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Laura Gurzynski-Weiss
Indiana University - Bloomington

Avizia Long
Indiana University - Bloomington, avizia.long@sjsu.edu

Megan Solon
Indiana University - Bloomington

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Comparing Interaction and Use of Space in Traditional and Innovative Classrooms

Laura Gurzynski-Weiss, Avizia Y. Long, and Megan Solon
Indiana University Bloomington

Abstract: Despite myriad changes to language teaching methods over time, university-level classroom spaces have largely remained the same—until now. Recent innovations in classroom space design center on technological advances, include movable furniture and coffee-shop style rooms, and are believed to facilitate language learning in several ways. Specifically, compared to traditional classrooms, innovative spaces are designed in hopes of decreasing pre-task set-up, increasing student-centered interaction, and facilitating collaborative work with multiple partners—features believed to be important for classroom learning. However, whether or not these features are present in these innovative spaces, or more so than in traditional classrooms, has yet to be tested empirically. This study set out to compare student interaction and the use of space in traditional and innovative classrooms, examining the presence of the aforementioned features. Data collected from university Spanish language and linguistic courses demonstrate that while some differences in use of space and interaction were observed when lessons in traditional and innovative classrooms were compared, notable differences were only present when the instructor was teaching all sections of a course in an innovative classroom and had adapted his/her lesson plans accordingly. Implications for language teaching, instructed language acquisition, and classroom space design are discussed.

Keywords: instructed SLA/ enseñanza de segundas lenguas en contextos formales; language learning context/ contexto de aprendizaje de lenguas; classroom language learning/ aprendizaje de lenguas en el salón de clase; classroom space design/ diseño del espacio de instrucción; teaching with technology/ enseñar con tecnología

<sh1>Introduction

While language teaching methods and approaches have changed over time, often in relation to research findings in second language acquisition (SLA), the physical university-level classroom spaces in which language teaching and learning occur have largely remained the same. Recently, classroom space design has entered into the conversation of how to maximize language-learning opportunities, and universities are adding classrooms designed around technology and with non-traditional organization.

Much like other technology-focused initiatives in language learning (e.g., computer-based interactive tasks and hybrid courses), these newer classrooms are believed to promote student-centered learning and to capitalize on student preferences and modern lifestyles (360steelcase 2010a). However, unlike research on other technology-focused initiatives like computer-assisted language learning, which has compared student interaction in computer-mediated and face-to-face environments extensively (e.g., Blake 2013), when it comes to classroom design, little research exists that compares the use of these newly implemented, innovative classrooms with traditional classrooms.

Although it is assumed that these innovative spaces will enhance learning opportunities in a variety of ways—by decreasing pre-task and administrative set up, facilitating student-centered lessons, equalizing participation, and allowing students to work with more classmates than they would in traditional classrooms—these hypotheses have yet to be tested empirically in a foreign

language setting. This study serves as a first step in investigating the presence of features believed to be beneficial for language learning in these new spaces and compares the presence of these features in traditional versus two types of innovative classrooms: one with nodal (moveable) chairs and one with a coffee-shop style collaboration café design.

<sh1>Features Important in Classroom Language Learning

Language teaching methodology has become increasingly student-centered in past decades (cf. Richards and Rogers 2014), and for good reason. First, when students are involved in language tasks, it is more likely that they are cognitively engaged and able to pay attention to both meaning and form. Learners' attention and cognitive engagement is seen as critical for language learning, as it allows learners to focus on new information and to solidify form-meaning connections (Schmidt 1990; Svalberg 2012). Learners' successful processing of feedback is also premised on their noticing the mismatch between their output and the target structure(s), their ability to hypothesize and utilize the feedback via interlanguage restructuring (Long 1996), and their motivation to produce additional output (Swain 2005).

Having students interact with different interlocutors (i.e., communication partners) is also believed to facilitate learning. Working with multiple partners exposes learners to more varied input, opportunities for interaction and output, and feedback, components believed to be critical for language learning (Gass 1997; Gass and Mackey 2006; Long 1996).

Third, given the limited amount of time students have with the target language in a classroom setting, getting students to interact as much as possible is seen as critical. While the pre-task, or set-up, stage is important for students to understand what is being asked of them, activate their prior knowledge, and have an opportunity to ask questions, modern teaching approaches place a premium on maximizing its efficiency and moving students on to the interactive, 'during-task' phase (Ellis 2003; 2009). Newer, innovative spaces claim to reduce task set-up by engaging attention and facilitating quicker ease of movement into the task.

Finally, in recent years, researchers have devoted increased attention to the contextual and environmental factors that may also play a role in foreign language learning, (e.g., Collentine and Freed 2004; Housen et al. 2011; Norris and Ortega 2001). The next section provides an overview of two topics that have dominated research on the role of learning context in second language (L2) acquisition: (a) comparisons between place of study, such as study abroad and at-home environments, or traditional and online environments, and (b) examining within-classroom adjustments, such as the use of technology and space design.

<sh1>Contextual Factors in Language Learning

<sh2>*Context of Learning*

Research exploring the role of context has identified factors such as time abroad to have a positive effect on L2 learning, particularly in relation to the development of L2 fluency and pragmatic competence (e.g., Freed 1995; Shively 2008). Results comparing study abroad and at-home environments for morphosyntactic and phonological development, in contrast, have been less conclusive (e.g., Collentine 2004; Díaz-Campos 2004). This overall pattern is consistent with the observation that study abroad affords more opportunities for use of the L2 in the surrounding social environment, which is best characterized as a communicative rather than a learning context, i.e., settings where input, output, and feedback draw attention to linguistic forms (Collentine 2009).

Studies comparing online, hybrid, and in-person classroom environments have also found mixed results. For example, Lord (in review) compared learning outcomes in three sections of beginning-level university Spanish: (a) a traditional, in-person section, (b) a section taught exclusively via Rosetta Stone, and (c) a hybrid section taught both online with Rosetta Stone and in person. While Lord, like others (e.g., Blake et al. 2008; Chenoweth and Murday 2003), found evidence of statistically significant learning regardless of environment, factors unique to each context led to differences in student attitudes.

Thus, place of learning has proven to be an important consideration in SLA research. These findings have motivated additional explorations of within-classroom contextual factors that may influence L2 learning, such as use of technology and classroom space design.

<sh2>*Technology in Classroom Learning*

Technological advancements have become central to language classrooms and the push toward more student-centered learning. Whether via a computer station at the front of the classroom; an online course site where students post assignments, retrieve resources, and chat with classmates; or having students interact online as a mandatory part of a course, technology has become an increasingly fundamental part of classroom language learning (cf. Brett and González-Lloret 2009). Research in computer-assisted contexts has demonstrated that learning opportunities such as exposure to input and opportunities for interaction, student-produced output, and feedback are as present as they are in more traditional, face-to-face classrooms (see Blake 2013 for review). Additionally, some have found beneficial characteristics present in computer-assisted environments that are not present in face-to-face environments, including more equalized participation between learners, especially among students more hesitant to participate (e.g., Sauro 2009; Swaffar 1998), and additional time to process input (e.g., Baralt and Gurzynski-Weiss, 2011).[1] Much for these reasons, universities have started to experiment with classroom space design to better take advantage of technology and further encourage student-centered interaction.

<sh2>*Classroom Space Design*

The idea that classroom space design has the potential to impact the language-learning context is not new. Weinstein (1981) noted that considerations of classroom space tend to come second to curriculum development and methods of instruction, yet aspects related to classroom design appear to influence student behavior and attitudes. Based on a review of several studies, Weinstein noted that "large group row arrangements" (13) tend to facilitate a more teacher-centered lesson, whereas "small group arrangements" (14–15) are better for classwork requiring interaction among students. Aesthetic quality also appears to play a role, with more participation observed among students in classrooms designed to be more aesthetically pleasing. Despite results that suggest that classroom space design could play a role in student-centered participation (an important ingredient in instructed L2 acquisition), this consideration of classroom space has largely been ignored in university language classrooms.

Traditionally, university-level language classrooms have consisted of a ubiquitous teacher-fronted space, with desks or small tables facing a front chalk/whiteboard and teacher desk/workstation. Modern classrooms often have a computer projection screen at the front as well as an instructor-controlled computer. Although instructors may ask students to move their desks to form semi-circles during class-wide discussions, or to move into groups for small group

work, the physical classroom space, and the furniture within it, has largely remained the same despite the aforementioned shift to student-centered teaching (Julian 2013).

Recently, universities have been working with classroom space design experts to address this disconnect. For example, two types of innovative spaces recently installed in universities are nodal classrooms and collaboration café classrooms. In nodal spaces, the innovative feature is the type of chairs used. Rather than traditional metal or wood-based desks, nodal chairs are bendable plastic, have wheels and built-in storage beneath seats for learners' book bags, and tables on the arms, features designed to facilitate quick student group formation (see figure 1).

<Figure 1 about here>
<caption> Figure 1. Photo of nodal chair

<Figure 2 about here>
<caption> Figure 2. Photo of nodal chairs placed together to form a common workspace

Additionally, the adjustable tables on the chairs allow students to form a common workspace when working in groups, providing the opportunity to work together on one space rather than on individual desks (see figure 2). Nodal chairs are also offered in bright colors, to assist with quick and random groupings.

A modest study was conducted investigating interaction in nodal classrooms in both language and content courses at the University of Michigan. Findings revealed that the nodal classrooms helped to improve concentration, mobility, group work, and the overall classroom experience of students (360steelcase 2010b). However, because this research was undertaken by the company selling the nodal chairs and did not include direct comparison with traditional classroom spaces, the reported benefits of nodal spaces are inconclusive.

A second type of innovative classroom is one modeled after a favorite hangout and study space of students: coffee shops. These "collaboration cafés" offer a variety of work areas within one classroom (see figure 3 and figure 4).

<Figure 3 about here>
<caption> Figure 3. Photo of collaboration café classroom

<Figure 4 about here>
<caption> Figure 4. Additional photo of collaboration café classroom

For example, within this particular café, one area has nodal-type chairs on wheels, another area has lower tables with wheeled chairs, and a third area has higher chairs and tables. There is also an area with computers and booths with a larger computer or TV screen for group work. In addition to an instructor workstation and projector, a SmartBoard, white boards, copy and/or document cameras, and mobile marker boards are often offered. Collaboration café spaces are typically larger than traditional classrooms and are designed for group work, with the aim of having students efficiently form groups and begin working and allowing the instructor to utilize the extra space by moving around to monitor the groups. Multiple computer screens allow the instructor to project instructions around the room and to change the task at hand, and permit students to easily share their work with the class without having to physically move. However, these claims have not focused exclusively on language classes, have not directly compared

interaction in innovative spaces to traditional classrooms, and have not been investigated empirically by independent researchers. To the best of our knowledge, unlike the nodal spaces, the collaboration cafés have not yet been investigated empirically.

<sh1>Research Questions

Despite the increasing focus on the relationship between learning context and features believed to be important for language learning, and the claims that nodal and collaboration café spaces increase the presence of these key features, research is needed to see if this is in fact the case. The present study sought to address these claims by examining if these innovative classroom spaces facilitate more student-centered interaction, longer during-task phases, and more variety of student collaborative work compared to traditional classrooms. Four questions guided the study, focusing on features that would presumably lead to differences in the acquisition of language and content:

<ext> 1. Do instructors and students differentially utilize traditional and innovative classrooms?
2. Are there observable differences in the input, interaction, and output opportunities to which learners are exposed?
3. Are there differences in tasks utilized?
4. Are there differences in instructor and student attitudes?

<sh1>Method

<sh2>*Study site*

The data were collected from six Spanish foreign language classes at a large, public research university in the Midwestern United States. Four were intermediate-level language classes (two in nodal classrooms, two in traditional) taught by two female instructors (two sections each). Two were upper-level content classes (one in a collaboration café, one in a traditional classroom) taught by two male instructors. For the intermediate classes, each instructor taught one section in a nodal and one in a traditional classroom. Each upper-level course had a different instructor, one who taught in a collaboration café and the other who taught in a traditional classroom. The approach to teaching for all classes can be described as communicative (Brandl 2008).

<sh2>*Participants*

Each intermediate-level Spanish language class had 20 to 23 students and each upper-level Spanish content (i.e., linguistics) class had 15 to 18 students. Students were primarily from the United States with English as a first language (L1). Importantly, the intermediate-level language course was taken to fulfill a university-wide language requirement, whereas the upper-level content course was a requirement only for Spanish majors and minors.

Instructors of the language classes were two female, non-native speakers of Spanish (L1 English), each with three years of teaching experience. Additionally, both were graduate students of Hispanic linguistics with SLA education and training. The two instructors of the upper-level content classes were male; one was a native speaker of Spanish, and the other was a non-native Spanish speaker (L1 English). These instructors did not have comparable amounts of teaching

experience: The native speaker had over 15 years of experience, whereas the non-native speaker had approximately 5 years. Both were trained SLA researchers.

<sh2>*Data*

The data comprised 21 hours of video- and audio-recorded classroom interaction from 22 intact lessons (eight 50-minute lessons for each intermediate-level language instructor and three 75-minute lessons for each upper-level content instructor). For the intermediate-level language classes, instructors and their students were recorded on four separate days during a single semester: one when the lesson focused on the presentation of new vocabulary, one when new grammar was presented, one when literature was discussed, and one centering on art. Controlling for lesson focus allowed for the isolation of the potential influence of classroom space on the variables under study and minimized potential differences related to the lesson. Additionally, instructors and students of the intermediate-level language courses were invited to complete an electronic questionnaire at the beginning and the end of the data collection period. This questionnaire contained multiple-choice and open-ended questions regarding perceptions of the classroom space and interaction within it, which provided attitudinal data for nodal classrooms. Ten instructors from other fields of study at the same institution who were teaching a course in a nodal classroom during the same semester were also invited to complete the questionnaire. The questionnaire was voluntary and anonymous.

For the upper-level content classes, the two instructors and their students were recorded on three days in the same semester: one when the lesson focused on dialectal variations of Spanish of the Americas, one with a focus on variations of Spanish in Spain, and one centering on semantics. Lesson focus was again controlled to better isolate the potential relationship between classroom space and the variables of study. Additionally, the instructors of the upper-level content classes participated in an interview upon completion of data collection. The questions focused on the instructors' perceptions regarding classroom design and use of space and respective connections to instruction and student learning. All materials can be downloaded from the IRIS database.[2]

<sh2>*Procedure*

The data were collected in two phases. During the first phase, the study centered on the intermediate-level language courses taking place in nodal and traditional classrooms. The procedure, following consent, was as follows: (1) for nodal classrooms only, the two instructors and their students were emailed a link to the online questionnaire (using SurveyMonkey.com) to collect attitudinal data at the beginning of the semester, (2) both instructors' classrooms were recorded on four days covering the same course content (e.g., both instructors were recorded on the day the same vocabulary was taught), and (3) the same two language instructors and students from the nodal sections were emailed the attitudinal questionnaire link again at the end of the semester. The instructor questionnaire was also sent to all instructors teaching in nodal classrooms at the institution during the same semester.

The second phase of collection centered on upper-level Hispanic linguistics content courses taking place in the collaboration café and a traditional classroom. The second phase, after consent, proceeded as follows: (1) both sections were recorded on three days covering the same course content (e.g., both instructors were recorded on the day "Spanish in the Americas" was being taught), and (2) the two instructors participated in a short interview at the end of the same semester of data collection.

Regarding the classroom recordings, two Kodak Zi8 video cameras were placed in the back of each classroom to capture maximum movement by instructors and students during the entirety of each classroom meeting. Additionally, eight Olympus digital audio recorders were placed on students' desk surfaces throughout the classroom to capture as much oral interaction as possible. The procedure for video and audio recording was the same for each lesson recorded, regardless of classroom type (i.e., traditional, nodal, or collaboration café).

<sh2>*Coding and analysis*

All video and audio recordings were coded for 10 factors that emerged from both the research questions and from the dataset itself. *Lesson focus* was operationalized as the central topic of the class as stated on the syllabus. Thus, on a given date, if the topic was mood choice in adjectival clauses, the lesson focus was coded as *grammar*. *Instructor and student use of space* was defined as use of classroom furniture, technology, and general movement throughout the space by both instructors and students. Given the nature of the data collected, the coding for these two variables was strictly qualitative. With regard to *task and/or activity type*, we coded for both the number and types of tasks and activities employed in each class recorded. Ellis's (2009) criteria for *task* were used to distinguish between tasks and activities, where those items that did not satisfy all of the criteria defining a task were coded as *activities*.

The coding for *input type* consisted of qualitative data detailing the types of input the students received as well as quantitative data detailing the duration of exposure. The variable *interaction opportunities* was operationalized as the types of interaction opportunities with the instructor and other students available to students in a particular classroom session.

We also coded for the *type of errors* observed in each class recorded. Errors were categorized as being related to phonology (e.g., las **acciones** [ak.ʃio.nes]), morphosyntax (e.g., ¿Te **gustan** mirar?), lexis (e.g., **el pasto de azules**, for "bluegrass"), use of L1 (English) (e.g., Estoy muy **tired**), or semantics (e.g., [tirar basura en el suelo] acción **concienzuda**). Those errors that did not meet the criteria for the error categories specified were coded as *other*. These typically involved the provision of a grammatical but non-target response, for example, a student responding "subjuntivo" instead of "indicativo" during review of a grammar activity. Additionally, we coded for *provision of feedback* as well as *feedback type* in order to examine the relation between error type and feedback provision. If the instructor provided feedback in response to an error committed, we further coded it as being *implicit* or *explicit*, operationalized as a response containing "no overt indicator that an error has been committed" or a response that "clearly indicates that what the learner said was incorrect" (Ellis, Loewen, and Erlam 2006), respectively.

We also coded for *opportunities for modified output* and *modified output*. *Opportunity for modified output* was operationalized as an opportunity given by the instructor to the student to modify his or her output after the provision of corrective feedback, and *modified output* was defined as whether or not the student modified his or her output, given the opportunity to do so.

With regard to the questionnaires and interviews, coding for open-ended items was conducted inductively using thematic analysis to highlight notable similarities and differences by topic in responses provided. Simple frequencies were calculated for multiple-choice items to provide descriptive statistics.

<sh1>Results

The results for the present study are framed around the four research questions such that a comparison of innovative and traditional classroom spaces could be drawn, specifically in relation to instructor and student use of space; input, interaction, and output; use of tasks; and attitudes. The reader is reminded that in this study, 'innovative spaces' refers to both nodal classrooms and the collaboration café.

<sh2>*Research Question 1: Use of Space*

The first question sought to determine if use of space by instructors and students differed between traditional and innovative classrooms. In the intermediate-level language classes, use of space and technology did not vary between traditional and nodal classrooms. In both types of spaces, instructors positioned themselves at the front of the classroom for presentation of the lesson materials and whole-class-related discussions. During individual and group work, instructors in both spaces circulated to monitor student progress and answer questions. Like instructors, the students' use of space in the intermediate-level language classes did not vary by space type. In general, students remained in the same seats selected at the start of each class and did not move unless instructed. Interestingly, few students in nodal classrooms made use of the innovative features of the node chairs, such as placing backpacks in the attached storage area or combining individual arm tables to create a shared workspace.

Turning to the upper-level content classes, several differences were identified. First, both the instructor and students of the traditional classroom used the space in the same manner as that observed in traditional classrooms in language classes: the instructor remained at the front of the classroom, moving only when students worked individually or in groups, and students displayed a static seating arrangement. The instructor of the collaboration café, in contrast, circulated throughout the classroom, including during presentation of lesson materials. Additionally, when stationary, the instructor tended to remain at the center of the classroom, as opposed to the front. With regard to student use of space in the collaboration café, more movement was observed, although this was task-dependent (further elaborated in subsection *Research Question 3: Use of tasks*); the available technology in the collaboration café also allowed for the use of computers by students to complete individual and group work, a feature not available in the traditional classroom when content was taught.

Table 1 provides a summary of findings for use of space.

<Table 1 about here>

<caption> Table 1. Summary of findings for use of space

<sh2>*Research Question 2: Input, Interaction, and Output*

The second question aimed to identify potential differences in input, interaction, and output between the traditional and innovative classrooms. Table 2 outlines the findings for the intermediate-level language classes.[3]

<Table 2 about here>

<caption> Table 2. Summary of findings for input, interaction, and output in intermediate-level language classes taught in traditional and nodal classrooms

With regard to input, there were no differences observed between traditional and nodal classrooms. This finding, however, was not surprising given that each instructor used the same

lesson plan in both their nodal and traditional sections. Thus, presentation of the lesson foci, as well as the activities and tasks employed, did not differ by classroom type.

Similarly, our analysis of error types revealed no notable differences in the types of errors observed by classroom space. Overall, more morphosyntactic errors were observed and corrected by the instructors, regardless of classroom type. Interestingly, the types of errors observed differed only by items on the syllabus for one of the instructors, where we observed a greater variety of error types (e.g., lexical, phonological, and errors related to use of the L1 in addition to morphosyntactic errors) on days in which literature and art were taught. In addition, we observed no differences in provision of feedback or feedback type by the type of classroom space. In Table 2, we can see that a greater range of errors (in percentages) received feedback in the nodal classroom than the traditional classroom; however, there was one nodal classroom meeting where the instructor corrected all of the errors observed and coded, making the upper limit on the range of errors receiving feedback for the nodal classrooms artificially high (100%). If we exclude that one nodal classroom meeting, the range of errors receiving feedback for the nodal classrooms overall would be 54.5%–75.0%, which is more comparable to that observed for the traditional classroom overall (21.4%–66.7%). Lastly, we observed no patterns of feedback type (implicit or explicit) by classroom type.

Minimal differences were observed in terms of interaction. In the nodal classrooms there was a slightly greater average and range of student-centered interaction in a 50-minute period (average 21.1 minutes, range 12.3–28.2) than the average found in traditional classrooms (average 18.5 minutes, range 10.5–26.2). With respect to the number of interaction partners per class, it should be noted here that, due to the manner in which the data were collected (i.e., the video cameras did not capture all learners in every class), not all learners could be tracked in multiple classes. To ensure robust data reporting, the findings presented reflect an analysis in which only those learners who appeared in all three taped classes for both classroom spaces were counted. No differences were observed between traditional and nodal classroom spaces, with learners in traditional spaces interacting with an average of 1.54 different partners per class, and learners in nodal spaces interacting with an average of 1.58 different partners.

In terms of opportunities for modified output, there were some differences in the amount of opportunities that instructors provided, namely a larger range observed for classes conducted in the traditional classrooms. Upon closer examination of the data, however, these differences reflected a tendency of just one of the instructors, who provided more opportunities for modified output in the traditional (0–5 instances) as compared to nodal classroom (0–3 instances). The other instructor ranged from 0 to 3 instances in each recorded lesson regardless of classroom type. Overall, findings for opportunities for modified output demonstrate small differences, though it is difficult to say if these are related to classroom space or individual instructor.

Regarding student provision of modified output, the ranges are comparable by classroom space. Similar to the input and interaction variables, there is minimal difference observed between traditional and nodal classrooms when examining instances of modified output in the classrooms observed.

Turning to the upper-level content classes, Table 3 outlines the main findings for input, interaction, and output in the traditional and collaboration café classes.

<Table 3 about here>

<caption> Table 3. Summary of findings for input, interaction, and output in upper-level traditional and collaboration café classrooms

Regarding input, although the findings do not suggest notable variation in terms of input type, there were interesting differences in terms of quantity in these classroom types. For example, instructors in both classroom spaces incorporated lecturing; however, the instructor in the collaboration café lectured less (between 5–10 minutes) than the instructor in the traditional classroom (between 25–40 minutes). Similarly, both instructors incorporated group work and discussions as well as listening tasks that made use of technology, although more of these features were employed by the instructor in the collaboration café. These findings suggest that classroom space may relate to the type of input provided by instructors. Given the negligible instances of feedback provided for errors in upper-level content courses, we did not extend our analysis of the relation between error types and feedback provision to this classroom space comparison.

Much more student-centered interaction was observed in the collaboration café, with an average of 67.7 minutes of student-centered interaction in a 75-minute period, as compared to 29 minutes in the traditional classroom. Additionally, a slightly greater range of student pairs or groups were observed in the collaboration café (1–3 pairs or groups per class) than in the traditional classroom (1–2 pairs or groups per class), which suggests slightly greater interaction between different students in the collaboration café.

Lastly, no differences were observed in terms of output, specifically opportunities for modified output and student-produced modified output. Very few instances of these variables were observed in both classroom types, suggesting that classroom space did not relate to output at the upper-level. This finding may be explained by greater attention given to content rather than grammar during class time by instructors at this level; however this explanation must be taken with caution and requires further investigation.

<sh2>*Research Question 3: Use of Tasks*

The third question sought to determine if there were any differences in the tasks utilized in relation to classroom type. Table 4 presents the findings for use of tasks in the intermediate-level language classes.

<Table 4. about here>

<caption> Table 4. Use of tasks in intermediate-level traditional and nodal classrooms

Continuing the theme from the earlier research questions, no differences were observed between traditional and nodal classrooms, this time in terms of the tasks utilized. Given that the instructors used the same lesson plan to teach in both types of classrooms, this finding was expected.

In the upper-level content classes, two differences were encountered that suggest classroom space may relate to the manner in which tasks are employed. First, though task *type* did not differ between classroom spaces, task *mode* differed greatly (see Table 5). For example, one task was carried out using a website in the collaboration café, whereas students in the traditional classroom remained with their textbooks. Second, task phases were observed in group tasks in the collaboration café but not in the traditional classroom. Specifically, the instructor in the traditional classroom tended to give the task to students followed by an entire class

debriefing, whereas the instructor in the collaboration café provided a quick introduction to the task through class discussion or a short activity, followed by providing students with the task and a final class discussion.

<Table 5 about here>

<caption> Table 5. Use of tasks in upper-level traditional and collaboration café classrooms

<sh2>*Research Question 4: Attitudes*

The final research question investigated potential differences in instructor and student attitudes regarding the classroom spaces. With regard to the intermediate-level language classes, online questionnaires were given to both students and instructors in the nodal classes, at the beginning and end of the semester. The questionnaire was also given to all instructors teaching in nodal classrooms at the institution at the beginning of the semester. Due to the lack of responses to the end-of-semester questionnaire, only the attitudinal surveys at the beginning semester are reported (see Table 6).

<Table 6 about here>

<caption> Table 6. Attitudes, instructors and students of nodal classrooms

Slightly more than half the instructors and students reported that the nodal space assisted in interaction or that interaction with instructors was somewhat different as compared to interaction in a traditional classroom. In contrast, a majority of instructors and students reported some benefit of the nodal space to group arrangement; thus, the space positively facilitated the logistical nature of group work. Lastly, instructors and students were asked to provide some positive and negative aspects of the nodal space in an open-ended format. Interestingly, both groups cited the ease of interaction and the promotion of a comfortable classroom environment in the nodal space. However, an aspect of the nodal spaces that both groups perceived negatively was how crowded or cluttered the classroom felt with the nodal chairs inside. In particular, many instructors pointed out that removing a few of the chairs could have assisted not only with better maneuvering about the classroom and interacting with students but also with taking advantage of more of the chairs' features, such as mobility.

Turning to upper-level content classes, interviews conducted at the end of the semester with instructors of each respective classroom type illuminated the findings outlined in Table 7.

<Table 7. about here>

<caption> Table 7. Attitudes, instructors of upper-level content classes

More differences were observed in the upper-level instructors' perceptions of the classroom space in which they taught than with instructors of the nodal classroom. With regard to use of space, the instructor of the traditional classroom reported the space as being small and often uncomfortable or stuffy, an aspect that tended to distract students. The instructor of the collaboration café, in contrast, indicated that the space was "convenient" and allowed for ample movement throughout the classroom. A common aspect of the spaces reported by both instructors was the usefulness of the available technology. As related to instruction, while both instructors indicated that the technology was a positive factor in their respective classroom, the instructor of the collaboration café reported the availability of more resources for use. The

instructor of the collaboration café also indicated that the space facilitated instruction, particularly with respect to quick transitions between groups and in terms of allowing students to interact with more students throughout the semester. This feature was not reported by the instructor of the traditional classroom, who reported that a larger room with fewer seats would have been helpful in facilitating more movement by him and students in the classroom. Lastly, an interesting difference with regard to perceived changes in use of space was that the instructor of the traditional classroom reported no change in how both the students and he used the space over the semester. The instructor of the collaboration café, in contrast, reported increased interaction among students throughout the semester, and, rather than attempting to modify the space to accommodate his instruction needs, he found himself modifying his lessons to benefit best from use of the space.

<sh1>Discussion

The current study explored the presence of various features known to contribute to language-learning opportunities in relation to traditional and innovative classrooms. Specifically, we compared the use of space; the input, interaction, and output opportunities; the types of tasks; and attitudes toward each type of space. With regard to the differences between the nodal and traditional classrooms, our analysis yielded few differences in the presence or employment of these factors: instructors and students utilized space and interacted similarly in the two classroom types. It should be recalled, however, that the instructors observed for this portion of the data were both teaching one class in the nodal space and one in a traditional space, and, as such, were using the same lesson plans for both classes. Additionally, the courses observed in these spaces were intermediate-level language courses, which follow a structure determined at the departmental level that leaves little freedom for instructors to modify lesson plans or classroom activities. Such restrictions, both in terms of a pre-determined course schedule and the practical tendency to create one lesson plan despite teaching in two spaces, may have contributed to the lack of differences observed in these spaces. Nevertheless, although few differences were observed, it should be noted that the features examined that are believed to be important for language learning (i.e., interaction, input, opportunities for modified output, modified output, etc.) were largely present in both spaces. Additionally, instructors and students recognized the potential for nodal classrooms to enhance these features, particularly in terms of interaction among students and between the instructor and their students.

The comparison between collaboration café and traditional classrooms, in contrast, revealed notable differences. The instructor in the collaboration café not only used the space differently in terms of his position in the classroom but his classes included substantially more student-centered interaction and technology use than the classes in the traditional space. Additionally, during the follow-up interview, the collaboration café instructor expressed that he believed that the space led to more interaction among students, more collaboration between different groups of students, and faster transitions between activities. Because of this, the instructor began adjusting his lesson plans to more effectively utilize the innovative space. The instructor in the traditional space, in contrast, emphasized the limitations of the small size of his classroom and the difficulty he experienced in convincing students to move and interact with different partners. Although the instructors' individual characteristics undoubtedly played a role in the differential use of these two spaces, the marked differences observed between the collaboration café and traditional spaces suggest that classroom space/design may be an additional factor contributing to differential learning opportunities. As with place of learning

(e.g., Collentine 2009), learning modality (e.g., Lord in review), or the presence and use of technology in language learning (e.g., Blake 2013), classroom space and design may be an additional contextual factor that influences the prevalence and maximization of opportunities for language learning.

The fact that the explicit and intentional adjustment of lesson plans based on classroom design appears to have contributed to a differential use of classroom space suggests that the potential of innovative spaces may not be uncovered or maximized without teacher training on incorporating these new contextual factors (i.e., classroom space, technology). Students, too, may need to be instructed on how to use the new spaces and their special features most effectively (e.g., by placing backpacks underneath the chairs or combining tables to create a common work space). With training, both instructors and students may be able to capitalize on the features of innovative spaces that appear to make them most amenable to language learning.

<sh1>Limitations and Areas for Future Research

As with all data collection that involves audio and/or video recording, practical concerns of equipment and space requirements may limit the completeness of the data set. In this study, these limitations prevented every student from being captured during each recording. Although this was taken into account during analysis, future studies should strive to ensure that all classroom members are represented.

Additionally, because the focus of this study was on the effects of the language-learning context, specifically with regard to classroom space design, other variables known to affect language learning were not considered. For example, instructor individual characteristics and classroom dynamic variables may have impacted reactions to the innovative or traditional spaces. This may be the case for the small differences observed in opportunities for modified output between traditional and nodal spaces for the intermediate-level language classes. In the future, larger samples may help us make better sense of variability based on such factors.

Finally, given that differences between the use of innovative and traditional spaces were only observed when instructors were teaching all of their classes in an innovative space, the results of this study suggest that language instructors, curriculum planners, and teacher trainers may wish to consider variables related to classroom space and design. For example, if consideration of classroom space and design may facilitate language-learning opportunities, how can teachers' lesson plans reflect these considerations? What type of training could prepare instructors and learners to maximize the potential of innovative spaces for interaction and language learning?

<sh1>Conclusions

This study compared student interaction and use of space in traditional and innovative classrooms and examined the presence of factors believed to facilitate the acquisition of language and content in each space. Results from data collected from university intermediate-level Spanish language and linguistic courses taught in nodal and collaboration café spaces, respectively, demonstrated that differences in the amount of student interaction and use of technology were only present when the instructor adjusted the lesson plan to take advantage of the collaboration café. When instructors utilized the same lesson plan in both a traditional and a nodal classroom, differences in interactional features were not present. Nevertheless, given this difference in instructor utilization of space, the results of this study suggest that classroom design may be one additional contextual factor that influences language-learning opportunities.

Additionally, teacher and student training on strategies to maximize use of classroom equipment and space to facilitate and vary interaction may yield advances in language teaching and learning that we have only begun to uncover.

NOTES

[1] Contrastively, recent research examining the medium of interaction and effects of task complexity has found that, while cognitively complex tasks completed in face-to-face led to the most learning (as compared to simple tasks), in computer-mediated interaction, cognitively simple tasks were most effective. Thus, mode of interaction may differentially mediate the positive effects of sequencing tasks according to cognitive complexity (Baralt 2013).

[2] To access the documents in the IRIS Digital Repository, www.iris-database.org, please search by author name.

[3] It should be noted that, although we present quantitative data, we opted not to include inferential statistical analyses of our results. Even though the data permit the running of nonparametric tests, the small sample size and consequent low statistical power would call into question the accuracy of the statistical findings and would increase our chances of committing a Type II error (i.e., not finding a statistical result when such a difference does actually exist in the population), as the probability of detecting statistical effects was significantly reduced (e.g., Larson-Hall 2010). As such, we have elected to present descriptive statistics of our quantitative results, as we believe this is most appropriate for this particular dataset and for the more qualitative analysis presented.

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