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## **Abstract**

*The multidisciplinary research presented in this paper focuses upon everyday life and social practices that can be characterised by the use of one (or more) language variety, modality or register. Conceptual ideas that arise from explorations based upon empirical analysis of situated and distributed so called monolingual and multilingual oral talk, written communication, signed interactions and embodiment in and across virtual and in-real-life settings inside and outside higher education and schools are presented and discussed. Using sociocultural and decolonial perspectives on language-use or languaging, analytical findings from traditionally segregated fields of study – Literacy Studies, Bilingualism, Deaf education, Language Studies – are juxtaposed. An overarching concern here is framed by the continuing dominance of structural linguistic positions and demarcated fields within the Language and Educational Sciences that frame didactical thinking. The work presented here highlights concerns regarding established concepts like “bilingualism” and “codes” and suggests more empirically relevant alternatives like “chaining”, “languaging”, “fluidity”, “timespace” and “visual-orientation” from ethnographically and netnographically framed projects where data-sets include everyday life in virtual settings and educational institutions in the global North. Focusing on social practices – what is communicated and the ways in which communication occurs – challenges currently dominant monolingual and monological perspectives on human language broadly and oral, written and signed languaging specifically.*

## **Keywords**

Everyday communication, Literacy, Orality, Signed language, Digital, Twenty-first-century

## **1. Introduction**

The overarching aim of this study is to contribute conceptually to multiple sub-fields in the language sciences. Another aim is to represent everyday communication in ways that transcend the “oral language bias” and the “monolingual bias” (see below) in scholarly reporting of human-tool interaction. These representations go beyond institutional and research accountings of language, including literacy in education. I present ethnographically framed analysis of data-sets made up of recordings of the use of different language varieties and modalities across virtual and in-real-life (henceforth irl) settings inside and outside schools. This section introduces and problematizes the continuing separation of oral and written communication in scholarship and in the organization of pedagogy. Section 2 explicates the advantages of juxtaposing data from multiple projects and domains and further focuses on analytical framings which center-stage language-in-use or “languaging” in terms of the chained deployment of oral-written modalities across one or more language varieties. The central empirical section 3 presents my analysis and synthesis of data-sets of everyday communication in the following settings: (i) social media, (ii) virtual university

platforms, and (iii) segregated special schools. Oral, written and signed modalities and interrelated dimensions of “timespace” are salient in these settings. The concluding section highlights key issues that emerge from an empirically informed analysis that has relevance for researching learning as well as language learning pedagogy.

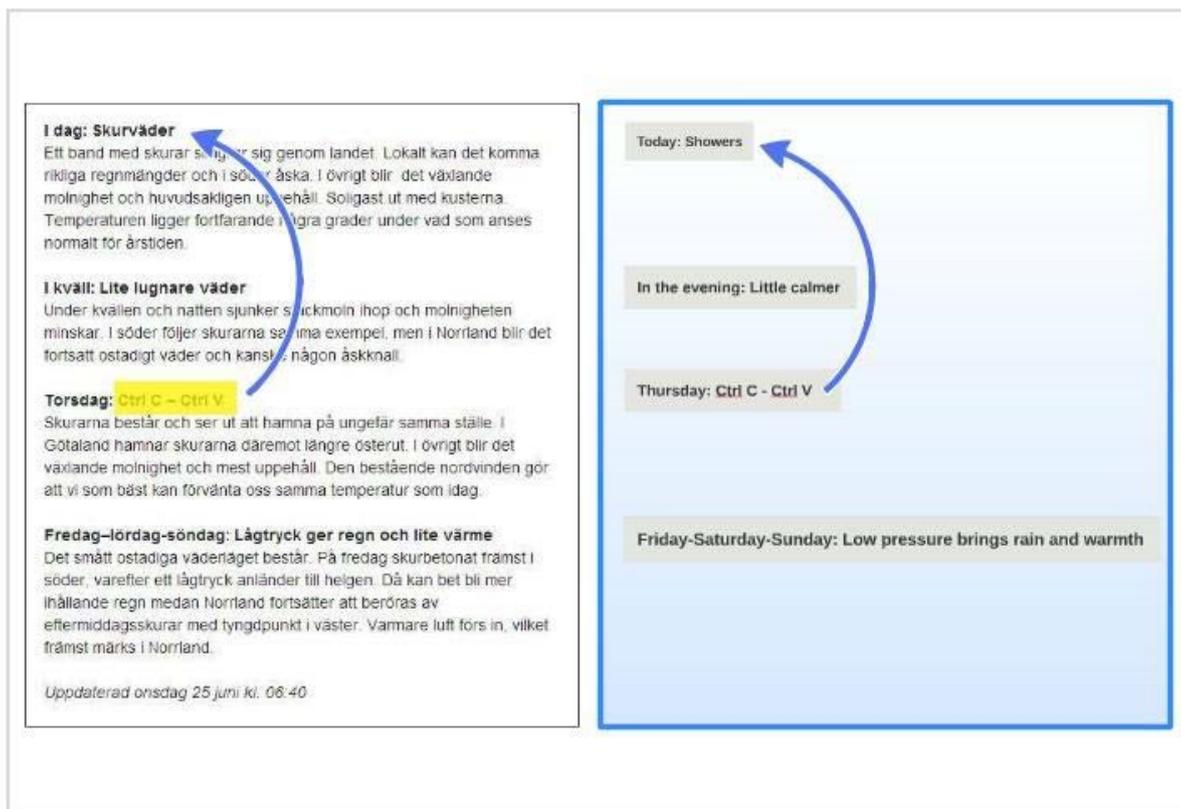
*Commūnicāre* – the Latin root that highlights sharing or making common – is a fundamental dimension of communication that points towards the interrelated performatory dimensions of timing and spacing or timespace (Edwards 2012, Messina Dahlberg and Bagga-Gupta 2015). All communication (across timespace) involves individuals-collaborating-with-others in close symbiosis with tools. *From* human inscriptions that have survived the passage of thousands of years, *to* alphabets, syllabaries, logographic characters i.e. conventionalized writing systems that children are socialized into (primarily in school settings across the world), *to* newer symbolic resources of virtual dimensions that cross-over and currently shape irl worlds inside and outside institutional learning sites. Here conceptual-cultural tools like language, the “tool-of-tools” (in the Vygotskian tradition), material tools like hammers, vehicles, chairs, etc. and discursive-technological tools (Bagga-Gupta 2004a) like computers, almanacs, pencils, etc. are interrelated. These are represented in the sociocultural literature as “human-beings-in-action-with-others-in-concert-with-tools” (compare Wertsch 1998; see also Bagga-Gupta 1995, 2014a, 2014b). Such composite hyphenated formulations attempt to go beyond reductionist accounts of isolated human cognition and analytically point to the linked nature of cognition to the social, of language to actions or rather cognition *as* social and language *as* action. Wertsch (1998) suggests that cultural tools mediate cognition and cannot be separated from people’s use of tools or thinking; thus cognition or the mind can be understood *as action*. It is such a mind-as-action (Wertsch 1998) position that frames the empirically pushed analytical discussions in this study. Returning to inscriptions, alphabets and symbolic resources, let us consider two examples of current written communication.

While the humble symbol “@” may pass off as another letter or character for twenty-first-century kids in global North spaces, it was an alien symbol for my university students in Sweden in the mid-1990s. Known by many oral names, the “@” is an omnipresent written symbol in today’s virtually framed life. For instance, it gets presented in oral Swedish as “snabel aa” (literally elephant-trunk A) and “kanelbulle” (literally cinnamon bun). Users of English in many parts of the world, including the global South, commonly refer to it orally as “at”. Its current use in written communication (outside its conventional usage in e-mail addresses) in the mega-city of Mumbai illustrates an interesting phenomenon:

You can meet us @ Kobes.  
@ the rate of 50/piece.  
He will be here @ noon.

The oral-written medley where a symbolic representation i.e. @, leaves one space (the virtual) and one modality (the written) and becomes conventionalized into another (the oral) to return to the first modality (written) in new guise, now gets populated, with a new sense. This highlights the cross-pollination across timespaces as well as the “chaining” of the oral-written modalities and virtual-irl spaces in sense-making in the twenty-first-century. Figure 1, a screengrab from the Swedish national television weather site (<http://www.svt.se/vader/>) in June 2014, illustrates another example of this chained oral-written languaging across irl-virtual spaces.

Figure 1: *Ctrl* – keyboard embodied shortcuts in written languaging on the web



Here fingers that traverse computer keyboards, use the conventionalized short-cut thumb-index finger embodied moves – “Ctrl C” followed by “Ctrl V” – to “copy-and-paste” written texts (Gynne and Bagga-Gupta 2015, Perkel 2006) on the screen in a novel manner. The written abbreviation “Ctrl” expands to the oral “Control” in different language varieties (such as Swedish, English, Hindi). In the five day forecast (Figure 1), the weatherman types “Ctrl C – Ctrl V” next to “Torsdag” (Swedish: Thursday), instead of writing the same information “Skurväder” (Swedish: showers) that he had written against “Idag” (Swedish: Today). The embodied two-fingered “Ctrl C – Ctrl V” writing executed on the bottom left-hand keyboard section gets extrapolated to the very message that gets presented after “Torsdag”, inviting readers to turn their gaze back to the text available after “Idag” and re-read it for “Torsdag”. It is important to note that the author types the individual letters “C-t-r-l”, etc., rather than merely executing a keyboard command of “Ctrl C”. This type of cross-pollination in writing seems to characterize contemporary communication. Furthermore, such everyday examples of writing serve as a reminder of the fallacy of treating oral and written modalities and digital and irl timespaces in bounded terms. From mind-as-action and emic perspectives this constitutes languaging. As further data discussed in section 3 will illustrate, such chaining characterizes languaging where *more than one* language variety and modality are deployed across virtual-irl and learning sites. Symbolic units like “@” and “Ctrl” are semiotic resources deployed by all irl communities that interface with virtual timespaces.

## 2. Analytical-methodological framings

Broadly taking sociocultural and decolonial points of departure, the work presented here contributes to gaps in scholarship where a skewed monolingual, monomodality bias continues to dominate literature on language learning, particularly in settings where more than one language variety and modality are in use. Decolonial perspectives (Apple and Buras 2006, Bagga-Gupta

2004b, 2013a, 2017a, Maldonado-Tores 2011, Mignolo 2009) highlight a distinction between geopolitical places *from* spaces of dominance/subjugation across what is glossed as the north-south. Thus global North and global South spaces point towards dimensions of colonialism and/or dominance/subjugation in the “east-west” or “south-north” and *within* “developing” east/south or “developed” west/north places. In other words, decoloniality constitutes a *perspective* that has relevance for all geopolitical spaces in relation to marginalization processes within and across places. I augment sociocultural framings through a decolonial lens by illuminating specific marginalization tendencies in the language sciences scholarship.

A monolingual/modal bias is clearly at odds given the ways-of-being-with-words, as illustrated through the two examples above, that mark dimensions of contemporary human existence. This thinking furthermore does not reflect the important scholarship whose emergence in the 1980s established the (New) Literacy Studies tradition (see Heath 1983, Scribner and Cole 1981, Street 1984). My concern here relates to making visible the dominating colonially framed monoglossic understandings of bounded language systems and modalities, including the strict separation of oral, written, signed resources in a range of formal learning settings. Using empirical examples, I will point to the fluidity in languaging and the heteroglossic nature of everyday communication (Bakhtin 1981, Blackledge and Creese 2014, García 2009, Hasnain et al. 2013, Kress 2003, Linell 2009). Thus, regardless of the concepts used to describe dimensions of communication evoked by or conferred upon language varieties and/or modalities used by individuals or groups, my analytical framing recognizes the need to reconceptualise human linguistic-cultural behavior, identity and timespace beyond boundaries (Bagga-Gupta 2013a, 2017a).

The following issues are also salient and frame my analysis. First, intersections and boundaries related to communication and identity are recognized as epistemic timespaces that constitute rich sites for understanding what language resources are privileged and/or marginalized in everyday interactions and in scholarship (Bagga-Gupta 2013a, Horowitz 2007). Second, sense-making processes are accorded primacy when compared to formal structural properties of linguistic variation, modalities and engagement with tools. A socioculturally framed mind-as-action position introduced in section 1 offers a performatory lens where newer action oriented concepts like “timespace” and “languaging” (verbs) constitute renewed attempts to sidestep monological static understandings that currently frame “language” (noun; Säljö 1999, 2005, Wertsch 1998, Vygotsky 1934/1962). Third, such framings have seen scholarship recently draw attention to the monological, bounded connotations vis-à-vis codes and code-switching (Garcia 2009, Linell 2009, Jørgensen 2008), and instead draw attention to the heteroglossic, hybrid-continuum nature of communication (Bagga-Gupta 2017a,b). Boundaries between language varieties and modalities are not a central concern in the daily lives of people glossed as bi/multilinguals. This being said, monolingual positions in scholarship and learning contexts continue (in global North spaces like Sweden at least) to obscure the fact that the majority of the human population across the planet live lives engaging with and deploying resources from more than one language variety (Gal 2007, Hasnain et al. 2013). This colonial linguacentrism furthermore, only in a limited manner, recognizes that routine ways of sense-making in virtual and irl settings inside and outside schools are not only rich sites for research, but that languaging here needs to be researched *from* points of departure where more than one language variety and modality are made analytically salient (Bagga-Gupta 1995, 2013a, 2014b, Garcia 2009). The point being that in communication people create meaning together, irrespective of whether this occurs in one, two or more linguistic varieties, dialects, registers or written, pictorial, oral, sign modality based systems. Fourth, my analysis is framed by a conceptual agenda, rather than a project-reporting one. The research reported in this study thus

goes beyond the individual projects I am involved in at the multidisciplinary research environment CCD (Communication, Culture and Diversity; [www.ju.se/ccd](http://www.ju.se/ccd)).

Furthermore, two analytical biases are attended to in this study. The oral language bias (Bagga-Gupta 2012a) highlights the privileging of orality in studies that focus on communication, making invisible the use of writing, body orientations (including haptic moves, pointing, gazing), timespace – that frame irl and virtual communication (e.g. in positions such as ethnomethodology, sociolinguistics, ethnography of speaking [SIC], etc.).

A second bias in the language learning literature equates communication as being equivalent to monolingual (oral) talk. This monolingual bias (Bagga-Gupta 2012a, 2017a, Fishman and Garcia 2010, Gal 2007) highlights: (a) the invisibility accorded to the use of multiple language varieties in everyday irl and written communication, and (b) the compartmentalization of scholarship in the domains of Bilingual Studies or Second or Foreign Language Acquisition literature etc. (Bagga-Gupta 2017b). My concern here, augmented by a decolonial perspective, is to analytically transgress these types of erasure in our own academic accounting practices. I do this by highlighting alternate contributions from empirically informed understandings of ways-of-being-with-words from different disciplinary domains.

Contributing to theorizing languaging from a mind-as-action perspective, this study, including my ongoing research, aims to go beyond the dichotomized tendencies, wherein oral–written, oral–signed, irl–virtual, mono–bi/multilingual etc., that are pre-theorized as the “natural”. My ambition also relates to “an underlying concern with cultural representation. That is not to say that an explicit cultural framework must be rigorously imposed on every study, but it does mean that to be ethnographic, a study must provide the kind of account of human social activity out of which cultural patterning can be discerned” (Wolcott 1999:69; see also Clifford and Marcus 1986). This means that I do not see ethnography in terms of techniques and fieldwork methods where data from single projects constitute a natural point of departure for reporting; representations of data pushed by an analytical “way of seeing” (Wolcott 1999) that account for cultural patterning frame the central aims of this study. My multi-sited, multi-scaled analysis of data from different projects, as the thick accounts and micro/meso-level transcripts presented in the next section illustrate, are concerned with children and adults’ ways-of-being-with-words inside and outside educational settings.

### **3. Languaging across virtual and irl timespaces**

In the classical *Situated Learning. Legitimate Peripheral Participation*, anthropologists Jean Lave and Etienne Wenger (1991) present an analytical framework illustrated by a set of studies from *outside* schools. One of the issues that their research highlights is the relevance of studying human conduct *across* different practices in order to explore learning. In similar fashion, there is merit in exploring ways-of-being-with-words outside schools with the intention of understanding languaging generally and learning language in educational settings more specifically. I will augment the two examples presented in section 1 with languaging from social media timespaces in section 3.1. Here data focuses a child-parent-iPad interaction, allowing a vantage point for observing socialization patterns into reading, writing, and talking. The second analytical section center-stages two institutional learning settings: (a) virtual higher education platforms where Italian language learning is the goal, and (b) bilingual deaf schools in Sweden where Swedish Sign Language (henceforth SSL) and Swedish are the official language varieties of instruction.

### 3.1. Modalities and varieties in Web 2.0 languaging: First encounters and “kidspeak” in a “touchscreen world”

A couple of days after the iPad, a new discursive-technological tool, was released (end March 2010), video films and comments were uploaded on Web 2.0 platforms like YouTube and FaceBook depicting one to four year old children, many of whom had previously handled smartphones, interacting with this artifact/tool. Adults in these films (infrequently in the camera frame) cajole, guide and challenge the young children, who are often called “iPad Babies” and “Children of Cyberspace”, to perform tasks for the camera and the adult, including the imagined global internet community. Web 2.0 technologies allow people to participate as consumers and also as online creators of the net itself.

In the case focused here, a father blogs (Figure 2 in Example 1) after he uploads a five minute 28 seconds film that he has recorded of his two and a half year old daughter’s first encounter with an iPad, a present he gives her a couple of seconds after he starts filming her. As the father succinctly puts it (last line of his blog), these young children’s “expectations about computing will be shaped by the fact that [they are] growing up in a touchscreen world”. The child’s handling of technologies in itself socializes her ways-of-being-with-words in digital timespaces and concomitantly creates experiences and expectations about the world. The father explicitly links his written (blog) to his audiovisual (video) texts and draws the attention of potential consumers on social-media platforms. The line “As you can see” (blog paragraph 2) “points” (Goodwin 1994) to the video implicitly. While the data does not allow us to “see” the nature of this consumption by other social-media participants, it can be suggested that members of Web 2.0 platforms are in close symbiosis with one another, writing for potential readers in ways that supports such consumption. Explicitly woven into the fabric of Web 2.0 communities, such chaining of blog text with video visual-oral-written-embodied communication also displays the heterogenous modality dimensions of languaging in virtual timespaces (see also Gynne and Bagga-Gupta 2015, Messina Dahlberg 2015).

The “user-interface” (paragraph 1) in a first encounter human-tool interaction, highlights a toddler’s range of communicative experiences in her daily life as well as the technology framed media site. Accepting the iPad as a “new toy”, the child immediately displays previous knowledge of similar technology (father’s iPhone) and engages with the discursive-tool without further prompting. She recognizes some dimensions, including Apps and the “Sutro Tower homescreen” (a landmark she identifies with her home-city), but also certain differences. This human-tool encounter also illustrates aspects of socialization into and the performatory dimensions of modality framed languaging.

A micro-scale focus on one minute video-data illustrates the situated-distributed nature of modality chaining in Transcript 1 (Example 1) where three primary actors participate: child, father and iPad. Here 16 oral turns can be attributed to the child and the father, while the iPad – in response to the child’s haptically framed turns – participates with four oral contributions (lines 1.28, 1.34, 1.36 and 1.41). Thus the “interaction order” (Goffman 1983) displays 20 oral turns in all. In lines 1.22-1.27 and 1.28-onwards, the child’s haptic index-finger interface on specific points/Apps/symbols and alphabets on the screen, elicits a range of responses from the iPad. Both unexpected interactional outcomes of the child and father’s turn contributions (for instance in 0.38, 0.43, 0.55, 1.33) and more anticipated reactions from the iPad (for instance in 0.43, 1.04, 1.08, 1.22, 1.25, 1.27, 1.31) can be noted. What the father calls an “interesting user-interface experiment” (paragraph 1, Figure 2) is at closer analytical scrutiny a modality-layered “hyper-literacy practice” with the mediating iPad being co-constructed as a toy (line 1.33).

## Example 1 including Figure 2 and Transcript 1: Linguaging on Web 2.0

**Figure 2. Father's blog text**

My iPhone-savvy 2.5 year-old daughter held an iPad for the very first time last night, and it turned out to be an interesting user-interface experiment.

As you can see, after geeking out on my *Sutro Tower* homescreen, she took right to it – including figuring out how to enlarge some of her favorite iPhone-legacy apps to 2x to display full-size on the iPad screen. If you're good at understanding kid-speak, you'll also notice that she immediately saw its potential as a video-display device. She lamented the lack of a camera, and wondered about its potential for playing games.

On the downside, she had the same frustration as many adults, where touching the screen-edge with your thumb while holding the iPad blocks input to all home screen icons. Notice also that she was confused by the splash page for *FirstWords Animals*, her favorite spelling game. Because the start button looked like a graphic, rather than a conventional button, she couldn't figure out how to start the game.

Most of all, though, it's cool to consider that as one of the new *Children of Cyberspace*, her expectations about computing will be shaped by the fact that she's growing up in a touchscreen world.

**Transcript 1. 2.5 year old child-father-iPad interaction**  
(C: child, F: father, iP: iPad)

0.38 C: *yeah whys the movies not going?*  
0.42 F: *can I help you?*  
0.43 C: (navigates different parts of the iPad-screen with right index finger, opens FWA, shuts it)  
0.55 Ba: (opens the digital keyboard, presses different letters, gaze fixed on the iPad)  
1.00 C: *nana ii sint xxx*  
1.02 F: *do you want to go back to the the dog an cat app?*  
1.04 C: *yeah* (gaze focused totally on the iPad and navigates on the screen with right index finger)  
1.06 F: *click that button*  
1.07 C: *the jes?*  
1.08 F: *the big button the bottom (,) there you go*  
1.11 C: *thank you*  
1.12 F: *now push the cat then youll be all set*  
1.13 C: (gaze focused on iPad, navigates on the screen, presses the rectangle box on the lower part of the screen app shuts)  
1.21 F: *oh nono hold on*  
1.22 C: (has navigated back and opened FWA)  
1.24 F: *oh here you go (,) now hit aa? (,) hit the cat*  
1.25 touch the cats face (,) there you go  
1.27 C: (immediately starts navigating on the "lion page")  
1.28 iP: ell (,) (,) ell (,) L (,) (,) i  
1.31 C: (index finger drags letters "l" och "i" to the marked squares on the page)  
1.32 (looks up)  
1.33 [i has games  
1.34 iP: ooo  
1.35 [o]  
1.36 F: [iapp] ell [ell] oo enn (,) lion  
1.37 iP: emm (,) ell [ell] o  
1.38 C: (takes up the iPad with both hands, [looks up] [i had xxx timed it  
1.41 iP: ([the lion head swirls round] [errrooar]

### Transcription Key:

linguaging: communication in English, oral modality

**linguaging**: communication that does not have a given language variety allegiance

linguaging: communication that is expressed with emphasis

xxx: communication that cannot be identified

[ ]: overlapping communication, oral modality or actions

(.): brief pause

((looks up)): supportive, explanatory information, or important body orientations

Furthermore, linguaging is distributed across all three participants situated here, rather than being a property of individual participants. This symbiotic dimension is interesting: without the iPad the interaction order would be quite different. It is a key “participant” and while it does not have “human” agency, the significance of its responses to the child’s actions cannot be denied. It is thus the child’s interaction with the iPad – against the backdrop of prompts and guidance by the adult, including previous experiences with other discursive-tools – that enables specific outcomes or learning trajectories. It is in the context of the performance where all three are co-present and in-interaction-with-one-another that situated goals are met. This then is what can be understood as the human-tool continuum of situated-distributed action. Learning, both written communication and how to handle mediating tools like the iPad, cannot be tweezed apart from such embodied activities.

This micro-scale sequential analysis makes visible linguaging as a concrete dynamic aspect of actors-in-concert with one another and tools. The child’s finger-framed and gaze directed interaction with the iPad together with prompts, corrections and directions from the adult are irreducibly chained with her accomplishments (including failures to achieve explicit goals and the concomitant (re)attentions to other ways of meeting goals like opening an App). The child’s “polyfocality” and the oral-written-embodied chaining is displayed in Transcript 1 as she attends to a number of dimensions ”across a range of multimodal signs” (Jones and Hafner 2012:85). Pointing and the central role of the index finger for navigating the screen, including the two

occasions when the child raises her head (lines 1.32, 1.37) to address her father are significant aspects of languaging.

The linguistic environment in this data-set is interesting on another level. The oral-written American-English variety in use is, from an emic perspective, layered in terms of “kid-speak” and as a corollary “adult-speak”, or “Web 2.0-speak” in written and oral modalities. In directly addressing the potential consumer on YouTube, the father writes: “If *you’re* good at understanding kid-speak, *you’ll* also notice that she immediately saw it’s potential as a videodisplay device” (paragraph 2, Figure 2, emphasis added). Here the blog author re-frames the video-recording for the consumer by drawing upon his own expertise in the specific language variety that he labels “kid-speak”. The father’s blog takes on a mediating role, opening meaning potentials for social media consumers. While language learning is not the central focus in this data recorded in an irl setting and available on a virtual site, it illustrates the everyday ways in which orality and technology frame writing and also language socialization. These dimensions have pedagogical relevance. With these analytical ideas and reflections in tow, let us shift focus to institutional learning sites where language learning is itself in focus.

### **3.2. Tools and languaging in virtual and physical learning sites**

Juxtaposing naturalistic recorded data from multisite netnographic and ethnographic projects, this section scrutinizes the spatial-interactional ordering in two institutional learning settings: (i) virtual language learning sites for adults<sup>1</sup> and (ii) bilingual segregated schools for deaf children<sup>2</sup>. Deaf pupils at different school levels and deaf and hearing teachers and assistants participate in the latter. Studying the learning of Italian by adults and learning in institutional settings where deaf pupils are members allows for an enhanced focus on the human-tool interface: the former is mediated through virtual platforms and the latter have an instructional language, i.e. SSL that does not have a written orthography (see below). Section 3.2a scrutinizes the discursive-technological tools available in, (a) the adult virtual learning site, and (b) the physical deaf schools. Analysis of data-recordings of different lessons from these different institutional settings are presented in section 3.2b.

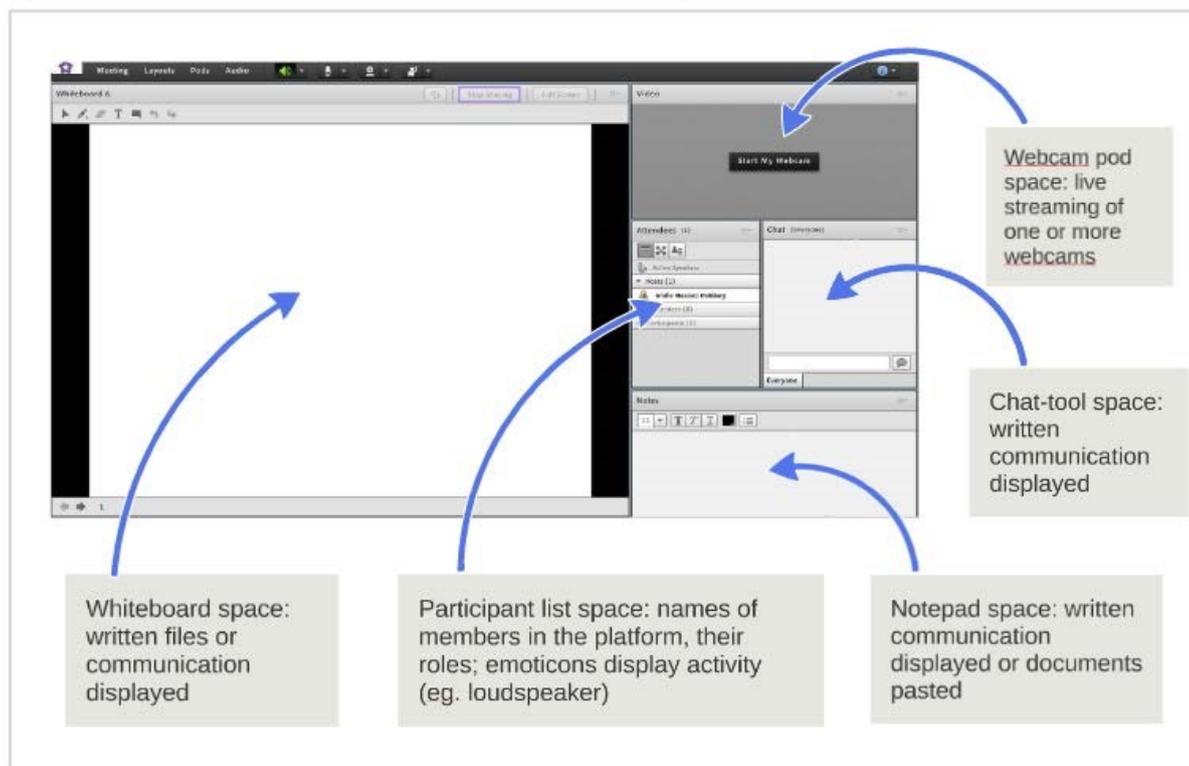
#### *3.2a. Discursive-technological tools in learning timespaces*

Schools and classroom timespaces, the world over, share fundamental features that set them apart from other societal sites. One such feature relates to the “spatial order” including the tools that are potentially available for learning and teaching. A spatial analytical scale illuminates the access and deployment of digital and/or analog tools. Shared learning spaces of virtual platforms are not bounded by concrete walls; here tools and semiotic resources enable shifts between local physical *and* virtual spaces (compare Example 1). While participants’ embodied presence can be limited in virtual learning sites, such milieus display cross-pollination and chaining of language resources and modalities *across* spaces.

The videoconferencing platform used for the adult Italian language course has webcams and pod spaces where oral and written communication can occur simultaneously (Figure 3). Thus participants can talk orally, type written text in a chat-tool and share files on the virtual whiteboard. In addition, webcam images from participants’ physical locations can be streamed on the screen. This modal chaining – oral talk, writing, embodied presence – is both simultaneous and, as section 3.2b illustrates, chained across irl-virtual timespaces (see also Messina Dahlberg and Bagga-Gupta 2013, 2014, 2015). While this resembles the chaining illustrated in the child-adult-iPad example above, participants converge in the virtual classroom at scheduled times *from* different physical sites. Access to the common scheduled timespaces is mediated by tools such as a computer, iPad,

smartphone, including an internet connection. Furthermore, a number of language varieties are available and used here: English labels in the videoconferencing program, Swedish, Italian or English text displayed on the whiteboard or chat-tool. Thus, the virtual spaces of Italian teaching supports other language varieties and modalities, affording different conversation floors simultaneously during synchronous lessons. Sense-making in such environments shares features of hypertextual languaging in Web 2.0 timespaces, and draws upon chained oral, written, pictorial, embodied communication (Horowitz 2007, Jones and Hafner 2012, Murphy 2012).

Figure 3: Representation of a synchronous virtual learning environment

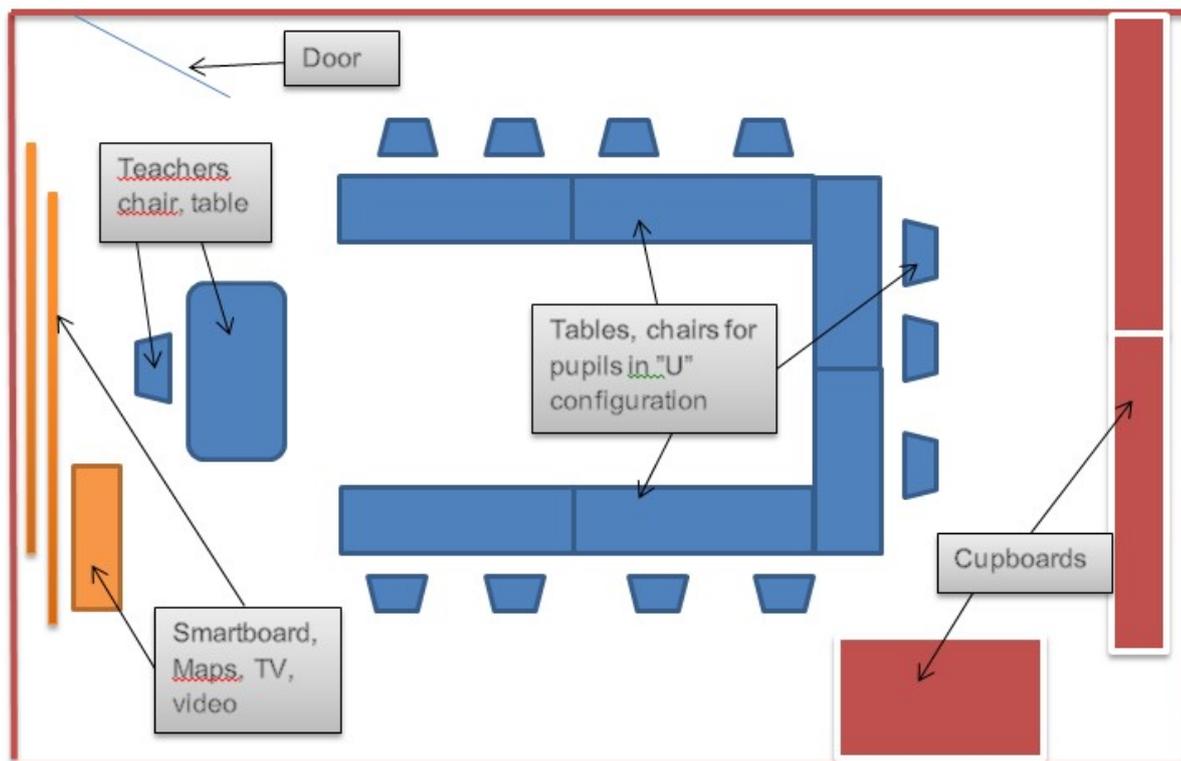


Physical spaces at the segregated bilingual schools for the deaf differ, but also share tools and features with virtual spaces represented in Figure 3. SSL and Swedish formally constitute the primary instructional language varieties in these schools. Similar to the majority of the world's different oral language varieties, and all other SLs, SSL does not have its own orthographic representational system amenable to the creation of a written record.<sup>3</sup> This shapes the intricate ways in which technological tools become dimensions of the pedagogical work in deaf schools. Deaf children are introduced to video-recording/playing tools from the primary grades onwards. My data across grades highlights the technological suaveness and nuanced handling of tools that deaf pupils display.

A striking feature of the spatial order in these classroom spaces is the “U” shaped ordering of tables and chairs (Figure 4). This spatial ordering enables visual access to the official as well as pupil-pupil communication in the classroom that is central for learning here: the “visual-spatial modality shapes the social organization of interaction and of talk-in-interaction specifically in that it must be accomplished in situ with hands, eyes, faces and bodies, but not with ears” (McIlvenny 1995:132). While the visibility of SSL (and other SLs) is recognized in the scholarship, the visibility of the other significant language variety – here Swedish – in bilingual deaf schools is not

center-staged. This includes the visibility of the written mode of Swedish and mouth formations of its oral production. Given the low academic achievement of deaf pupils reported worldwide for over a century, “bilingualism” in these physical learning sites thus more appropriately can be conceptualized as “visually-oriented languaging” where the two primary language varieties are interlinked (Bagga-Gupta 1999/2000, 2002, 2004a; see also Bailes 2001, Erting 2001, Hansen 2005, Padden 1996, Tapio 2014).

Figure 4: Floor map of classrooms at segregated deaf schools in Sweden



There may be a text-telephone in the classroom if the teacher is deaf; a telephone mounted on the wall if the teacher is hearing. With the advent of smartphones these discursive-technologies are becoming obsolete in these schools. The teacher and tools like whiteboard or smart-board, TV, computer, video devices, overhead projectors, etc. are positioned in the opening of the “U”. Furthermore, maps hang from the roof, posters and digital pictures from excursions and other group activities, pupils own texts, creative works are available on the walls. It is not uncommon for a video-camera to be positioned on a tripod in SSL classrooms and smartboards appeared in these schools in the twenty-first-century. Pupils have their own books at their individual desks and files and other materials like DVD’s, workbooks, text books, dictionaries, video literature, etc. lie in the classroom cupboards. Previous studies have indicated that these tools are *used* quantitatively and qualitatively *in different ways* in different subject classrooms (see particularly Bagga-Gupta 1999/2000, 2002).

Use of visually-oriented discursive-technological tools, and the flow of activities in these timespaces are both framed by and themselves frame the language modalities and varieties deployed in activities (see Figure 4 and section 3.2b; Bagga-Gupta and Holmström 2015). Their

usage is related to the absence of SSL's orthographic representational system and is similar to the role that the written word has played in phylogenesis (Säljö 2005), enabling "SSL narratives and sequences to be 'captured' for the purposes of preserving SSL, allowing for reflection, analysis, re-use, and sharing discussion in pedagogical settings in particular" (Bagga-Gupta 1999/2000:103, see also McIlvenny 1995). While technological tools like professional video cameras, editing equipment, advanced film, etc. constitute a regular feature in the Media program at the upper-secondary level, video technology and TV equipment are deployed for another purpose during SSL lessons at all school levels. Use of these tools is related to a language learning agenda, deployed for a discursive purpose at the latter. SSL classrooms have special cordoned off spaces called "språk-boxes" (Swedish-English: language boxes; see below; Bagga-Gupta 1999/2000, 2014b). Every språk-box is fitted with the following tools: video camera, video player/recorder, TV and chair. Pupils here individually and routinely create their own *videotexts* – narratives in SSL.

A comparative analysis of educational spaces in deaf and hearing schools in Sweden suggests that a relatively larger range of tools is present and their advent is earlier in the segregated school milieus (compare Bagga-Gupta and Holmström 2015). The spatial order constitutes a tool-rich visually-oriented communicative arena that supports irl languaging where different language varieties, modalities and resources are deployed. Leaving the scale of the organization of spaces in virtual and physical learning sites, the final analytical section in this study zooms back to the scale of languaging, including the human-tool continuum across timespaces in schools.

### 3.2b. *Languaging across lesson timespace – chaining*

Drawing upon analysis of recorded lessons that focus virtual language courses provided by a university and segregated special schools in Sweden, Figures 5 and 6 make available composite chained patterned flow of language varieties, modalities and tools in use across timespace. To recap, common aspects of the two data-sets here comprise of the flow of everyday life in learning settings, where deployment of more than one language variety and modality is the norm. While previous studies from these projects have presented in-depth analysis of languaging across lessons from each data-set separately, my aim here is to highlight patterns that emerge when data-sets from virtual and irl spaces are focused together.

At least three types of chaining have been identified in the analysis of the interaction order from the deaf school projects. These types of chaining have also emerged in the analysis of the virtual adult Italian classroom data:

- *Local-chaining*. SSL and Swedish are linked to one another at the inter- as well as intra-turn level in interaction
- *Activity-chaining*. Both language varieties are used and linked at the meso-scale across lesson phases
- *Synchronized-chaining*. Both language varieties are used in parallel (eg. in activities that are interpreted).

While all instructional activities at the segregated schools display a complex medley where SSL and Swedish are deployed in pattered chained ways (see Bagga-Gupta 2000, 2002, 2004a), there exists a strong normative stance whereby these two language varieties are seen as "in need" of being kept apart (Svartholm 1990, 1994).

Figure 5: Linguaging phases across mixed-lessons in virtual timespaces. Varieties, modalities, participants and tools

<p><i>Introductory phase (ca 10 minutes)</i></p> <ul style="list-style-type: none"> <li>• Plenary communication <ul style="list-style-type: none"> <li>- oral Italian (teacher)</li> <li>- written Italian (teacher &amp; 8-10 students)</li> </ul> </li> <li>• Chat-tool (teacher &amp; 8-10 students), whiteboard (teacher), mike (teacher &amp; 8-10 students)</li> </ul> <p><i>Language-Grammar phase (ca 30 minutes):</i></p> <ul style="list-style-type: none"> <li>• Desk-top written based work – primarily Italian, but also Swedish (teacher &amp; 8-10 students)</li> <li>• Mike and whiteboard (teacher), chat-tool (8-10 students)</li> </ul> <p><i>Discussion phase (ca 30 minutes):</i></p> <ul style="list-style-type: none"> <li>• Desk-top oral based work – primarily Italian, but also English, Swedish (2-3 students in smaller groups dispersed in new virtual rooms)</li> <li>• Mike and chat-tool (2-3 students/group), chat-tool (teacher), offline notes (individual students)</li> </ul> <p><i>Concluding phase (ca 10 minutes):</i></p> <ul style="list-style-type: none"> <li>• Plenary communication <ul style="list-style-type: none"> <li>- oral Italian (teacher)</li> <li>- written Italian (teacher &amp; 8-10 students)</li> </ul> </li> <li>• Mike (teacher &amp; 8-10 students), whiteboard (teacher), chat-tool (8-10 students)</li> </ul>
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Analysis of data from the virtual adult language classrooms and at the segregated schools have previously reported the presence of all three types of lesson typologies reported from other classroom interactional research: (a) plenary, (b) mixed, and (c) desk-top lessons (Sahlström 1999). The interaction order in the mixed-lessons has been reported as displaying patterned variation where use of space as well as writing is interesting. Mixed-lessons in the virtual data-set are characterized by four phases where the interaction order across timespace is marked by a written-oral modality flow (Figure 5). The four phases of a typical 80 minute synchronous lesson consists of: (a) an Introduction phase, (b) a Language-Grammar phase, (c) a Discussion phase, and (d) a Concluding phase (see Messina Dahlberg and Bagga-Gupta 2014, 2015). The teacher initiates the Introductory, Language-Grammar and Concluding phases in the “main virtual classroom”, while students, in smaller regroupings in “other spaces in the virtual platform”, self-initiate turns during the Discussion phase. Communication is mediated primarily with tools such as individual microphones, the chat-tool and the whiteboard. While web-cameras are rarely deployed by the eight to ten students and the teacher, use of the other tools differs across the lesson timespace (Figure 5).

This meso-scale analysis of virtual lessons, makes visible the complexity of chained languaging, including the deployment of tools. Online lessons are usually initiated when the teacher, in oral Italian, asks whether the students have any course, grammar-related or practical queries. First, during this Introduction phase and parallel to the teacher’s oral talk, students frequently write queries related to grammar in Italian in the chat-tool. This parallel oral-written modality medley illustrates both local- as well as activity-chaining. Second, the teacher devotes 30 minutes in the Language-Grammar phase, orally providing examples, explicating issues that students have written in the chat-tool. The teacher orally initiates and distributes turns and the students work in their dispersed physical sites, participating in the virtual classroom through writing during this phase.

This constitutes a “desk-based” phase where languaging is primarily oral (teacher), written (students) and where the teacher may display written texts on the whiteboard. Tools such as the whiteboard, chat-tool and microphones are commonly used by the participants here.

Third, the interaction order shifts to the (iii) Discussion phase when the teacher has covered the students’ queries. The students leave the main classroom, regrouping in smaller numbers dispersed in other virtual rooms. The chat-tool, microphone and physical written documents such as course materials that each student has access to at his/her physical site, constitute tools used during this phase (see particularly Messina Dahlberg and Bagga-Gupta 2013). A plenary interaction order in the main classroom characterizes the final (iv) Concluding phase circa 10 minutes before the end of the lesson. Here the teacher wraps up the topic, inviting final comments from the students. The chat-tool and occasionally the whiteboard, are used during this phase. Explicit oral good-byes brings the session to an end.

Use of discursive-technologies and an oral- and activity-chaining interaction order constitute common features of mixed-lessons in the data-sets from the segregated deaf schools as well. The teacher leads individual and group work phases that follow one another in the temporal ordering of activities in irl timespaces here (Figure 6). Participants in mixed-lessons commonly include a teacher (who can have access to interpreters<sup>4</sup> at the upper secondary level if s/he has limited experiences with SSL), a resource person and three to eight pupils. After (a) an Introductory phase where teachers outline the topic of the lesson, a specific task (that requires pupils to work with individually or in pairs) is presented. This often leads to (b) a Clarification phase where pupils pose task-related queries in SSL. (c) An Individual or group work phase follows thereafter. In SSL lessons and in some other subject lessons (e.g. Media) pupils compose individual texts on the topic in focus (see Bagga-Gupta 1999/2000, 2002, 2014b for different examples). Here pupils ask the teacher, the resource person, interpreters or another pupil how to spell, i.e. write down a particular sign. The response is either signed or written on the whiteboard or on paper. During this third phase, pupils routinely also present their individual or group work to the entire class. Teachers usually write personal notes during pupil presentations and pose brief questions in SSL. Pupils frequently shift gaze to their written texts while presenting in SSL. Referring to their notes after all the presentations, the teachers make brief comments in SSL. The interaction order shifts to (d) a Closing routine phase when teachers round up by touching upon the lesson’s central theme. They occasionally write homework on the whiteboard and written details regarding the homework get distributed to the pupils.

Specific interactional patterns are thus co-constructed during the different phases, where the use of *either* SSL (and oral Swedish) *or* written Swedish *or* different varieties (SSL, Swedish) and modalities (written and oral Swedish), including resources (fingerspelling, mouthing)<sup>5</sup> get played out in complex patterned ways together with tools across the lesson.

Writing is produced and used in complex ways. Deaf pupils are expected to produce relatively large amounts of written Swedish, especially when Swedish is not the focus in activities. In such instances teachers rarely evaluate pupils’ written texts. Written texts and videotexts are created in technology infused settings and become the point of departure for both individual and whole class discussions in SSL.

Activity-chaining thus represents a routine discursive-technological interactional order where more than one language variety, modality, resource and tools are used by participants in both virtual and irl learning sites across lesson phases (Figures 5 and 6). A group teaching interaction order

dominates in mixed-lessons. In addition to activity-chaining, language varieties and modalities are also chained at the micro discursive scale in both virtual and physical learning sites. Where teachers work alongside SSL interpreters, this local-chaining is distributed across the adults (see Bagga-Gupta 2002, 2014b). Pupils SSL presentations are mediated by a written text illustrating the fluidity of local-chaining. The presence of interpreters suggests that oral Swedish and SSL, in addition to written Swedish and SSL, are synchronously-chained. Teachers often either write down and/or repeat a word/sign when they introduce or emphasize a central concept. The repetitive use of the oral and written concept gets interpreted repeatedly also in SSL. This local-chaining occurs both in the teacher's oral Swedish and in the interpreters SSL discourse, thus representing interpreted synchronized-chaining.

Figure 6: Languageing phases across mixed-lessons at segregated deaf school timespaces. Varieties, modalities, participants and tools

<p><i>Introductory phase (ca 10 minutes)</i></p> <ul style="list-style-type: none"> <li>• Oral Swedish and SSL (teacher, interpreters)</li> <li>• Overhead picture, other texts, whiteboard</li> </ul> <p><i>Clarificatory phase (ca 3-5 minutes):</i></p> <ul style="list-style-type: none"> <li>• Oral Swedish and SSL (teacher, interpreters)</li> <li>• SSL and oral Swedish (pupils &amp; interpreters)</li> </ul> <p><i>Individual or group work phase (ca 50-60 minutes):</i></p> <ul style="list-style-type: none"> <li>• Text books, note books</li> <li>• Written Swedish (pupils' productions)</li> <li>• SSL and oral Swedish (pupils, interpreters)</li> <li>• SSL and written Swedish (pupils)</li> <li>• Oral Swedish and SSL (teacher, interpreters)</li> <li>• Written Swedish (teacher's productions)</li> </ul> <p><i>Closing routine phase (ca 10 minutes):</i></p> <ul style="list-style-type: none"> <li>• Oral Swedish and SSL (teacher, interpreters)</li> </ul>
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The organization of timespace in mixed-lessons at virtual and physical learning sites focused here can be understood in terms of the flow of activities where participation in particular types of discursive-technological practices enables possibilities for learning different language varieties, modalities and conventions. The medley of modalities, varieties, tools and embodiment highlighted here is similar to the complex, intricate ways in which oral-written-virtual-irl-embodied dimensions are chained in the social media example in section 3.1.

#### **4. Languageing as chained oral-written-signed-embodied deployment of resources across irl-virtual spaces**

Inscriptions, alphabets, symbolic resources and signs are tools that are created and have become conventionalized into language varieties and ways-of-being-with-words across timespace. These mediate the world to us. In sociocultural terminology, they are *cultural-tools* or mediational means

that enable but also curtail our interface with the world. More recent, pluralistic, dynamic understandings of communication, including writing have grown from studies of social practices where languaging gets scrutinized through ethnographical approaches in and across different irl-virtual settings. While current ideas about boundaries between language varieties and the reality mirroring function of language dominate theorizing, paying attention to the complexities of languaging, as I have done in sections 1 and 3, enables insights that are relevant for understanding how linguistic varieties and modalities interact with embodiment and tools. Studies that focus on communities of users in virtual-irl learning sites where the analytical-methodological spotlight is on social practices, rather than oral *or* written *or* signed language use in separate settings and projects, throw light upon the situated, distributed, collective and chained ecology of sense-making processes. This is highly relevant for understanding how we approach language pedagogy broadly and written language pedagogy specifically.

The study presented here both draws upon, but also contributes to the fields of literacy, bilingualism and multimodality broadly, and to learning and communication specifically. Each example in sections 1 and 3 highlights the central role that spatial and interaction orders, including the use of tools and technologies plays in written communication. Sense-making is embedded in social practices in and across both virtual and irl spaces and an interest in written communication calls for a broader analytical lens.

Classical ethnographies from the 1980s questioned the naivety of compartmentalizing oral from written communication, and showed that people develop (oral-written) language, including different varieties in concert with social requirements in different life domains. To develop written language (in a particular variety or register), thus, requires contact with tasks that support and make specific dimensions (in a variety or register) functional and necessary. Growing up in a touchscreen world, playing with Apps, learning Italian through a university virtual platform enabled by mediating tools while sitting at home, or preparing a videotext in SSL in a deaf school all require the creation and use of written texts. However, as I have highlighted, marginalizing the role that written language, embodiment and tools play in activities when more than one language variety and modality are used is problematic. In other words, mapping how the oral and written are chained and how oral, written, signed, embodied resources together with technologies contribute to languaging more broadly is significant for understanding the “didactics of literacy” or writing pedagogy.

Classical research from 1980s illustrated that the ability to read and write (in a specific variety and orthography) is not a neutral capacity that individuals can access for use in every situation. For instance, in his ethnography from Iran, Street (1984) showed how reading, writing, book-keeping, contract writing, etc. in different language varieties were required and used in the timespaces of commerce and trade but hardly ever outside them. Thus, and as this study also shows, it is for specific tasks that writing becomes a culturally accepted tool for mediating practical everyday activities in and across specific language varieties and timespaces. It is in this way that “@”, “Ctrl”, “touchscreen worlds”, “chat-tools” and “språk-boxes” become resources that mediate sense-making and practices.

Results pointing in a similar direction can also be derived from Scribner and Cole’s (1981) studies in Liberia among the Vai. At that time, the Vai had contact with three language scripts: the alphabetic (through English), the indigenous syllabary, and Arabic (which existed in two versions). Scribner and Cole creatively showed how these scripts (and oral language varieties) were used in different life domains and therefore mediated different types of experiences: languaging in English

script was tied to formal schooling and practices in production and administration, Vai script was used for personal letters and informal messages and high Arabic script was exclusively connected with religious practices including reading the Koran.

One of the main issues that have been acknowledged through accounts offered in such research is that it is not mastery of written language that per se creates a literate mind. Rather, the decisive issue is – as the examples in this study show – the connection between writing as a means for communicating and representing experiences on the one hand, and specific practices on the other. In particular, these accounts illustrate the omnipresence of written language resources in contemporary languaging across irl-virtual settings inside and outside learning sites. Thus, formal learning sites are not the only settings that afford and reinforce practices where writing becomes functional. However what is functional *inside* schools may not be functional *outside* it, since writing may play an altogether different (or in global South spaces no significant role) there. In other words, this calls for making visible (a) the rich complex nature of languaging and the purposeful flavor of communication, and (b) the domain specificity of experiences with different language varieties, modalities and conventions. This also means acknowledging the role of the written modality in settings that are glossed as bi/multi/pluri/translingual. Here there is need to recognize that the classical studies from the 1980s were conducted in both global South and North settings where more than one language variety or sociolect was deployed. Paradoxically then, their contributions have been acknowledged in the field of (New) *monolingual* Literacy Studies and have so far not shaped the fields of “bilingualism” or “multimodality” (see Bagga-Gupta 2012a, 2017a,b). Theorizing language from mind-as-action positions, the present study thus contributes to making visible the significance of understanding languaging *from* framings where multiple language varieties and modalities are part of the analytical toolkit.

This also points to a mismatch that exists between recent sociocultural framings, and the continuing demarcated nature of research in the language sciences. Going beyond the dominating monological approaches, more recent communicatively oriented dialogical approaches highlight the monolingually framed oral language reductionism embedded in central concepts like “bi/multilingual” and “code” in themselves. Recognizing the fluidity between linguistic varieties or a continua between language varieties and modalities, as the analysis in this study has shown, attends to the complexities of ways-of-being-with-words and a human-tool connectivity. This allows for the emergence of analytical metaphors like chaining and timespace and necessitates going beyond oral-written-signed and irl-virtual divisions as well as bounded metaphors like code and code-switching. In a parallel discussion in the Literacy Studies field Hornberger (2003) attended to such dichotomised reductionism by proposing a “continua of biliteracy”.

Significant pedagogical implications that arise from these empirically pushed analytical discussions relate to the nature and quality of languaging i.e. the ways-of-being-with-words that learners have access to inside and outside educational settings. The ways in which oral, written, embodied and signed dimensions of languaging interface with tools in participants’ everyday lives across irl-virtual timespaces shapes learning. For instance, Mayer and Wells (1996) suggest that rather than the amount of written texts that deaf pupils are exposed to, it is the type and quality of activities where pupils engage with different written language repertoires that constitute en/disabling aspects of learning. This has pedagogical significance, not least since reading and writing have been central concerns in deaf pedagogy world-wide for over a century (Bagga-Gupta 2004b, Chamberlain, Morford and Mayberry 2000, Marschark 1997, Moores 1991).

Knowing how to participate in practices where symbols like “@” or an iPad feature, etc. are salient in classroom communication in virtual or physical settings is thus not only contingent upon individual skills in a specific language variety or oral or written modality. It is the situated-distributed nature of specific kinds of knowledge that are significant for learning to participate in these practices. Going beyond oral-written-signed divisions, I have accounted for languaging in terms of the access that “iPad babies”, children and adults have to different communicative symbols and resources across irl-virtual timespaces. The point that is salient is that it is not identifications based on the notion of knowledge about a specific bounded language, or a specific writing system or functional ability that is significant. Rather it is the ways-with-words that are contingent upon the ways-of-being, including the sociohistorical experiences of participants in a community of practice that are significant. This raises issues regarding the continuing compartmentalized focus on oral and written language varieties and modalities in pedagogy.

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<sup>1</sup> Data from project *CINLE* ([www.ju.se/ccd/CINLE](http://www.ju.se/ccd/CINLE)) consists of screen recordings of *synchronous online meetings of an “Italian for Beginners” course* offered by a Swedish university (see Messina Dahlberg 2015, Messina Dahlberg and Bagga-Gupta 2013, 2014, 2015).

<sup>2</sup> Data from three large scale ethnographic projects where fieldwork, since the mid-1990s, has focused the technologically infused spaces of *segregated deaf bilingual schools* at the primary, secondary and upper-secondary levels in Sweden (see Bagga-Gupta 1999/2000, 2002, 2004a, 2007, 2010, 2014b).

<sup>3</sup> There exist a number of serious attempts in different parts of the world to construct written conventions for different SLs and many SLs have their own written and/or signed dictionaries.

<sup>4</sup> SSL interpreters routinely work in pairs, where they interpret for 10-15 minutes each. Interpreters are rarely present in primary or secondary classrooms. Here teachers are deemed as having requisite experiences of using SSL.

<sup>5</sup> Manual representations of alphabets on the hand; lip movements without the production of sound that are dimensions of SSL and languaging generally.

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