Wireless ESL: How second language students, instructors, and administrators envision our laptop classrooms

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Abstract

What are stakeholders' preferences for wireless English as a Second Language classrooms? This article presents the case of a laptop computer writing classroom for non-native speakers of English at a large, public research university. Participants included ESL students, instructors, and administrators connected to the classroom. Data came from official documents pertaining to the classroom, site observations, questionnaires, tape-recorded interviews and focus groups, and written reflections. The analysis of the data positions the wireless ESL classroom as a nexus where stakeholders' preferences are sometimes at odds and sometimes converge. Different aspects of the ESL classroom emerged as priorities for participants, including ownership of the laptops, availability of peripherals, classroom size and security, and furniture and furniture placement. This study promotes the consideration of L2 learners', instructors', and administrators' preferences, and provides the field with heuristics for outfitting and ordering wireless classrooms.

Keywords: Mobile, Wireless, Computer-Assisted Language Learning (CALL), Laptops

A tide of wireless connectivity has washed over the landscape, covering Starbucks, parking lots, and classrooms alike. Writing programs of all stripes, always under pressure to keep up with cutting-edge professional contexts, may find themselves whip-lashed by the exceptionally rapid evolution of wireless technologies. The latest mobile gadgets have found their way into our scholarly discussions; laptops, phones, gaming systems, and handhelds are often imagined in the laps and hands of workers and students writing under trees (Drew, 2003; Mitchell, 2003; Strauss, 2003), at cafes, in cars (Gant & Kiesler, 2002), at construction sites (Gillette, 2001), and in dorm rooms (Olsen, 2001)—mostly spots other than the principal site of second language (L2) writing instruction: the classroom. These portrayals may speak to our need to escape cramped classrooms and windowless offices susceptible to a stream of visitors, invited and otherwise. Perhaps we just want refills, flowers, family, or Fido nearby as we work.

In his study of laptops and literacy practices at 10 K-12 public schools, Mark Warschauer (2006) makes several observations that are generalizable to the college campus, the site of the present study. Most relevant among them: daily laptop use influences each stage of the writing process, from prewriting to revision. Warschauer's work picks up where the wave of wired computer classroom scholarship that crested in the 1980s and 1990s (e.g. Britton & Glynn, 1989; Myers, 1993; Palmquist et al., 1998) leaves off. It is unique in that it focuses on linguistically diverse students, a high proportion of English language learners among them. Warschauer's study is especially distinct in that it pays particular attention to laptops, all too often eclipsed in the literature by their wireless cousin, the mobile phone. It does not, however, throw much light onto the landscape in which this wireless L2 writing instruction takes place. As Michael K.

Legutke (2005) notes, the "significance of the room in which one learns a language has been

almost completely ignored by mainstream educational linguistics" (p. 128).

One of the most wireless-friendly definitions of computer-assisted language learning

(CALL) comes from Joy Egbert (2005): "CALL means learners learning language in any context

with, through, and around computer technologies" (p. 4). The emphasis here is on a broad range

of technologies operating in fluid contexts. But when wireless technologies and ESL instruction

intersect in the literature, this breadth is usually lost as the emphasis shifts to almost exclusively

to mobile phones, the most pervasive wireless technology[1], against ambiguated backgrounds

(Taylor and Gitsaki, 2003; Aizawa and Kiernan, 2003; Levy and Kennedy, 2005; Thorton and

Houser, 2001; Houser, Thorton, Yokoi, and Yasuda, 2001; McNicol, 2004; Thornton and

Houser, 2004; Thorton and Houser, 2002; Kiernan and Aizawa, 2004; and Levy and Stockwell,

2006; Crystal, 2001). Perhaps we're left with only the fuzziest glimpses of the scenes of wireless

L2 learning because these authors wish to include students and teachers operating the widest

variety of contexts with the greatest variations in hardware. Foregoing detailed setting

descriptions in favor of abstracted backgrounds might be (generously) interpreted as a gesture at

inclusion—"wireless language instruction isn't site specific!" A less generous interpretation

would cast such nearsightedness as an oversight.

A student learning language on the go against shifting backdrops, mobile device of some

sort in hand—it's an appealing image. Mobile technology manufacturers have capitalized on the

appeal of these ambiguous scenes of learning, conjuring up advertisements which suggest that

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[1] As Manuel Castells et al. (2006) reported, wireless technology is the fastest growing communication technology in history. Penetration rates are highest in the European Union, with almost 86 mobile phones per 100 inhabitants in 2004. Australia and New Zealand follow with almost 82 phones. Hong Kong, Japan, and Korea averages 74 phones. The United States and Canada trail with 66 mobile phones per 100 inhabitants (p. 12).

with the "right" wireless technologies (usually the latest to emerge), the classroom (or the office)

can be located anywhere, even spots formerly reserved for play. Some L2 instructors (e.g.

Murray, 2005; Kluge, 2002) have internalized these messages. There's a sizeable discrepancy,

however, between advertisements promising "anywhere" mobile computing and the actual

practice of using wireless technologies to learn to write, especially in a second language. The

"access anytime, anywhere" angle is a compelling sales pitch, but it is also a highly problematic

rhetorical construction that naively positions all places as functionally equivalent for all writers.

This article embeds the laptop—the wireless technology with arguably the most obvious

connection to second language writing instruction[2]—in the classroom space, the principle site of

L2 instruction. How, I ask, do L2 students', instructors', and administrators' spatial priorities line

up? My motivation for focusing on three groups of stakeholders connected to a new ESL

wireless classroom at a large Midwestern university speaks to a desire to tease out the

preferences of the classrooms' chief architects *and* occupants. This emphasis on stakeholders is

borrowed from business ethics and management theory. Common to most understandings of

stakeholder theory is the notion that a stakeholder is any person or group of people with interests

"at stake" in relation to the workings of a business (Cragg & Greenbaum, 2002; Kaler, 2002;

Langtry, 1994; Morris, 1997; Phillips, 2003). This philosophy demands responsiveness to those

non-shareholders who are still affected by the outcomes of corporate decision-making. A

stakeholder perspective necessitates a broad view of participants that includes more and less

powerful players for the fullest possible perspective on the classroom. This approach lays the

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[2] Mobile phones are becoming increasingly sophisticated communication tools that incorporate more and more textual and multimedia features (e.g. Internet access and text messaging), a phenomenon Henry Jenkins (2006) refers to as *convergence*. They are, however, primarily associated with oral communication whereas laptops are more definitely textual.

groundwork for users to become active contributors to the design process. Participatory design

begins with a belief that all stakeholders have a right to influence their surroundings and/or the

technologies they use (Ehn, 1992; Winner, 1995). Participatory design is a far cry from the

abstraction of anywhere/anytime representations of wireless place. In a participatory framework,

designers and non-designers dialogue about proposed designs in context. The designer is charged

with "raising the level of awareness of his/her partners (client/users) in the discussion, and the

solution will come out of the exchanges between the two" (Sanoff, 1990, p. 7). Experts

contribute their expertise. Users come to the table with a wealth of lived experience. No single

stakeholder group has enough perspective to arrive at the "right" design. Working in tandem,

their collective insight has the potential to yield good classroom design. Classroom design

happens at the intersection of people, architecture, things, and tools. We intuitively know that a

classroom is more than its walls. So in heeding Michael K. Legutke's (2005) call to pay more

attention to the "room in which one learns a language," this article takes more than the perimeter

of the wireless ESL classroom into account, looking to participants to lead the way in

determining topics of interest.

It begins with a description of the landscape on which stakeholder preferences converge

and an overview of methodology before examining stakeholders' preferences themselves in

detail. The findings, it could be argued, are germane to a range of wireless classroom situations

rather than the exclusive purview of second language instruction. To keep L2 instruction

foregrounded, 1) all participants studied are specifically L2 stakeholders[3]; and 2) their priorities

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[3] As Deborah J. Bickford (2002) observes facility managers, finance, board of trustees, development, maintenance
crews, alumni, technology staff, state legislators, disability directors, and architects also have a stake in most campus
learning spaces. This study aims to give voice to those stakeholders with ESL-related priorities.

are viewed through the lens of one particular L2 assignment, the Interview Report Assignment.

These priorities range from the overtly spatial—furniture, furniture arrangement, and room size,

for example—to less obviously spatial concerns (e.g. peripherals) that still inform the character

of the classroom. By allowing the stakeholders to determine which topics that fall under the

rubric of wireless classroom design and the amount of attention paid to any given topic, the study

relinquishes the "surgical strike" style focus that defines some of the discipline's best work. It's a

risk for sure. And I was surprised over and over again by stakeholders' foci. No participants lost

any sleep over furniture, for example, except me. Instructors talked passionately about

projectors, barely a blip on my radar and of limited concern to the students. However, with this

stakeholder-directed approach we gain a more nuanced understanding of which classroom

features and staples matter most to stakeholder groups. The article closes with a map of

(sometimes surprising) stakeholders' priorities. This map forms the basis of a series of heuristics.

While this case study itself is not generalizable, these heuristics could act as a jumping off point

for those at other institutions looking to emplace wireless with all L2 stakeholders' priorities in

mind.

Studying the wireless landscape: Hatfield Hall room 124

English 101 international (ENG 101i)[4] is an introductory writing course for nonnative

English-speaking undergraduate students that meets in Hatfield Hall room 124. Nine student

participants—two females and seven males—who agreed to private interviews range in age from

17 – 24 years old. This homogeneity is offset by their diverse geographic origins: Taiwan (Heng

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[4] The course name, the name of all locations, and the names of all participants have been changed. Participants' names are intended to preserve their gender and nationality as much as possible while protecting their anonymity.

and Chan), Hong Kong (Shen), the Ivory Coast (Johanna), Mexico (Rosa), Japan (Yoshi),

Kuwait (Amir), Indonesia (Dian), and Ecuador (Enrique). In addition to this core of nine student

participants, five students agreed to be observed in the context of their 101i class and to share

anonymous written reflections on Hatfield Hall 124[1]. Eight 101i instructors—seven females

(Monique, Mary, Jun, Gretchen, Emily, Jennifer, and Ling) and one male (Cheung)—

participated in private interviews, filled out questionnaires, came together as a focus group, and

shared written reflections. Only Mary, Jennifer, and Emily are native speakers of English. The

three administrators are a departure from the other stakeholder groups in that George (English as

a Second Language), Tom (Introductory Composition), and Margaret (Introductory

Composition) are all native speakers between 45 and 54 years old. George, Margaret, and Tom

drafted the university-funded grant that paid for Hatfield Hall 124. All English 101i instructors

report directly to George.

Students self-select for 101i, though enrolling in some variation of introductory

composition is compulsory. Like its mainstream counterpart, English 101, 101i meets a

university-wide composition requirement and bears the same amount of credit. It also shares a

rhetorical focus; students are required to write four essays, with each successive assignment

building on the skills mastered in the previous assignment: a personal experience essay, an

interview report essay, a literature review essay, and an argumentation essay. English 101i

differs, however, in its targeted focus on language issues that are especially salient to

international students. The majority of 101i instructors are themselves L2 speakers while the

majority of 101 instructors are not. And while English 101 is held in a wired computer classroom

at least once a week, 101i meets fulltime in a dedicated wireless classroom (see Figures 1 and 2).

Figure 1: Northwestern View of Hatfield Hall 124

All sections of 101i meet in HH 124 four or five days a week (at the instructor's

discretion). Eleven rectangular Watson Desk Fusion tables (ten of the standard model and one

A.D.A.-approved model), each measuring 24" x 54", have replaced the standard chairs with built

in half desks that populate most classrooms on the first floor of Hatfield Hall. The rectangular

tables are usually arranged into a square in the center of the room. Twenty one black resin

(wheel-less) chairs are tucked neatly beneath the tables. In the corner of the room, a wheeled,

lockable cart measuring 43"x 51"x 18" contains 20 wireless Gateway 450sb laptops. Between

classes, the laptops are returned to the cart for a quick re-charge (see Figure 2). The new

additions are surrounded by familiar staples of the traditional writing classroom: a blackboard, an

overhead projector, a clock, and a lectern.

Figure 2: Gateway Laptop Cart

Data collected came from six primary sources: texts that informed decision making about

the site (e.g. grant proposals, budgetary reports, policy documents), site observations, pre-

interview and pre-focus group questionnaires from participants; student, instructor, and

administrator one-on-one interviews; an instructor focus group; and instructors' and students'

written reflections about HH 124. In total, over 50 documents were analyzed, roughly 38 hours

of observations were conducted, and almost 17 hours were spent interviewing groups and

individuals over the course of eighteen months. Questions posed to participants fit into three

basic categories: general observations about the classroom itself (e.g. If another instructor found

out that you were teaching in a wireless classroom and wanted to know what it was like, how

would you describe the experience?); about outfitting the classroom (e.g. Is HH 124 "done"? Are

there any changes you'd like to see?); and ordering the classroom (e.g. Where do you most like

to sit?). Direct questions—i.e. "Do you like rolling chairs for wireless classrooms?"—were

avoided in an effort to suss out stakeholders' priorities as well as their preferences for the space.

Case studies (Stake, 2005) lend themselves to composition research in general (Kirsch &

Sullivan, 1992 and Lauer and Asher, 1988) and L2 research in particular (Weigle and Nelson,

2004; Dodigovic, 2005; and Canagarajah, 1993). This qualitative, descriptive approach is suited

for initial inquiries into new areas of study and the study of whole environments; the wireless

ESL classroom falls into both categories. It has also proven itself as an especially effective

methodology for capturing the diversity of L2 writers and their contexts (Geertz, 1983; and

Casanave, 1995 and 2003, for example). If, as Richard Kern (2006) suggests, "the complexity of

the issues involved in technology and language learning is pushing us to look beyond grossly

decontextualized measures of effectiveness to understand effectiveness in terms of the specifics

of what people do with computers, how they do it, and what it means to them" (p. 189), then case

studies are a particularly good choice for CALL research. Though other institutions establishing

wireless ESL classrooms may or not bear a resemblance to this research site, this case study does

identify nodal points at which stakeholders' preferences may intersect or diverge on other

campuses. Acknowledging these overlaps and discrepancies is a first step towards opening up a

dialog that could lead to profitable negotiations.

Findings: Visions of our wireless L2 classroom

ENG 101i students spend the majority of the semester building their writing skills and

their vocabulary as they research and write about a personally resonant topic (e.g. making

American friends, securing financial aid as an international student, daycare in the US and

abroad). For the Interview Report Assignment[5], the third of four sequenced essays required for

the course observed, students speak with an expert on their chosen topics. In preparation for their

interviews, students are encouraged to seek out a knowledgeable source, confirm their selection

with the instructor, formally request the interviewee's participation, write open-ended questions,

and secure recording equipment if possible for later transcription. The report that results from

this encounter is born from recordings (hopefully) and notes (mandatorily). After reviewing their

notes and/or recordings several times, students are asked to focus their report around a main idea

rather than attempt to present a complete portrait of the participant. Students who are unable to

meet with their interviewees face-to-face are permitted to replace in person meetings with emails

or phone calls.

The types of online research tasks that precede the interview are among the most

common uses of laptops (Warschauer, 2006). Because these students don't own these laptops[6]

and their circulation is limited to the classroom itself, they are unable to use these particular

computers to complete these tasks outside of class time. For pre-interview research, this doesn't

pose much in the way of hardship since students can user their own technology or the

university's computer labs. Students cannot bring HH 124 laptops along to interviews with

experts to take notes. They cannot install transcription software, such as Dragon

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[5] Adapted from Leki, I. (1998). *Academic writing: Exploring processes and strategies, Second edition.* New York: Cambridge University Press.
[6] Most don't own a laptop period, though they do own desktops.

NaturallySpeaking (even at their own cost), to help them analyze their conversations post-

interview. Laptop ownership, it seems, has the potential to influence this course's learning

outcomes.

Nancy Sullivan and Ellen Pratt (1996) were among the first to compare a traditional face-

to-face classroom of ESL students with a computer-assisted classroom of ESL learners to better

understand the effects of regular computer use on foreign language learning outcomes. Though

they found no difference among the groups of students in terms of attitudes towards writing with

computers or writing apprehension, they did detect an improvement in writing quality in the

computer-assisted classroom. Their findings have been borne out over and over again by others

studying the benefits of using computers for conferences with ESL students (Skinner and Austin,

1999); to facilitate collaboration (Sotillo, 2002); and for grammar instruction (Yuan, 2003).

Given these advantages, designers tasked with the responsibility of setting up a wireless

classroom for second language learners likely find themselves facing the twin hurdles of access

and ownership early on. Will the cost of laptops (the initial investment and upkeep) be absorbed

by the institution, or should it be the responsibility of stakeholders[7]? University-wide ownership

initiatives—requiring students to purchase laptops as a condition of enrollment[8]—give rise to a

bramble of thorny questions: If stakeholders pay for their own computers, will the cost be folded

in tuition for students? Financed? If the school pays for the laptops, will stakeholders be

permitted to remove them from the classroom? Will they care to remove them from the

classroom? Who is financially responsible if machines break through use or negligence? Yet

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[7] In either case, it can be argued that students are on the hook. Whether they pay Best Buy or pay more for tuition and fees, students seem more likely to shoulder the bulk of the cost.
[8] Such as the requirement for all incoming students at University of North Carolina at Chapel Hill and Rose-Hulman Institute of Technology and for some majors at the University of Florida and Georgia Tech

despite these concerns, instructors and administrators are united by the desire to own the

technology (see Table 1).

Table 1: Stakeholder Groups' Preferences for Laptop Ownership

Participants' Preferences	Count	Proportion of Stakeholder Group
Students		
University-owned laptops	6	.67
Individually-owned laptops	3	.33
No preference stated	0	0
Instructors		
University-owned laptops	0	0
Individually-owned laptops	8	1
No preferences stated	0	0
Administrators		
University-owned laptops	0	0
Individually-owned laptops	3	1
No preferences stated	0	0
All Participants' Preferences Combined		**Proportion of All Participants**
University-owned laptops	6	.3
Individually-owned laptops	14	.7
No preference stated	0	0

The 101i instructors and administrators are very much in touch with the benefits of

ownership (though no ownership initiative is in place): less class time spent distributing, setting

up, and re-shelving cart-bound laptops, no caster-clad but ultimately stationary cart chained to

the front of the room. And while the students, like instructors and administrators all own at least

one non-mandated (mostly wired) computer, they ultimately come down on the other side of the

fence. The few students that own laptops aren't rushing to bring them to this class or any other,

thanks to heavy machines and heavier course loads that would require them to bear the load for

excessively long periods. Most students are content to use the laptops provided in HH 124

during classtime—relatively stripped down models—and to duck into the 59 (wired) computer

labs spread across campus as the need arises. Like the rows of tables and chairs bolted down in

these computers labs, the furniture in HH 124 resists infinite reordering.

Ruth Mirtz (2004) argues that classroom furniture staples—desks, chairs, tables,

projectors, chalkboards—all have a strong resting inertia (p. 14) The castor-clad laptop cart in

HH 124 that is chained to the wall, for example, strongly resists reordering. By disrupting that

inertia (or the tendency of objects at rest to stay at rest), instructors and students can manipulate

the furniture to establish, maintain, or challenge control (p. 19). Many of these instructors

exerted their power by opting for arrangements that supported their ability to closely monitor

students' screens.

Table 2: Stakeholder Groups' Preferences for Furniture Arrangement

Participants' Preferences	Count	Proportion
Students	**Count**	**Proportion of Stakeholder Group**
Unobstructed view	4	.44
Visible display	2	.22
Private display	6	.67
Flexible	0	0
No preference stated	3	.33
Instructors	**Count**	**Proportion of Stakeholder Group**
Unobstructed view	7	.88
Visible display	6	.75
Private display	0	0
Flexible	7	.88
No preference stated	0	0
Administrators	**Count**	**Proportion of Stakeholder Group**

Unobstructed view	3	1
Visible display	3	1
Private display	0	0
Flexible	3	3
No preference stated	0	0
All Participants' Preferences	**Count**	**Proportion of All Participants**
Unobstructed view	14	.7
Visible display	11	.55
Private display	3	.3
Flexible	10	.5
No preference stated	3	.15

Cliff Kuang (2009) connects the evolution of popular arrangements for office space with changing attitudes towards work. Early 20th century Taylorism, characterized by its emphasis on efficiency and oversight, favored an open environment for low-level workers monitored by higher-ups in private offices. The 1960s brought a more European approach that favored socialist values. Management was no longer sequestered, and arrangements were dictated by function: designers' desks formed pinwheels to aid collaboration while clerks were more likely to be stationed side-by-side for their more solitary work. Cube farms propagated in the 1980s as middle management swelled and these workers' in-between status merited more than unprotected desks on the office savanna and less than private vistas from which to do their work. According to Kuang, we currently favor a moderated approach to office design that allows for more sociability than a cube farm and less privacy than individualized offices. Popular moveable, semi-enclosed pods suggest personal space but lack actual privacy. Kuang's observations in the workplace lead me to ask: What does the current, favored configuration in HH 124 suggest about stakeholders' attitudes towards their work?

Most instructors default to leaving tables in a large square mirroring the perimeter of the

room with about two feet of space between the walls and the tables to accommodate students and

their chairs, thankful to be free of sightline obscuring, weighty desktops (see Figures 1 and 2).

Instructors, unlike their students, possess the agency to move more than just their bodies, but

they are typically hesitant to spend class time re/arranging furniture or bodies even if they do

appreciate flexibility in the abstract. This default arrangement is favored by instructors primarily

because it supports surveillance. Instructor Jennifer, like many of her colleagues, feels compelled

to "monitor students' progress during group lessons" (Reflection, 15). Most instructors take a

few laps around the square during class, looking over students' shoulders. Jennifer, in an effort to

more consistently observe students' screens, describes "turning the classroom around" by

pushing the tables out to the walls (Focus group, 103-106). This setup requires students to sit on

the inside of the square and face the walls while the instructor, stationed in the center of the

room, discourages students from deviating from sanctioned programs and content.

Students interviewed do play. But the nature and value of the play described isn't as

straightforward as some might suspect. Daniel Anderson et al. (2002) note that students working

on wireless laptops are especially susceptible to "outside distractions," such as instant

messaging. Of course, they add, students in traditional classrooms have always had their own

diversions. Wireless classes open up new options for stealth procrastination: reading the online

version of the school newspaper is much less conspicuous than reading the paper copy in class.

But, others have argued, even the most seemingly off-task exchanges can be valuable if they help

maintain collegial relationships that can contribute to the success of classroom activities (see

Rouzie, 2001). Recognizing the tension between what she finds important and her students

priorities, Melissa Meeks (2004) has an uniquely nuanced understanding of play in the wireless

classroom. "Off-task laptop use" she writes, "is…only a problem if it impedes work; it is not a

clear sign that the student is bad and the teacher is worse. Not being on-task is not the same as

being off-task, and I think the distinctions are harder to make in wireless spaces, especially if we

use the lenses that work well in pen and paper classrooms." Several of these students

acknowledge using the laptops to take short breaks from class work by checking email, chatting

with unenrolled friends, and playing games while pretending to take notes. Some, though, rely on

the laptops to help fill in the gaps when they aren't following the conversation because they have

encountered unfamiliar vocabulary or concepts, using (strictly speaking) unsanctioned software

and websites to aid each other and themselves in the drafting and revision process.

For example, the Interview Report assignment incorporates a process approach that

emphasizes prewriting, drafting, rewriting. During the initial stages of the Interview Report, the

instructor comments on the first draft during conferences. At stage 2, students comment on each

others' second drafts in class. For stage 3, the final, revised draft is due to the instructor. The

students observed compensated for deficits in vocabulary during the first stage of the assignment

with the help of online dictionaries and thesauruses. They also looked to each other. Student

Shen describes his use of an instant messaging service to confer with co-present classmates about

the task at hand even though this program is technically off-limits (Interview, 5-17). During the

second, peer review stage of the Interview Report Assignment, students opted to swap their

drafts electronically. This electronic exchange opened the door to alternate methods of feedback

(e.g. Track Changes in MS Word). Students integrated commenting features with "scaffolding

tools" such as spelling and grammar checkers, bibliographic software. Though the choice to

swap drafts electronically was initially driven by the challenges of navigating tables and bodies

in the 21' by 21' square room, this means of exchange opened up pedagogical opportunities.

The size of the room was viewed as unremarkable or adequate by most students and

instructors, as crowded by a handful of instructors, and as politically advantageous by

administrators (see Table 3).

Table 3: Stakeholder Groups' Preferences for Room Size

Participants' Preferences	Count	Proportion of Stakeholder Group
Students		
Room size		
Too big	0	0
Too small	0	0
Adequate/appropriate	5	.56
No preference stated	4	.44
Instructors		
Too big	0	0
Too small	2	.25
Adequate/appropriate	2	.25
No preference stated	4	.5
Administrators		
Too big	0	0
Too small	0	0
Adequate/appropriate	3	1
No preference stated	0	0
All Participants' Preferences	**Count**	**Proportion of All Participants**
Too big	0	0
Too small	2	.1
Adequate/appropriate	10	.5
No preference stated	8	.4

Administrators purposively selected and outfitted this smaller space because the university

supports a one-to-one student computer ratio across disciplines. Stocking the cart with 20

laptops—rather than 24-27, the number of students Space Management and Scheduling

determined could comfortably fit into HH 124 before the ENGL 101i redo—keeps enrollment

low. Larger class enrollments are among the challenges English as a Foreign Language teachers

and administrators face (see Leki, 2001). Smaller spaces, however, will only accommodate

particular types of furniture. The details of the pieces themselves don't register nearly as much

with the participants in this study as their configurability (see Table 4).

Table 4: Stakeholder Groups' Preferences for Furniture

Participants' Preferences	Count	Proportion of Stakeholder Group
Students		
Desks	2	.22
Tables	0	0
Task chairs with casters	0	0
No preferences stated	7	.78
Instructors		
Desks	1	.13
Tables	2	.25
Task chairs with casters	0	0
No preferences stated	5	.63
Administrators		
Desks	0	0
Tables	3	1
Task chairs with casters	0	0
No preferences stated	0	0
All Participants' Preferences	**Count**	**Proportion of All Participants**
Desks	3	.15
Tables	5	.25
Task chairs with casters	0	0
No preferences stated	12	.6

Possibly because students and instructors have historically had so little control over

classroom furniture selection, they are relatively tight-lipped about this topic. A few student

voices express a preference for a conventional staple: a desk on which to write. A few instructors

favored desks. But most student and instructor stakeholders didn't weigh in on the topic at all. A

connection between furniture and learning has been established in other disciplines. When

traditional desks were replaced by tables and lightweight chairs in college accounting courses,

both student interaction and engagement improved (Cornell and Martin, 1999). As part of their

curricular overhaul, the Massachusetts Institute of Technology's Department of Aeronautics and

Astronautics remodeled their studios, labs, and project rooms to aid their graduates in the often

bumpy transition from college to work (Cornell, 2002). The College of Professional Studies at

the University of Wisconsin–Stevens Point replaced their multi-hued plastic tablet chairs with

tables and upholstered chairs (among other significant improvements). Upgrades resulted in an

extended repertoire of classroom activities among teachers and a heightened sense of

empowerment reported by students (North, 2002). Though tight-lipped about furniture, HH 124

stakeholders did voice opinions about selected peripherals (see Table 5).

Table 5: Stakeholders' Preferences for Peripherals

Participants' Preferences	Count	Proportion of Stakeholder Group
Students		
LCD projector	0	0
Printer	2	.22
AC adaptors/outlets	0	0
Docking stations	0	0
External Mice	5	.56
External, full size keyboard	0	0

Microphones	0	0
Webcam	0	0
Soundcard	0	0
No preferences stated	7	.78
Instructors		
LCD projector	7	.88
Printer	4	.5
AC adaptors/outlets	0	0
Docking stations	0	0
External Mice	1	.13
External, full size keyboard	1	.13
Microphones	0	0
Webcam	0	0
Soundcard	0	0
No preferences stated	0	0
Administrators		
LCD projector	2	.67
Printer	1	.33
AC adaptors/outlets	1	.33
Docking stations	0	0
External Mice	0	0
External, full size keyboard	0	0
Microphones	0	0
Webcam	0	0
Soundcard	0	0
No preferences stated	0	0
All Participants' Preferences	**Count**	**Proportion of All Participants**
LCD projector	9	.45
Printer	7	.35
AC adaptors/outlets	1	.05
Docking stations	0	0
External Mice	6	.3
External, full size keyboard	1	.05
Microphones	0	0
Webcam	0	0
Soundcard	0	0
No preferences stated	7	.35

The grant that ultimately funded HH 124 makes no provision for peripherals and shortages have not gone unnoticed by any group. This absence weighs particularly heavy on the minds of almost every instructor interviewed. Without a mounted liquid crystal display (LCD) projector in Hatfield Hall 124 projector, opportunities to explore the visual components of the Interview Report assignment are limited[9]. L2 students, operating in multiple contexts (some in which red signifies "prosperity" and others in which it means "stop") are under special duress to cultivate visual literacies in their increasingly multimodal worlds. A mobile LCD projector is currently available but deemed insufficient by instructors because it is shared by the entire Department of English and its 200+ members, set up procedures are time consuming, and it is not especially user friendly. Instructors have developed mostly unsatisfying workarounds for dealing with the absence of a permanent projector (e.g. an old-fashioned overhead projector with transparencies and handouts). Conflicting accounts explaining its absence circulate among the instructors. These explanations range from there not being enough space to accommodate the built-in projector, to its absence being an oversight on the part of the administration. Administrator George clears up the mystery; a built-in projector was simply too expensive (interview, 88-92).

The contents and organization of the Interview Report are largely open in that the assignment gives students free reign to craft any type of document they see fit. The lack of assorted peripherals in HH 124, however, does not encourage genre experimentation or multimedia content. These students seem content to stick to a conservative format: 750-1000 words, double spaced, downloadable MS Word documents housed on stripped-down Web pages

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[9] Even Microsoft Word documents are designed.

for the instructor's consumption. Paula Winke & Senta Goertler (2008) identify a mismatch

between foreign language students' personal use of websites and multimedia materials and how

L2 instructors (fail to) incorporate these texts into the classroom. Their argument suggests that if

students are consuming and constructing online texts like podcasts, blogs, and wikis in their daily

lives, instructors can tap into this enthusiasm by integrating Web 2.0 technologies into

assignments (see Sykes et al. 2008). Here multimedia tools—microphones, webcams, digital

cameras, etc.—are in short supply in HH 124 but not especially missed by participants.

Other peripherals—mice, A/C adaptors, docking stations with external monitors—get

short shrift from participants. Students observed regularly plugging their own ancillary mice into

laptops offered no opinion on their use during interviews. Only one instructor, a male with larger

hands, stated he would appreciate an external mouse and full size keyboard. Most backburned

the issue. A/C adapters to plug into the classroom's sporadically-placed, scant four outlets (eight

plugs total), it seems, are not missed by any stakeholder group.

Some answers, more questions: Finding common ground in a wireless world

From the participants studied here, it can be said that L2 stakeholders' priorities for this

wireless classroom form a cobweb of connections (see Figure 3).

Instructors

Printer

Bigger room

Individually-
owned laptops

Visible display

Flexible
arrangement

Projector

Administrators

Specialized furniture

Clear view

Portability

Adequate
room size

No specialized furniture

External mice

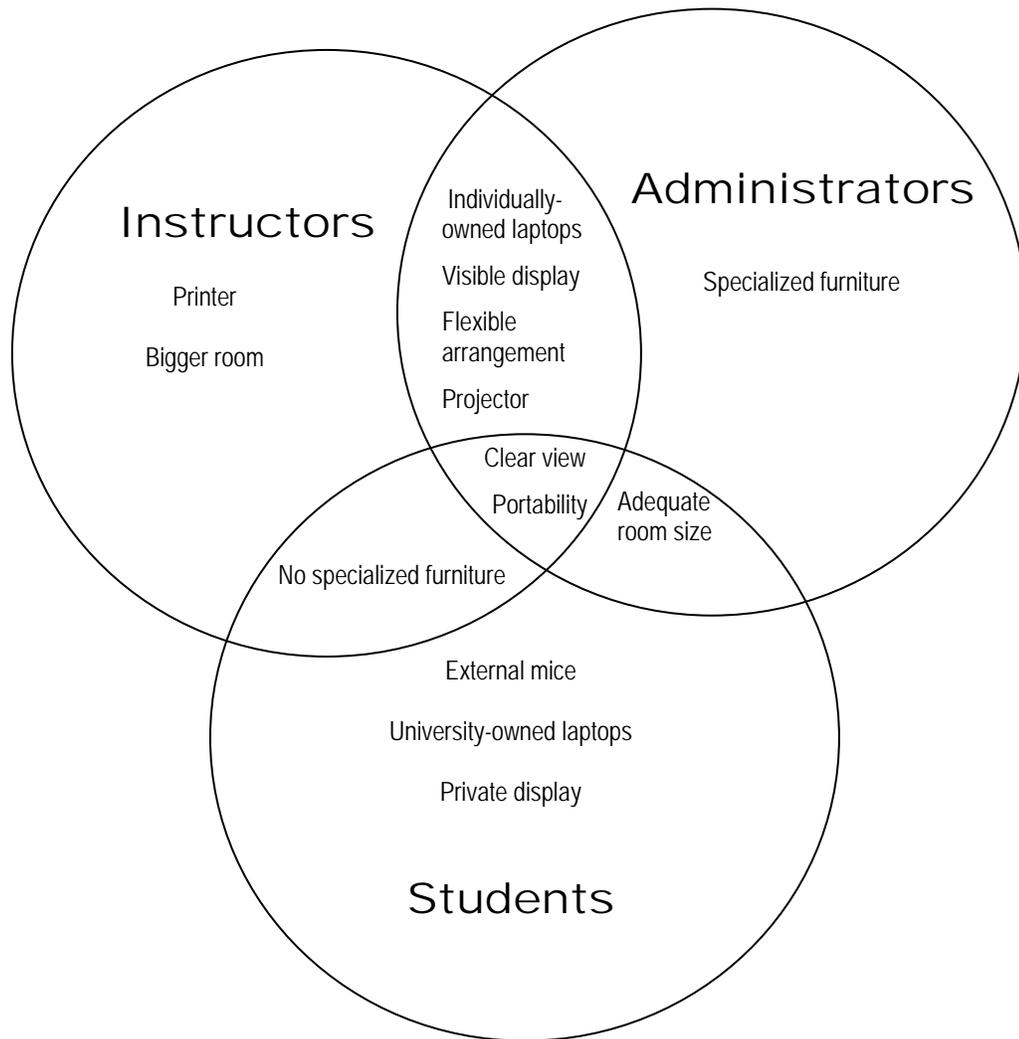University-owned laptops

Private display

Students

Figure 3: Stakeholders' Preferences for HH 124

The almost universal preference for unobstructed views of peers, students, displays, and

so on suggests that three minutes spent reconfiguring furniture at the beginning of class might be

time well spent. Instructors and administrators find common ground when expressing their

preference for laptop ownership initiatives, visible displays that support surveillance, the

acquisition of a projector, and flexible furniture arrangements. Administrators and students agree

that the room is appropriately sized, but they come to this conclusion for very different reasons.

Disagreement between stakeholder groups often represents differing priorities rather than

an intractable locking of horns. It's not that students oppose the installation of a built-in LCD

projector, per se; the LCD projector doesn't appear on their radar. Some instructors strike out on

their own when they reject HH 124 as too small or call for a printer. Administrators' emphasis on

specialized furniture sets them apart. Students veer off from instructors and administrators when

expressing their dislike of mandated laptop ownership and their desire for private displays and

use external mice. These findings imply that acquiring expensive, featherweight laptops,

specialty chairs, and budget-busting peripherals beyond the printer and projector might not be the

best use of funds in the wireless ESL classroom. It also suggests that outfitting a wireless ESL

classroom might not be as cost-prohibitive as it seems on first glance.

Can competing stakeholder desires be mediated or resolved? What are the implications of

(not) doing so? Pigeonholing outliers and the less powerful participants in the name of coherence

seems unreasonable at best, unethical at worst. The design for the "best" wireless ESL classroom

may be the one that most openly recognizes and attempts to account for competing stakeholder

perspectives within and across groups. Establishing more transparent, inclusive procedures for

wireless classroom design would allow users to shape their environment instead of just reacting

to it. It could also shore up relations between stakeholder groups. Instructors who argue HH 124

is too small for their liking might revise their position if administrators openly acknowledged the

classroom's size as a purposeful tactic for limiting enrollments.

A participatory approach to design—deviating from a top-down model and decentralizing control over the process—requires lived experience to join up with expertise to inform decision-making. Michael K. Legutke (2005) suggests that L2 students should be encouraged to "co-construct the learning environment" by writing their own texts and incorporating texts they have gathered themselves into the curricula (p. 144). This article extends Lugutke's proposition to include the physical space of the learning environment. Including L2 students in design processes that fundamentally alter the scene of their education is a significant redistribution of power.

So this article closes not with the last word on ESL laptop classroom design but with heuristics for outfitting (Table 6) and ordering (Table 7) wireless ESL classrooms.

Table 6: Heuristic for Outfitting Wireless ESL Classrooms

Node	Questions

Ownership	• Who will pay for the laptops?
	  If the school pays for the laptops:
	   o Will students be able to remove them from the classroom?
	   o Who pays if the machines break?
	   o How many models will be available?
	  If the stakeholders pay for their own laptops:
	   o How will they pay for them? Will this cost be folded into tuition (for students)? Subsidized by employers (for instructors)?
	   o Will suppliers work with representatives from the school to determine pre-approved models? Which representatives? Are alternative models acceptable?
	   o Will stakeholders have to bring laptops with them to every class?
	• Will there be back-ups available to replace malfunctioning machines?

Furniture	• Is the furniture common in school settings (e.g. desks)? What are the dis/advantages of maintaining the status quo? • Is there furniture common in workplace settings (e.g. ergonomic chairs with casters)? What are the dis/advantages of making the classroom look like an office?

	• Is the furniture common in homes (e.g. comfortable, oversized chairs)? What are the dis/advantages of making the classroom look like a home?
Security	• Are there security measures in place for university-owned laptops? Are there check-out procedures? A lockable cart? Lockable room? Who gets keys? Who decides who gets keys? • What happens if equipment goes missing? Will it be replaced? Who is responsible for the loss?

Peripherals	**Printers and paper**
	• Is there a printer?
	If there is a printer:
	    o How will its presence affect the distribution of information? The collection of assignments?
	    o Will its presence disrupt the class?
	    o Who will pay for maintenance? Replenish the paper supply?
	    o Will a surplus of paper invite or hinder mobility?
	If there is no printer:
	    o How will its absence affect the distribution of information? The collection of assignments?
	    o Is there a viable, alternative paper supply?
	    o Will electronic documents invite or hinder mobility?
	
	Projection
	• Is there an LCD projector? Is it mobile or permanent?
	If it is mobile:
	    o Is it shared? By who?
	    o Is it easy to hook up?
	    o Where is it stored?
	• Is there an overhead projector? Who stocks it with transparencies? Do transparencies contrast sharply with the professionalism of other productions? What is the effect of this contrast?
	• Does the absence of an LCD projector inhibit participants?
	
	Adaptors vs. batteries
	• Are there AC adaptors available, or do stakeholders need to rely on batteries?
	If AC adaptors are provided:
	    o Are there enough outlets to accommodate them?
	    o Do they pose a tripping hazard?
	
	If laptops run on battery power only:
	    o *Cart-bound laptops*: Is there enough charge time between uses to

	recharge cart-bound laptops? o *Laptops*: Can stakeholders be counted on to bring their own laptops to class fully-charged?
	Multimedia tools • Are there webcams? • Are there microphones? • Are the laptops equipped with soundcards? • Are the video cameras?

Table 7: Heuristic for Ordering Wireless ESL Classrooms

Node	Questions
Arranging people	• Is the place large enough to support a large-scale reordering of people? If not, are small-scale reorderings possible? • Can participants sit far away from each other? Close to each other? • Are sightlines impeded by the arrangement of people? • How do stakeholders' positions reflect or deflect their power?
Arranging furniture	• Is the place large enough to support a large-scale reordering of furniture? If not, are small-scale reorderings possible? • Does the arrangement create paths for movement? Impede it? • Are sightlines impeded by the arrangement of furniture? • Does the arrangement follow an academic model? What are the dis/advantages of adhering to it? • Does the arrangement follow a work-world model? What are the benefits of adhering to this model? Deviating from it? • How hard is the furniture to move? How much class time is devoted to re/arranging furniture? Does the furniture have to be returned to a default state at the end of class? • Does the configuration of furniture support play? Curb it? Is it valuable or valueless? • Does the configuration of furniture support surveillance? Curb it? What are the dis/advantages of this surveillance?
Arranging technologies	• Is the place large enough to support a large-scale reordering of technologies? If not, are small-scale reorderings possible? • How much class time will be devoted to checking-out, booting-up, and returning university-owned laptops to the cart? • How hard is the technology to move? How much class time is devoted to re/arranging technology? Does the technology have to be returned to a default state at the end of class? • Where are laptops stored? Does storage block access to certain zones (e.g. near the windows) or resources (e.g. the blackboard)? Is it im/mobile? Easily accessible? • Are sightlines impeded by the arrangement of technologies?

Chosen nodal points are based on local participants' preferences. In other contexts, they will

likely require redefinition. These heuristics are purposefully broad to inspire those at other

institutions to emplace wireless technologies with L2 stakeholders in mind.

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