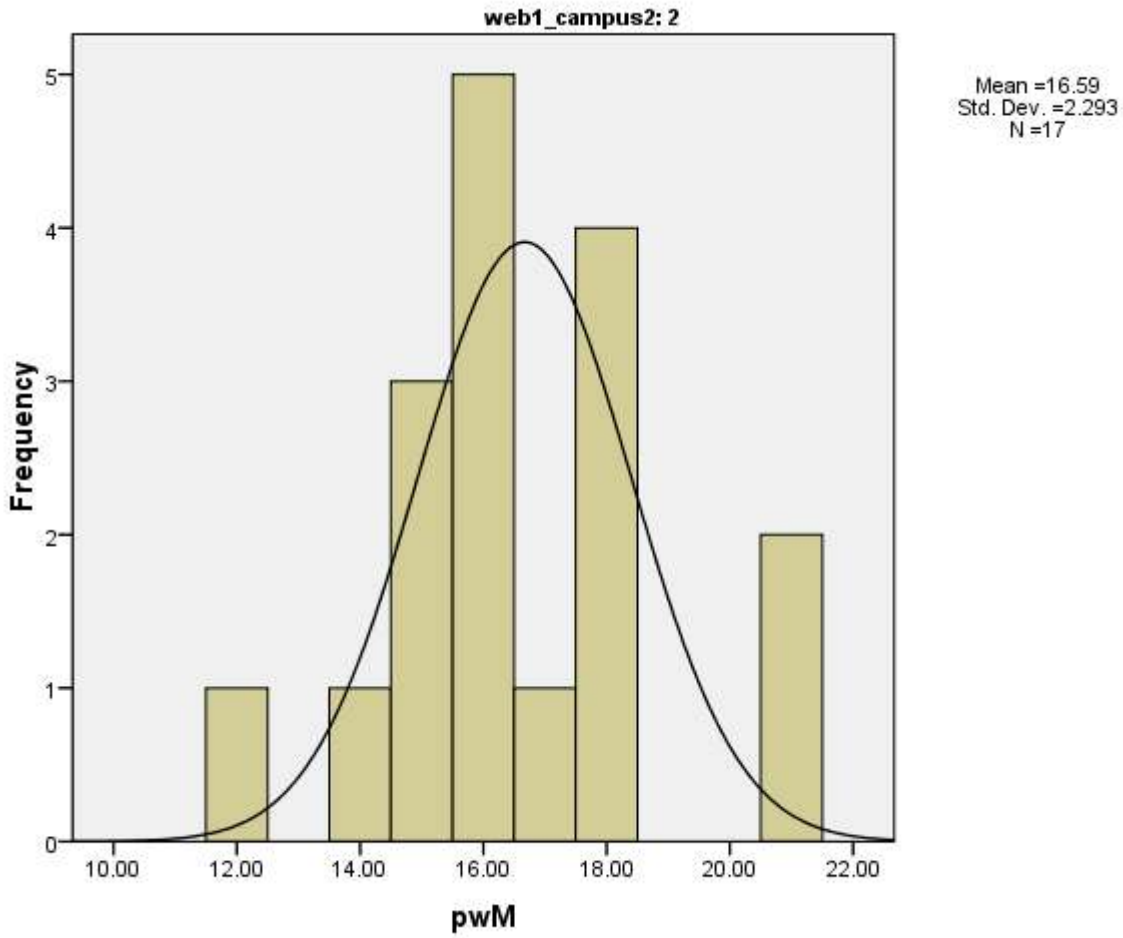

Figure 5.18: nonword repetition task score distribution, classroom-based group

5.6.3 Descriptive statistics

Table 5.1 shows the means, standard errors, medians, and standard deviations for the nonword repetition task for both conditions (cf. Payne and Whitney 2002, p. 19). There was no significant difference in nonword repetition task scores between the two groups.

condition					
	N	Mean	Std. Error	Median	Std. Deviation
web	16	16.69	.65	17.00	2.60
classroom	17	16.59	.56	16.00	2.29

Table 5.1: descriptive statistics, nonword repetition task data set

5.6.4 Normality of distributions

The nonword repetition task distributions were normal in both conditions. The SOPI-based task speaking gain distributions were significantly non-normal in both conditions (web-based condition: $D(16) = .21$, $p = .056$; classroom-based condition: $D(17) = .21$, $p = .056$). Thus non-parametric Spearman and Kendall correlations were calculated.

5.6.5 Correlations

In both conditions, there were no statistically significant correlations between nonword repetition task scores and SOPI-based speaking task gains ($N_1 = 13$; $N_2 = 12$), nor did the correlations approach significance. It is possible that, as in Payne and Whitney (2002), the text-based chat exchanges weakened the correlation between nonword repetition task scores and SOPI-based speaking task gain scores in the web-based condition (p. 23). However, text-based chat exchanges, which were absent from

the classroom-based condition, cannot account for the lack of a correlation in this context.

5.6.6 Summary

These findings suggest that there is no simple and direct relationship between phonological working memory, as measured by the nonword repetition task, and SOPI-based speaking task gains, in either the web-based or classroom-based German language courses at Penn State's University Park campus. The findings of the present analysis therefore suggest that the development of oral proficiency in web-based language learning contexts, as measure by the SOPI-based speaking task, is not based upon phonological working memory, as measured by the nonword repetition task. However, because of the small number of participants in both conditions, these findings must be interpreted with caution.

5.7 Conclusion

In this chapter, correlation analyses have sought to explore possible relationships between developmental outcomes and some of the learner characteristics that are frequently referenced in discussions on the role of the learner in distance language education. Because of the limited sample sizes in both conditions, results must be interpreted with caution.

The correlations appear to be few. In the web-based condition, there was a significant, positive, medium correlation between age and declines in translation recognition reading times (N_1 = 16), r_s = .35, p (one-tailed) = .044, τ = .43, p (one-

tailed) = .05; a significant, positive, large correlation between SAT math scores and declines in grammaticality judgment task reading times (N_1 = 8), r = .79, p (one-tailed) = .01; and a significant, positive, large correlation between SAT total scores and declines in grammaticality judgment task reading times (N_1 = 8), r = .80, p (one-tailed) = .009. In the classroom-based condition, there was a significant, negative, medium correlation between previous course grade and WebCAPE task gains (N_2 = 15*)*, r_s = -.37, p (one-tailed) = .049, τ = -.44, p (one-tailed) = .05.

The lack of repeated correlations between particular individual variables and all developmental outcomes suggests that no individual learner characteristic single-handedly determines the level of learner success in either environment. However, the lack of significant correlations could be due to the small sample sizes. In the future, it would be useful to repeat these correlation analyses with larger data sets.

Chapter 6: Summary and implications

6.1 Introduction

This dissertation set out to consider perhaps the most controversial issue in distance language education today, a question raised by educators, students, and administrators alike. Can distance approaches constitute a viable and comprehensive alternative to classroom instruction? Can distance language learners develop not only the abilities to read, write, and listen in the target language, but can they also learn to speak? As distance instruction becomes "an increasingly visible part of educational provision" (White, 2003, p. 1), these questions have become the crux of the issue for many educators, students, and administrators. Says Yarnall (2003): "Beyond…political and financial considerations…online learning will ultimately be judged by what impact it has on student achievement, especially in the standards-based, high-stakes-testing world…We've learned that it's not about the technology. It's about the people." (pp. 108-109).

Like Yarnall, this dissertation focuses on achievement and on people. Because "[d]elivering a language course exclusively via the Web constitutes a paradigm shift in teaching [and] very little relevant research exists to guide the language teaching profession in this new endeavor" (Fleming, Hiple, & Du 2002, pp. 36-37), a detailed outline of the development and design of the fully web-based German Online at PSU courses was provided in chapter two. However, this dissertation was not intended as an overview of technologies. In the following statement, Felix (2003) sums up the approach to technology that I sought to embody in this dissertation:

> In all these endeavors…the technology does not dominate the learning experience but remains in the background in the shape of one of many tools at the disposal of both teachers and students, used for the unique potential it offers in different settings and in catering for different learning needs (p. 164).

Thus the foci of the dissertation were the research questions laid out in chapter three. The primary research question was as follows: (1) Is it possible to develop viable, comprehensive, fully at-a-distance language courses, that is, courses without any face-to-face contact hours? This primary research question was operationalized through the following four sub-questions: (1): Do classroom-based and web-based learning contexts differentially support the development of vocabulary and grammar as measured by the German WebCAPE examination?; (2): Do classroom-based and web-based learning contexts differentially support the development of language processing capabilities as measured by speeded translation recognition reading times?; (3): Do classroom-based and web-based learning contexts differentially support the development of language processing capabilities as measured by speeded grammaticality judgment reading times?; (4): Do classroom-based and web-based learning contexts differentially support the development of oral proficiency as measured by the SOPI-based task, that is, the Simulated Oral Proficiency Interview, rated according to the Payne and Whitney (2002) 50-point scale?

The second research question was as follows: (2) Do individual characteristics – namely age, semester standing, SAT scores (verbal, math, and total), previous course grades, and phonological working memory – and developmental outcomes correlate in either the classroom-based or web-based contexts and, if so, are these correlations

similar or different in these two contexts? The second research question was operationalized through the following five sub-questions: (1): Is the correlation between age and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (2): Is the correlation between semester standing and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (3): Is the correlation between SAT scores (verbal, math, and total) and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (4): Is the correlation between previous course grades and developmental outcomes the same, stronger, or weaker in web-based instruction as compared to classroom-based instruction?; (5): With regard to oral proficiency, is the positive correlation between phonological working memory and development weaker in the web-based condition, as in the hybrid/blended condition in Payne and Whitney (2002)?

In order to answer these questions, a quasi-experimental, pre-test/post-test research design was developed (chapter 3). The web-based (treatment) condition consisted of a fully web-based German-language course which included (a) self-study of text, audio, and video materials (section 2.2.2.4); (b) reading, writing, grammar, and listening activities with automated feedback (section 2.2.2.5); (c) a weekly, web-based, large-group discussion forum, commonly know as an electronic message board (section 2.2.2.6); (d) mobile language immersion (listening to two German pop songs per week on a portable audio player such as an iPod) (section 2.2.2.7); (e) speaking assignments submitted to the instructor and shared with classmates as podcast

episodes (section 2.2.2.8); (f) two, 50-minute text-based chats each week, in peer-to-peer small groups and dyads (section 2.2.2.9); (g) three final exam components (section 2.2.2.10); (h) access to additional, supplementary websites (section 2.2.2.11); and (i) attendance at a minimum of two virtual office hours (2.2.2.12). In the classroom-based (control) condition, the weekly speaking assignments and weekly text-chat sessions were replaced by four, 50-minute face-to-face sessions each week which included group study of the text and audio materials, speaking activities, and small group discussions. All other course components were identical across the two learning conditions.

6.2 Developmental outcomes

The developmental outcomes for both web-based and classroom-based conditions were presented in chapter four. On all tasks, statistically significant development was found, from pre-test to post-test, in both learning conditions. Further, among the web-based learners, improvements in vocabulary and grammar (as measured by the WebCAPE task) and improvements in language processing (as measured by the grammaticality judgment and translation recognition tasks) were not only statistically significant but also had large effect sizes (r = .70; r = .76; and r = .76, respectively). Similarly, improvements in oral proficiency (as measured by the SOPI-based task, that is, the Simulated Oral Proficiency task rated according to the Payne and Whitney (2002) 50-point-scale) were not only statistically significant but also had a medium effect size (r = .39). The larger the effect size, the more likely that the variable under discussion (e.g., learning condition) does, in fact, account for the variance in

performance (Field, 2005, p. 32). In other words, the medium to large effect sizes suggest that development gains were, in fact, a result of the learning condition rather than a result of other variables.

Further, the improvements seen in the web-based condition were in all cases statistically equivalent to the improvements seen in the classroom-based condition; classroom-based and web-based learning contexts equally support gains on the WebCAPE examination, declines in speeded translation recognition reading times, declines in speeded grammaticality judgment reading times, and gains on the SOPI-based task. It is also to be noted that, on a descriptive level, declines in translation recognition reading times were slightly greater in the web-based condition (web-based condition: M = 239.27; classroom-based condition: M = 134.34) and gains in oral proficiency were also slightly greater in the web-based condition (web-based condition: M = 4.38; classroom-based condition: M = 3.53). Once again, this finding – that the web-based context supports development just as well as does the classroom-based context – is a vital piece of information for educators and administrators who are currently considering forays into web-based provision.

The findings of this dissertation support, extend, and bring together the results of several previous studies. Using a pre-test/post-test design, Volle (2005) reported statistically significant development among fully web-based learners. However, Volle did not include a classroom-based control group, so it remained unclear whether development among web-based learners, although statistically significant, was equivalent to the development one would observe among learners in a comparable classroom-based context. Beauvois (1998) directly compared classroom-based and

hybrid/blended learners and reported that hybrid/blended learners, who engaged in one text-based chat each week, achieved higher scores on two mid-term oral exams and one final oral exam than did their fully classroom-based counterparts. However, Beauvois did not utilize a pre-test/post-test design, so it remained unclear whether the hybrid/blended learners performed better due to their learning context or due to greater previous development. Chenoweth and Murday (2003), reporting on the Language Online initiative at Carnegie Mellon University, found mixed results for hybrid/blended learners. In some iterations, the hybrid/blended learners outperformed the fully classroom-based learners; in other iterations, the classroom-based learners outperformed the hybrid/blended learners. Without a pre-test/post-test design and with potentially incomparable learning conditions (for example, weekly, one-on-one, face-to-face instruction in the hybrid/blended conditions), it remained unclear whether web-based instructional elements fostered development or whether development was fostered by the face-to-face, classroom-based elements. Kost (2004) did utilize a pre-test/post-test design and very comparable conditions in a study that found no statistically significant differences in either oral or written proficiency development between hybrid/blended and fully classroom-based learners. However, it could be argued that the two conditions were actually too similar; the hybrid/blended learners engaged in 15-20 minute text-based chat role plays on a weekly basis, but all other aspects of the two learning conditions were the same. Payne and Whitney (2002) had perhaps the most careful research design, involving pre-tests and post-tests, comparable instructional time in both conditions, and distinctive portions (text-based chats in the hybrid/blended condition) that were twice as distinctive as those of

any similar study. Payne and Whitney (2002) reported significantly greater gains in oral proficiency development among learners in the hybrid/blended condition, who engaged in text-based chats. While the findings of Payne and Whitney (2002) suggested that text-based chat might, in fact, be a sort of flight simulator for speaking, allowing learners to "…dive, stall, [and] recover…inhabiting the sweet spot at the edge of …[their] capabilities in ways…[they] could never risk in an actual plane [conversation]" (Coyle, 2009, p. 24), it remained unclear whether the face-to-face portions of the hybrid/blended courses in Payne and Whitney (2002), Beauvois (1998), Chenoweth and Murday (2003), and Kost (2004) were critical to development. The present study has considered this possibility and found that face-to-face communication is not essential to development. However, the next logical research step is to compare fully classroom-based instruction, fully web-based instruction, and hybrid/blended instruction in a three-way design that may reveal, as suggested by the findings of Payne and Whitney (2002), superior development among hybrid/blended learners. If, in a three-way study, superior development were found among hybrid/blended learners, this finding would confirm that the optimal approach to language education is to blend the very best pedagogies, regardless of the modalities and physicalities that they involve. While this seems to an intuitive statement, it is sometimes difficult to consider that non-contiguous technologies that appear to be less rich than face-to-face communication may nevertheless be of unique pedagogical value.

6.3 Correlations between developmental outcomes and learner characteristics

For both web-based and classroom-based conditions, the correlations between developmental outcomes and learner characteristics were presented in chapter five. Due to small sample sizes in both conditions, the correlation results should be interpreted with caution. The correlations between developmental outcomes and learner characteristics appear to be few. In the web-based condition, there was a significant, positive, medium correlation between age and declines in translation recognition task reading times, a significant, positive, large correlation between SAT math scores and declines in grammaticality judgment task reading times, and a significant, positive, large correlation between SAT total scores and declines in grammaticality judgment task reading times. In the classroom-based condition, there was a significant, negative, medium correlation between previous course grade and WebCAPE task gains. There was no correlation, in either condition, between phonological working memory (as measured by the nonword repetition task) and oral proficiency development (as measured by gains on the SOPI-based speaking task). This contradicts the findings of Payne and Whitney (2002). In their hybrid/blended condition, they found a weak correlation between phonological working memory and oral proficiency development. In their classroom-based condition, they found a modest correlation between phonological working memory and oral proficiency.

The lack of repeated correlations between particular individual variables and all developmental outcomes suggests that no individual learner characteristic single-handedly determines the level of learner success in either environment. However, the correlations observed in the present study warrant further consideration, particularly

with larger data sets. It is possible that the lack of significant correlations is due to the small sample sizes in both conditions.

6.4 Student and educator comments regarding German Online at PSU

As mentioned when outlining the research design (chapter 3), this study consciously focused on developmental outcomes rather than learner perceptions. Nevertheless, some readers may wish to know how learners felt about their experiences in the web-based context. It may also be of interest to know how other educators perceived the courses after touring the course spaces in the learning management system, reviewing the course content, and observing student interactions. Table 6.1 provides a sampling of student comments; these comments were excerpted from student emails and are very typical. Although instructors noted that students occasionally questioned course components or the online format, no negative written comments were available for inclusion in the present study.

Comment 1: "I have really enjoyed this class and wish I had taken German online all three semesters. I really liked being able to work at my own pace."
Comment 2: "Honestly, I did not realize how well my speaking had come along. The more I read the faster I read and by the end I was very impressed with myself."
Comment 3: "The material is fairly hard (TONS of vocab [sic]), but the supplemental material is excellent. The online section requires regular chats over the Internet with classmates, which makes a huge difference.**"**

Table 6.1: student comments regarding German Online at PSU

The first comment is one that was heard frequently among the web-based learners. They appreciated the flexible pacing of the week-by-week format of the German Online at PSU courses. The second comment speaks directly to the issue of oral proficiency development. As evidenced in this comment, learners themselves are sometimes apprehensive about learning to speak in a fully web-based environment. By recording weekly speaking assignments, however, the oral proficiency objectives for the course were broken down into smaller sub-goals (reading aloud, reading a previously-written essay, responding to aural prompts, and, finally, impromptu exposition on a specified topic). By recording weekly speaking assignments, learners also left a concrete record of their progress. The third comment points out that while the learners may not have perceived the course content as undemanding, they did feel that the course was manageable and the content was accessible. Learners also appeared to appreciate and enjoy the peer-to-peer chats.

Table 6.2 provides a sampling of comments from fellow educators who reviewed or visited the German Online at PSU courses.

Comment 1: "Since its inception two years ago, this program has provided a wider range of students who could not attend a traditional, on-campus section the opportunity to learn the language despite geographical or scheduling difficulties. Needless to say, the online course series has a significant institutional and humanitarian value in this regard."
Comment 2: "You are doing a titanic work!"
Comment 3: I am greatly impressed [by] how your students are learning the language. Reading their forum entries, I can definitely say that the students are enjoying their conversation in German, and become progressively better in their sentences and ability to express themselves in [a] foreign language.

Table 6.2: educator comments regarding German Online at PSU

The first comment highlights the institutional and personal value of web-based provision. The second comment points out the commitment of time and resources that are involved in non-contiguous provision. In my experience, the cooperation and mentorship of experts in educational technology, the specific content area, and the content-specific pedagogy are crucial to the development of a successful course. The third comment notes that learners appear to be enjoying the course work and making progress as they move through the course activities.

6.5 Limitations

As with any study, there are design limitations that must be kept in mind when considering the results of this study. First and foremost, intact groups were used. Although the groups were comparable with regard to various individual characteristics, such as mean years of previous study and phonological working

memory, and although a pre-test/post-test design allowed previous development to be taken into consideration, it is possible that those learners who choose to enroll in a web-based course are in some way different than those learners who choose to enroll in a classroom-based course. A future study might combine the developmental and individual characteristic measures utilized here with measures of learner motivation. Additional limitations in the present study are the lack of distinct course levels and the small sample size. Ideally, future studies will compare development across learning conditions and between course levels.[24] In addition, it would be ideal to repeat the present study during future iterations of the German Online PSU courses, as has been done in studies of the Language Online initiative at Carnegie Mellon University, in order to obtain larger sample sizes.

6.6 Implications and next steps

What implications does this study have for future course design? The defining characteristics of the web-based condition were the weekly text-based, peer-to-peer chats and the weekly, recorded speaking assignments. In all web-based courses that I have designed since German Online at PSU, I have, therefore, always included these components. It would also appear worthwhile to include these components in traditional, face-to-face courses, making them hybrid/blended. The results of Payne and Whitney (2002) suggest that the combination of face-to-face and text-based chat practice is superior to face-to-face practice alone in fostering oral proficiency. The observations of Donahue (2000) suggest that the physics of the classroom can never

[24] See again footnote 14. Such a study would require a research context in which course levels are distinct.

allow for the long stretches of uninterrupted speech that are possible in individual recording assignments. In the present study, it is likely that these two components allowed the web-based context to be comparable to the classroom-based context in fostering development. The inclusion of weekly text-based chats and weekly recorded speaking assignments in classroom-based courses is relatively simple and is likely to significantly benefit learners. In addition, if available, CD-ROMs or websites with Automated Speech Recognition (ASR) allow for individual speaking practice that is simply not possible within large face-to-face groups.

Finally, all learners in the present study made statistically significant improvements on all measures of grammatical development; all learners also completed automated grammar exercises. Thus, whenever possible, I include automated grammar exercises in my course designs. It should be noted that even within a course management system, the development of automated grammar exercises is quite time consuming. If using a pre-existing curriculum, a CD-ROM of automated grammar exercises may be provided by the publisher; this is an invaluable resource, both because of the time it saves the course designer and because of the developmental benefits to learners (Redfield & Campbell, 2005; Zapata & Sagarra, 2007).

In sum, the results of this dissertation have led me to maintain this same basic infrastructure when designing other courses. For example, over the past two years I have designed a series of four web-based courses (first- through fourth-semesters) that utilize this same basic infrastructure within an integrated model (White, 2003). Specifically, whereas the activities of the German Online at PSU courses wrapped around pre-existing curricula, these newer courses, which I have piloted at Penn State

and Sam Houston State University, are based upon a dynamic, online, realia-based curriculum. The course activities themselves are static, but the online content, such as newspaper articles and film trailers, that learners use to complete these activities is constantly changing; when students learn to skim newspaper headlines, they are reading up-to-the-minute realia. The course content is a mixture of classic and contemporary. Learners read poems by Goethe and Brecht and then write poems of their own in the same styles. Learners watch German children's cartoons from the 80's and 90's, cartoons that are familiar to adults living in Germany today. Cultural currency and langaculture[25] (Agar, 1996) are discussed explicitly and implicitly through the courses. Constant communication, flowing through the infrastructure of the German Online at PSU courses, evolves around these realia. This is the hallmark of the integrated model – constant, integrated communication. White (2003) asserts that the integrated model "has many promising aspects for distance language learners including the use of real-time events and an emphasis on the collaborative, task-oriented and discussion-based activities, along with opportunities for critical reflection within an online learning community" (p. 22). The challenge of teaching within an integrated model is learning how to achieve design-based fluidity. When using an integrated model, the content of the course in each iteration is extremely variable, "determined to a substantial degree by what learners bring to it" (White, p. 222). If a course, using the integrated model, is to be designed for repeated use, it must be designed by someone capable of engineering flexibility or it must always be taught by instructors who are familiar and comfortable with this style of teaching. The

[25] In order to highlight the inseparability of language and culture, Agar (1996) coined the term "langaculture".

integrated model would not be suitable for a course series such as German Online at PSU, which was intended for long-term, repeated use by instructors with minimal technological knowledge and a web-based coordinator with more technological knowledge but perhaps limited acquaintance with the non-traditional pedagogy of the integrated model. In addition, as already mentioned when discussing the development of the German Online at PSU courses in chapter two, although the entire process of preliminary research, design, implementation, and evaluation spanned several years, the decision to use a pre-existing textbook and select ancillary materials drastically reduced the design phase – to approximately 18 months. This is about half the time typically spent on language course development at the Open University (Hurd, 2004, p. 144) and six months less than the time spent on this newer series of courses.

Although I have not yet subjected these newer courses to the type of evaluation described in this dissertation, student evaluations have been overwhelming positive. Table 6.3 provides a sampling of student comments from these newer courses. Once again, these comments were excerpted from student emails and are very typical.

Comment 1: "I just wanted to say thank you for a great web class. I have taken a few web classes during my time at Penn State and this is by far the best one I have had…[When I emailed you], you got back to me within a few hours almost every time. Class has been wonderful. Thank you for everything."
Comment 2: "I attended all 12 group chats and all 10 partner chats. Alles gute [sic]. Nice job putting on an awesome class. Tchuss [sic]!"
Comment 3: "I wanted you to know that your online course was the best online course I have ever taken. You made it easy to understand the assignments. I thoroughly enjoyed both of your courses…Thank you so much for all your support this past year."
Comment 4: "Danke!...I really appreciate you answering that question. I wouldn't say I was lying awake at night thinking about it <wink> , but it was the only question I've had that kept popping into my head at random intervals even outside of class and after the course was over! I'm not sure if its [sic] a blessing or a curse that *yours are the only German courses I've taken that actually succeed in encouraging me to think about them outside of the courses themselves*. Thanks again for answering that question! It all makes sense now! Tschuess!" (emphasis added)

Table 6.3: student comments regarding web-based courses designed within an integrated model (piloted at the Pennsylvania State University and Sam Houston State University)

The first comment mentions the constant communication that occurs in these courses. Not only is the instructor available throughout the day via email, students are also interacting with one another throughout the day (and night) through email, the course management system, and, at their own discretion, through outside media as well. The second comment highlights, as in the German Online at PSU courses, student appreciation and enjoyment of the peer-to-peer chats. The third comment is notable because, like the first comment, it comes from a learner who has completed other

online courses and can offer a comparative perspective. The fourth comment speaks to the use of the integrated model; in this case, not only was the course content and communication an integrated whole, the course content and communication also began to be integrated into the learner's daily thoughts, even when the learner was not directly engaged in course activities.

6.7 Conclusion

This dissertation has demonstrated that it is possible to develop viable, comprehensive, fully at-a-distance language courses, that is, courses without any face-to-face contact hours. Further, the findings of this dissertation suggest that overall success in web-based language learning contexts is not based upon age, semester standing, SAT scores, previous course grades, or phonological working memory. Both of these findings are important to language educators and administrators. They need to be confident of the developmental outcomes that can result from fully web-based provision or from the inclusion of web-based components in hybrid/blended courses. This dissertation is another step in considering the potential effectiveness of web-based approaches. Educators and administrators also need to be confident that fully web-based provision is appropriate for all learners. This dissertation offers an initial exploration of the possible relationships between various individual learner characteristics and developmental outcomes. Finally, the student comments offered in this final chapter also suggest that students appreciate web-based offerings and can have a positive online learning experience. Distance language learners are no longer isolated individuals struggling to grasp a target

language with limited, time-delayed instructor feedback and little or no peer interaction. Rather, distance language learners are individuals networked with their peers and their instructor in a web of daily and hourly communication that leads to a well-rounded, engaging, and developmentally-effective learning experience.

While seeking to provide educators and administrators with a quantitative assessment of the effectiveness of web-based provision, I have also attempted to include information that will be useful to course designers, whether they are designing fully classroom-based, fully web-based, or hybrid/blended courses. While outlining the design and development of the German Online at PSU courses I have tried to reiterate two guiding design principles: (1) keeping pedagogy in the foreground and technology in the background (Felix, 2003, p. 164) and (2) planning and organizing in advance (Fischer, 1996, p. 15). In his keynote address at the 1996 annual symposium of the Computer Assisted Language Instruction Consortium (CALICO), Donald Fischer, a retired US-colonel at the University of New Mexico's Distance Education Center, argued that *It's Not the Distance: It's the Design*: "Actually, the task of delivering effective learning experiences over distance is only slightly more complex than classroom delivery should be. The point though is that you cannot muddle through a distance learning event. The effects are immediately felt" (p. 15). As demonstrated in chapter two, the task of designing the German Online at PSU courses was roughly comparable to the task of designing quality classroom-based courses. Every learning environment – a classroom, a home stay, or a text-based chatroom – has unique characteristics, which should be systematically considered in the course design, in order to achieve desired objectives.

Future research will determine whether these guiding design principles can be used to develop courses in other languages and at other levels, such as intermediate and advanced levels, that will also be as developmentally effective as comparable classroom-based courses. Future research will also determine whether web-based elements can be integrated into hybrid/blended courses and whether superior developmental results can be achieved through the combination of contiguous and non-contiguous modalities. Finally, future research will continue to explore the individual learner and how the characteristics of the learner relate to developmental outcomes.

APPENDIX A

SAMPLE SYLLABI

Syllabus: German 001 (web-based)

Syllabus: German 001 (classroom-based)

SYLLABUS: GERMAN 001 (WEB-BASED)

The Pennsylvania State University
Department of Germanic and Slavic Languages and Literatures
German 001 Online

COURSE MATERIALS:
- textbook: Deutsch Heute, 8th edition (by Moeller et al.; ISBN 0618338292)
- two student audio CDs to accompany DH (ISBN 0618338373)
- interactive multimedia CD-ROM to accompany DH (ISBN 0618338330)
- portable mp3 player
- $25.00 iTunes or Napster music card

If you do no own a portable mp3 player, you may loan an iPod from MediaTech for part or all of the semester. (Please identify yourself as a German Online student when borrowing an iPod and be sure to request the loan for the entire semester, rather than the usual three-day period. If there are questions, they may email the German Online director.) The listening assignments may be completed without a portable player, but it is recommended that you use one for greater speed and convenience in developing your listening skills.

OBJECTIVES: The objective of the course is that you develop skills in listening, speaking, reading, and writing German. A particular focus on the development of listening and speaking will be supported by innovative pedagogy such as podcasts, mobile language immersion (listening to German pop music on a portable mp3 player), and real-time text chat with classmates and your instructor.

METHODOLOGY: This online German 001 course is based in research from the fields of cognitive neuroscience, psycholinguistics, computer-mediated communication, and second language acquisition. During the course, you will engage with those technological applications most likely to foster language development in the most efficient manner possible.

REQUIREMENTS: There are ten requirements for satisfactory completion of this course. Each requirement is given a point value. The primary purpose of the point system is to help you calculate your own grade with accuracy throughout the semester.

(1) active participation and attending virtual office hours – 100 points
This course is designed to give you maximum flexibility in completing German 001. is course does not meet on campus at any point in the semester. However, it is expected that you 1) submit each week's assignments by 5PM Saturday of each week, that you 2) attend and participate in the weekly group and partner chats, and that you 3) attend your instructor's virtual office hours at least twice during the semester. It is extremely important that you proceed in a regular and timely fashion in order to learn German in the most effective and efficient manner. We recommend reading through

each week's assignments at the beginning of the week, making a schedule for yourself, and then doing a small portion of work each day. Please try not to complete all your work at the last minute each week. For timely and steady completion of course requirements, you will receive 50 points.
Each week your instructor will hold virtual office hours in the "Sprechstunden" chatroom (ANGEL, In Touch tab). You must attend these office hours twice during the semester. We recommend one office hour early in the course and one during the middle or end of the course. Your instructor will post his/her office hours during week two of the course. If the instructor's office hours (listed next to the "Sprechstunden" chatroom) do not fit with your schedule, contact your instructor to make an individual appointment. For your attendance at two virtual office hours during the semester, you will receive 50 points (25 points per office hour).

(2) weekly small group chats – 200 points

During week two of the course, your instructor will assign you to small four-person groups for weekly online chats. The chats will be scheduled for the same time every week, according to the available times you will be asked to submit to your instructor during the first week of the course. Once your chat time and group have been assigned, you are expected to participate in that group chat each week. The 200 points reflect that you arrive on time (or preferably a few minutes early) and actively participate in the conversation each week. The quantity and quality of your participation in the group chats will be graded by your instructor at the middle and end of the semester (100 points each).

(3) weekly partner chats – 200 points

During week two of the course, your instructor will assign you a partner for weekly one-on-one online chats. These partner chats may be conducted at any time, although it is recommended that you find a convenient time for you and your partner and set aside this same time every week. Once partners have been assigned, you are expected to find a convenient time and chat for 50 minutes each week. You will be assigned a new one-on-one chat partner at the middle of the semester. The quantity and quality of your participation in the one-on-one chats will be graded by your instructor at the middle and end of the semester (100 points each).

(4) weekly message boards – 300 points

The weekly writing assignments will be completed using electronic message boards. You will be required to post your own messages and respond to posts by your classmates. You will receive specific instructions when you complete the first writing assignment. The 300 points reflect that you post messages that are the required length, with correct grammar and punctuation.

(5) weekly podcasts – 200 points

The weekly speaking assignments will be sent to your instructor as a weekly podcast. To complete these assignments, you will need a computer with a built-in or plug-in microphone. However, you do not need a recording or podcasting program – we will be using a free online service for both recording and podcasting. The 200 points for

weekly podcasts reflect that you submit your podcasts on time and that you try to improve your speaking abilities during the course.

(6) bi-weekly progress reports – 50 points

The bi-weekly progress reports document your completion of the activities on the CD-ROM. They will be uploaded to a drop-box in ANGEL each week. You will receive specific instructions when you complete the first chapter on the CD-ROM. The 50 points reflect that you upload the reports on time and that you have satisfactorily completed the activities listed on each report. The lowest progress report grade will be dropped from your final course grade.

(7) weekly mobile language immersion – 50 points

Each week, you will download and listen to two German songs of your choice. You will need to find the lyrics online and post them to a message board. Then you will need to listen to these songs a few times that week while walking across campus, doing housework, or driving to work. You will receive specific instructions when you complete the first mobile language immersion assignment. The 50 points reflect that you select a wide variety of songs and find complete and accurate lyrics online.

(8) final podcast – 100 points

The final oral presentation will be sent to your instructor and classmates as a final podcast. You will receive specific instructions later in the course. The 100 points reflect that you create a creative, interesting, and well-practiced final podcast.

(9) final group culture project – 100 points

The final group culture project will be completed using a wiki (an online tool for open, group document editing). You will work in small groups assignments by your instructor. You will receive specific instructions later in the course. The 100 points reflect that you are a responsible and creative member of the group.

(10) final listening exam – 100 points

During the final week of the course, you will be given an online listening exam similar to the listening exercises that you will practice throughout the course.

GRADE DISTRIBUTION (total 1400 points):

active participation	50 points
virtual office hours	50 points
weekly group chats	200 points
weekly partner chats	200 points
weekly message boards	300 points
bi-weekly podcasts	200 points
bi-weekly progress reports	50 points
weekly mobile language immersion	50 points

final group culture project	100 points
final podcast	100 points
final listening exam	100 points

GRADING SCALE:
94.5 – 100 = A // 89.5 – 94.4 = A- // 87.5 – 89.4 = B+ // 83.5 – 87.4 = B // 79.5 – 83.4 = B- //77.5 – 79.4 = C+ // 69.5 – 77.4 = C // 59.5 – 69.4 = D // 59.4 and lower = F

DEPARTMENTAL POLICIES

Instructors will provide the class with a section policy statement in the first semester week. This document will explain the instructor's policy on various course requirements, his/her contact info, etc.

ANGEL Course Management System
All online German courses use ANGEL, Penn State's course management system (CMS). To use ANGEL, you will need to have a Penn State Access Account, a computer with Internet access, and a web browser that is compatible with ANGEL (for a complete list of browser and computer requirements please see "First Time Users" in the 'Help' section of the ANGEL web site. Penn State campus computer labs are equipped to use ANGEL). To access this course in ANGEL, go to the ANGEL web site (https://cms.psu.edu) and log in with your Penn State user ID and password. For technical assistance, please go to the ANGEL website, select the 'Help' link in the left frame on the screen. There you will find ANGEL support documentation, including a Quick Start Guide for Students under "Student Documentation." You may also submit questions to the Help Desk via the ANGEL Help Form or call the Help Desk between 9:00 a.m. and 5:00 p.m., M-F.

Technical support not related to ANGEL (portable mp3 players, podcasting, course CD-ROM functions, etc.) is available from the German Online director, Noelle Isenberg, via email. However, Ms. Isenberg cannot answer questions related to course requirements or grades. These inquiries should be directed to your individual instructor.

DEPARTMENTAL SERVICES

German Tutorial Sessions and the German Writing Center
The German department provides cost-free tutorial sessions. A list of available dates and times will become available the first week of the semester.

German Film Nights
The German department offers regular German film nights that are free for students. Ask your instructor if you would like a schedule of the films for this semester.

Stammtisch
The undergraduate and graduate students of the German department organize regular informal gatherings to provide you with the opportunity to hear and/or use authentic German outside class. Ask your instructor if you would like to be added to the mailing list for this group.

UNIVERSITY-WIDE POLICIES

PSU Foreign Language Placement Policy
The Department of Germanic and Slavic Languages and Literatures administers proficiency examinations. Check with the main office for test dates. Please consult with your advisor for questions regarding the PSU placement policy.

Academic Integrity Statement
You and your instructor are considered to have a relationship based on trust in this course from the first day forth. Therefore, the corresponding clause is not reproduced here. For any exceptions the relevant Senate policies will apply. Any proven case of cheating or plagiarism will result in an automatic recording of "F" as the course grade. Using translation software or any form of undisclosed outside help for any of your assignments is considered plagiarism in this course.

Disability Access
The Pennsylvania State University encourages qualified people with disabilities to participate in its programs and activities and it is committed to the policy that all people shall have equal access to programs, facilities, and admissions without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. If you anticipate needing any type of accommodation in this course or have questions about physical access, please tell your instructor immediately.

SYLLABUS: GERMAN 001 (CLASSROOM-BASED)

CROSS-SECTIONAL SYLLABUS: GERMAN 001: Beginning German

The Pennsylvania State University
Department of Germanic and Slavic Languages and Literatures

REQUIRED COURSE MATERIALS:
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- two student audio CDs to accompany DH (ISBN 0618338373)
- interactive multimedia CD-ROM to accompany DH (ISBN 0618338330)
- portable mp3 player
- $25.00 iTunes or Napster music card

RECOMMENDED COURSE MATERIALS:
-one medium-sized German/English-English/German Dictionary
-recommended text: *English Grammar for Students of German.* Cecile Zorach. Olivia & Hill Press, 1994 (3rd edition).

If you do no own a portable mp3 player, you may loan an iPod from MediaTech for part or all of the semester. (Please identify yourself as a German student when borrowing an iPod and be sure to request the loan for the entire semester, rather than the usual three-day period. If there are questions, they may email the German Online director.) The music listening assignments may be completed without a portable player, but it is recommended that you use one for greater speed and convenience in developing your listening skills.

OBJECTIVES: The objective of the course is that you develop skills in listening, speaking, reading, and writing German. A particular focus on the development of listening and speaking will be supported by innovative pedagogy such as podcasts and mobile language immersion (listening to German pop music on a portable mp3 player).

METHODOLOGY: This German 001 course is based in research from the fields of cognitive neuroscience, psycholinguistics, computer-mediated communication, and second language acquisition. During the course, you will engage with those technological applications most likely to foster language development in the most efficient manner possible.

REQUIREMENTS: There are nine requirements for satisfactory completion of this course. Each requirement is given a point value. The primary purpose of the point system is to help you calculate your own grade with accuracy throughout the semester.

1) attendance and preparation/homework – mandatory (see departmental policies)

As indicated by university guidelines, please plan on devoting a minimum of two hours to lesson preparation and homework for every class hour. Your attendance and initiative is key to your success in this course. The departmental policy allows you to miss up to four sessions. You do not need to submit an excuse if you are absent, nor it will be accepted any absences beyond four as excused. Every further unexcused absence will drop your total score by 50 points. You are also responsible for getting any missed work from your classmate. Please arrive always in time and be prepared to work. If you are four times late, it will count like being absent for one time.

(2) active participation and quizzes – 400 points

Please note: Simply coming to class won't qualify you for a grade toward this course requirement! You will receive four class participation grades from your instructor (each out of 50 total points) throughout the semester about your status and suggestions for improvement. The average of these four grades will then produce your final course participation grade. The quiz-tests, i.e. testing mechanisms that are more elaborative than traditional quizzes but not as extensive as traditional tests, will focus on text comprehension, vocabulary, grammar and any other relevant course material of your instructor's choice. (200 total points). See your instructor's section policy for the evaluation criteria for participation as well as for details on the frequency, format and point distribution of the quiz-tests.

(3) portfolio – 300 points

There are no written in-semester examinations in this course due to the fact that every individual develops foreign language skills differently yet traditional tests tend to standardize this learning process. This course offers you a ground on which to apply your own learning system and thus to individualize the process of achieving the course objectives (to a reasonable extent, of course), while still reaching the required proficiency level. This rare opportunity lies in the portfolio work that is a stage on which you demonstrate the skills you learn in this course with the help of level-appropriate proficiency oriented assignments. Therefore, the portfolio does not constitute to mere journal writing. The learning process and progress you show in your portfolio work with carry a far larger carry a far larger importance than a simple journal entry or a short writing assignment you may be accustomed to having in the past. Your portfolios will have to reflect effectively the knowledge of German you gain in this course displaying equal attention to and awareness of all different aspects involved: listening, reading, writing and cultural. Your instructor will designate a variety of assignments to help you with the development and improvement of these skills. Your instructor will collect the portfolios approximately every two weeks to provide you with feedback and grades throughout the semester and then will collect it one last time to designate a final grade. You are expected to type, save, date and include originals as well as revised versions of all portfolio assignments before each submission. The grading of the portfolio assignments will be based on content, progress, revisions, and quality of your correction process, not on the number of structural mistakes you made. Your instructor will review the drafts of your written

work with the entire class at regular intervals throughout the semester in order to best guide everyone in their writing skills

(4) interviews – 300 points

During the semester your instructor will conduct two brief face-to-face interviews and will require you to record and podcast two additional interviews with a partner or small group (in which you interview one another). During these four interviews you will demonstrate your proficiency in spoken German. You will receive specific instructions on all four interviews either in your instructor' course policy or later in the course. You will receive assistance in podcasting during a *Medienstunde*.

(5) bi-weekly progress reports – 50 points

The bi-weekly progress reports document your completion of the activities on the CD-ROM. They will be uploaded to a drop-box in ANGEL each week. You will receive specific instructions when you complete the first chapter on the CD-ROM. The 50 points reflect that you upload the reports on time and that you have satisfactorily completed the activities listed on each report. The lowest progress report grade will be dropped from your final course grade.

(6) weekly mobile language immersion – 50 points

Each week, you will download and listen to two German songs of your choice. You will need to find the lyrics online and post them to a message board. Then you will need to listen to these songs a few times that week while walking across campus, doing housework, or driving to work. The 50 points reflect that you select a wide variety of songs and find complete and accurate lyrics online. You will be introduced to mobile language immersion during a *Medienstunde*.

(7) final podcast – 100 points

The final oral presentation will be sent to your instructor and classmates as a final podcast. You will receive specific instructions later in the course. The 100 points reflect that you create a creative, interesting, and well-practiced final podcast.

(8) final group culture project – 100 points

The final group culture project will be completed using a wiki (an online tool for open, group document editing). You will work in small groups assignments by your instructor. You will receive specific instructions later in the course. The 100 points reflect that you are a responsible and creative member of the group.

(9) final listening exam – 100 points

During the final week of the course, you will be given a listening exam similar to the listening exercises that you will practice throughout the course.

GRADE DISTRIBUTION (total 1400 points):

active participation and "quizzes"	400 points

portfolios	300 points
interviews	300 points
bi-weekly progress reports	50 points
weekly mobile language immersion	50 points
final group culture project	100 points
final podcast	100 points
final listening exam	100 points

GRADING SCALE:
94.5 – 100 = A // 89.5 – 94.4 = A- // 87.5 – 89.4 = B+ // 83.5 – 87.4 = B // 79.5 – 83.4 = B- //77.5 – 79.4 = C+ // 69.5 – 77.4 = C // 59.5 – 69.4 =D // 59.4 and lower = F

DEPARTMENTAL POLICIES
Instructors will provide the class with a section policy statement in the first semester week. This document will explain the instructor's policy concerning grading and accepting homework papers (including lab-work) and quiz-tests, class visitors, taping of instruction, etc. Each instructor is responsible for her/his own daily planning and execution of the material built into this course. Should you have any questions or disagreements, please talk to your instructor or to Dr. Hülya Ünlü without delay to clarify any misunderstandings.

Attendance and preparation/homework
Foreign language skills can best be developed through regular exposure to, active use, practice and review of the target language. Therefore, regular and timely attendance and preparation/work at home are considered key elements to your success in this course and as such they are required. Absenteeism will affect your course performance directly, based on the departmental policy ***** but also in an indirect way: If you don't attend the class regularly, you can't participate effectively, and if you don't participate effectively you will miss opportunities to earn a high grade in this class because you will not be sufficiently prepared to deliver all the demands of other course requirements, such as homework assignments, quiz-tests, projects, and interviews, etc. The German Department allows each student enrolled in a German language class a maximum of 4 unexcused absences. For each subsequent unexcused absence, a student will incur a 10% penalty off the class participation grade of the course. (An excused absence is customarily defined as one that has been validated in writing by a physician, clinic, dean or a person of authority. For details, go to http://www.sa.psu.edu/uhs/) Since the weekly class sessions only amount to four, it is necessary for your instructor to assign you homework on a regular basis. Your instructor will decide whether to correct these assignments in class or at home or to designate a grade for them.

Active participation and quiz-tests
Regular attendance is critical to your success in this course; however, merely coming to class is not enough! Your regular and qualitative class participation in class

activities is imperative. You are expected to participate actively in class for individual as well as group work and discussions to earn any of the points designated for this course component. It is your responsibility to ask your instructor, if any of her/his expectations of you are not clear. Your instructor will provide you with four class participation grades throughout the semester, approximately every three to three-and-a-half weeks in order for you to know your status each time and to seek suggestions for improvement. The average of these four grades will reflect your final course participation grade. As for the quiz-tests, they will highlight text comprehension, vocabulary, grammar and any other relevant course material. Your instructor will determine the frequency, content, make-up opportunities, etc.

The portfolio

There is no make-up for this project. In the recent past a large number of Penn State University students and instructors of German have reported this project to be very beneficial for the students' mastery of the German language at the designated levels, improvement of written expression, overall success in the development of skills to apply what is learned as well as for the growth of cultural awareness and insight. You will be no exception, assuming of course that you work diligently and as required on your portfolio assignments and take full advantage of your instructor's guidance throughout the semester.

Culture project

More information will be provided on this project during the *Medienstunden*.

Interviews

Check with your instructor's section policy for details on make-up options for the interviews.

Semester-end listening exam

There are no make-up options for the listening exam**.**

ANGEL Course Management System

Some or all instructors of German may chose to use ANGEL, Penn State's course management system (CMS), on occasion or on a regular basis because this approach enables instructors to use the web to enhance student learning and facilitate communication, outside class hours through the use of lesson space, online quizzes, drop boxes, message boards, discussion rooms, etc. Therefore, you are expected to become familiar with the basics of this online system. To use ANGEL, you will need to have a Penn State Access Account, a computer with Internet access, and a web browser that is compatible with ANGEL (for a complete list of browser and computer requirements please see "First Time Users" in the 'Help' section of the ANGEL web site. Penn State campus computer labs are equipped to use ANGEL). To access this course in ANGEL, go to the ANGEL web site (https://cms.psu.edu) and log in with your Penn State user ID and password. For technical assistance, please go to the ANGEL website, select the 'Help' link in the left frame on the screen. There you will find ANGEL support documentation, including a Quick Start Guide for Students

under "Student Documentation." You may also submit questions to the Help Desk via the ANGEL Help Form or call the Help Desk between 9:00 a.m. and 5:00 p.m., M-F.

DEPARTMENTAL SERVICES

German Tutorial Sessions and the German Writing Center

The German department provides cost-free tutorial sessions in order to assist you with difficulties you may have in mastering any of the course material as the curriculum outlines. You are strongly encouraged to set up an appointment as soon as you notice any difficulty in keeping up with the course material. You will also be able to seek assistance once a week throughout the semester to receive corrective feedback from our Graduate Student Teaching Assistants for your writing projects. A list of available dates and times will become available the first week of the semester.

German Film Nights

The German department offers regular German film nights that are free for public. Your instructor will provide you with the details on these events.

Stammtisch

The graduate students of the German department organize regular informal gatherings to provide you with the opportunity to hear and/or use authentic German outside class. Your instructor will provide you with the details on these events.

UNIVERSITY-WIDE POLICIES

Auditors & Visitors

Please see the University policy statement 34-68. The German program requires that auditors complete all course requirements, including attendance, with a passing average in order to receive an AU. Visitors and others not registered for the course must obtain instructor's permission to sit in.

PSU Foreign Language Placement Policy

The Department of Germanic and Slavic Languages and Literatures administers proficiency examinations only. Check with the main office for test dates. Please consult with your advisor for questions regarding the PSU placement policy.

Academic Integrity Statement

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Disability Access

The Pennsylvania State University encourages qualified people with disabilities to participate in its programs and activities and it is committed to the policy that all people shall have equal access to programs, facilities, and admissions without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. If you anticipate needing any type of accommodation in this course or have questions about physical access, please tell your instructor immediately.

APPENDIX B

SAMPLE LESSON PLANS

Sample lesson plan: German 001, week seven

Sample lesson plan: German 001, week eight

SAMPLE LESSON PLAN: GERMAN 001, WEEK SEVEN

This week includes Kapitel 3 (Was brauchst du?), a message board in which you respond to last week's weather reports, and a chat in which you play "I Spy" in German.

1) DEUTSCH HEUTE TEXTBOOK FOR WOCHE 7

a) OVERVIEW: Lernziele p. 88; Vokabeln 1 pp. 95-96; and Vokabeln 2 pp. 104-105.

b) ACTIVITIES:
listen and read: Gehst du heute einkaufen? p. 89
https://streaming.psu.edu/media/?movieId=1788
listen and read: Wo gibt es eine Apotheke? p. 89
https://streaming.psu.edu/media/?movieId=1789
read: Brauchbares p. 89
read: Flavoring particles pp. 91-92
read: Doch as a positive response to a negative question p. 92
read: Lebensmittel p. 93
listen and read: paragraph beginning with 'Es ist Samstag...' pp. 98-99 (this is another text that is mostly for listening practice - don't worry about meaning)
https://streaming.psu.edu/media/?movieId=1790
read: Brauchbares p. 99
read: Noun compounds p. 100
read: Days of the week and parts of days as adverbs p. 102
read: Units of weight and capacity p. 102
read: Units of measurement and quantity p. 102
read: Verbs with stem-vowel change e to i p. 106
read: Word order with expressions of time and place p. 107
read: Imperatives pp. 109-110
read: Direct object p. 111
read: Accusative of the definite articles der, das, die p. 111
read: Word order and case as signals of meaning pp. 111-112
read: Direct object vs. predicate noun p. 114
read: Demonstrative pronouns in the accusative case p. 115
read: Accusative of ein and kein p. 115
read: Accusatice of possessive adjectives p. 116
read: Accusative of wer and was p. 117
read: Impersonal expression es gibt p. 117
read: Prepositions p. 118
read: Accusative prepositions p. 118
read: Accusative of masculine N-nouns p. 119
read: Accusative of personal pronouns p. 120
listen and read: Leserunde p. 121 https://streaming.psu.edu/media/?movieId=1777

read: Grammatik: Zusammenfassung pp. 123-126

2) MULTIMEDIA CD-ROM FOR WOCHE 7
a) Be sure to log in so that you can generate a progress report later on.
b) ACTIVITIES: Do all activities except the speaking activities.
c) Upload your progress report into the 'progress reports' folder for this week (Lessons tab, Wochenplaene, Woche 7).

3) GROUP CHAT FOR WOCHE 7
For 50 minutes, play the Kinderspiel "I Spy" or, auf Deutsch, "Ich sehe". One person begins by describing something they see. ("Ich sehe…".) The other players guess what the object might be. ("Ist es…?". "Siehst du…?".) They might also ask about the nature of the object. ("Ist es lang?". "Ist es klein?". "Wie klein ist es?". "So klein wie eine Maus?" and so on.)

4) PARTNER CHAT FOR WOCHE 7
Chat for 50 minutes. For 10 minutes, greet your chat partner and ask how they are doing, what they are doing, etc. For 30 minutes, take turns playing the game 'Rate meine Person'. For the last 10 minutes, the topic is open.

To play 'Rate meine Person', one person thinks of a person or character (real, fictional, living, or dead) and the other person has to ask questions (in German, natuerlich!) in order to guess who the secret person is.

Zum Beispiel:

-Ist deine Person ein Mann oder eine Frau?
-Wie alt ist deine Person?
-Was macht deine Person?
-Welche Haarfarbe hat deine Person?
-Hat deine Person lange oder kurze Haare?
-Wo wohnt deine Person?
-Ist deine Person ledig/verheiratet/geschieden?
-Was fuer eine Familie hat deine Person?
-Lebt deine Person noch?

If you want to make a guess, you should ask "Ist deine Person (Name)?". The person who is giving the clues can then reply, 'Ja, meine Person ist (Name)" or "Nein, (Name) ist nicht meine Person.".

5) MESSAGE BOARD FOR WOCHE 7
Respond to any three of the weather reports from last week. If you have been to the

geographic location, you may comment on whether you agree or disagree with the report. If you have not been to the location, you may comment on whether you would travel there, based upon the weather and the activities available in that climate. Compare the weather there with cities/areas with similar and/or different weather. Also, you may ask questions if anything in the report is unclear. The only requirement is that you write ten sentences in response to each of the three reports. The reports to which you respond do no need to be written by your chat group partners; you may respond to anyone in the entire class.

6) LANGUAGE IMMERSION FOR WOCHE 7: Download two more songs. As before, visit this week's MUSIK message board to share info on your selection with your classmates.

7) FINAL ESSAY: You will eventually write an essay of 5 paragraphs and approximately 250 words. This week, after your topic is approved, create an outline that includes the following items, all in German. Focus on finding the right vocabulary, deciding how you will present and argue your points, and expressing your ideas in short, simple, correct sentences.

I. introduction: main/topic sentence
a. first question to be addressed and reason this question is significant
b. second question to be addressed and reason this question is significant
c. third question to be addressed and reason this question is significant

II. first supporting paragraph
a. evidence relating to first question
b. more evidence relating to first question
c. more evidence relating to first question

III. second supporting paragraph
a. evidence relating to second question
b. more evidence relating to second question
c. more evidence relating to second question

IV. third supporting paragraph
a. evidence relating to third question
b. more evidence relating to third question
c. more evidence relating to third question

V. conclusion
a. answer to first question
b. answer to second question
c. answer to third question
d. final/closing sentence that takes into account all three questions

If your topic is tourism in Berlin, your questions might be “Ist Tourismus wichtig fuer Berlin?”, “Wieviele Leute fahren jaehrlich nach Berlin?” and “Ist Berlin ein interessantes Reiseziel”? If you find evidence to confirm all of these questions with a “yes”, you could then offer the conclusion that “Ja, Berlin ist ein interessantes Reiseziel. Viele Leute fahren dorthin. Tourismus ist sehr wichtig fuer Berlin.” However, if you find contradictory evidence allowing you to refute all of these questions with a “no”, you could then offer the conclusion that “Nein, Berlin ist kein interessantes Reiseziel. Keine Leute fahren dorthin. Tourismus ist gar nicht wichtig fuer Berlin.”

Post your title and outline to the ESSAYS message board (LESSONS>WOCHENPLAENE>FINALS>final essay).

SAMPLE LESSON PLAN: GERMAN 001, WEEK EIGHT

This week, you will complete Kapitel 3 and begin writing your final essay.

1) GROUP CHAT FOR WOCHE 8
Chat for 50 minutes. By this point in the semester, try to use as much German as possible – especially the phrases provided to you in the book. It's alright to use English to clarify now and then, but it's even better for your brain if you try to explain yourself in German. This kind of practice is called 'circumlocution', which, in Latin, means to speak (loqui) around (circum-) a topic. In modern English, we would say circumlocution is using extra and seemingly unnecessary words to explain something – in the way children do when playing the game 'I spy' or 'I'm thinking of…' Although it takes more time and may seem awkward, it is an irreplaceable skill when you are communicating in a foreign language, since you will rarely know every word for every situation. For this reason, the America Council on the Teaching of Foreign Languages lists circumlocution as part of proficient language use. So: relax and try to make your point in German only – it's time well spent!

10 minutes: Open topic, but be creative and fun! Introduce something that no other chat group will think about (Was ist deine Lieblingsfarbe?; Wie viele Schuhe hast du im Schrank?…)

20 minutes: Ask each other about the contents of your dorm/bedroom/apartment. Each person should ask at least 25 questions.

10 minutes: Einkaufen und Essen: find out what you partners bought im Supermarkt or ate this week. Each person should ask at least 10 questions.

10 minutes: finish everything and then open topic. Keep chatting – and make it interesting – until the very end!

2) PARTNER CHAT FOR WOCHE 8
Chat for 50 minutes. Play 'Rate das Ding'. Last week, you played the game 'Rate meine Person' in which you guessed a person described to you by your partner. This week, play the same game, but with objects (Dinge).

Some possible questions:

-Ist das Ding gross oder klein? kurz oder lang? dick oder dunn?
-Welche Farbe ist es?
-Wozu braucht man das?
-Hast du dieses Ding?
-Kann man dieses Ding kaufen? Wo?

-Wieviele von diesen Dingen gibt es in der Welt?
-Hast du dieses Ding gern?

3) MESSAGE BOARD FOR WOCHE 8: FILM TRAILERS / MUSIC VIDEOS: Use the links in Websites, Filme to get you started in finding film trailers and music videos. Or find some through iTunes or your favorite media portal. Then post a link and a list of as many words and phrases as you can recognize. (Try for at least 2-3 phrases and 10-15 words.)

4) SPEAKING ASSIGNMENT FOR WOCHE 8: In this speaking assignment, you will record the speaking activities which you skipped over last week when completing the activities on the multimedia CD-ROM. See HOW TO SUBMIT SPEAKING ASSIGNMENTS under LESSONS.

5) LANGUAGE IMMERSION FOR WOCHE 8: Download two more songs. As before, visit this week's MUSIK message board to share info on your selection with your classmates.

6) FINAL ESSAY: Over the next weeks, your instructor will give continual feedback on your essay. As you revise and incorporate this feedback, do not edit the original entry/post. Instead, post your revision as a reply to your original post. Your original post should always contain only the original draft of your outline and each new additional part of the essay (as you write them each week). Any revised versions of parts you wrote the week before should be posted as replies. In this way, there will be both an original first draft plus a record of the improvements you have made. At the end of the course, you will combine all the revisions into one final, polished essay.

This week, in addition to revising your outline (if your instructor has given you any revisions) you should write the introduction. Unlike revisions, this new addition can be added to your original post.

So, below this portion of the outline,

I. introduction: main/topic sentence
a. first question to be addressed and reason this question is significant
b. second question to be addressed and reason this question is significant
c. third question to be addressed and reason this question is significant

write out your introduction. Begin with 1-3 sentences that, by themselves, state the point of your entire culture project essay. Then, write 2-3 sentences to overview each of the 3 questions you will address and the evidence you will consider for each.

APPENDIX C

SAMPLE ACHIEVEMENT DIAGNOSTICS

Final listening examination, German 001

Final listening examination, German 002

Final listening examination, German 003

Final assignments, German 001

Final assignments, German 002

Final assignments, German 003

FINAL LISTENING EXAMINATION, GERMAN 001

(1): Lern Gretchen kennen: Listen to the readings and answer the questions provided. In most cases, you must respond in full sentences. However, some questions may simply ask for a richtig/falsch response.

1. Woher kommt Gretchen?
2. Wie alt ist sie?
3. Richtig oder falsch: Gretchen geht nicht oft joggen?
4. Wo wohnt sie jetzt?
5. Wie viel Geld kann Gretchen pro Monat für eine Wohnung bezahlen?

(2): Max und seine Reise: Listen to the readings and answer the questions provided. In most cases, you must respond in full sentences. However, some questions may simply ask for a richtig/falsch response.

6. Wohin faehrt Max?
7. Warum kann er nicht fahren?
8. Was macht er zuerst?
9. Wie lange laeuft er?
10. Wer faehrt vorbei?
11. Was kauft Max, und wie viel kostet es?

(3): Eine Party: Listen to the readings and answer the questions provided. In most cases, you must respond in full sentences. However, some questions may simply ask for a richtig/falsch response.

12. Wann arbeitet Baerbel?
13. Was macht Michael Mittwoch?
14. Wann ist die Party?
15. Was kaufen Michael und Baerbel?
16. Was sollen die Gaeste mitbringen?
17. Wer kommt zu der Party?
18. Wann ruft Peter an?
19. Warum kann er nicht kommen?

FINAL LISTENING EXAMINATION, GERMAN 002

(1): Read the statements below and select T (true) if the statement is true and F (false) if the statement is false. You may listen to the audio file three times.

1. Klaus und Dieter haben eine Radtour in die Berge gemacht.
2. Die Sonne hat das ganze Wochenende geschienen.
3. Sie haben drei Naechte lang in einem Hotel geschlafen.
4. Die Radtour hat ihnen nicht gefallen.

(2): You will hear eleven statements or questions. You will hear each statement or question twice. Check the reply that makes sense. You may pause the audio file between statements/questions, and you may listen to the entire audio file three times.

5. (statement 1)
   Answer: Ich habe nur ein bisschen im Internet gesurft.
6. (statement 2)
   Answer: Wo? Im Internet?
7. (statement 3)
   Answer: Zu Hause.
8. (statement 4)
   Answer: Ich muss auch eine neue Bluse kaufen.
9. (statement 5)
   Answer: Nach Hause.
10. (statement 6)
    Answer: Ist es nicht in deinem Rucksack?
11. (statement 7)
    Answer: Nein, ich bin leider pleite.
12. (statement 8)
    Answer: Ja, das Stueck war gut.
13. (statement 9)
    Answer: Leider haben wir keine Zeit.
14. (statement 10)
    Answer: Ja, wir hatten ganz prima Plaetze.
15. (statement 11)
    Answer: Ein Stueck von Brecht.

(3): Read the statements below and select T (true) if the statement is true and F (false) if the statement is false. You may listen to the audio file three times.

16. Steven soll in fuenfzig Minuten in Wilmington sein.
17. In Wilmington hat er ein Jobinterview.
18. Er moechte im Sommer in Wien arbeiten.
19. Er braucht die Arbeit, weil er im September nach Oesterreich fliegen will.

20. Im Sommer moechte er bei Greyhound arbeiten.
21. Bei Greyhound will er lernen, wie man mit einem Computer arbeitet.

(4): Answer the questions that you hear. You will hear each sentence twice. Write in complete sentences. You may pause the audio file between questions, and you may listen to the entire audio file three times.

22.

(5): Read the statements below and select T (true) if the statement is true and F (false) if the statement is false. You may listen to the audio file three times.

23.Kontakt mit den Nachbarlaendern ist fuer die Schweiz sehr wichtig.
24. Die Schweiz exportiert viele Lebensmittel und Rohstoffe.
25. Schweizer Produkte koennen gut auf den Weltmaerkten konkurrieren.
26. Im Zweiten Weltkrieg hat die Schweiz Frankreich und England geholfen.

FINAL LISTENING EXAMINATION, GERMAN 003

(1A): Richtig oder falsch? You will hear a dialogue between two pregnant friends, Gila and Annette. They are speaking about their future children and their jobs. Read the ten statements below and select T (richtig) if the statement is true and F (falsch) if the statement is false. You may listen to the audio file three times.

1. Gilas Kind kommt in drei Monaten.
2. Anettes Kind soll morgen kommen.
3. Gila arbeitet seit einer Woche nicht mehr.
4. Gila hat ihre Arbeit gern.
5. Gila möchte zehn Jahre Erziehungsurlaub haben.
6. Anettes Mann Walther möchte lieber mit dem Kind zu Hause bleiben.
7. Gila muss arbeiten, weil das Geld eine große Rolle spielt.
8. Gila wird die ersten sechs Monate zu Hause bleiben, dann bleibt ihr Mann Jürgen zu Hause.
9. Gilas Mann Jürgen ist Computertechniker.
10. Gila muss gehen, weil ihr Bus kommt.

(1B): Korrektur. Listen to the dialogue again (you may listen three more times - making 6 times total). From the answers above, correct the false statements to make them true. There are six false statements! Retype and correct each of the false statements, in complete sentences.

11.

(1C): Dialog. Imagine a conversation between Gila and Annette six months from their above conversation. Write a dialogue of at least 10 lines.

12.

(2A): Pauls Brief. Fill-in the blanks with the words that you hear. You may listen to the audio file three times.

13. Paul schreibt einen Brief an seinen Freund Thomas: Susanne und ich sprechen zur Zeit manchmal darüber, dass wir _____ haben wollen. Doch _____ _____ zu mir möchte Susanne noch ein paar Jahre warten. Sie hat es nicht eilig damit. Sie möchte erst noch drei oder vier Jahre viel arbeiten, denn _____ _____ ist ihr wichtig. Wenn die Kinder da sind, möchte sie auch weiter in ihrem Job arbeiten. Ich finde, _____ _____ der Kinder _____ auf jeden Fall beide Eltern etwas _____. Und _____ wollen wir dann auch _____ machen.

(2B): Fragen zum Diktat: Pauls Brief. Answer the following questions in complete German sentences from the dictation: Pauls Brief.

15a. Wie lange will Susanne arbeiten?
15b.Wer ist für die Erziehung der Kinder verantwortlich?

(3A): In der Freizeit. Fill-in the blanks with the words that you hear. You may listen to the audio file three times.

16. In meiner Freizeit _____ ich oft etwas mit meiner Freundin Maja. Wir treiben gern Sport und unsere _____ ist Inlineskaten. Wir gehen auch _____ zusammen joggen. Am Wochenende bleibe ich auch gern zu Hause und _____. An diesem Samstag möchte ich _____ und nichts tun, aber Maja möchte ans Meer fahren und dort _____. Ich werde jetzt ihre E-Mail _____ und mir _____ _____ eine neue _____ für die Reise kaufen.

(3B): Fragen zum Diktat: In der Freizeit. Answer the following questions in complete German sentences from the dictation: In der Freizeit.

17a. Was macht der Erzähler am Wochenende?
17b. Was kauft er für die Reise?

FINAL ASSIGNMENTS, GERMAN 001

During the final exam period, you will complete the final essay (incorporating all feedback from your instructor), record your final oral presentation, and take the final listening exam. All three components must be finished by 5PM on the last day of the final exam period.

1) FINAL ORAL PRESENTATION: Record and submit your final oral presentation, which should be 3 minutes in length and follow the plan you developed (see message board). Be sure to incorporate the feedback from your instructor. (See HOW TO SUBMIT SPEAKING ASSIGNMENTS under LESSONS. Submit to the drop box in this folder.)

2) FINAL ESSAY: This week, add all revisions to your final essay. You should have at least 250 total written words. Post your final version as the last reply to your original post.

3) FINAL LISTENING EXAM: The final listening exam will be available in ANGEL sometime after the end of Woche 15 and will be available until the end of the exam period. You will be sent an email to remind you that the exam is available (LESSONS>WOCHENPLAENE>FINALS> final listening).

FINAL ASSIGNMENTS, GERMAN 002

During the final exam period, you will complete the final essay (incorporating all feedback from your instructor), record your final oral presentation, and take the final listening exam. All three components must be finished by 5PM on the last day of the final exam period.

1) FINAL ORAL PRESENTATION: Record and submit your final oral presentation, which should be 5 minutes in length and follow the plan you developed last week (see message board). Be sure to incorporate the feedback from your instructor. (See HOW TO SUBMIT SPEAKING ASSIGNMENTS under LESSONS. Submit to the drop box in this folder.)

2) FINAL ESSAY: This week, add all revisions to your final essay. You should have at least 300 total written words. Post your final version as the last reply to your original post.

3) FINAL LISTENING EXAM: The final listening exam will be available in ANGEL sometime after the end of Woche 15 and will be available until the end of the exam period. You will be sent an email to remind you that the exam is available (LESSONS>WOCHENPLAENE>FINALS> final listening).

FINAL ASSIGNMENTS, GERMAN 003

During the final exam period, you will complete the final essay (incorporating all feedback from your instructor), record your final oral presentation, and take the final listening exam. All three components must be finished by 5PM on the last day of the final exam period.

1) FINAL ORAL PRESENTATION: Record and submit your final oral presentation, which should be 8-10 minutes in length and follow the plan you developed last week (see message board). Be sure to incorporate the feedback from your instructor. (See HOW TO SUBMIT SPEAKING ASSIGNMENTS under LESSONS. Submit to the drop box in this folder.)

2) FINAL ESSAY: This week, add all revisions to your final essay. You should have at least 400 total written words. Post your final version as the last reply to your original post.

3) FINAL LISTENING EXAM: The final listening exam will be available in ANGEL sometime after the end of Woche 15 and will be available until the end of the exam period. You will be sent an email to remind you that the exam is available (LESSONS>WOCHENPLAENE>FINALS> final listening).

APPENDIX D

SOPI-BASED SPEAKING TASK: 50-POINT SCALE

SOPI-BASED SPEAKING TASK: 50-POINT SCALE

(Payne & Whitney, 2002, pp. 30-31)

Comprehensibility

___ 10-9: for a native speaker: easy to understand without any confusion.

___ 8-6: for a native speaker: can understand with minimal difficulty.

___ 5-3: for a native speaker: can understand with some difficulty.

___ 2-1: for a native speaker: can understand with great5 difficulty.

Fluency

___ 10-9: native-like fluency: hesitations only when appropriate.

___ 8-7: near native fluency: very few hesitations or pauses.

___ 6-5: some hesitations, pauses, but fairly continuous speech.

___ 4-3: frequent hesitations and pausing, speech is more disjointed.

___ 2-1: very disjointed speech with many hesitations and pauses.

Vocabulary usage

___ 10-9: very extensive vocabulary usage.

___ 8-7: good vocabulary usage, very few inappropriate terms.

___ 6-5: moderate vocabulary, a few inappropriate terms.

___ 4-3: limited vocabulary, some inappropriate terms used.

___ 2-1: very limited vocabulary, frequent use of inappropriate terms.

Syntax and grammar

___ 10-9: native-like grammar and syntax; used a variety of syntax and tenses.

___ 8-7: near-native grammar and syntax; few mistakes.

___ 6-5: used few syntax structures, some grammar and syntax mistakes.

___ 4-3: very limited in syntax and grammar usage with frequent mistakes.

___ 2-1: no systematic use of grammar and syntax rules.

Pronunciation

___ 10-9: native-live pronunciation, virtually no discernable accent, no errors.

___ 8-7: near-native pronunciation, slight accent, few errors.

___ 6-5: some errors: obvious accent, but doesn't interfere with comprehension.

___ 4-3: frequent errors: strong accent: some comprehension difficulties.

___2-1: little effort to use target language pronunciation.

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- Pool Faculty, Department of Foreign Languages, Sam Houston State University (2008-2009).
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- National Merit Finalist Award, National Merit Scholarship Corporation (2000).

INVITED PUBLICATION

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