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Contexts for Self- and Co-Regulated Learning in a Dual-Language Elementary School

Classroom

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Abstract

Using a qualitative case study design and applying a sociocultural theoretical perspective, support for self- and co-regulated learning in an elementary Spanish and English dual-language classroom was documented. The multi-age classroom comprised 33 students acquiring English and Spanish, at school (52% female students; 20 fourth grade and 13 fifth grade students; 28 dual-language learners). Spanish was the home language for most students. Four classroom observations of mathematics and writing instruction periods and three in-depth teacher interviews were collected over a five-month period. Analyses of inductive, deductive and thematic coding characterize the teacher's and students' interactions that worked to support student self-and co-regulated learning of the two languages. Findings suggest that flexible learning contexts coupled with communicative activities provide a classroom microculture that affords students opportunities to become more regulated (i.e., setting own learning goals, reflective of strategies) learners of English and Spanish. These results have implications for practice, informing educators about instructional methods that support self- and co-regulated language learning in dual-language environments.

Keywords: Dual-language immersion, dual-language learners, self-regulated learning, co-regulated learning, classroom microculture, language learning

Contexts for Self- and Co-Regulated Learning in a Dual-Language Elementary School

Classroom

Regulated learning supports students' navigation of the linguistic and disciplinary

demands found in college and career ready standards (White & DiBenedetto, 2015), which can

rely heavily on language teaching and learning (Author 2 & colleague, 2012; Hakuta, 2014).

With regard to dual-language learning, studies suggest early self-regulation skills are important

to English vocabulary development (Bohlman, Palacios, & Maier, 2015), and teacher guidance in

self-regulating learning experiences may support the English-language learning of students who

are acquiring English as a new language (Author 2 & Author 3, 2018). Less research, however,

has explored how dual-language learners[1] (DLL students) and their teachers enact regulated-

learning behaviors in bilingual-learning environments, particularly those that can support the

learning of two languages.

Selvester and Summers (2013) describe regulated-learning strategies as the building

blocks of academic capital for high achievement in learning settings. Self-regulated learning has

been traditionally described as internal cognitive processes developing within the individual and

assisted by external modeling and feedback (Schunk & Usher, 2013). In contrast, co-regulated

learning refers to a transitional process in which a learner is assisted in acquiring aspects of self-

regulation within Vygotsky's zone of proximal development, in which a learner can construct

new understanding with scaffolded supports (Hadwin & Oshige, 2011). Affording DLL

students, a historically underserved and marginalized student group (Olsen, 2014), opportunities

to practice regulated-learning strategies (e.g., goal setting, planning, eliciting and using feedback,

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[1] DLL students are also referred to as emergent bilingual or English learner students in the literature, and include reclassified to fluent English proficient students.

monitoring) as academic capital, is a call to action or "socially responsible pedagogy" (Selvester & Summers, 2013). Taking this further, White and Bembenutty (2014) have advanced a *self-regulated, culturally proactive pedagogy* that involves teachers and students, together, setting goals and strategies, and engaging in self-reflection to promote equity, diversity, and inclusion. Such an approach is consistent with Paris' (2012) "culturally sustaining pedagogy" that emphasizes the need for continued development of students' cultural knowledge and assets.

The current study contributes to the existing self- and co-regulated learning literature by exploring a proof of concept—how regulated-learning skills in the bilingual-classroom environment reinforce DLL students' development of the home and the new language. In addition, this study explores how establishing regulated practices may in turn support language learning and the disciplinary-content learning (e.g., mathematics, reading, writing) outlined in the standards.

Theoretical Perspectives

Cobb and Yackel's (1996) conceptualizations of classroom microcultures developed in mathematics education are combined with sociocultural perspectives on language learning to understand the range of teaching and learning situations in a bilingual classroom. Cobb and Yackel (1996) argue that to analyze individual and collective disciplinary-content activity at the classroom level, one must consider the reciprocal relationship between the social dimensions of the classroom microculture as well as the psychological dimensions of individuals' conceptualizations (e.g., mathematical beliefs and interpretations). The social dimensions consist of *classroom social norms*, which are typical communal or collective classroom activities "jointly established by members of the classroom community;" s*ociomathematical norms*, which are communicative acts specific to mathematical activity; and *classroom mathematical practices*,

which are defined as normative activities that no longer need to be justified or explained and are regarded as mathematical truths by the teacher and students (e.g., units of 10s and 1s) (Cobb & Yackel, 1996, p. 178).

We extend Cobb and Yackel's (1996) conceptualizations of the social dimensions of a classroom microculture to the disciplinary-content area of writing and the bilingual-learning context (Spanish and English) of DLL students. With regard to the concept of classroom social norms, we posit that students within a teacher-organized structure (teacher-led class discussion) or collaborative student structure (groups or partnerships), can jointly modify existing norms, practices (routines), and conceptualizations in tacit or explicit moves, if the classroom culture fosters back-and-forth exchanges. These ideas are supported by literature on regulation: in co-regulation neither participant is a dominant interactant and so the management of co-regulation (class-teacher, student-student) can shift between participants in a process of joint regulatory ownership to determine the way forward in learning (Author 3, 2016).

Furthermore, drawing from sociocultural perspectives on language learning, we maintain that aspects of the social and psychological dimensions in a classroom setting are bound to social activity where the teacher and students participate in communicative acts—writing, doing, saying, and being—to express academic-disciplinary knowledge using their language skills. From this perspective, students make meaning of language and content when participating in social practices, and, in turn, social practices are shaped and rendered by social languages (Gee, 2015), as well as by the classroom microculture (Mottier Lopez & Allal, 2007).

The Dual-Language Learning Environment

Students learning in dual-language contexts are diverse: they have varying bi/multilingual-learning experiences and proficiencies with using their linguistic repertoires at

school, at home, and in their community. Considering this diversity, in addition to supporting

languages learned in school, some educators coordinate translanguaging spaces that leverage

students' linguistic repertoires in order to produce, interpret, and navigate social and academic

discourse practices (Poza, 2018). Canagarajah (2017) recommends we expand repertoires

beyond the linguistic to include semiotic resources, and states that these repertoires are

spatialized, "embedded in the material ecology and facilitated by social networks" of a specific

setting (p. 37). From this translingual perspective, during communicative activity, language

resources work with an assemblage of semiotic resources and cultural and environmental

affordances that intersect with individuals' languages, histories, cultures, and experiences

(Pennycook, 2017).

Regulation and Language Processes

To understand how language-learning and regulated-learning mechanisms converge and

unfold in a bilingual classroom microculture, we first explore the reciprocal nature of the

relationship. Language and regulatory processes are intimately intertwined as DLL students

develop the necessary language skills to participate in academic and social interactions during

instruction (Author 2 & Author 3, 2018). Self- and co-regulation skills position DLL students to

more effectively learn new language skills. Conversely, greater competence with language

enables DLL students to participate in the academic and social interactions that promote self- and

co-regulation skills. Through social and academic interactions, individuals learn to manage self-

regulation strategies by observing, requesting, and experimenting with others (Hadwin & Oshige,

2011). Furthermore, DLL students make meaning of linguistic and disciplinary-content

knowledge when there are opportunities to dialogue and regulate learning (Author 2 & Author 3,

2018).

By engaging in communicative activities, DLL students become adept at making distinctions between everyday terms and phrases and discipline-specific uses of language (e.g. mathematics discourse), domain-general uses of language that can cut across a number of different academic disciplines, and school-navigational language (SNL, Author 2 & Author 3, 2008) that highlights language not directly related to the disciplines but nevertheless important for school interactions (e.g., following directions, classroom management). DLL students also become skilled at recognizing the material tools (e.g., drafts written in different languages, class charts, notebooks) that best support communication (e.g., sharing ideas verbally, in writing or by drawing).

Pedagogical Mechanisms That Support Regulation and Language Learning

Pedagogical mechanisms or processes afford teachers opportunities to facilitate DLL students' regulated learning and language learning concurrently. The formative assessment process as a pedagogical mechanism is an iterative learning and teaching practice, utilized by both teachers and students to guide and improve learning through feedback (Author 3, 2016). Formative assessment moves by teachers include pausing (i.e., providing students time to draw on linguistic repertoires to process language and disciplinary content) and asking probing questions (Druker, Holmberg, Patthoff, & Barnes, Sept., 2019). These teacher moves are related to co-regulation because they assist DLL students in acquiring aspects of self-regulation (i.e., modeling questions students might ask themselves) and important language strategies in order to construct disciplinary content-knowledge. Work by Mottier Lopez and Allal (2007) on the microcultures established in two third-grade mathematics classrooms illustrates how teachers "provide a reference for the elaboration of mathematical practices and for the interactive regulation of learning" (p. 252). About half of the participating students spoke a home language

in addition to Swiss French. Close-in analysis of dialogue revealed teachers had different norms for orchestrating the regulation of student contributions to discussions with ramifications for how students ultimately adopted discursive problem-solving procedures. While both classrooms shared similar participation configurations (i.e., initiation-response-evaluation), only regulation moves by one teacher led to regulated sociomathematical norms—such as encouraging students to first seek "effective" (i.e., accurate and fast) problem-solving procedures, allowing for emergence of new mathematical understanding by utilizing seeking behaviors, and creating a culture of co-regulation between students so they could directly propose solutions to each other's less effective procedural ideas.

Formative assessment moves by students include overtly eliciting feedback from teachers and peers or generating their own feedback by self-monitoring learning using self-questioning techniques, such as identifying, applying, and evaluating learning strategies. Velasco and García (2014) found that bilingual writers utilize translanguaging processes to regulate the writing process. For example, one bilingual kindergarten student self-monitored his learning and progress by choosing and combining specific semiotic (i.e., drawing a visual representation of what he wanted to write about) and linguistic resources (i.e., writing verbs in English that captured the action depicted in his drawing) to brainstorm ideas for a writing piece in Korean.

The Current Study

The current qualitative case study sought to describe the communicative activities and pedagogical mechanisms of a bounded system (the dual-language classroom) by collecting "thick" descriptions of content instruction (via observations and teacher interviews) to identify which aspects of the classroom microculture supported regulated and language learning. We then systematically analyzed the interrelationships among the practices studied (Merriam &

Tisdell, 2015). Students' disciplinary conceptualizations and social interactions were observed as they relate to aspects of the classroom microculture that the teacher and students initiated, guided, or organized. This qualitative study was designed as a single case to gather proof of concept before expanding the study to include additional classrooms. The current study was guided by the following research question:

> *How do students and a Spanish-English bilingual teacher incorporate regulated- and*
>
> *language-learning practices in a dual-language elementary classroom?*

Method

School Site

This study was situated in a public K-12 university-affiliated Community School located in a high-poverty, urban neighborhood in Southern California. Most students enrolled at the elementary level are Latinx (80%), emergent bilinguals (75%), and/or socioeconomically disadvantaged (91%). Some students are reclassified as fluent English proficient (6%), have special needs (10%) and are gifted and talented (5%). Students are grouped in multi-age dens— Den 1 (grades K – 1), Den 2 (grades 2 – 3), and Den 3 (grades 4 – 5).

The elementary level has a Korean world-language program and a Spanish dual-language program. This study took place in the Spanish dual-language program, where teachers use Spanish and English to teach content and help students develop proficiency in English while maintaining and continuing to develop skills in the home language, Spanish. The bilingual program follows an initial 90:10 approach to instruction in which the partner language (Spanish) is the target language of instruction 80%-90% of the time in Den 1. By the end of Den 3, Spanish is the language of instruction 30%-40% of the time. While teachers allocate time to

target instruction in English and Spanish, teachers employ fluid language practices, using both languages interchangeably and strategically.

Teacher-Participant

We applied a purposive sampling approach using reputational sampling criteria (Merriam & Tisdell, 2015). Mr. Alvaro (all participant names are pseudonyms), a fourth/fifth grade bilingual teacher for 11 years, was recommended by the school to participate in this study because he was a Spanish-English bilingual teacher and was actively involved in leadership roles at the school. Mr. Alvaro is Latino and a son of Mexican immigrants. He grew up in Southern California, in and around the neighborhood where he currently teaches. After receiving his bachelor's degree in Community Studies with a minor in Earth Science, Mr. Alvaro worked as a teacher's assistant for three years at the elementary school he attended as a child and taught linguistically and academically diverse students. He also worked at a school in Brooklyn, New York for about 6 months conducting a field study, where he worked closely with students and their families around social justice, language, and immigration issues. Soon after, he enrolled in a teacher education program receiving a master's degree in Education; Mr. Alvaro is currently completing the National Board Certification process. He has taught at the Community School for 10 years.

Mr. Alvaro's Classroom

Mr. Alvaro's multi-aged, fourth and fifth grade classroom was composed of 33 students (fourth grade students, $n = 20$; fifth grade students, $n = 13$; DLL students, $n = 28$). Most students self-identified as bilingual (42%, $n = 14$) or multilingual language users (e.g., additional languages such as Indigenous American, Korean) (36%, $n = 12$). Although students reported using mostly Spanish and English overall, when asked about language use at school, students

reported using more English and felt more comfortable speaking English. See Table 1 for demographic information and Table 2 for information about students' reported language use and comfort using languages at school.

Mr. Alvaro alternated between Spanish and English writing units on a daily basis. Each unit ended with a "bridging instructional period," where key concepts were reviewed using the language that had not been previously used as the instructional language. The observations of writing instruction presented in this paper occurred during an English "bridging period." Also, during this period, students were required to complete two writing pieces in each of the languages before the next unit of study. Mathematics was taught mostly in English, although Mr. Alvaro often incorporated Spanish-language handouts of mathematical word problems.

Data Collection Strategies

The University and Community School institutional review boards approved all procedures. All data were collected over a five-month period (January to June). Four observations of content-area instruction—mathematics and writing—were included in the analysis to establish contextual connections across the content areas. Each content-area was observed twice. During each observation, the first author took notes and audio recorded the mini lesson[2]. After each observation, dialogue from the audio recording was transcribed and woven into the observation fieldnotes to further contextualize events. Three in-depth interviews were also conducted across the same period using a semi-structured interview protocol adapted from Seidman's (2013) *Three Interview Series*. The interviews focused on Mr. Alvaro's background, experience teaching, and reflection; each interview was about 60 to 90 minutes in length. Additional follow up interviews were conducted over the phone and via email. The Community

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[2] Teacher-led explicit instruction that occurs during the first 10 minutes of an instructional block or lesson.

School collects students' language use data every spring with the Language Experience Survey

(created by Mr. Alvaro and Author 1). We used this survey and other student records (e.g.,

English learner classification) to describe the linguistic make-up of the classroom (See Tables 1

and 2).

Trustworthiness

Trustworthiness was established by triangulating the content of Mr. Alvaro's interview

transcripts with the classroom observation transcripts and fieldnotes, as well as examining

insights with impartial colleagues to deepen reflexive analysis and check for bias (Merriam &

Tisdell, 2015). To further ameliorate bias, Author 1 member checked the results with Mr.

Alvaro to ensure that his viewpoints were accurately reflected. Mr. Alvaro also read various

iterations of the manuscript (throughout the publication review process) to ensure the authors

were portraying his teaching experiences and classroom practices with accuracy.

Positionality. The first author had worked as a bilingual educator for 6 years. Thus, to

address issues of potential bias, Author 1 reflected during each stage of the research process

(data collection, analysis, and publishing) and kept in-process memos of how professional

experiences (i.e., being a bilingual educator and school partner) might bias the data. This is

important considering that this study was not about our previous professional experiences or later

collaborations with Mr. Alvaro, but about documenting Mr. Alvaro's conceptualizations about

bilingualism and his teaching practices.

<div align="center">Data Analysis</div>

Inductive open coding (Merriam & Tisdell, 2015) and deductive coding using Author 2

and Author 3's (2018) taxonomy were applied to the interview transcripts and observation

fieldnotes (see Table 3 for definitions of taxonomy codes). The taxonomy was developed from

self-regulation strategies and related behaviors and dispositions (Buckingham Shum & Deakin

Crick, 2012; Zumbrum, Tadlock, & Roberts, 2011). Regulation strategies used by individual

students were identified as self-regulation strategies, and regulation strategies used by two or

more students or with the teacher to support self-regulation behaviors were identified as co-

regulation strategies. We supplemented the taxonomy with additional inductive codes arising

from the data. Inductive and deductive codes (see Figure 1) were included in the codebook with

the "meaning unit" (the sentence or paragraph) in which they were found, to avoid losing

contextual information (see Bazeley, 2014). Thematic coding linked relevant codes to a central

theory (Saldaña, 2016) reflecting the classroom microculture. The deductive and inductive codes

used to synthesize theory were not mutually exclusive. Three themes emerged from the data:

Mr. Alvaro's beliefs and commitments, *a flexible learning environment*, and *support for

regulated- and language-learning processes.*

As an intermediary step between the coding analysis and the findings, two *disciplinary

pedagogic snapshots*, were written to illustrate certain pedagogical mechanisms underlying each

theme in action. First, we wrote episodes using a constitutive analysis approach (Schensul,

Schensul, & LeCompte, 2013), combining the observation transcripts and fieldnotes and the

interview transcript data. Thirteen episodes were consolidated to form two composite

disciplinary pedagogic snapshots that globally described how Mr. Alvaro taught writing and

mathematics across all the observations over five months. By compositing episodes, we were

able to explore the themes from different data sources (Blommaert & Dong Jie, 2010), while also

keeping in mind the general architecture and context of a disciplinary content-area lesson that

form the microculture.

Findings

We present Mr. Alvaro's beliefs and commitments about teaching, learning, and disciplinary-content practices in a bilingual setting to provide a sense of the social organization of the classroom and the purpose of the norms and practices he enacted to support students' disciplinary content, language, and regulated learning. Then, we highlight the classroom's flexible learning environment and support for regulated- and language-learning processes and illustrate how language-learning and regulated-learning mechanisms are mutually supportive using examples[3] drawn from the disciplinary pedagogic snapshots.

Mr. Alvaro's Beliefs and Commitments

Mr. Alvaro considered classroom discourse a social justice practice: "social justice is access…discussion…bringing in different perspectives, being able to talk with each other." He explained: "[Social justice] is embedded in our curriculum and in our community circles and our read alouds." Although the classroom is just "one social environment," it has the potential "to help transform" students' lives, and as "[students] grow up, they will take these learning experiences with them and apply them." "Access" is when the class is less teacher-directed and students take part in composing, evaluating, and negotiating the rules, norms, and structures they established together, and negotiate next steps. "Access" also includes "choice: "in writing, students are choosing topics, in math, the choice is in the number sets and the strategies students want to use."

Mr. Alvaro believes formative assessment moves promote social justice and self-directed (regulated) learners. He uses questioning techniques to support oral language development and deepen student reflection and disciplinary knowledge. He often reflects on how equitable his

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[3] Each example indicates the language(s) students used to communicate with others when completing a task or participating in academic discourse. Additionally, regulated-learning strategies are italicized to aid with identification.

questioning techniques are: "What types of questions am I asking and who am I asking the questions to?" because he wants to ensure "all students have opportunities to respond to open-ended questions regardless of what level they are at." Mr. Alvaro enacts "wait-time" (pausing) because "some students "may be translating," others "may be going from one language to another." He adds: "I make certain I am giving students ample opportunities to digest the information we are discussing." He also encourages partnership work because it facilitates student rehearsal, which is when students prepare for a writing task, math task, or group discussion. Rehearsal provides "opportunities for students to listen to themselves share their math work or writing ideas and provide their partner with feedback before they present their thinking to the group or write it down on paper."

A Flexible Learning Environment

Mr. Alvaro's flexible bilingual learning environment cultivated student choice which supported content meaning making, self- and co-regulation, and language learning. Students moved between activities—students walked to and from the rug, worked with him, worked alone, in partnerships, or in groups—choosing conditions that facilitated disciplinary-content learning and regulated learning:

> During the middle of a lesson, Mr. Alvaro (in Spanish, English, or both), led a small group on the rug to support students who needed teacher-guided practice, while other students worked in groups, alone or in partnerships supported by the teacher's aide. A student named Sylvia left the group of her own accord, sat down at her seat, and continued working on the fraction worksheet (written in Spanish) using different colored markers. Quietly, students in the group continued to freely join and leave the group as they saw fit.

This back-and-forth was such a normative routine that students knew to *evaluate* their

understanding as well as choose a bilingual learning environment that might help them attend to

a task with or without their teacher present.

Additionally, Mr. Alvaro noted that during *evaluation (self-assessment)*, students initiated

and facilitated classroom discourse, which sometimes occurred spontaneously:

Last year, during math time, my students and I were having a class discussion on the

number zero and what it represents. Some students said… 'I'm not really sure,' 'I think

it's positive,' or 'I think it's negative.' I kid you not; they literally split the room in three.

They said: 'All the people over there, on the left, are people who agree, the people in the

middle are people who are not sure where to go, and the people over to the right, they

disagree.' They began to have a deeper conversation about zero as a class, while in these

recently formulated groups. Because of this discussion, students created a protocol.

Whenever they felt the class was having a difficult or animated conversation, they knew

to separate themselves into these groups.

This *evaluative* whole-class activity showcases how the management of co-regulation shifted

between each participant in a process of joint regulatory ownership to determine a social routine

that would pave the way forward in learning (e.g., "0" is indeed the only integer that is neither

positive nor negative). These norms created a space that elicited class dialogue about topics that

were important to students.

Support for Regulated- and Language-Learning Processes

We highlight the pedagogical mechanisms (i.e., semiotic assemblages, "wait-time,"

requests and questions, and general and discipline-specific language) that activated regulation

and language processes in certain communicative arrangements. For each pedagogical

mechanism highlighted, we describe the directionality of the reciprocal relationship between language and regulation processes. Sometimes language is needed for co-regulation (e.g., question formulation skills) and other times co-regulation is needed to activate language processes (e.g., assistance with noticing cognate words, prompting for academic register), either direction supports language learning. (See Table 3).

Semiotic assemblages.

When students worked in partnerships to complete classroom tasks, students drew from myriad semiotic resources they brought with them, sought out, or assembled with their partner, while simultaneously regulating these resources to make meaning of the disciplinary content. For example:

> During writer's workshop, Mr. Alvaro (in English) instructed students to find a partner to help them revise their Spanish or English persuasive essays. Daniel (a fourth grader) asked Dario (a fifth grader) if he could provide him feedback on his Spanish-language persuasive essay. After Daniel read aloud his essay in Spanish, Dario (using Spanish) helped him identify the opinion, reasons why, and details. Dario noticed that Daniel's details did not match his reasons, so Dario asked him questions in Spanish to try to understand what he was trying to convey. Dario explained in Spanish: "Daniel, imagina que tu párrafo es la cancha y las pelotas que pataleas hacia la cancha son los detalles. La opinión es el juego. [Daniel, imagine that your paragraph is the goal and the soccer balls you kick into the goal are your details. The opinion is the game.]" Together (using Spanish) they reviewed each paragraph and revised any details that did not match.

In Dario and Daniel's case, the more expert peer, Dario (in this instance): (1) actively listened to Daniel read his essay in Spanish, (2) *evaluated* Daniel's work, (3) found an error, and then (4)

chose to use a metaphor as a learning strategy to teach and improve his partner's

misunderstanding by verbally sharing (in Spanish) a cultural and personal reference (i.e., the

rules of soccer and the vocabulary of that situation) in order to transfer knowledge of this

reference to the analogous situation of academic writing. Dario combined various semiotic

resources (i.e., aural, textual, cultural, environmental) and co-regulated language to support

content understanding (i.e., knowing how to structure a persuasive essay), while Daniel

monitored his own progress as he worked with Dario to review his work.

     While in partnerships, students used "choice" to assemble various semiotic resources in

order to implement multiple learning strategies across tasks, a hallmark of *flexible use of*

strategies in regulated learning. In this example, choice is a regulation strategy that students use

to enhance their regulation and language skills as well as their disciplinary-content knowledge:

     A fifth grader, named Aldo, wrote down a list of tips in English for his fourth-grade

     partner, Jorge, to use as a reference as he finished his English persuasive essay. Once the

     list was finished, Aldo supported Jorge by helping him write a conclusion section. Aldo

     (using English) explained that after writing the first concluding paragraph together, Jorge

     would have to write the second concluding paragraph on his own. As Jorge wrote down

     sentences, Aldo sat close to him, hovering over his shoulder, with his palm under his

     chin, attentively reading Jorge's writing. Aldo often provided Jorge with feedback in

     English, and together, they would discuss (using English) whether to include or omit the

     feedback given. When Jorge struggled, Aldo sometimes referred to his list of tips.

     Across the way, at a different table, Pedro, a fourth-grade student, was almost done

     writing his conclusion in English. His fifth-grade partner, Fabian, asked Patricia, a

neighboring student, in English, what they should do next. Responding in English,

Patricia suggested he edit Pedro's essay for grammar.

Other similar examples of co-regulated learning occurred between fifth and fourth

graders' mathematics partnerships:

> During independent practice a group of four fifth graders, who had finished the
>
> mathematics task (written in Spanish) early, circled the room and helped other students.
>
> Ignacio, a member of this fifth-grade group, walked over to his table mate, Anna, to
>
> borrow a mathematics example she had drawn in her notebook that he wanted to use to
>
> help a student.

Partnerships, afforded students the opportunity to use various semiotic resources (i.e.,

mathematics worksheet written in Spanish, mathematical drawing, list of tips written in English,

reading in Spanish or English, listening to and/or speaking in Spanish or English) to *self-monitor*

completion of a language task as well as *seek help and feedback* from a peer. This flexible use of

semiotic resources facilitated communication and exchange or negotiation of meaning making.

"Wait time."

Mr. Alvaro used "wait-time" (pausing) during whole-class discussion as a regulation

strategy that supported oral language use and encouraged student participation. He explained

that drawing out the silence, afforded students an opportunity "to collect their thoughts [so they

could] express what they want[ed] to share." Mr. Alvaro's portrayal of "wait time" was further

supported during an observation of a fishbowl activity (i.e., a communicative task that entails a

small group of students modeling a process or a skill to the rest of the class), when Mr. Alvaro

asked the class: "What did you want to change? Were there things you would have added?" At

first students were quiet, but after many seconds, students shared: "Not using 'a lot of'…or

'then' so much." In effect, Mr. Alvaro utilized "wait time" as a co-regulation strategy, to support students *monitoring of* effective communicative strategies (i.e., drawing from their entire linguistic repertoires to discern the language heard), and as a means to shift the class discussion about writing strategies into opportunities for student creation and selection of personalized writing goals (i.e., *goal setting*). He also used "wait time" as a culturally proactive, regulating language process to encourage student participation as students were developing disciplinary language in both their home and new languages.

Requests and questions.

Mr. Alvaro used language specifically to promote student regulation, enhance English oral language skills, and improve disciplinary-content knowledge during mathematics and writing instruction. Mr. Alvaro used requests and questions as formative assessment moves (instructional tools) to co-regulate student understanding during mathematics and writing instructional blocks (e.g., whole-class discourse) while students practiced oral language skills. He often requested that students *self-monitor*—"I would like you to think about how what you did now, helped you better understand the challenge problem from yesterday"—and *evaluate* in partnerships—"Now share with your partner if you agree. Do these strategies help you solve yesterday's math problem?" In addition, he often drew out *evaluative* discussions with the whole class: "One minute to think to yourself, one moment in silence…How did working in partnerships help you work? How did it help the other person? What did you learn? Now share with your partner." Mr. Alvaro also *motivated* students to understand disciplinary concepts and academic language by inviting or encouraging students to, in unison, read aloud: "Let's count using mixed numbers...Let's find a rhythm." These exchanges demonstrate how Mr. Alvaro and

students used requests, questions, and encouragement to elicit student *monitoring*, *evaluation*, and *motivation* in order to develop disciplinary conceptualizations and practice oral language.

Modeling general and discipline-specific language.

Mr. Alvaro also modeled specific language to promote students' regulation and English oral language skills. He used School Navigational Language (i.e., language used to communicate specific goals, directions, pacing, and sequencing of a classroom activity; Author 2 & Author 3, 2008) to communicate expectations in order to co-regulate *goal setting* and *planning*. For example, during a writing lesson, he stated the *goal*: "Let's go over the steps to the revision strategy." He then verbalized the revision strategies needed to accomplish the writing task, and then again , with the help of student volunteers during the fishbowl exercise: "Let's go over the steps to the revision strategy: (1) read the draft out loud; (2) identify the opinion or main idea; and, (3) identify the three supporting reasons."

Additionally, he established socio-writing norms to facilitate student solicitation of *feedback* when they worked with a peer using a directive: "In partnerships one of you will read your draft to your partner. Your partner's job will be to listen and identify the opinion or main idea and the three supporting reasons. After you receive feedback from your partner, you will switch roles and listen to your partner read their essay." Using general terminology that can cut across the different academic disciplines without a change in meaning (e.g., *strategy, identify, partnerships, receive, feedback*) and discipline-specific terminology (e.g., *draft, revision, main idea, opinion, supporting reasons, essay*), the teacher provided students with a *goal, flexible use of strategies*, and the language they needed to provide partner *feedback*.

However, Mr. Alvaro's co-regulation (modeling) of general and discipline-specific language scaffolded students as they provided each other with *feedback* during work time.

Scaffolding of general and discipline-specific language was also observed during mathematics instruction. In sum, Mr. Alvaro repeated general and discipline-specific language multiple times throughout a lesson, each time co-regulating how to use language during the mathematics and writing content blocks. He also used school navigational language to communicate socio-disciplinary norms and regulate academic behaviors.

Discussion

Our qualitative case study explored how a Spanish-English bilingual teacher and students incorporated regulated- and language-learning practices in a dual-language elementary classroom. The findings based on inductive/deductive and thematic analyses can be organized within an explanatory framework. This framework illustrates four nested components (depicted as concentric circles in Figure 2): The outermost circle is representative of the *classroom culture* and includes the following: social (e.g., classroom social norms) and cultural systems (i.e., a flexible learning environment). The next circle is representative of the classroom's *communicative activity* (e.g., partnership tasks). The following circle is composed of two inner-circles, one is representative of regulated-learning processes and the other is representative of language-learning processes. These circles are linked with bi-directional arrows that are representative of the reciprocal nature of regulation and language. Inside these circles are pedagogical mechanisms that activate regulation and language processes in certain communicative contexts; sometimes pedagogies target regulation that enhances language learning, on other occasions, language assists students with utilizing regulation strategies that may also ultimately promote language learning. The inner most circle is representative of the teacher's and students' beliefs, conceptualizations, and background characteristics that constitute the dual-language classroom microculture.

The observed classroom microculture provided communicative activities (e.g., working in partnerships to complete a writing task in Spanish and English) that supported students use of semiotic resources (e.g., textual, aural, linguistic, and visual) as well as cultural (e.g., drawing from lived experiences to make sense of content) and environmental affordances (e.g., freedom to walk to other tables to seek help or visual resources). These findings are largely consistent with those of Poza (2018) who reported students in bilingual classrooms can be supported in their content and language learning by allowing them to use bilingual repertoires, collaborations, authentic experiences, and providing sufficient exposure to chosen language varieties.

We found that the flexible learning environment afforded students opportunities to take ownership of their learning as they made spatial, social, and metacognitive choices to assist meaning-making and language learning in both languages (Spanish, English). With respect to spatial choices, students made decisions to stay, move, or return to a space in order to retrieve learning tools (e.g., lists, mathematical drawings) or seek assistance. Students' social choices involved partnership or whole class activity. In partnerships, students had opportunities to practice English as a new language and sustain or expand their social and academic uses of Spanish, while co-regulating each other's content learning (e.g., revising a persuasive essay). During whole class activity, we found that communal or collaborative evaluation (self-assessment), as a social classroom norm, provided students with opportunities to discuss their disciplinary-content learning, while also evaluating and monitoring the regulation strategies they used in Spanish or English to convey their disciplinary conceptualizations with peers. Students' metacognitive choices involved managing the completion of a task. For instance, students assembled various semiotic resources to implement myriad regulated-learning strategies that

facilitated communication and meaning making as they worked to complete a Spanish and

English persuasive essay before the end of the writing unit.

Limitations and Future Directions for Research and Practice

This small-scale study is a proof of concept. This exploration will need to be expanded

to additional classrooms and to describing the impact on student language and content learning

over time. Considering that students play an integral role in a classroom microculture, future

explorations will need to incorporate student interviews. Future studies should also include more

observations conducted across the academic-school year and incorporate video and audio

recordings in order to investigate which regulation strategies are more prominent. We suggest

that qualitative methodology is a fruitful avenue for examining complex regulatory interactions

in bilingual-learning environments and recommend further exploration. Our findings also have

implications for practice. We argue that our disciplinary pedagogic snapshots might provide

educators with vivid examples of how to incorporate regulated- and language-learning processes

in bilingual settings.

<div align="center">

Conclusion

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Our findings suggest that this application of regulated-learning characteristics was

successful in revealing the complex ecology of the bilingual classroom. In some instances,

regulation supported language learning specifically. In others, language was used in support of

regulatory processes that enhance disciplinary-content and language learning. Partnerships

emerged as important for co-regulation and language support and may explain why peer

interaction in addition to teacher support of regulation may prove valuable in the effective

education of DLL students.

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Table 1.
Demographic Description of Students (N = 33)

	n	%
Ethnicity		
Latinx	32	96.97%
White	1	3.03%
Gender		
Female	17	51.52%
Male	16	48.48%
Gifted	6	18.18%
Special Education	5	15.15%
English Language Development Classification		
Emergent Bilingual	12	36.36%
Reclassified to Fluent English Proficient (RFEP)	16	48.49%
English Only (EO)	5	15.15%
Language Profile Self-Identification *		
Bilingual	14	42.43%
Multilingual	12	36.36%
English Monolingual	1	3.03%
No Response	6	18.18%
Languages Heard *		
Spanish	27	81.82%
English	29	87.88%
Indigenous American (e.g., Zapotec)	6	18.18%
Korean	9	27.27%
Japanese	1	3.03%
Tagalog	1	3.03%
French	3	9.09
American Sign Language	1	3.03%
No Response	4	12.12%
Languages Spoken *		
Spanish	30	90.91%
English	30	90.91%
Indigenous American (e.g., Zapotec)	3	9.09%
Korean	1	3.03%
Japanese	4	12.12%
Tagalog	1	3.03%
French	2	6.06%
American Sign Language	4	12.12%
No Response	3	9.09%

Note. English language development classification derived by the school from California English Language Development Test scores. DLL students include emergent bilingual and reclassified to fluent English proficient students. * Student self-report data from the Language Experience Survey; students responded to: *"Choose the word that best describes you," "Write a list of all the languages people speak around you"* and *"Write a list of all the languages you speak."*

Table 2.

Students Self-Reported Language Use and Comfort Using Languages at School (N = 33)

	n	%
Languages Most Often Used		
Languages Heard		
Spanish	14	42.42%
English	27	81.82%
Korean	2	6.06%
No Response	6	18.18%
Languages Spoken		
Spanish	13	39.39%
English	27	81.82%
No Response	6	18.18%
Languages Most Comfortable Speaking		
Spanish	15	45.45%
English	27	81.82%
No Response	4	12.12%

Note. Student self-report data from the Language Experience Survey; students responded to: *"Write the language or languages you hear the most at school," "Write the language or languages you speak the most at school,"* and *"Write the language or languages you feel most comfortable speaking at school."*

Table 3.

Regulation Strategies and Related Behaviors and Dispositions Taxonomy

Strategy	Behaviors and dispositions
Goal setting	Basing short-term goals for learning on evidence and feedback; setting and prioritizing individual and/or group goals and subgoals
Planning	Establishing strategies for achieving individual and/or group (two or more students) goals; determining how much time and resources are needed to achieve the goals
Motivation	Independently (i.e., without external rewards) using one or more strategies to keep their own and/or their peers learning on track to meeting the goals
Attention control	Attending to tasks and removing distractions from the environment; choosing conditions that make independent and/or group learning easier
Flexible use of strategies	Implementing multiple learning strategies across tasks and adjusting those strategies when needed to secure progress independently or with a group; using evidence to adapt and invent learning strategies independently or with a group
Monitoring	Monitoring their own and/or their peers progress toward learning goals and making adaptations to secure progress
Help-seeking and feedback	Seeking advice and support from adults and peers; seeking information (e.g., libraries, internet, contacts); soliciting progress feedback from teachers and peers
Evaluation	Evaluating their own and/or their peers learning, independent of teachers, and making adjustments for similar tasks in the future

Adapted from Author 2 & Author 3, 2018, created in part from information found in Buckingham Shum & Deakin Crick, 2012 and Zumbrum, Tadlock & Roberts, 2011.

Table 4.

Pedagogical mechanism for language learning supports and directionality of co-regulation and language processes

Pedagogical Mechanism	Directionality of Processes	
Rehearsal	Co-Regulation → Language	
Semiotic Assemblages	Co-Regulation → Language	
Wait-Time	Co-Regulation → Language	Language and Content Learning Support
Requests and Questions	Language → Co-Regulation	
Modeling General and Discipline Specific Language	Language → Co-Regulation	

Language-Learning Practices	**Communicative Activities**	**Whole-Class Tasks ****	
		Group Tasks **	
		Partnership Tasks **	Mixed-Aged Mentorship **
			Language Partners **
		Formative Assessment Moves	Questioning *, Author 3, 2016
			"Wait Time" **
		Modeling Academic Language	School Navigational Language *, Author 2 & Author 3, 2008
			Disciplinary Language **
		Semiotic Assemblages *, Canagarajah, 2017; Pennycook, 2017	
		Rehearsal **	
Regulated-Learning Practices	**Regulation Strategies, *** Author 2 & Author 3, 2018	**Goal Setting ***	
		Planning *	
		Motivation *	
		Attention Control *	
		Flexible Use of Strategies *	
		Monitoring *	
		Help-Seeking and Feedback *	
		Evaluation *(Self-Assessment)* *	
Context	**Classroom Culture**	**Environment of Focus ****	
		Flexible Environment **	
		Management of Regulation *, Author 3, 2016	
		Classroom Norms, * Cobb & Yackel, 1996	Classroom Social Norms *
			Socio-Disciplinary Norms *
			Classroom Disciplinary Practices *

Note. * = Deductive codes; ** = Inductive codes.
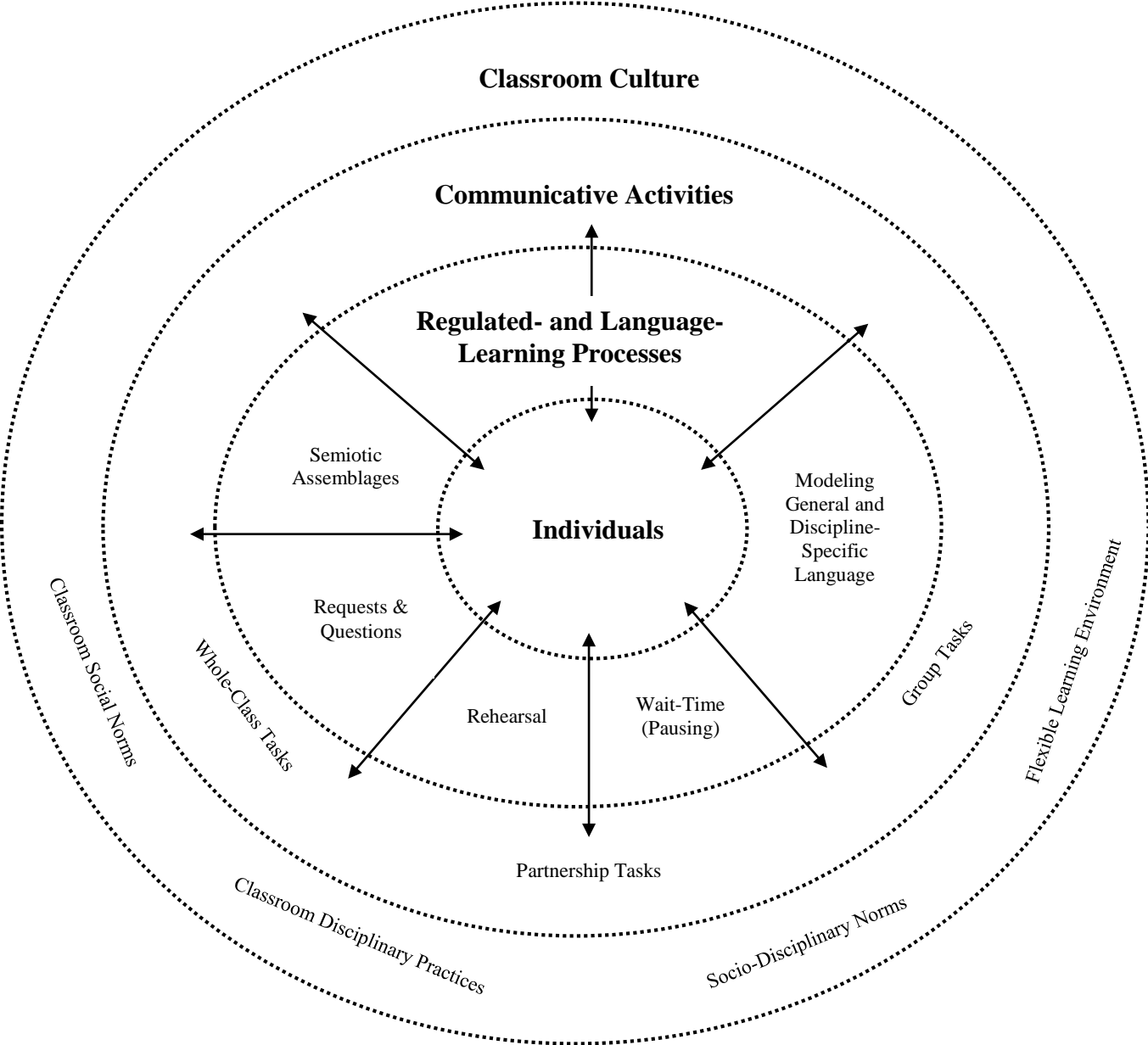
Figure 1. Deductive and Inductive Code Map

Figure 2. An Explanatory Framework for Dual-Language Classroom Microculture