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Starts and Stops: Multimodal Practices for Walking as a Group in an Augmented Reality Place Based Game

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Multimodal Practices for Walking as a Group in an

Augmented Reality Game.

by

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Abstract

Research on mobile-technology for second language acquisition is an emerging field. Augmented-reality place-based games (AR-games) are a relatively new mobile technology and one such area of necessary research. This thesis describes the interactive practices that groups of English language learners use for starting and stopping group movement during an AR-game. During the game, students walk to and from various destinations on campus. Practices for walking as a group are important actions for accomplishing the ChronoOps game and tasks. This thesis describes some of these practices of walking as a group, specifically, how groups start to walk and come to a stop. The study draws from theories of embodied and distributed cognition, interactional competence, and conversation analysis. Data was collected using multiple video cameras of groups of 3 students playing the game. Multimodal, conversation analyses of the data provides a taxonomy of practices for group starts and stops. Results show that starts and stops are projectable and accountable actions, comprised of complex modalities verbal, gestural, and embodied practices. Furthermore, starts and stops are contingent on players' orientation to place as the physical location of the campus, and their place within the various tasks of the ChronoOps game as well. The findings have implications for future research theories of learning in SLA and AR-games.

Dedicated to

Shirley and Kathleen

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Chapter 1: Introduction and Literature Review

Introduction

Mobile technology is changing the way researchers think about teaching and learning. Advances in technology are increasing more than ever, and so are the educational opportunities and implications inside and outside the classroom. With new technologies come new questions regarding the pedagogical utility of such inventions, and such considerations need to be taken seriously in accounting for the differences they make.

> [Teachers] regularly witness a disconnect between the real world outside their classrooms and the contrived, dated world that exists within. They see the stark contrast between squirmy bodies and the glazed stares brought on by textbook-based lessons and the palpable energy brought on by artfully designed, technology-infused lessons. They know they must transform their classrooms and their teaching, but, like the students they serve, they need scaffolding to change and grow (Gee, 2009 p. 52)

James Paul Gee has written extensively on the social spaces created by video-games, gamers, their communities, and opportunities for learning they provide in spite of common views of video games as detrimental (see Gee 2003, 2013). Gee questions how teachers might integrate, evaluate (and keep current) with ever-changing technology into the classroom. However, he also proposes that advances in technology pose challenges to researchers and teachers in how they conceptualize learning.

Consider the case of mobile-phones. Advances in the technological capabilities and ubiquity of mobile devices have increased in recent years. Mobile devices, including cell phones and tablets are increasingly present in the classroom and are an issue for teachers. On one hand, these technologies can create distractions and are commonly attributed with detrimental consequences (as with video games) in our ability to think and

interact with others. One the other hand, mobile-devices provide students to access a wealth of information through internet, social media, GPS-enabled maps, apps, and other methods of communication, regardless of time or place. Simply put, technology has both benefits and detriments. Neither, however, exists in a vacuum consisting only of the technology and user.

The relationship between technology and learning is not one of direct causation. Students do not learn simply because they have access to technology, and technology does not automatically cause its users to learn. Rather, technologies of any type are digital artifacts based in human interaction. As artifacts, technology acts as conduits that shape and are shaped by social interaction, whose meanings are situated in locally conditioned cultural practices (Alac, 2011,;Alac & Hutchins, 2006; Hutchins, 1995; Latour, 2005). For example, when Gee writes about how video games facilitate learning, it is not just from the design of the game itself, but from affordances of interaction and participation in various affinity spaces which games provide. Gee (2011) distinguishes the "little g" games, or game-design, and the "big g" or "meta-games" which are the broader types of participation in communities of practice that come from game-playing communities. These practices include reading and writing about games and game strategies, interacting with others through fan-fiction and online forums. Affinity spaces are not structured a priori, but are social spaces that emerge from the game players. These spaces are cultural, not in traditional sense associated with nation-states and common practices, but in the sense that they are emergent, locally constructed, and based on mutual understandings of its members.

So when people engage with new technologies and learning, it is not merely a direct relationship between the device and learning, but a larger, complex picture, of multiple modalities that must be taken into account in evaluating opportunities for learning. Augmented Reality Place Based games (AR games) are a new technology, and this study focuses on the locally constructed "culture" of embodied practices that emerge in AR-games. A description of AR-Games is given below, followed by theoretical considerations for understanding learning, and the research questions of this study.

Augmented-reality place-based games

AR-games utilize audio/video capabilities, geo-spatial positioning systems (GPS) maps, and social media capabilities of mobile-devices. Through GPS-enabled maps, AR-games direct student game players to particular spaces within a community. Upon arriving at these destinations, players are given tasks to perform, typically involving the documentation of the destination using audio, video, and photo capabilities of mobile devices. These quest-like activities are simple in procedure, but provide the opportunity to interact with the historic, social, technological, and social aspects of the community. AR-games take students out of the classroom, and into the world where they learn *about* places rather than *of* places, bridging the gap between the traditional classroom, and the world that extends beyond its walls (Holden & Sykes, 2011). This is an opportunity for teachers to engage students in a non-traditional classroom activity while integrating theories of embodied cognition (Wilson & Golonka, 2013) and situated learning (Lave & Wegner, 1991) into the development of such activities.

In general, AR-games rest on the premise that our best learning is both experiential and embodied (Dewey, 1928, 1935), and that learning is always situated in social and cultural places. These embodied experiences in situated real-world locations (Wilson & Golonka, 2013) are bases for identity and knowledge. As people accumulate knowledge for the body and place, this knowledge is adapted and transferred to fit other contexts. Squire (2009) refers to this transfer of experience and context as hybridity of place, and argues that mobile media. AR-games highlight the embodied, situated, and locally constructed learning that often occurs outside of classrooms, and in less structured environments. These kind of real-world environments are often missing from research on learning, where studies traditionally use data from classroom settings or experimental settings. While, research on AR-games as tools for learning in classroom exists (Holden & Sykes, 2011, Squire 2010; Squire & Minfong, 2007), less research has been done to focus on the embodied and experiential interactions cultivated by learners during the use of AR-games (see Thorne, Hellermann, Lester, & Jones, in press). As such, this is a much needed area of research. In the sections below, an outline of how this research can contribute to our understanding of learning in AR-games will be given.

Second language acquisition.

The AR-Game used in this study, ChronoOps, is designed for second language teaching. The game, which is available in multiple languages including English, French, German, Japanese, Russian, and Spanish, was used as part of an ESL class at Portland State University's Intensive English Language Department (see Chapter 3 for further discussion). AR-games as a pedagogical intervention for language-learning is new and

has not been the subject of much research. This study focuses on a context for learning that relies on recent theoretical developments in second language acquisition (SLA) which bring the complex social and material dynamics of the language learning process into the theory.

The field of SLA has roots in cognitivist and generative views of language acquisition (see Van Patten & Williams, 2008, for a full discussion). These theories have focused on the generative properties of grammar, as proposed by Chomsky (1965), where the 'language acquisition device' is seen as undergoing a necessary re-ordering for learners to acquire a new grammar. This led to the conceptualization of learner language as interlanguage (Selinker, 1972) and to research which posited universal stages of acquisition (Schumann, 1979; Dulay & Burt, 1974; Pieneman, (in Van Patten & Williams, 2014) for SLA. More recent developments (Ellis, 2006) have expanded on these notions, culling from constructs in psychological and cognitive science, including memory, attention, input, output, and processing, in attempts to understand how a learner can internally process and acquire the grammatical, phonological, lexical, and components of a second language. Discussing these theories in depth is beyond the scope of this paper. However, it should be noted that one shortcoming of critics point out for all these theories is that they only focus on the cognitive states of the individual learner, ignoring the complex, dynamic, and very social nature of language itself.

Where early theories in SLA predominantly focused on the internal cognitive aspects of language learning, other theories have received less attention (VanPatten & Williams, 2007, p. 13; Brown & Larson-Hall, 2012). The " social turn" (Block, 2003) in second language acquisition (SLA) refers to a shift in research focusing on the

individual's brain or language acquisition device, as the central focus for language learning, to researching the social, material, and interactional conditions that facilitate language learning. The socially-oriented theories attempt to bring the social and interactional nature of language learning to the forefront of analyses for studies in SLA. Theories such as Long's input-interaction-output model (Gass, 2006) were the first to begin addressing the role of interaction in SLA. Long viewed interaction as a means for providing comprehensible input or language that would facilitate acquisition. Long's views still privileged the process of acquisition as one of individual internalization.

As generative and psycholinguistic views of SLA have observed, language is clearly a cognitive construct. However, language is also inextricable from its social context. Other theories have moved beyond the inside-the-head views of language acquisition to the social practices that are sites for language use and language learning. Socio-cultural theory (Lantolf & Thorne, 2006) describes social environment, the interactions between people, the environment, and cultural artifacts as sources of mediation between the external and internal states of learning. In contrast to ideas that language learning is rooted as an internal process, one of memorization, neural-networking, or language acquisition device, socio-cultural theory views SLA as rooted in human's social and material action. The ability to mediate actions and concepts with language leads to the internalization of language, and socio-cultural theorists view the social and material contexts of learning as the primary source for understanding language acquisition.

Prior to the social shift in SLA, other fields of cognitive science have similarly expanded the idea of cognition as existing only in the individual mind, to a broader view

rooted in the physical body, the material and social environment (Lebaron, Goodwin, & Streeck, 2013; Neville, Haddington, & Rauniomaa, 2014; Wilson & Golonka, 2013). This research draws from these fields to analyze learning in AR-games which blend multiple activity networks including person-person interaction, person-device interaction, person-environment interaction, and device-person interaction. These complex activity networks are similar to what Hutchins has referred to as the 'cognitive ecology' (2010) of an activity. As Hutchins (1995) proposes:

> Paying attention to the ways that the body and mind are coupled to the environment highlights two forms of multimodality. Interactions between persons and their environments often simultaneously engage several modalities, speech and gesture, for example. It is now clear that inside the brain as well, the causal factors that explain the patterns seen in any one modality may lie partly in the patterns of other modalities (p. 710).

AR-games are just one of many new and rapidly advancing technologies. With any new technology, research and empirical caution should be taken in devising pedagogical plans for the use of AR-games. Rather than risking the assumption that new technologies transmit information, or, increase the transmission of information, one must consider the more complex, interactive relationships between. As James Paul Gee (2008) put it:

> A situated/sociocultural viewpoint looks at knowledge and learning not primarily in terms of representations in the head, although there is no need to deny that such representations exist and play an important role. Rather, it looks at knowledge and learning in terms of a relationship between an individual with both a mind and a body and an environment in which the individual thinks, feels, acts, and interacts. Both the body and the environment tend to be backgrounded in traditional views of knowledge and learning (p. 81).

Gee's argument against psychometrics is used here to illustrate an analogical point. Psychometricians have a predisposed theory of learning that is applied to testing and

assessment, which privileges the understanding of internal cognitive states and, as Gee argues, have little descriptive, empirical accounts of what situated learning looks like. To have a theory of learning prior to adequate descriptive accounts of learning situations may risk miscalculating our understanding of what is being learned, and how teachers and researchers might approach new avenues for learning. AR-game contexts are no exception to needing adequate description. Because AR-games represent a nexus of social, cultural, and historical cognition, intertwined with the embodied, physical, and material world, descriptive accounts of this nexus are much needed. For this, I turn to the exploratory nature of this study, and Conversation Analysis and learning within a CA perspective.

Conversation analysis & learning

Learning, in general, is a problematic concept and difficult to define. For this study, learning is treated as a change in participation during activity, or "legitimate peripheral participation". (Lave & Wenger, 1991; Sfard, 2005). Conversation Analysis provides an (a)theoretical and methodological framework that uses rigorous analysis of audio/video data to bring forth the members' methods for meaning making in everyday activities, rather than the researchers. The practice of meaning making and learning in our data is structured using language, the body through gaze and gesture, material artifacts (such as the mobile device) and movement throughout the environment. CA methods provide the means for helping us see the complex process of meaning-making practices as they unfold in interaction. Each of these areas, as relevant to CA research will be discussed to give perspectives on how learning might be conceptualized for AR-games.

Conversation analysis.

Conversation Analysis is rooted in Garfinkel's (1967) work in ethnomethodology, wherein studying social interaction does not focus on social theories and constructs such as gender, ethnicity, socioeconomic status, etc., but on how people organize themselves to achieve the tasks of mundane, everyday interactions. CA employs a data driven approach to the analysis of language and interaction, unconstrained by pre-existing theories or conceptualizations of language or linguistics, and focuses on what emerges from the data as relevant to the participants themselves in conversation. Detailed analyses of conversation in interaction outline how conversationalists, and in the case of this study, players of an AR-game, achieve interactional competence in mundane institutional settings (Kasper and Wagner, 2011). When considering learning, this means not looking just for what is acquired, but how it is acquired, and more specifically, the ways in which learners orient to language learnables (Majlesi & Broth, 2012) in social and interactional settings that might facilitate the language learning process.

Actions are the primary analytic unit in CA. Actions in CA have been categorized as speech acts such as greetings, questions, and securing recipients for conversation or storytelling. It is through rigorous and detailed microanalysis of these actions that CA shows how people package these actions into language (turns) and routinely perform and accomplish actions in everyday face-to-face interaction. This action-based focus is different from other cognitivist areas of SLA research.

CA proposes that simple tasks in conversation are constructed and organized through co-participation, in regularly, orderly, though context-sensitive ways. CA focuses

on the structure of talk during participants' interactions, and the methods used to achieve sequential organization in accomplishing actions. This encompasses a number of analytic constructs important to the field of CA and how CA describes conversation.

Conversation is a systematic process of turn-taking machinery (Sacks, Schegloff, & Jefferson, 1974). The basic analytic construct for achieving action through turn-taking is a speaker's turn of talk, or, the *turn constructional unit* (TCU). TCU's are bounded by speaker change and traditionally analyzed in terms of their grammar, the sounds of speech, and the actions they perform. CA has also shown other linguistic features, those often ignored by other linguistic fields, as relevant for shaping interaction. These are sometimes referred to as "non-verbal" forms of communication and include intonation, rhythm, prosody, as well as "non-word" utterances, such as in-breaths, out-breaths, laughter, and pauses. What is important about TCUs is that they cannot be defined *a prior*; participants co-construct such units in contextually-relevant ways to perform particular actions.

Speakers construct their TCUs in the context of ongoing sequences of talk and TCUs organize the interaction between participants. For example, when one member of conversation formulates a greeting in a particular TCU, it is designed for the other member(s) of the conversation and designed to have other member(s) respond with a greeting. Or, when one participant performs the action of asking a question, it is likely that this question seeks to secure an answer from the other member of conversation. Thus, a particular action from one participant will implicate a following action from another, in what are referred to by CA researchers as *adjacency pairs.* Adjacency pairs in CA analysis are direct displays of the interpretation processes that conversationalists use

to co-construct sequential organization and intersubjectivity in conversation. A first speaker's utterance is shown to be interpreted when a next speaker provides a next turn in the context of that previous utterance. In this way, CA provides insight into how people use and interpret one another's language to achieve everyday actions in interaction.

As mentioned above, social action is created through a complex system of modalities co-occurring with spoken language, to create orderly interaction. CA researchers have thoroughly addressed this issue. These multiple modalities of communication, including the role of the body, through gaze, gesture, and posture, and its situated position within the environment are discussed below.

Multimodal analyses in CA.

One of the earliest studies to incorporate the body in linguistic research was done by Goffman (1963, as cited in Liddicoat, 2011). This study shows that securing a recipient response in conversation opening can be either verbal or non-verbal. More importantly, in this study, Goffman found the most indispensable action by participants in successful conversation openings to be the establishment of mutual gaze toward one another. This, before anything else, was mutually necessary in establishing a concerted opening to begin the conversation. Since this study, others have illustrated the importance of non-verbal communication as well. For example, Goodwin (1980) shows that it is not just the verbal elements of speech in participants' TCUs which organize sequential turn allocation in conversation, but that participants' gaze toward each other had equal weight in organizing actions, such as story-tellings, speaker allocation, and repair**.**

Similarly, data from everyday conversations, (Streeck 2009; 2011) has shown how gestures influence sequential conversational practice in a variety of contexts[1]. Streeck (2011) shows that gesture can be employed to create *depictive motion* in the story-telling of a car-accident, to describe visual imagery related to a car-accident, to describe an environment not in the immediate surroundings, in performing necessary communications for completing tasks of auto-repair, and in describing archaeological digs. For example, in the study of archaeological digs**,** Streeck, Goodwin, and Lebaron (2011) show that parties in conversation often used gestures as supplemental to verbal communication. That is, where a speaker might mark a potential place for another to take a turn (TRS) or incomplete turn, the gesture substituted additional meaning for speech by directly referring to locally relevant objects within the environment. The gesture, in effect, organizes action by completing a turn. This type of embodied completion (Olsher, 2004) is an example of increasing evidence that the language system relies on broader modalities of communication rooted in the body and environment.

From the starting point of the body as a multimodal system of communication including gesture, gaze, and other bodily orientations to the environment, research has expanded from more singular foci of analysis to holistic tasks that integrate multiple frameworks in conjunction with verbal communication. Goodwin (2007) calls these *embodied participation frameworks* (p. 56) of speech, gesture, gaze and bodily orientation as subsystems for *semiotic fields* (Goodwin, 2000) upon which action "is built through the visible, public deployment of multiple semiotic fields that mutually elaborate

[1] Kendon (2004) and McNeill (2000, 2012) have done extensive work on gesture, and though his work comes from perspectives other than CA, their contributions are indispensable in the understanding of the interactional work that gesture performs.

each other" (p. 1494). An analytic perspective such as this will be important for my research where participants draw on multiple semiotic modalities to establish actions in an AR-game.

CA, SLA, & Interactional Competence

The above section has described how language and learning are always situated in complex systems of multimodal communication. Action is built at the nexus of these systems, but a description for learning is still needed. The ability to participate within complex systems of communication is one way of describing learning in CA research, and finding changes in participation aid researchers in accounting for the occurrence of learning.

CA has a rich history of defining interactional competence in a variety of contexts. For example, in SLA, studies have examined how learners in a language-learning context manage and change participation over time. As noted by Lee & Hellermann (2014):

> It is what the nonnative speakers do, not simply the linguistic outcome, which is of interest. The conceptual argument and analytic demonstrations are thus designed to demonstrate how CA's attention to real-time details of natural interactions can capture changes in the organization of talk in nonnative use of English (p. 3).

Thus, any resources which participants might use in conversation should be considered important for analysis in SLA research, as well as potential patterns of resources as they emerge in interaction. Recently, CA and SLA have turned to studies of interactional competence (Gardner & Wagner, 2004; Hall, Hellermann, & Pekarek-Dohler, 2011; Hellermann, 2008; Pallotti & Wagner, 2009). From an interactional-competence perspective, language learners' conversations are no different from those of

native-speakers (Gardner & Wagner, 2004). Conversations are built upon universals of structured interaction, and in spite of limited language lexis, grammar, or phonology, language learners' goals are like those for other conversationalists: to achieve intersubjectivity in their interactions. How language learners build such predictable structures for interaction is analyzed for evidence of learning. From this perspective, the routine and necessary aspects of interactions (turn taking, turn construction) provide opportunities for language learning to occur and a site where researchers may see learning from the participants' perspective.

This perspective, incorporated in complex semiotic fields of action, has been illustrated in contexts other than language learning. For example, Koschman and LeBaron (2002) demonstrate how learning could be articulated, from both expert and novice perspectives, in medical settings. Similar work, (Zemel and Koschmann 2014), demonstrated this complex practice through the "production of a learnable", or an "orientation to and accomplishment of particular… actions" (p. 180). What might be seen as the small action of pointing to a particular instrument or space on the body, can be a prompt for demonstrating the learning of a process. Though this context involves instructors being trained in surgical procedures, the message here is certainly important to SLA research. To see learning, researchers must accurately explicate transformative changes in language learners' involvement in actions. This may involve not only the production of lexical or grammatical forms, but the competence to carry out and perform tasks effectively related to language use as well. As stated by Hellermann and Lee (2014) regarding the usefulness of CA in SLA research:

> Epistemological traditions other than ours may treat language competence

> as a native trait or an abstract linguistic model that serves as the target for a learner's L2 system, or both. CA researchers focus on the micro-level details of the situated competencies of learners to interact with another through their formulations (with co-participants) and language for social actions (p. 63).

By examining closely the nature of learners in interaction through CA, the situated resources regularly deployed by learners to accomplish relevant tasks become available to researchers. In AR games, the outside environment and community space becomes the learning context. The data in this research and the close analytic methods thus provide insight into the novel context of AR games for language pedagogy, as well as a rare opportunity to see language-learners interacting outside of a classroom setting. By exploring language learners' concerted use of language, gesture, and their environmental surroundings to accomplish tasks, this research will contribute to research in AR-games through an understanding of the complex everyday processes of meaning making unaccounted for in mobile-media and gaming research.

For the scope of this thesis, limitations must be set to the type of task accomplished. AR-games engage learners in multiple tasks, some novel and others relatively mundane, such as constructing recording activities, to walking throughout a public space. The latter is the focus of this research paper, and studies of walking in CA are discussed in the following section.

Movement and Talk

Goodwin's writings on participatory frameworks illustrate how actions are built through complex systems of communicative resources. CA, which uses in-depth analyses of shorter pieces of interaction, such as openings and closings in

conversation, has traditionally examined interaction in stable participatory frameworks, such as a doctor's office, a classroom, or an archaeological dig. Everyday activities are not always so stable. People spend much of their days moving through spaces, traveling to and from work, throughout the different spaces at home or work, and to new and entirely unfamiliar places. More recently, research in CA has sought to investigate the role of mobility in interaction more thoroughly.

Studies of walking in CA have focused on a variety of walking contexts including supermarkets, piers, museums, and everyday street encounters. Many studies describe the practice of walking in 'mobile formations' (as a group) as both complex as they are commonplace. Broth & Lundstrom (2013), Broth & Mondada (2013), De Stefani (2013), De Stefani and Mondada (2014), Mondada (2009, 2014) and Weilemen, Normark and Laurier (2014) have all studied the intricacies of groups walking while talking. These studies show that in mobile contexts walking is a resource that shapes and is shaped by sequential practices of conversation interaction. For example, Broth and Mondada (2013) showed how walking away from a stationary group is an embodied method of closing conversations. Similarly, De Stefani (2013) showed coming to a stop is a resource for closing one action, but also a resource for introducing a next actions.

Initiating (Mondada, 2014) and stopping (De Stefani and Mondada, 2014) movement in interaction is complex behavior that employs other well-studied multimodal analyses of CA, including gesture and gaze. These studies

additionally incorporate the lower half of the body, and show that the movement of feet and trajectories of body influence the sequential organization of talk. Since talk, task performance, and moving as a group are integrated practices in AR-games, this study examines the sequential practices for starting and stopping walking as a group.

Conclusion

Teachers and researchers cannot ignore the impact of mobile technology on the classroom, nor can they ignore that technology shapes the way students learn and engage in learning outside of the classroom. AR-games present new pedagogical opportunities that extend learning beyond the classroom walls. Similarly, AR-game contexts can provide researchers with ways of understanding learning beyond the traditional ideas that are often espoused in fields of cognitive science and psychology. While AR-games are an exciting endeavor, research on the interactional practices of AR-games, and how they afford learning is necessary. Learning opportunities occur in the social and material facets of tasks. Understanding how AR-games cultivate social interaction in their embodied, mobile contexts can provide teachers and researchers with foundations for understanding the advantages of such mobile technologies, along with new ways of understanding learning from an interactional perspective.

Research Questions

To narrow this scope of this research for the purpose of an MA TESOL thesis, I have chosen to focus my analysis on the practices of coordinating group movement in a specific AR-game. Specifically, the practices of coordinating group movement I will examine are starting and stopping walking. The purpose of this is outlined below.

AR-games are situated in places. More specifically, these places refer to various sites that make up part of a community whose cultural, historical, and social roots are highlighted as a means of creating ludic engagement and learning possibilities for its players. During AR-games, players move from place to place within a community. The participants in our data play the game in groups, and thus must walk as a group. This kind of activity represents what Garfinkle (1967) called the "unseen but not unnoticed" type of behavior ripe for CA research. Starting and stopping as a group are interactional practices, and from initial observations of the data, it is clear that these practices are motivated by a shared understanding of the current tasks at hand in AR-games. I argue that the understanding of the AR-games are evidenced by group practices for starts and stops, and that rigorous investigation of these practices will uncover sites for interactional competence as outlined by CA researchers, particularly in SLA. The following research questions will guide my analysis:

1) What are the multimodal practices that participants use to start as a group?
2) What are the multimodal practices that participants use to stop as a group?

Chapter 2: Methodology

Introduction

This study uses CA methodology to uncover the sequential practices of starting and stopping group movement during an AR-game. I examined the video-recorded interaction of two groups of students engaged in an AR-game called ChronoOps. ChronoOps, the context, participants, data collection, and analysis methods are discussed in the following section.

Setting & Context

The AR-game used for this study, ChronoOps, gives students a quest activity involving five-destinations on the Portland State University (PSU) campus[2]. Each destination highlights an environmentally sustainable technology, which is a relevant to PSU's mission for sustainability, and a part of many academic programs. The PSU campus is integrated within downtown Portland. Campus buildings and offices regularly intersect with other businesses and institutions in the area. This setting provides many challenges for data collection. Students regularly encounter and walk through pedestrian, bicycle, and automotive traffic on their quest to the AR-task destinations. An intensive data collection process ensured perspicuous collection of data for analysis, as discussed below.

Participants & Data Collection

Two groups are analyzed in this study. I will refer to these groups as Team Green Energy and Team Green Transportation throughout the analysis. Each group is comprised of three players who work together on performing the AR-task. The groups use

[2] Data collection and transcription was supported in part by Portland State's ReThink grant, #155 Mobile and Augmented Reality Resources for Learning, Steven L. Thorne, PI.

participant assigned pseudonyms for the study. In figure 1, the first group, Team Green Energy, is Max, Trek, and Prius. Max and Trek were each wearing head-mounted cameras. A *mis-en-scene* camera, operated by volunteer researchers followed the group. Audio for the mis-en-scene camera was recorded through a lapel microphone attached to the shirt of Prius. The second group, Team Green Transport, is, from left to right, Schwinn, Volt, and Hybrid. Volt and Schwinn wore head-mounted cameras, and Hybrid wore the lapel microphone recording audio for the *mis-en-scene* camera.

Team Green Energy Team Green Transport

Figure 1 – Two groups in ChronoOps data

Figure 2 – Multiple camera views from ChronoOps data

During the AR-task, the students use one device that is loaded with the AR app per group. This was a pedagogically motivated decision to ensure student interaction during the AR-task. This data provides an emic perspective of the participants during the AR game, including their orientations to each other, the device, other materials and the environment, and thus provides the opportunity for rich, multimodal analyses.

Data Transcription & Analysis

The video and audio data was analyzed using CA methodology, which uses rigorous methods of transcriptions and analysis to make rich, qualitative data objective to the reader. As mentioned in the literature review, CA takes no a priori theoretical perspectives on the data. CA focuses on how members in the data make their methods publicly available, not only to those in interaction (the other players in the game), but the researchers as well. Consequently, rigorous analysis of the data through transcription and evaluation are treated as a way of engaging in the emic perspective of the participants. Any arguments made in this research are made evident through the transcripts, allowing the reader to analyze and evaluate these arguments from their own perspective.

I viewed the video-recorded data of these participants initially as part of a Conversation Analysis class in spring term of 2014. I transcribed video data for Team Green Transport beginning in 2015, the data for Team Green Energy the following summer, and began working on transcripts for other groups during the time as well. I transcribed approximately 8.5 hours of interaction from different groups playing ChronoOps. Transcribing hours of data from multiple groups and multiple cameras provided me with a chance to immerse myself in the routines and types of problem-

solving which players often face during ChronoOps. I transcribed the entirety of the game-playing from the two groups in this study. As I became immersted in the data, I was initially interested in how groups moved together, practices of wayfinding, and their talk about the tasks. This led my current research questions, which I chose purposefully as interactions where the players oriented to their surroundings and ojectives of the game.

The data from for each group, containing video from 3 separate cameras, was initially transcribed according to Jefferson's (2004) conventions[3], regularized practice among those in CA. This system is a rigorous method for accounting for and illustrating multiple aspects of turn construction and sequences of turns. These features of talk include words as well as pauses, breaths, laughter, rises in pitch and intonation, overlapping talk, rates of speech. The figure below indicates TCU features commonly seen in Jeffersonian transcriptions:

```
2  Max:     and its good for your: (.) joy the environme::nt,
3           outside,
4  Trek:    yes. its helpful for save the +(environment).+
5  Max:     °°okay  [thats good°°
6  Prius:           [°ni:ce°
7  Trek:    $°environment°$ .((mouthing "environment"))
8           .hh [ha ha
```

The above transcript excerpt shows text organized by speaker turns in conversation. Various symbols in the text indicate details of sound production that and other non-linguistic features that are not available in most other transcription

[3] A list of all transcription conventions used for this study is listed in Appendix A.

systems. For example, in line 2, : in *environme::nt* indicates a stretched vowel sound. The (.) indicates a brief pause between the lexical items *your* and *environment.* Other features include out-breaths .hh in line 8, with laughter tokens following, quieted talk indicated by ° ° in lines 5 and 6, and the transcribers description of actions unavailable for transcription in double-parenthesis (line 7). TCU final intonation is indicated by a period . for falling final intonation, and a , for continuing final intonation. Transcribing ordinary conversation in this matter allows CA researchers to uncover elements of talk that may go otherwise unnoticed by linguistic researchers.

Depending on the focus of the analysis, it is common practice for CA researchers to modify or add other transcription symbols to indicate multimodal aspects of speakers TCUs. CA researchers adapt transcriptional conventions of talk to include gaze, gesture, and posture in analyses. These are particularly relevant for the embodied focus of social cognition, where TCU's are produced not just as linguistic features but as fully embodied constructions. Recently, researchers have focused on the embodied turn in CA (Nevile, 2015), but also understanding the body as it is situated within the material world. Common objects, or artifacts include everyday objects, such as common tools and workplace computers, and mobile devices have all been found to shape turn-construction in studies, and thus the use of these objects are treated as relevant to shaping interaction. An example from Goodwin & Goodwin (2013) below indicates places where objects become ways of shaping interaction within participatory frameworks.

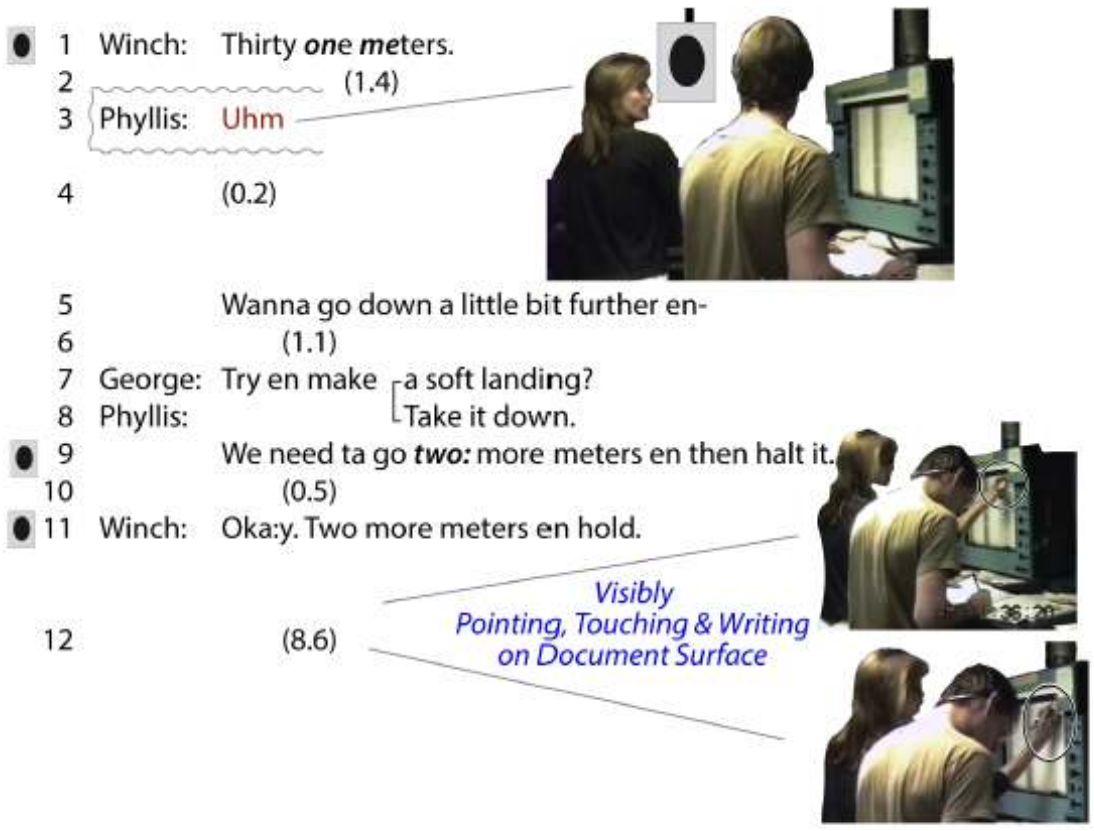

Figure 3 - *Multimodal CA transcript (from Goodwin & Goodwin, 2013, p. 25)*

Figure 3 shows a multimodal transcript, detailing multiple elements of talk and embodied interaction. Relevant features of talk are represented in changes in text. For example, lines 1 & 9 show bold and italicized text to indicate stress. Lines 7 and 8 indicate where participants talk over one another. The images to the right of the transcript, how the participants' gestures and gaze used in their environment, and how artifacts shape talk. Audio and video data are often messy, complex, and a challenge to researchers. Audio can be muffled at points, and transcribing talk can take numerous listens, and is still sometimes impossible to uncover. Video provides access to participants' environments and embodied behavior, but requires multiple, intensive views

to accurately uncover actions. Figure 3, represents how CA researchers take the complex, messy, naturally occurring data and create transcripts which illustrate actions to the reader as clearly as possible. Attaining this level of detail in the transcription and presentation of the data for this thesis is paramount. This study describes the actions of group movement, and corresponding actions related to group tasks. Starts and stops are embodied actions shaped by multiple features of talk in interaction. The transcripts I present follow the CA tradition of trying to succinctly present readers with easily identifiable features of talk related to the actions I present.

Chapter 3: Analysis & Results

Introduction

The following analysis begins with a summary of the AR-task used in this study. Once the tasks have been outlined, their relationship to starting and stopping walking is discussed. Then, I give a taxonomy of practices for starting and stopping, followed by some illustrative examples of the complex methods groups employ for starts and stops.

AR-Game

ChronoOps is an AR-game designed for language-learning, and walking is a corollary to the language-learning game. Walking is a purposeful act and means of accomplishing the ChronoOps task(s). While the ChronoOps game may lack some fundamental game mechanics, (see Purushtoma, Thorne, & Wheatley, 2013), I believe the granularity of game mechanics in this study is relative. The practice of coordinating group walking is a means of achieving ChronoOps' various tasks, and reflects players' attunements to the complex interactional and task-based practices of the game.

In general, the design of the AR-game is quite simple. Learners must routinely accomplish two basic tasks which are described below: wayfinding and reporting. These tasks are linear and cyclical. The group must successfully find the location both in terms of its physical, brick-and-mortar campus space, as well as its representation on the ChronoOps maps. Once at the location, the group makes a report about the destination. After completing the report, the group moves to the task of wayfinding for the next destination. This repeats until all five locations are complete for the game.

Starting and stopping walking represent the physical and temporal space where players accomplish one task, and transition to and commence a new task. Analysis of

wayfinding and reporting tasks reveals a much more complex picture of social, task-based practices that adhere to what Purushtoma, Thorne & Wheatley, (2008) have described as essential game mechanics in AR games for language learning.

The game mechanics outlined by Purushtoma, Thorne, & Wheatley (2008) are similar to descriptions of task-based learning in SLA (Richards & Rogers, 2001; Brandl, 2008). In AR learning games, students regularly seek solutions to puzzles involving reading maps, interpreting directions, giving instructions about using the mobile device and features of the ChronoOps game, and so on. In this sense, the design of the ChronoOps game provides a number micro-tasks for students playing (and learning to play) the game. These instantiations of task-based learning are best understood within the context of the game, and particularly to this study the context of walking as a group during the game.

The attention to the differences in the designed outcomes of an activity, and the actual outcome of an activity as performed by students has been addressed by researchers in SLA (Coughlin & Duff, 1994; Seedhouse, 2005). Yet descriptive, empirical accounts of the task-design-action interstice are understudied. In the ChronoOps context, the task-design constrains only the particular locations and technologies students are required to document, and the order in which they access the locations. However, the interactional processes involved are emergent and dynamic, built by the students through face-to-face interactions. This is particularly evident in the subtasks necessary for students to accomplish wayfinding and reporting activities. Because the use of AR games for second-language acquisition is a new study for teaching and research, an outline of arrangement of tasks is given below.

Organization of task cycles within ChronoOps.

ChronoOps is organized in five task cycles. These task-cycles involve finding and creating reports about destinations on the PSU campus. In total, there are five destinations, each organized and presented to students in a sequential fashion through the GPS-enabled, ChronoOps map. Once students arrive at the first destination they are instructed to create a report about the environmentally sustainable technology at the destination using the notebook-recording feature. This feature allows students to document the location using text, picture, audio, and video on the mobile device. This information is then uploaded to a secure server for access by teachers and students (Thorne, Hellermann, Jones, & Lester, 2015).

Wayfinding subtasks.

The first ChronoOps task is to find a destination. Groups of three players walk from the classroom to a location near the first destination to begin the game. While the students are near the destination, they must identify the first destination in the game using the ChronoOps GPS-enabled map. This can performed in several ways. Students may refer to the blue dots that track their GPS coordinate on the map. Additionally, identifying the first location may be performed via clicking on the "question mark" which appears at the beginning of the game, to indicate a "quick-travel" feature. Quick-travel allows students to open the information about the destination, without having to physically travel to the destination. Students also have available on the map numerical marker '1', identifying the physical location of the first destination on campus.

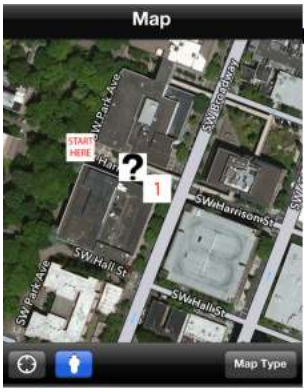

Figure 4 - ChronoOps Map showing 'question-mark' and numerical markers

Once students arrive in the vicinity of the destination, the players are given text-based instructions that their location is "under the skybridge between Smith Memorial Student Union and Neuberger Hall".

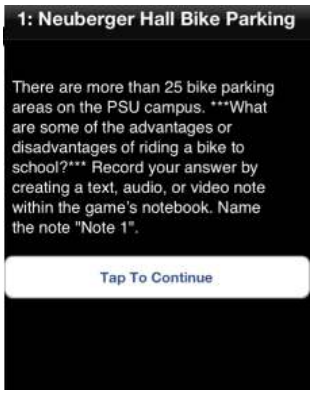

Figure 5- Screen describing the first destination in ChronoOps

As students continue the game, emerging numerical markers act as a way of identifying subsequent destinations.

Figure 6- ChronoOps map showing blue-dot marking group location via GPS and numerical markers for additional destinations

After students identify their next destination, they begin wayfinding, which involves many additional subtasks. The participants observed in the dataset often stop to confirm or change their trajectories while walking to the destination. They also stop to perform other work on the device, such as clarifying unknown procedures about using the ARIS software.

Reporting subtasks.

The second main task in the ChronoOps game is the report. After arriving at each destination, the students document their location using the note-book feature of the ARIS software. One component to the reporting test is selecting how to document their arrival to the location. This can be done via photo, video, audio, text, or some combination of the two. The decision of how to report is also comprised of smaller tasks including reading information aloud from the device, selecting reporters, and engaging in task-prefatory talk. Then the report is made.

While this task cycle is described generally to give an outline of what the various actions group members perform during the game, it does not give a holistic representation of the complex interactional necessary for accomplishing the each game. Wayfinding and reporting are linear and cyclical, but also comprised of various smaller steps – interactional accomplishments and social strategies – of which wayfinding and reporting are comprised as outlined below in Table 1.

Table 1 - ***Wayfinding and reporting tasks with examples of subtasks***

	MAIN TASKS (Linear, Cyclical)	**SUBTASKS (Non-linear)**
ChronoOps Game	1. Wayfinding ↓ ↑ 2. Reporting	-Finding coordinates/recognizable names on device -Walking to Destination -Arrival at Destination
		-Reading ChronoOps Info and Instructions -Prefatory Talk and Summary -Selecting Reporter(s) - Recording Report - Saving Report - Departing Destination

This is by no means an exhaustive list of all strategies and subtasks students perform during the game. What this shows, however, is that the structure of the ChronoOps game is one of semi-unstructuredness. These students were given instructions in classes prior to the activity on the ChronoOps game as well as various paper maps/instructions to as supplements to the task. Teachers, and research volunteers, including MA TESOL students, faculty and staff from the IELP, and other members of the PSU community, were also available on hand to answer questions for students.

Ultimately, the students autonomously interpret and create their own organization of the game.

Investigating learners' orientation to and performance of such tasks adheres directly to what Firth and Wagner (1997) meant when they referred to "learner competencies". Language learners bring to any task a rich source of accumulated cultural knowledge for social interaction that help them navigate various language-learning activities, in spite of limited knowledge of a second language. The organization of the ChronoOps as a larger activity emerges from the organization of and navigation between sub-activities, such as the reporting task and wayfinding for the next location. This organization is a locally-constructed cultural phenomenon that emerges from the interactions of the players and their sequencing of the appropriate tasks and subtasks. The locally-constructed actions in start and stop sequences provide insight as to what aspects of the ChronoOps game, the task, the environment, and the language are attended to by learners as the focal point for the language learning process. In turn, it is this interactional focal point that can be more rigorously attended to by SLA researchers as a site for language learning.

Starts and stops as measure of the task.

As discussed above, ChronoOps is an aggregate of five destinations, each destination comprised of even smaller component tasks. Each component is an interactional accomplishment that is performed by the group as an organized team. This organization is partly done in walking to and from destinations. How groups start walking and stop walking is interesting from an ethnomethodological/CA perspective of everyday mundane activities, as well as from the perspective of SLA as interactional competence.

The data show that members use various linguistic and embodied actions to catalyze movement from a state of being stopped in group formation to walking as a group. Prior research on the role of mobility and talk has shown that walking and talking as a group are activities that are contingent on or responsive to changing landscapes. Each activity is also an accomplishable action (Mondada and Broth, 2013), that is, an action that is done through coordinated language practices of a group. Stopping and starting activities are also ways of introducing and (re)formulating next actions (DeStefani & Mondada, 2014). In this study, groups start and stop walking (henceforth, starts and stops) purposefully for the (sub-) tasks of the ChronoOps game. There are various reasons groups start and stop and, accordingly, participants employ various resources – linguistic and embodied -- to start and stop as a group. While the resources vary according to action, there is a turn-by-turn mechanism which characterizes nearly all instances of starting and stopping among groups.

For these groups, starting and stopping represent the physical and temporal spaces in which members' transition from particular tasks, sub-tasks, and strategies in the ChronoOps game. For example, arriving at a destination in the game often marks the transition from the accomplishment of a wayfinding task to the commencement of the reporting task. Similarly, starting walking upon leaving from a destination represents the transition from the accomplishment of reporting to the commencement of wayfinding. In other cases, participants might stop or start as a result of re-evaluating or confirming necessary steps to continue a task in action.

This study discusses how participants use language and interaction for projecting and accounting for starts/stops. Tables 1 and 2 below show a summary of the practices used by the two groups in this data.

Table 2 - Actions for Starts

ACTION	PRACTICES
PROJECTING A START	**1. Report Completion** **2. Pointing** **3. Joint Recognitions**
START	**(starts)**
ACCOUNTING FOR THE START	**1. Assessments**

Table 3 Actions for Stops

ACTION	PRACTICES
PROJECTING A STOP	**1. Destination Arrival** **2. Directives** **3. Verbalizing Features of the Game**
STOP	**(stops)**
ACCOUNT FOR A STOP	**1. Task Transition**

In the following sections, the practices for each turn will be discussed individually to give the reader adequate detail in understanding how these practices are implemented and how these practices reflect attunement to the task.

Starts: Illustrations of Each Practice

Group members start walking because it is a relevant next action. Considering the tasks the groups have, starting is made relevant during wayfinding work when a destination has been determined, or after completing a reporting task. In each case, moving to the next place is relevant. The data shows that these tasks shape group practices for starts.

Projecting a start.

The following section describes practices for projecting a start. In general, projections are the actions which group members use to refer one another to catalysts for walking. Group members perform this work with three different ways of projecting: through completion of reporting activities, pointing, and choral responses. Completion of reporting activities refers to when group members project accomplish this game sub-task (making a report of the green technology they have encountered). Walking is then a next relevant action. Pointing and joint recognitions are ways of referring to particular landmarks or destinations that shape the groups' subsequent actions of starting. Each practice is discussed below.

Projecting a start: report completion.

During the AR-task, members arrive at destinations, make a report, and then move to the next destination. Once the report is complete, starting becomes a next relevant action. Reporting is a stationary activity, and groups frequently are situated in an f-formation (see figure 7, below) which allows equal access to the device for recording purposes during the report (Hellermann, Thorne, Jones & Lester, 2015).

← East ((Bicycle racks, behind the group)) **TEAM GE during Reporting Task** **West→ ((Park blocks, ahead of group))**

Figure 7 - Group physical orientation during reporting task

In excerpt (1.1) the report completion is treated as a catalyst for walking. Trek has been designated as the reporter prior to the activity and is making the report as the excerpt starts. Max makes additions to the report, which are oriented to as relevant by Trek (lines 1-9). Consistent with the construction of story-telling turns, Max and Trek's prior utterances have been treated with continuing intonation, projecting her report as still to be completed. Max's interjection maintains this practice, and Trek confirms his addition in line 10, and then marks the completion of her report with a falling-final intonation and, syntactic completion, summarizing the bicycle racks as environmentally friendly. This TCU (line 10) projects a transition space where report completion can be acknowledged and a movement to the next destination can begin. Trek's turn is followed with assessments from Max (line 11) and Prius (line 12) (typical behavior following the end of a report) (Goodwin, 1984) Trek embodies this completion work by moving her gaze from the device, shifting her posture away from the f-formation, and walking away. Max and Prius follow.

Excerpt (1.1) Report Completion as Projecting a Start

1 Max: =you don't create see-oh-two emission,=

2 Trek: ye:s=

3 Max: =gas,=

4 Trek: =gas.

5 (0.5)

6 Trek: =gas,

7 (0.5)

8 Max: and its good for your: (.) joy the environme::nt,

9 outside,

10 Trek: yes. its helpful for save the (environment).

11 Max: °°okay [thats good°°

12 Prius: [°ni:ce°

13 Trek: |$°environment°$.((mouthing "environment"))|

T: |smiling, shifts posture away from group,

STARTS. |

14 .hh [ha ha

15 Max: [perfect.

M&P: ((follow Trek))

16 Trek: ha ha

17 Prius: (its okay:)

Starts after a report are simultaneously embodied completions and embodied next actions. This represents a type of "double-barreled" action (Schegloff, 2007) that invites both the assessments of the completed task (lines 11 and 12) and the movement into the next task for the game. Starting to walk upon completion of the report displays the shared knowledge of participants in the task and can be done simply by completing the report. In other instances, participants project starts by explicitly displaying their knowledge and reasoning for doing so. Below, describes one method, in which members directly point to objects in their environment as a means of projecting a start.

Pointing as a resource for projecting a start.

Starting upon completion of a report represents a group's locally constructed attunement to task-transitions. In contrast, when stopped mid-way between two of the game destinations, projecting a start requires the establishment of intersubjectivity. In the following excerpt, Team Green Transport has stopped mid-way to a destination to clarify the direction they are moving. In this and other wayfinding tasks, group members employ environmental resources as indexicals for shaping next actions. This is commonly done with deictic references and pointing gestures which make starting to move a next relevant action.

At the beginning of (1.2) Team Green Transport is in an f-formation around the device, and Volt is reading aloud from the ChronoOps screen. The group had stopped to

repair a misinterpretation of the ChronoOps instructions. They recognize the name of a building from the ChronoOps text as a relevant location for their wayfinding. In line 5, after a brief pause, Volt markedly increases the volume of his voice in line 6, and begins re-reading information that he had just uttered, thus marking it as notable. Hybrid, who is standing to the right of Volt and also looking at the device orients to Volt's turn in line 6, and performs a candidate completion of Volt's utterance, completing the prepositional phrase "between **smith**", specifying the location. Here, Hybrid couples his utterance in line 8 by extending his hand with an environmentally-coupled pointing gesture (Goodwin, 2006) towards Smith Memorial Student Union to elaborate his utterance. The gesture goes unnoticed to Volt, whose gaze is fixed to the device. As Volt turns his gaze up from the device in line 9, he questions the location, which followed quickly by a receipt-token and easterly pointing gesture, which leads to an overlapping response conjunction with Hybrid's answer (line 11). Volt returns his gaze to the device, then makes another account in line 15, again in concert with an incomplete answer and pointing gesture from Hybrid.

Excerpt (1.2) – Pointing for projecting a start

2 Vol: all the (button) you will need to play are
3 located onthe °bottom °( )°° of the screen as
4 explore the cam:pus (.) (things) will begin to
5 show °your first trip is under,° (.) YOUR FIRST
6 TRIP (.) YOUR FIRST STOP IS (.) UNDER (.) THE
7 SKYBRIDGE BETWEEN (.) BETWEEN |SMITH MEMORIAL ←

8 Hyb: *|smith

←

H: *|points to smith

9 Vol: and neuberger hall. >where is that.<

10 Vol: | [ah:is it? |

11 Hyb: |[this smith. |

11 V&H | point to smith |

12 Vol: over there? |

Vol: |points to smith

13 Hyb: ye:ah (.) this smith. |

H: |points to smith

14 (4.0) ((Volt gazing at the device))

15 Vol: | [I]think its there ←

16 Hyb: | [I-] >come on< ←

H&V: |point to Smith

17 Vol: mm hmm.

18 ((group begins walking))

Lines 7 and 8 show the point where Volt and Hybrid jointly read and hear what is intended to be recognized as their relevant destination (Smith). Lines 16 and 17 show where the overlapping pointing gestures, collaboratively select a direction for the group's start. There are multiple adjacency pairs (lines 9-11, and 12-13) between the point of recognizing a location, and the point of selecting a location to walk to. This indicates possible 'problematic overlap' (Liddicoat, 2011), not just attributed to the talk, but to the

constraints of perceptions in attuning to multiple resources at once. In (line 9-11), for example, Hybrid's pointing gesture goes unnoticed to Volt, who is still reading from the device. When Volt looks up from the device, Hybrid has already retracted his gesture, leading Volt to reformulate his question. However, rather than viewing this talk as problematic, (1.2) shows how participants must account for locations with multiple semiotic resources: the device, their physical environment, and each other. Each adjacency pair is done chorally, and in this instance it is a matter of the participants recognizing a destination (Smith), testing a possible destination, and then confirming the destination between the device and terrain.

Pointing together with talk is a way that groups reconcile the location on the map with a particular landmark in the group's physical terrain. These interpretations are displayed publicly to the group. This excerpt shows the complex timing of pointing gestures with talk in securing a landmark (Mondada, 2014). Pointing is a way for creating shared understanding or intersubjectivity (Wagner & Eskildsen, 2015). While Hybrid appears to know the location of Smith in excerpt (1.2), Volt appears less certain. The interaction between Volt and Hybrid in (1.2) shows how the emergence of the name of the building is negotiated. Volt's "I think" (line 15), with a chorally-produced and environmentally coupled gesture to the destination from Hybrid (line 16) creates a group shared understanding of the next destination, closing this part of their wayfinding task and instigating walking to the destination.

Multiple responses as a resource for projecting a start.

Members may also recognize responses that don't necessarily need the elaboration work of pointing gestures, but that still involve displays of recognition. Excerpt (1.3) shows how choral responses are accomplished as catalysts for starting. In (1.3), each member of Team Green Energy recognizes an item read aloud from the map and displays their recognition of the location with response cries (Goffman, 1971) before shifting their gaze to the location.

In (1.3) Max, Trek, and Prius have stopped in an attempt to find a feature in the ChronoOps game. The group encounters trouble, and spends several minutes doing repair work with the game. Just before the excerpt, the group is collaboratively reading from the device. At line 1, there is a lengthy pause, and Max resumes reading in line 2. Here he places emphatic stress and an audible outbreath on the lexical item *skybridge.* His TCU is left syntactically incomplete, but Trek and Prius display their knowledge with a response cry (Max, line 3) and a proximal reformulation of the lexical item (Prius, line 4). When Max makes a suggestion that the group members begin walking, they all turn their heads up from the device together and look south, to the direction of Smith, and start walking to their destination.

Excerpt (1.3): Choral Responses

1 (4.0)

2 Max: under the: sk(h)ybridge between smith memorial,

3 Trek: oh:h↑(h)a=

4 Prius: =smiths.

5 Max: oh:h.

6 Trek: ah↑:hhhh,

7 (.)

8 Max: ts! lets go there, |

| all members shift gaze

south

M, T, P: ((**START**))

9 Trek: lets go=

10 Max: =thats back.=

11 Prius: =smiths.

(1.3) illustrates how multiple verbalizations of noticing acts as a catalyst projecting a start. While the choral practice (3-6) are not mutually overlapping, they represent an practice of choral echoing (Ikeda & Ko, 2011). The members responses are treated as individually accountable, as each members waits until turn completion for the next turn. Though, their responses echo the same function: to make public the members' reactions and makes a start an accountable move.

Accounting for starts.

Once started, the third part of the focal action structure is the accounting practices for starting. That is, participants make some kind publicly available account for why it is they started moving. Starts are relevant when ChronoOps tasks have been completed and launching new tasks is relevant. In (1.4) accounting for starting occurs due, in part, to the suddenness of the start.

Team Green Energy had stopped mid-way to a destination to find information about the second destination. Trek and Prius are offering instructions to Max on finding the destination and at line 1, Max contests their instructions. However, Max's contestation is produced with the action of 'clicking' on the device that reveals a numerical marker on the screen that is visible to all group members. In lines 9-11, the group produces a choral-response to the emergence of that numerical marker and with

Max's directive (line 11) start walking. As the group is walking there is a turn of laughter from Prius (line 12), and then a *wh*-question word, repeated multiple times from Trek (line 13), regarding the group's trajectory. Max responds with the name of the location (line 14).

Excerpt (1.4): Accounting for a start: Verbalizing next destinations.

8 Max:	it does not *show* us.	
9 Trek:	↑.hh! [ahh:::!!	
10 Prius:	[ahh:::!!	
11 Max:	[(ohh!) +>lets go there.<	
M, T & P:	+ start walking	
12 Prius:	hah hah hah	
13 Trek:	where¿ where¿ where¿	←
14 Max:	Lincoln hall solar (array)	

In (1.4), the members account for the start by resuming the task that was started prior to stopping. Before the excerpt, the group had stopped because Max was unable to find the location on the ChronoOps map. The revelation of the numerical marker by Max in line 8, made walking an immediately relevant next action. And while Trek indicates that she doesn't know the destination, she treats the numerical marker as providing enough information to start. It is then, after the start, that Max names the destination, and the group engages in task-prefatory for the next reporting activity.

Conclusion on starts.

The taxonomies for starts and stops given in this study show that participants project and account for changes in group movement as accomplishments related to the ChronoOps tasks. Practices for projecting starts and stops reflexively shape group members' orientations to the various tasks in the game. Starts in wayfinding activities are projected using environmentally-coupled pointing gestures, reflecting the necessity of participants to make public displays of their interpretations of their situated environmental context, which may not be shared by other group members. When participants share mutual orientations to expected features of the game, such as the appearance of numerical markers on the device, they publicly display their acknowledgement of these features as relevant for starts, but do not require explicit accounts of the reasons for starting. Similarly, public embodied displays of task completion make relevant starts upon completing reporting tasks, and departure from a location, indicating a locally constructed, cultural attunement to the ChronoOps tasks.

Stops

Coming to a stop is another group practice that is an important part of interaction in the ChronoOps game. Groups come to a stop when they reach a destination to perform the reporting task or to engage in wayfinding activity mid-way while walking to a destination. Whether stopping at a destination or mid-way to a destination, the act of coming to a stop is a group achievement done through talk-in-interaction and is both

projectable and accountable. The following section outlines methods for projecting a stop, including directives, less direct methods, and arrival at destination.

Projecting stops at a destination: indicating a visual reference.

Stopping is relevant for group members arriving to destinations during the ChronoOps game. Like other social actions, stopping is projectable as group members arrive to the location and accounted for when group participants transition to the reporting task. An essential resource for project a stopping action at a destination is establishing an assessable object or space for the reporting task.

In (2.1) Team Green Energy is arriving to the third destination of the ChronoOps game which houses an electric-car charging station. As the group approaches the destination, Max begins a projection of the groups arrival, stating “here we are”(1). The group continues walking towards the destination, and then Max uses a pointing gesture coupled with talk to indicate a vantage for taking the picture (line 3). Prius confirms in line 4, raising the device to begin taking a picture. Trek, moves slightly around the group and offers an alternative vantage for the picture, which Max counters just after, in line 10.

Excerpt (2.1) Projecting a stop at a destination

1 Max: here we are man:.

2 (.)

3 Max: we can take |this picture? |

M: |points to charging station|((**STOPS**))

4 Prius: |here.

P: |**((STOPS))**

5 Max: charging [(.) station (.) its good to:[: show this

6 Trek: [oh!| [here here is

7 this |

| walks to opposite side of charging

station and stops

8 Max: here [I think is good.

9 Trek: [here is <u>good</u>

10 Max: yeah, but here you show the cars, (.) you know¿

11 Trek: mmhmm.

Coming to a stop upon arriving to the destination involves announcing the arrival together with a justification through gesture to a place to establish a shared space for performing the task. In this excerpt, Team Green Energy begins preparing for the reporting task as they approach the charging station by selecting an appropriate vantage point to take the picture. The projection doubles as a projection to stop at a particular place as well as a transition into the reporting task.

Projecting stops mid destination.

Directives.

Stopping is also relevant mid-way to destinations when group members must perform necessary clarification work for finding destinations. In the excerpts following, *projecting a stop* is performed with the use of directives. The group member who offers the directive then accounts for the stop by re-orienting the group to the object of focus

(usually the device). In (2.1) Prius directs his group members to stop. The group is still in the first few minutes of playing the game and are still orienting to the task. While the group is walking, they are engaged in task-prefatory talk about the particular green technology. Prius audibly and physically overlaps Max's turn (line 2), extending his arm that holds the device in front of his group members to physically block the group. Once a stop is secured from his cohort (line 4), he immediately accounts for the stop (line 5) by asking a question about the group's location, transitioning the group into an interstitial task of finding their current location on the map.

Prius, who is slightly behind Trek and Max at the beginning of the excerpt, is holding the device and sees what he determines to be a discrepancy between the location of the group on campus and the blue dot on the map. His projection in lines 2-3, coupled with an extended arm placing the device within his group members' purview, acts to first draw Max and Trek's attention from their current task-prefatory talk to the device, which allows the group to come to a stop, and gives Prius the physical space to move the device in front of the other two group members to account for the stop by focusing their attention on a new task: coordinating their location with the blue navigational dot on the map.

Excerpt (2.2) Directives as Projecting a Start

```
1    Max:      I think bi:ke (.)  alre[ady is a green,
2    Prius:                          [|hey stop. >stop
3              stop stop stop.<=                      |
```

P:  | device outstretched in front of Trek and Max.

4 Trek: ye:s. |stop?=

T&P: |((STOP))

5 Prius: =a:re we:e, [here,

6 Trek: [ohh yeah it's a ( ). [↑what?

8 Max: |[°let me see° |

|takes device from Prius

Similar to excerpt (1.2) that showed members publicly negotiating knowledge of places through pointing gestures and talk, the directives for stopping in (2.2) ,involve a one member making public displays of their knowledge and reason for stopping to the group. This brings the group to a stop in order to re-orient the group to an insert repair sequence. Once the group resolves the issue of the blue dot, and the group begins walking, Max resumes his topic of bikes as green transportation.

Less direct projections for stopping.

Participants may not always use such bald, direct language to project stopping. Excerpt (2.3) shows another resource used by participants to bring the group to a stop. In

(2.3), Team Green Transport is walking three abreast down a street on PSU's campus when Volt brings the group to a stop in line 1. Excerpt (2.3) is similar to (2.2) in that a feature on the ChronoOps game is recognized as a catalyst for stopping. Volt's TCU in line 1 is comprised of two exclamatory change-of-state tokens which orient his members to what he sees on the ChronoOps map. Following this is the start of a hedged claim making relevant the group's current trajectory. This is followed by a stop, and then a completion of his TCU (line 2) that indicates the group's trajectory as being erroneous. Schwinn responds in line 3 with a receipt token, and directive to take the device and review Volt's declarative statement.

Excerpt 2.3 Projecting Stops with Directives

1 Vol: oh! oh! I think we are going to the, | the

V: | shifts posture closely to device, extends hand to manipulate map |

2 | wrong destination

V,H,S: |**((STOP))**

3 **Sch: okay let me check it** |

Sch: | takes device from Volt

Volt here indicates, indirectly, that he has seen a change on the ChronoOps map indicated the need for a stop. This leads to his hedged claim for his stopping, which he embodies by slowing his walk, and crouching his neck more closely to the device, as though examining it more closely. There is a brief pause ("going to the, the (.)" where a noun phrase should occur (line 1) at which point Volt lifts his right hand with an extended index finger that points at the device and ChronoOps map. This not only points to the device as a focal point for the group, but also indicates that the map may need to be manually manipulated, and prefaces Volt's introduction of the noun phrase 'wrong destination', which is introduced just after he stops. Schwinn responds to this directly to this in line 3, coming to a stop, and taking the device from Volt, where he begins manipulating the map feature on the device.

Accounting for stops

As we have seen, after a group comes to a stop, the purpose for the stop is accounted for through the group's talk and interaction. Accounts here do not always occur in the sense of a participant giving a direct explanation for why the group stops.

However, the embodied actions by group participants make the stop accountable and facilitate the transition to new tasks and actions.

In (2.4), as seen just previously in (2.3), Volt has projected a stop by verbalizing what he sees on the ChronoOps map as relevant for stopping. While his walking slows, his attention turns to the device through his posture and gesture, during a claim. Once he stops, Volt accounts for the stop with the lexical phrase “wrong destination”. Hybrid and Schwinn each stop, and Schwinn orients directly to Volt’s account by taking the device to confirm what Volt has indicated on the ChronoOps map.

Excerpt (2.4) Accounting for Stops

1 Vol: oh! oh! I think we are going to the,| the

V: | shifts
posture closely to device, extends hand to manipulate
map |
2 | wrong destination
V,H,S: |**((STOP))**|
3 **Sch: okay let me check it** |
Sch: | takes device from Volt

In an example similar to (2.4), Team Green Energy accounts for the stop by shifting the focus to the device. In (2.5), Prius has made a directive to project stopping. Once Prius and Max come to a stop (line 4), Max proposes a question regarding the group's current location relative to the ChronoOps map.

Excerpt (2.5) Directives as Projecting a Start

1 Max: I think bi:ke (.) alre[ady is a green,
2 Prius: [|hey stop. >stop

3 stop stop stop.<= |

P: | device outstretched in front of Trek and Max.

4 Trek: ye:s. |stop?=

T&P: |((STOP))

5 Prius: =a:re we:e, [here,

(2.4) and (2.5) show similar examples of group members accounting for stops through gestural displays and talk that indicate potential problems in the trajectory. This is a common practice for the ChronoOps players observed in this data, especially during the beginning parts of the game. Both (2.4) and (2.5) occur before the group members find and arrive at their first destination in the game and providing an account for why a member wants to stop progress toward a destination is particularly relevant.

Arriving at destinations presents a different method for accounting for stopping. In (2.6), Team Green Energy has arrived to the third destination. This excerpt is similar in that the account for a stop involves the articulation of a space for the next relevant action. What is different is the focus of the action is on objects external to the group. While Team Green Energy approaches the electric charging station at the 3rd destination in (2.6), Max has projected their arrival as seen in (2.1). The group stops as Max points to the charging station as a referent for the picture-taking activity of the report. Max

accounts for their stopping by verbalizing the name of the location and offering an assessment (line 5). When Prius turns to a slightly different vantage point of the charging station, there is an exchange on which viewpoint provides a better image in lines 8-11, behavior which also accounts for their stop as transitioning into the report.

Excerpt (2.6) Accounting for stops at a destination.

1 Max: here we are man:.

2 (.)

3 Max: we can take |this picture? |

M: |points to charging station|((**STOPS**))

4 Prius: |here.

P: |**((STOPS))**

5 Max: charging [(.) station (.) its good to:[: show this

6 Trek: [oh!| [here here is

7 this |

| walks to opposite side of charging station and stops

8 Max: here [I think is good.

9 Trek: [here is good

10 Max: yeah, but here you show the cars, (.) you know¿

11 Trek: mmhmm.

Conclusion on stops.

The projections for stops are performed in ways similar to starts and reflect shared orientations to ChronoOps tasks. Stops may be projected with *direct* or *less direct*

requests as members walk through the campus during the game. Requests for stops establish the device as an interactional focal point for tending to necessary activities in the AR-game. Similarly, stops upon arrival to destination involve participants finding and creating assessable objects for the reporting tasks. In contrast to starting, a group stopping at a destination involves an increase in participation among group members. Where directives involve one member making public displays to other group members, arriving at destinations involve collaborative efforts among each group member in establishing structured spaces for the reporting task.

ChronoOps players account for stopping differently depending on where they are. When they are mid destination, stopping is projected through with direct actions including direct and embodied requests to divert the group attention from continuing to walk forward, to stopping as a means of re-orienting the group's interactional focus. Other less direct methods of stopping still involve embodied displays of turning away from the forward moving group, to create a space for a stopped interaction When they arrive at a destination and stop, accounting for stopping does not involve explicit requests to stop, but rather, members negotiate their knowledge of the green technology at the destination, as a means for finding assessable objects to complete necessary reporting tasks.

Chapter 4: Discussion and Conclusion

This study sought to describe how groups coordinate starts and stops while playing ChronoOps. The answer is complex. Results show the coordinating movement is performed through embodied displays of gesture, gaze, and language. Through these multiple modalities, participants create interactional focal points in their physical surroundings and link them to their digital representations of destinations in the ChronoOps game. The multimodal practices for starts and stops show the complex human-technology interface that occurs when learning with AR-games, and provides considerations for AR-game research, L2 interactional competence, and how we conceptualize "place" in learning.

Squire (2009) writes about mobile technology as creating multiplicity of places. With mobile technology it is possible to be physically present in one location, such as a classroom, while tending to sports, news, media, or friends in entirely different places, through mobile devices. This "hybridity of places" represents mobile-technology in general, and more specifically, AR-games. AR-games are complex learning environments. In ChronoOps, players constantly mediate the physical environment of the PSU campus with that of the digital world. Players orient to and talk about place in terms of physical environment, but also mediate their orientation to place through the subtasks in the game. When players start and stop, they do so as means of embodied representations of these objectives and tasks. Participants must make public observations of place whether in the immediate physical environment, the digital device, or the place within particular tasks. These public displays are certainly relevant for AR-games, but also for those everyday practices that have long been the focus of CA and

ethnomethodology. This kind of real-world research context is what Wagner & Gardner (2004) suggest could benefit the field of SLA.

Everyday activities such as walking around busy campuses, finding locations, dealing with mobile technology in groups and a wealth of semiotic information in the world surrounding learners, are all present in the AR-game data. A considerable challenge for studies of L2 IC has been bringing the concept of learning into data when what is often studied are not necessarily oriented to as learnables by participants (Hall, et al., 2011). This study shows that participants are indirectly orienting to learning through their use of methods of competently accomplishing tasks given in the AR-game as illustrated through the practices of starting and stopping as a group. They are engaging in language practices that are not explicitly taught (Hellermann & Vergun, 2007) but a fundamental part of being able to accomplish their given tasks. These actions can be argued as direct displays of cognition; the participants show what they know about the activity by what they do. In SLA research, where the focus of learning in SLA is often the linguistic product, but the questions is *how* the product is acquired, this study demonstrates on a small scale that the situated actions of starts and stops display what the participants understand as necessary for the task. If the tasks given to language learners are to model authentic, real-world contexts while facilitating conditions for language learning, understanding how learners make sense of tasks should be given consideration in future research.

The learning of routine interactional practices is often unnoticed by teachers and researchers. These sites, such as starts and stops in an AR-game, may provide evidence of learning by understanding how participants regularly orient to their environment. This

has implications for language teachers and researchers. Where environment and context are often treated as background, or supplementary, this study shows a learning context where the background, the environment are foregrounded as the focus of learning. Being able to navigate these contexts, whether in the complex environment of the ChronoOps game, or a more traditional classroom setting, can change teachers' understandings of the learning process. For the student game players in this study, the iterative nature of the subparts of the ChronoOps tasks provides the students with a routine set of actions. These routines and interactional become increasingly familiar to students with use, and the familiarity of these routines may provide more opportunities for the kinds of creative language use and expression that language teachers often focus on in class lessons and curricula.

Limitations

As with any CA research, the results in this study are not generalizable to other populations. The practices for starts and stops shown in this study are locally-constructed by group members, and will possibly change among different groups. In this sense, this study does not predict precisely what participants will do while playing AR-games. It is probable, that although the actual practices among different groups are quite different, we expect that each group must project and account for starting and stopping behavior. In using data from two separate groups, this study showed similar embodied, sequential practices used by different groups, and thus, similarities which may be attributed to the nature of the ChronoOps game or AR-games in general. Further research would be

necessary to make any claims as such. However, the scope of this study was unable to fully explore the differences that exist among group practices.

Understanding learning poses many challenges to researchers in all fields. This study contributes to research on learning as a locally situated, embodied practice. Due to the rigorous analytic methods in CA, and the extensive time necessary to develop analyses that show learning from these perspectives, it is not within the scope of this study make claims as to whether or not any learning occurred. A brief look at the practices of starts and stops across the two groups shows that there are regular patterns in the methods of starts and stops in accordance with the specific task at hands which provides promise that further research can accurately assess learning in similar AR-game contexts.

Future research

This study has laid the groundwork for a description of the embodied practices of groups in an AR-game. Future research could examine embodied practices of group movement as a site for learning through interaction in AR-games. Studies of walking are notoriously complex, but provide an unending wealth of research opportunities. Examining the development of any of the task-based starts and stops presented here across time would be beneficial in determining changes in interaction for evidence of learning. Future studies may also look at these practices more in-depth, examining the common adage in CA of "who speaks when?" that could show participant roles and identities as language learners orienting to the task. Research should also be done in examining 'deviant-cases', to more accurately show how practices for projecting and accounting stops are made relevant when breached by group members.

Finally, to truly trace development in interactional practices, longitudinal studies are needed. The iterative nature of the ChronoOps games allows researchers to trace practices on a micro-longitudinal scale and can provide a basis for specific research foci. Engaging students in long-term use of AR-games would benefit those interested in the differences AR-games make in educational settings, particularly those interested in how action and activity shapes for language learning. With an increasing ubiquity of mobile technology in educational settings, AR-game pedagogical interventions are attainable goals that will help language educators pursue new avenues and understandings of language learning.

Conclusion

This microanalytic study examined practices of group movements in AR-games. Through this analysis, I hope to have given insight into the locally constructed human-technology-place interface that arises in ChronoOps. I hope this will contribute not only to the fields of L2 IC and AR-games, but to teachers interested in integrating new technology into their classrooms. Technology continuously changes. For educators and researchers, the fast-evolving nature of technology can be challenging. New opportunities, such as AR-game interventions, will prove promising for researchers interested in the experiential, situated, and embodied learning contexts that learners face daily outside of the class. This should also prove promising for teachers interested in facilitating new technology into their classrooms. Keeping current on new technology often means returning to the basic understanding of the everyday human actions that shape technological interactions. This endeavor should prove promising AR-games, where everyday places are highlighted in semi-structured, task-based contexts.

Furthermore, as mobile technology is increasingly present in everyday lives, teachers should consider the everyday practices for interacting with technology and the immediate environment as sites for learning.

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Appendix A: Transcription Conventions

I'm [talk]ing [no I]	Overlapping Talk – two speakers talking at the same time
=	Continguous talk – no pause between two turns
(1.0)	Pause = Indicates a timed pause, in seconds
(.)	Untimed Pause – Brief pause, where time has not been counted
Ha huh hah	Laughter
hh	Outbreath
.hh	Inbreath
I think **here** we are	Bolded talk indicates stress
I THINK HERE	Captials indicate loud/increased volume of speech
°where°	Indicates quited talk
$environment$	Indicates talking while smiling
<>	Indicates slow talk
><	Indicates fast talk
::::	Indicates elongated vowel/syllables
yeah but I thi-	Abrupt cut-off
Where?	? – rising intonation contour
Sure¿	¿ slightly rising intonation contour
Here.	. falling information contour
;	; slightly falling intonation contour
So,	, continuing intonation contour
↑	Sharp rise in pitch
↓	Sharp drop in pitch
(let me check it)	Parenthetical talk indicates unclear audio
((claps))	Double parentheses indicate transcribers description of actions
←	Transcriber drawing reader attention
oh| |all members shift gaze	Lines connect talk with images Lighter font indicates descriptions of gaze, gesture, and movement corresponding with images and talk

Appendix B: Consent Forms

CONSENT TO PARTICIPATE IN RESEARCH

Mobile and Augmented Reality Resources for Learning

Introduction

You are invited to be in a research study examining the use and perception of place-based learning using mobile digital devices for language learning. This study is being conducted by Dr. Steven Thorne (Department of World Languages and Literatures) and Dr. John Hellermann (Department of Applied Linguistics) at Portland State University.

You are being asked to be a participant for this study because you are the teacher of this class that is using mobile devices for place-based learning outside the classroom.

We ask that you read this form and ask any questions you may have before agreeing to be in the study.

What will happen if I decide to participate?

If you agree to be in this study, we would ask you to consent to work with a group of learners (your students) who have their game playing video recorded and the written or spoken language they produce as part of the game (including any post activity tests) to be collected for research. All the game playing will take place during class and will not involve extra class time. You may be video recorded as you work with the student groups.

All identifiable information from the video, audio, or written data that we collect will remain confidential in any published report.

You may opt out of participating in the data collection at any time. Your participation is voluntary and will not affect your relationship with the researchers, Portland State University or other organizations at Portland State in which you are involved.

How long will I be in this study?

If you chose to participate, you will not be asked to spend additional time outside of your normal class activities. The data collection period will last as long as the game activities last, approximately 90 minutes.

What are the risks of being in this study?

This study has minimal risks in that video recordings of your participation will be archived for research investigation. There are potential risks of loss of privacy and confidentiality associated with participating in a research study. However, only the principal investigators and research assistants will have access to the data we collect. For more information about risks, ask one of the study investigators.

What are the benefits to being in this study?

There are no direct benefits of the study for you as a participant. The indirect benefits of this study are an increased understanding of the use of mobile games used outside of the classroom for language learning. The research will, potentially, help you improve instruction at Portland State University.

CONSENT TO PARTICIPATE IN RESEARCH
Mobile and Augmented Reality Resources for Learning

What other choices do I have if I do not want my data collected?
If you choose not to have your data collected, you will complete the class activities as normal and no data will be collected from your activities.

How will my information be kept confidential?
We will take all measures to protect your privacy and the security of all your personal information. The records of this study will be kept private. Any sort of report that might be published will not include any information that would make it possible to identify a subject. That is, we will not use anyone's name in a published study. Research records will be stored securely and only the research team will have access to them. The data will be archived for future analysis, but all identifying information will be removed or stored separately from the data itself.

What are the costs of participating in this study?
There are no costs for participating in the study.

Can I stop being in the study once I begin?
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the researchers, Portland State University, or other campus organizations with which you are involved. If you decide to participate, you are free tell the researchers that at any time without affecting those relationships.

Whom can I call with questions or complaints about this study or with questions about my rights as a research subject?
If you have questions or concerns about your participation in this study, contact Steven Thorne, PhD, at steven.thorne@pdx.edu, Neuberger Hall 492 or John Hellermann, Ph.D. at jkh@pdx.edu, 503-725-8732, UCB 335Q, Portland State University. If you have concerns about your rights as a research subject, please contact Research and Strategic Partnerships, Market Center Building 6th floor, Portland State University, (503) 725-2227.

CONSENT TO PARTICIPATE IN RESEARCH
Mobile and Augmented Reality Resources for Learning

Teacher consent:

You are making a decision whether to have audio and video data collected for the research study we described earlier in this document. Your signature below indicates that you read the information provided (or the information was read to you).

I have had an opportunity to ask questions and all questions have been answered to my satisfaction. By signing this consent form, I agree to participate in this study. A copy of this consent form will be provided to you.

Now please check one of the two boxes below, sign and date the form:

☐ **I grant the researchers my consent to collect video recordings of my participation in the language learning game project in this class.**

☐ **I do not grant researchers my consent to collect video recordings of my participation in the language learning game project in this class.**

Name of Adult Subject (type or print)	Signature of Adult Subject	Date

I have explained the research to the subject and answered all of his/her questions. I believe that he/she understands the information in this consent form and freely consents to participate.

Name of Investigator/Research Team Member	Signature of Investigator/ Research Team Member	Date

RECEIVED
03/27/2014
Portland State University
Office of Research Integrity

CONSENT TO PARTICIPATE IN RESEARCH
Mobile and Augmented Reality Resources for Learning

Introduction
You are invited to be in a research study examining the use and perception of place-based learning using mobile digital devices for language learning. This study is being conducted by Dr. Steven Thorne (Department of World Languages and Literatures) and Dr. John Hellermann (Department of Applied Linguistics) at Portland State University.

You are being asked to be a participant for this study because you are a student in this class that is using mobile devices for place-based learning outside the classroom.

We ask that you read this form and ask any questions you may have before agreeing to be in the study.

What will happen if I decide to participate?
If you agree to be in this study, we would ask you to consent to be in a group of learners (your classmates) who have their game playing video recorded and the written or spoken language you produce as part of the game (including any post activity tests) to be collected for research. All the game playing will take place during class and will not involve extra class time.

All identifiable information from the video, audio, or written data that we collect will remain confidential in any published report.

You may opt out of participating in the data collection at any time. Your participation is voluntary and will not affect your grade in the course or your relationship with your teacher, the researchers, Portland State University or other organizations in which you are involved.

How long will I be in this study?
If you chose to have your data collected for the research, you will not be asked to spend additional time outside of your normal class activities. The data collection period will last as long as the game activities last, approximately 90 minutes.

What are the risks of being in this study?
This study has minimal risks in that your written and spoken work will be archived for research investigation. There are potential risks of loss of privacy and confidentiality associated with participating in a research study. However, only the principal investigators and research assistants will have access to the data we collect. For more information about risks, ask one of the study investigators.

What are the benefits to being in this study?
There are no direct benefits of the study for you as a participant. The indirect benefits of this study are an increased understanding of the use of mobile games used outside of the classroom for language learning. The research will, potentially, improve instruction at Portland State University.

What other choices do I have if I do not want my data collected?
If you choose not to have your data collected, you will complete the class activities as normal and no data will be collected from your activities.

APPROVED
Study #:
03/31/2014 - 03/30/2015
Portland State University
Office of Research Integrity

CONSENT TO PARTICIPATE IN RESEARCH
Mobile and Augmented Reality Resources for Learning

How will my information be kept confidential?
We will take all measures to protect your privacy and the security of all your personal information. The records of this study will be kept private. Any sort of report that might be published will not include any information that would make it possible to identify a subject. That is, we will not use anyone's name in a published study. Research records will be stored securely and only the research team will have access to them. The data will be archived for future analysis, but all identifying information will be removed or stored separately from the data itself.

What are the costs of participating in this study?
There are no costs for participating in the study.

Can I stop being in the study once I begin?
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with your teacher, the researchers, Portland State University, or other campus organizations with which you are involved. If you decide to participate, you are free to ask to not have your data for the task collected at any time without affecting those relationships.

Whom can I call with questions or complaints about this study or with questions about my rights as a research subject?
If you have questions or concerns about your participation in this study, contact Steven Thorne, PhD, at steven.thorne@pdx.edu, Neuberger Hall 492 or John Hellermann, Ph.D. at jkh@pdx.edu, 503-725-8732, UCB 335Q, Portland State University. If you have concerns about your rights as a research subject, please contact Research and Strategic Partnerships, Market Center Building 6th floor, Portland State University, (503) 725-2227.

CONSENT TO PARTICIPATE IN RESEARCH
Mobile and Augmented Reality Resources for Learning

Student consent:

You are making a decision whether to have audio, video, and written data collected for the research study we described earlier in this document. Your signature below indicates that you read the information provided (or the information was read to you).

I have had an opportunity to ask questions and all questions have been answered to my satisfaction. By signing this consent form, I agree to participate in this study. A copy of this consent form will be provided to you.

Now please check one of the two boxes below, sign and date the form:

☐ **I grant the researchers my consent to collect video recordings of my participation in the language learning and my written and spoken data associated with the game project in this class.**

☐ **I <u>do not</u> grant the researchers my consent to collect video recordings of my participation in the language learning and my written and spoken data associated with the game project in this class.**

Name of Adult Subject (type or print)	Signature of Adult Subject	Date
		/

I have explained the research to the subject and answered all of his/her questions. I believe that he/she understands the information in this consent form and freely consents to participate.

Name of Investigator/Research Team Member	Signature of Investigator/ Research Team Member	Date
		/

Study #: