South African Journal of Childhood Education
ISSN: (Online) 2223-7682, (Print) 2223-7674

In word and deed: Embodying early literacy learning in gestures and postures

Author:
Caroline R. van der Mescht[1]

Affiliation:
[1]Department of Education, Faculty of Education, Rhodes University, Makhanda, South Africa

Corresponding author:
Caroline van der Mescht,
c.vandermescht@ru.ac.za

Dates:
Received: 03 Oct. 2022
Accepted: 30 May 2023
Published: 24 Oct. 2023

How to cite this article:
Van der Mescht, C.R., 2023, 'In word and deed: Embodying early literacy learning in gestures and postures', *South African Journal of Childhood Education* 13(1), a1280. https://doi.org/10.4102/sajce.v13i1.1280

Copyright:
© 2023. The Authors. Licensee: AOSIS. This work is licensed under the Creative Commons Attribution License.

Read online:
Scan this QR code with your smart phone or mobile device to read online.

Background: The context of this research is reading literacy instruction in Foundation Phase classrooms in South Africa. Although large-scale studies have researched learner performance, little is known of the nuances of teachers' practice, particularly in the non-verbal realm. This research seeks to address that gap.

Aim: This research investigated teachers' gestural and postural enactments during reading literacy instruction in the Foundation Phase. It identified and described these enactments to understand their function.

Setting: The research sites comprised three Grade One classrooms in suburban government schools. The research focused on the Foundation Phase speech event 'Reading on the Mat', a variation of Group Guided Reading.

Methods: This article presents a strand of a linguistic micro-ethnography. An analysis of the forms and styles of communication showed the salience of gestures and postures in teachers' practices. The research used an established framework to analyse non-verbal communication and also generated a framework to analyse postural communication.

Results: These teachers deployed gestures and postures to enact their instruction. Learners embodied their learning by copying gestures and using them in recall. Postures were used to provide signals to learners and visitors related to the function of activities on the Mat.

Conclusion: The article concluded that gestures and postures can be deliberately employed in the service of literacy teaching in the Foundation Phase. Their analysis can also reveal the function of enactment practices to researchers.

Contribution: This article adds to the understandings of embodied practices. It presents original categories that may be useful in similar research into teachers' practices.

Keywords: enactment; embodiment; gestures in reading instruction; postures in reading instruction; early reading instruction practices.

Introduction

Rigorous large-scale research over the last decade has shown that South African learners are underperforming against international benchmarks in the key area of early reading literacy. For example, results of the Systemic Evaluation (SE) 2003; the Annual National Assessments (ANAs), 2014–2017; the Southern and East African Consortium of Educational Quality (SACMEQ) 2005, 2010, and 2017 and Early Grade Reading Study (EGRS), 2015–2016, and 2018 all highlight the inability of young South African learners to move beyond decoding and to read for meaning (Govender & Hugo 2020). The Progress in International Reading Literacy Study (PIRLS) (Howie et al. 2007, 2012, 2017, DoE 2021) presents similar results.

In response to this research NGOs and education departments have focused on providing materials designed to improve learner performance. However, the EGRS evaluation report acknowledges the fact that simply distributing the resources has not improved reading outcomes significantly and that the effectiveness of materials depends on how they are used by teachers (Taylor et al. 2017). The 2022 Reading Panel Background Report similarly suggests that changes to teachers' practices rather than resources are the key to improved outcomes (Spaull 2023).

Although the importance of practice is increasingly acknowledged by the large-scale research mentioned above, teachers' practices in Foundation Phase classrooms remain opaque. This article presents research into the gestures and postures which teachers use as complementary semiotics in the multimodal teaching of young learners. The non-verbal is a powerful but largely

unacknowledged aspect of teachers' practices although theories of embodied cognition point to its importance. It is also not usually a focus of educational research, therefore its potential value is elaborated on further in a review of literature discussed further.

The goal of this article is to describe embodiment through teaching gestures and postures in authentic settings and thereby to establish criteria, descriptors and categories for similar research. It will be of especial interest to researchers but has implications for practice also.

Research design

Linguistic ethnography seeks to understand the language and communications of individuals in naturalistic settings. Hymes (1974), who established the disciplinary foundations for ethnographies of language, observes that 'it is of speech acts and speech events that one writes formal rules for their occurrence or characteristics' (Hymes 1974:52). The first requirement therefore was to identify a single significant speech event for intensive analysis. A variation of Group Guided Reading known as *Reading on the Mat*, was chosen as the site of the research. The research investigated and described teacher practices in this methodology.

The primary data for the analysis were video and audio recordings. These were supported by observation notes, classroom materials, formal interviews and informal conversations with teachers, and the texts and artefacts used on the Mat. Validity of the findings was strengthened by cross-referencing analytic tools as well as explicit confirmation by the participants of the meaning of their actions.

Returning to Hymes' (1974) foundational methodology, the first cycle of analysis used his eight categories for analysing a speech event. One category, that of Instrumentalities, presented variations in data that suggested that it required additional investigation. This is in line with the findings of Watson-Gegeo (1992) who argues for *thick explanation* in studies of language socialisation and the 'integration of micro- and macrolevels of contextual data collected and analyzed in a qualitative, ethnographic framework, to achieve a more holistic understanding of children's socialization' (p. 52). Instrumentalities includes all the modes and media used by participants to communicate. On the Mat, the three primary Instrumentalities were the textual artefacts (graded readers and cards), the oral communication of teachers' speech and two non-verbal modes: gestures and postures. Gestures and postures were salient features of activities on the Mat and the analysis presented here reveals nuances of teachers' instructional behaviour in these modes.

During the analysis of Instrumentalities, the full data set of video recordings was reviewed for commonalities between the teachers as well as for patterns in the practices of each individual teacher. The analysis was functional, seeking to understand the purpose of gestures and postures in the speech event. Following the example of Kress and Van Leeuwen (1996), categories of Systemic Functional Linguistics provided the framework for all the Instrumentalities. As a consequence, the research developed four original functional categories for analysing the postural communication of teachers in similar educational contexts. These are presented in Appendix 1 to this article.

This article firstly presents the argument that an analysis of teaching interactions cannot be confined to the verbal domain alone. See for example Kendon (2004), McNeill (2005), Cienki and Müller (2008), Goldin-Meadow and Alibali (2013), Cochet and Vauclair (2014) and Iriskhanova and Cienki (2018). These researchers assert that much can be learned about practice from an analysis of non-verbal elements. Proponents also argue that the non-verbal domain can be harnessed effectively in teaching (Roth 2002; Skulmowski & Rey 2018; Taylor 2014). Secondly, the article shows that gesture and posture have archetypal features and are also idiosyncratic. Both kinds of gesture can be used deliberately by Foundation Phase teachers in their interactions with young learners, as demonstrated by all the teacher participants in this research.

The sites and participants of the research

The participants were three Grade One teachers from three different former Model C schools, that is, government schools that before 1994 were designated for white children only. These classrooms were chosen as examples of good practice literacy learning environments. The classrooms were well resourced and the teachers in this study, given the pseudonyms Mrs Danes, Mrs Samuel and Mrs Michael, had received between 5 and 6 years of training and had taught Grade One at their respective schools for between 6 years and 19 years. They were confident professionals with a well-articulated knowledge of reading pedagogies. The researcher spent a week in each classroom at the beginning, the middle and the end of a year, that is 21 days in each classroom. Each group was recorded every day during the weeks of data collection. In line with established ethnographic research practices, the purpose of the investigation was to describe rather than to compare or to generalise. However, the data sets from three participants allowed the researcher to present a richer picture through the resonances set up by differences and similarities between the teachers.

In the three classrooms, the core literacy teaching event resembled Group Guided Reading (Fountas & Pinnell 1996, 2017) a whole language methodology for reading tuition in small groups. This is required by the English Home Language Foundation Phase Curriculum and Assessment Policy Statement (Department of Education 2011) and detailed in the accompanying teacher's handbook (Department of Education 2008). Because it was known as *Reading on the Mat* in these schools, I use this term in the research and refer to the site of the event as the *Mat*.

Although other teaching methodologies were used in these classrooms, Reading on the Mat dominated literacy instruction. Every learner in the classrooms of the research came to the Mat every day for reading instruction and the seating arrangement allowed strong normative work as it provided teachers with daily close contact with learners in small groups. Reading on the Mat therefore met the requirement of the research, as a 'bounded series of actions and reactions that people make in response to each other at the level of face-to-face interaction' (Bloome et al. 2005:6). On the Mat phonics drill with cards and other texts was followed by round robin reading of graded readers, closely monitored by the teacher. Each learner or the whole group might be asked a question on the text. Learners not in the group were given work and discouraged from interrupting group activities.

Classroom organisation and the schools' funding of resources support the observation that Reading on the Mat was a key activity in these classrooms. There were at least two sets of commercial graded reading series in each class, library books, a reading corner and laminated cards of words and letters for each learner. Additional materials kept the rest of the class occupied so that the teacher could focus on the reading group for extended periods. All the learners came to the Mat daily and they all had an equal opportunity to read. The importance of reading in the classrooms was emphasised by the teachers' exclusive focus once Reading on the Mat was under way.

Analysis

The difficulty of correlating gestures to meaning creates challenges for researchers. To avoid the micro-level of individual elements I turned to the broad categories established in the early work of McDermott, Gospodinov and Aron (1978) who analysed the interactions of reading learners in a similar context and of a similar age to those of this research. Their broad functional categories describe the function or *work* of the interactions. McDermott et al. (1978) maintain that most single actions can be understood as constitutive elements of functional clusters. Analysing through functional categories such as these provides information about broad trends; the categories generated in this analysis and discussed further are similarly functional but focused on the teachers rather than on the learners as teachers established and maintained the group and managed the instructional interactions there.

After the whole corpus of video data was viewed for each teacher, two sessions were selected from each set which reliably represented each teacher's non-verbal style. These were viewed repeatedly against the functional indicators designed by McDermott et al. (1978), generating their own categories and the observations presented further. Appendix 1 presents the analysis in tabular form as an aid to interested researchers.

Ethical clearance for this research was granted by Rhodes University Education Department Higher Degrees Committee; informed consent was obtained from all participants. Pseudonyms have been used for participants and schools. Illustrations were made from video footage to conceal participants' identities.

The non-verbal mode in teaching

While teaching on the Mat used written texts and was mediated by teachers' verbal instruction, gestures and postures were salient features of the literacy teaching practices of these teachers. This section discusses bodily semiotics and then focuses on the meaning making potential of gestures and postures alone. A further section on embodied cognition links gestures and postures to learning and teaching.

'Non-verbal communication' covers the full range of meaning, which can be expressed by the human body: qualities of the voice, gaze, gestures, bodily positions or movements. It also includes aspects of written communication: the choice of fonts, the placement of photographs and pictures, layout in textiles or paper and computer hardware and software (Kress 2010; Kress & Van Leeuwen 2001).

A common perception is that the verbal is the prime or only semiotic available to teachers or to educational researchers (Hutchins & Palen 1997). This perception strips teaching exchanges of meaning and a key early realisation of researchers was that all body movements and facial expressions complement verbal communication; that they form a co-semiotic in multimodal meaning. Researchers also support the principle that fine-grained research into naturalistic educational contexts should include an analysis or acknowledgement of the full range of semiotic resources (Taylor 2014). This research supports arguments for both the importance of the non-verbal in teaching and as an essential element of research into educational interactions.

Gestures

This research uses Kendon's (2004) definition of gestures as movement that attempts to give information (2004). Gestures have received particular attention in educational research because of their obvious role in explaining and demonstrating. Teachers point to writing and diagrams, to objects and to learners to explain the learning content and to direct learning. In mathematics and science teaching, research gestures have received particular attention because of the link they can make to abstract concepts. This is supported by Arzarello et al. (2009), Alibali and Nathan (2012), Hare and Sinclair (2015), Tran, Smith and Buschkuehl (2017), Sabena (2018) and Chikiwa and Schäfer (2019). However, in South Africa, Chikiwa (2021) comments that 'there is a dearth of research in South Africa that explores and exemplifies the crucial symbiotic relationship between gestures and spoken language for teaching purposes' (p. 2).

McNeill (1992) and Kendon (2004) offer useful classifications of gestures for use in analysis: *iconic, metaphoric* and *deictic*

gestures and *beats*. Briefly defined, *iconic* gestures attempt to represent concrete objects or actions (McNeill 2005). They are perceptibly similar to the concept they refer to and relate closely to any accompanying speech (McNeill 1992). For example, a teacher might gesture the meaning of *eat* by miming spoon movements. *Metaphoric* gestures, on the other hand, attempt to represent an abstract concept. Iriskhanova and Cienki (2018) explain that 'when representational gestures are applied to abstract ideas, this can give rise to multimodal metaphor' (p. 27). For example, a teacher might hold up a hand to signify *stop*. As the examples suggest, many gestures used on the Mat are iconic and metaphoric. *Deictic* gestures refer to objects, locations or people that are being mentioned in speech, usually by hand and finger pointing or head movements and these were very common on the Mat. Because they direct listeners' attention to a specific item (Cochet & Vauclair 2014) deictic gestures are highly context dependent (Alibali et al. 2013). The last group of gestures identified by McNeill (2005) are *beats*: hand movements that follow the voice rhythms of the speaker to draw listeners' attention to ongoing speech. Beats were notably absent from teaching on the Mat but their communicative function was taken up by postures that claimed learners' attention for the work of the group. This is discussed further in the findings.

Some educational researchers acknowledge the fact that gestures and postures can be open to multiple interpretations by participants and researchers. Iriskhanova and Cienki (2018) assert that gestures are 'more fluid, more subject to individual differences and more resistant to entrenchment, as well as being more language-dependent than language-independent' (p. 34). However, others assert that non-verbal communication is highly reliable and that where there is apparent contradiction the non-verbal is more likely to communicate the true intention of the sender. Jordan and Henderson (1995) support this view, arguing that 'Gestures and body positioning are difficult to manipulate and control for any length of time, and microbehaviors such as gaze and head turns are usually out-of-awareness. In talk, people make greater attempts to modify what they say than how they say it' (p. 22). As this research took place in naturalistic settings when teachers were focusing on another task, it seems that the non-verbal communication presented here is substantially reliable. Frequently teachers' verbal instructions aligned with their non-verbal communication in ways that made an interpretation of teachers' intention dependable.

A second issue of interpretation is that gestures may differ in meaning where there are language or cultural differences. There are two points to make in this regard. Kendon (1988) and McNeill (1992) assert that the most symbolic or sign-like gestures are stable because of the well-established relationship between form and meaning. These gestures are therefore least open to multiple interpretations. Idiosyncratic or unconventional gestures, on the other hand, are freely open to interpretation. Gestures on the Mat belong to both ends of this continuum, with some belonging to the stable, archetypal patterns of mentor–novice relationships while others were generated by teachers specifically for teaching a particular sound or word. This article presents examples of both archetypal and idiosyncratic gestures.

A final point to make regarding interpretation is that teachers on the Mat were consciously inducting young learners into a vocabulary of gestures through repetition and explicit verbal reinforcement. Daily repetition ensured that the gestural and postural norms on the Mat rapidly became familiar, whatever was learners' home language or cultural background. Taylor (2014) maintains that 'meaning-making is a multimodal activity, which does not leave room for the notion of an absence of meaning. Meaning is, therefore, always being made, but not necessarily through language' (p. 3). However, where necessary teachers reinforced norms verbally, ensuring that the non-verbal elements of multimodal communication were explicit.

Postures

Postures, or the ways in which we hold our bodies, have received less attention when compared to gestures in educational, linguistic or cognitive psychology research. There has been little attempt to create taxonomies or to define the nuance of postures with functional or other descriptors. However, in the classrooms of this research the seated postures of teachers on the Mat had a strong communicative function and I offer four categories that may be useful to other researchers in similar educational contexts. These are tabulated in Appendix 1.

In this research, the gestures and postures of teachers gave a visual and physical form to the verbal communication and replicated the verbal mode. Moreover, in the speech events the non-verbal modes not only explained and completed but also enlarged on verbal interaction. Goodwin (2010) remarks on:

> [*T*]he simultaneous use of structurally different kinds of semiotic practices (language, gesture and the structure of the page being worked with) in different media which mutually elaborate each other to create a whole that is different from, and greater than, any of its constituent parts. (p. 55)

This meant that the researcher could not fully understand an interaction by analysing one mode alone.

The non-verbal in educational research

There are additional reasons for analysing the non-verbal that support the interests of researchers in educational contexts.

Firstly, there is the potential value of non-verbal data in a range of qualitative and interpretative research methods in education. Participants are not only performing activities but are also signalling to each other what they are doing through postures, gestures and glance. They adjust these messages

by taking on the movements characteristic of their current activity. Furthermore, they do this together in an 'elaborate postural-kinesic dance, in which the learners and the teacher quietly round each other up until all return to the book to read' (McDermott et al. 1978:251). This *dance* confirms the purpose of the group to its members in an ongoing micro-stream of information. Erikson (1982) suggests that non-verbal signals indicate the *work* in the group and who is doing it. In response, individuals can align themselves to the group purpose or withdraw from it. Non-verbal information thus provides rich data for researchers, who can view members' perceptions of the group activity or the contribution individuals make to it on an ongoing basis. Validity is provided when non-verbal information about roles and expectations is reinforced verbally.

It is worth noting that Reading on the Mat creates a learning space that is simultaneously educational and physical. Teaching on the Mat, with a ring of learners around the teacher, was a physical setting with a boundary created by the participants' bodies as Figure 1 depicts. Non-group members were simultaneously excluded. They were occupied, usually at their desks, with tasks previously set by the teacher.

Critical studies have highlighted the body as a site of power negotiation through which individuals are inducted into dominant or subservient roles in social hierarchies. Institutions such as schools require individuals to demonstrate their compliance with dominant values not only by saying but also by doing and being (Deacon 2006; Lye 2008; Wehrle 2016). Some of the non-verbal practices on the Mat emphasised compliance and control the 'regulative discourse' of classrooms identified by Bernstein (Singh 1997). On the Mat learners' bodies were trained in the physical habits associated with formal reading in school environments. Teachers modelled these habits non-verbally and at the same time verbally instructed learners to follow them. See for example the 'sit nicely' rule described in Section 'Posture three: *Directing*'.

Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 1: Reading on the Mat in action. A physical space with boundaries, created by bodies.

Embodied cognition

In a theoretical field closely related to non-verbal communication in educational settings, *embodied cognition* seeks to describe and understand how bodies and movements are related to cognitive processes and to learning, particularly to recall (Barsalou 1999; Beilock 2015; Glenberg 2010, 2011; Shapiro 2010). The interests of cognitive psychologists in this field intersect with those of educational researchers (Lindgren & Johnson-Glenberg 2013; Skulmowski & Rey 2018).

Initially, Barsalou (1999, 2008) revealed that brain structures that are active during learning are reactivated during recall. In addition, movements related to the learning content were a better aid to recall than those that were not. Embodied cognition theory therefor investigates *enactment*, that is, when meaning is acted out during instruction (Gallagher & Lindgren 2015). This happens when the movements of learners or teachers are semantically related to the learning target, as deictic, iconic and metaphoric gestures can be. See Hutto, Kirchhoff and Abrahamson (2015) and Gallagher and Lindgren (2015) for overviews. De Koning and Tabbers (2011, 2013) reviewed educational research into how multisensory processing influenced learning, especially its potential for making abstract concepts easier to grasp.

Many interventions focus on the movements of learners while they learn rather than on the movements and actions of teachers. However, enactment by teachers also affects the cognition and recall of their learners. In particular, recent research in mathematics and science education emphasises the effectiveness of teachers' gestures in embodied cognition (Chikiwa 2021; Chikiwa & Schafer 2019). The research presented in this article similarly investigated teachers' enactments in order to identify and describe practices.

In research closer to that described in this article, researchers in language learning (Edwards 2009; Kendon 2004; McNeill 1992, 2005) have observed gestures and speech developing together in second language acquisition. Alibali and Nathan (2012) emphasise that gestures are crucial in all contexts because learning becomes more concrete when teachers refer to actual objects, whether by iconic, metaphoric or deictic gestures. Macedonia (2019:n.p.) adds that in additional language learning gestures 'help to memorize vocabulary better than by only reading it or listening to it'.

Turning specifically to the role of teachers' gestures in embodied cognition, McNeill (1992) asserts that 'gestures do not just reflect thought but have an impact on thought. Gestures, together with language, help constitute thought' (p. 242). In line with this assertion, gestures play a key role in the thinking process and in aiding conceptual learning (Goldin-Meadow & Alibali 2013; Roth 2002). Gestures can therefore be used by researchers to identify teachers' perceptions of what learners are struggling with at any

particular moment. This last point applied clearly to some gestures used by teachers in this research.

However, research has also shown that an increase in gestures does not automatically result in greater recall. Yeo, Ledesma and Nathan (2017) believe that 'some gestures may be unhelpful, and some may even be detrimental. In this study, less gesture … was actually better for student learning' (p. 10). They attribute this to the need for a clear relationship between movements and the learning content. Skulmowski and Rey (2018) assert that 'A highly integrated form of embodiment and an implementation featuring a high gestural congruency would both exhibit a semantic relationship between a bodily activity and learning targets' (p. 5).

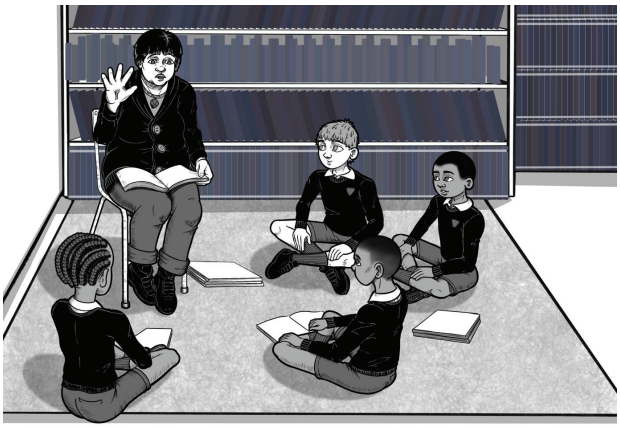
The sections below first discuss features of archetypal mentor-novice interactions common to all three teachers, as these provide a foundational explanation of both the gestures and the postures taken up by teachers. This is followed by a discussion of the gestures teachers use, firstly the archetypal gestures shared by all three teachers and then idiosyncratic gestures in the practice of one teacher. Finally, there is an analysis of postures taken on by teachers during Reading on the Mat. These are used instead of beat gestures to draw learners' attention.

The mentor–novice relationship

Goodwin (2007) suggests that small groups such as the learners and teachers on the Mat are an archetype for inducting novices into community practices, a 'primordial site for the organization of human action, knowledge and cognition' (p. 60). The considerable overlaps in the three teachers' non-verbal behaviours on the Mat can most easily be explained by archetypal behaviours. The postures of teachers, their habits of eye contact and the gestures they used were all typical of the mentor–novice behaviour described by Goodwin (2010) and Luke (1992). If learners did not immediately understand a gesture, then the teacher confirmed its meaning verbally, explicitly identifying the work of the group or of individuals in it.

On the Mat teachers all sat close to the learners, leaned forward, demonstrated on and pointed to books or cards. They nodded for approval or shook their heads for disapproval in similar ways. They put fingers to their lips for silence and drew attention by pointing or by tapping learners on the knee. They held a palm outwards as depicted in Figure 2 to communicate *stop* or made a pushing movement with the whole arm for *go away* or *sit back*.

The daily repetition of these movements at close proximity ensured that learners were quickly inducted into the appropriate responses to teachers' non-verbal signals whatever their home language or cultural background. At the end of the year, all the groups in the three classes were more confident of teachers' expectations and teachers spent less time reinforcing requirements verbally.



Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 2: Mrs Michael uses an archetypal metaphoric gesture – hand held up – to communicate *stop reading*.

Gestures on the Mat

Deictic forms and automatic signals

The concordance analysis that was part of the initial review of Instrumentalities showed an extensive use of deictic forms such as *these, here, that* or *this*. In fact, nearly 90% of the pronouns used by each teacher were deictic and needed a nod, a touch or glance to complete their meaning (Van der Mescht 2013). This is in line also with the findings of McNeill (1992). These enactments showed that teachers were conscious of the need to locate the activity of the group in the texts and artefacts they were reading from.

The prevalence of deictic forms shows how concrete and referential instruction on the Mat was. Teachers' closeness to texts and learners made it possible for them to make their intentions clear, for example: 'What is that? … That's a fish, but what is the fish in? And what's this child doing?' (Mrs Samuels). While deictic gestures were used with great frequency on the Mat they were used to clarify verbal deictic forms and did not add to the content of teaching.

In addition to the many deictic forms, some instructions were completely replaced by gestures, a practice that McDermott et al. (1978) also observed with a teacher of young readers of whom they write that 'precise verbal formulation can be replaced by a no less precise, but far simpler head nod or hand gesture. On occasion, a gesture can stand on its own as the sole signal for a prolonged context' (p. 248). In just this way, Mrs Dane placed a finger on her lips for silence and Mrs Samuel and Mrs Michael nodded to indicate 'Read now'. Towards the end of the year, a series of communications with learners were entirely non-verbal allowing the activity to continue uninterrupted. McDermott et al. (1978) maintain that group members' responses confirm the validity of non-verbal interpretations and learners did indeed respond appropriately to these non-verbal signals, showing that they understood their communicative intention.

Idiosyncratic gestures as a teaching semiotic

In addition, all the teachers used idiosyncratic gestures of their own invention to teach the content of the lesson and iconic and metaphoric gestures dominated this aspect of their instruction. Iconic gestures often resembled the letter shapes that were being taught. Mrs Michael, for example, made a Y-shape of the thumb and forefinger pointed at the learner to mimic the Y-shape, verbalising it as 'pointing at *you'*. Mrs Samuel held David's fists in a hitch-hiker's gesture to demonstrate the difference between *b* and *d* as illustrated in Figure 3.

Enactment of this kind embodied learning in three different ways. Firstly, teachers encouraged learners to copy their gestures, embodying the learning through movement as well as sight as the illustration in Figure 3 shows. Teachers might also shape the gestures the learners were making by touching learners' hands or bodies, adding the kinesthetic stimulus of touch. As Figure 5 shows, learners copied gestures spontaneously, an indication that they were intuitively seeking both auditory and kinesthetic stimulus.

In addition, Mrs Dane had developed iconic gestures into a coherent system of non-verbal support that she identified as her own innovation. Her practice is therefore worth examining in greater detail. She called them 'mnemonic hooks' and said: 'Non-verbal language that hopes to make associations to words. … Anything I can think of to make them learn a word' (Mrs Dane, Interview).

Mrs Dane's gestural cues (Figure 4) therefore helped learners' recall through embodiment, especially of words that could not be sounded out phonetically. Mrs Dane developed and used many iconic gestures. Examples were *come* (fingers scooped towards her), *home* (arms over her head as a roof), *here* (finger pointed downward to herself), *out* (hand pointed to door), *away* (pushing movement), *Digger* (scratched at the ground), *key* (mimed putting a key in a lock) and *want* (stamped feet as in a tantrum).

Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 3: Mrs Samuel demonstrates the difference between *b* and *d.* Learners embody her teaching.

Mrs Dane introduced the gestural mnemonic to learners at the same time as presenting the new word on a flash card. Importantly, she usually added a verbal explanation of the mnemonic, tightening the link between meaning and gesture in the way that the theory of embodied cognition suggests is most beneficial to recall. She encouraged learners to imitate her actions, embodying their learning experience through sight and kinesthetics. For example, when teaching *here,* she pointed downward between her eyes and said 'The e ... e is like my two eyes and I am *here* between them'. See Figure 5 where a learner copied that movement. The gesture for *come* was 'like a curly c'.

If learners hesitated in their reading, Mrs Dane said 'Look at me' and performed the mnemonic gesture. She gave the word only verbally if these cues failed; in contrast to Mrs Michael and Mrs Samuel who immediately prompted readers verbally. Mrs Dane also performed the gestures during reading and her learners looked at her for this guidance.

Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 4: Mrs Dane introduced the metaphoric gesture *help* together with the word on a flash card.

Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 5: Mrs Dane mimed *here*. The learner at the back embodied her learning by copying Mrs Dane.

Some also performed the gestures themselves while they read, demonstrating the embodied cue. In contrast Mrs Samuel and Mrs Michael used repetition to teach words that could not be broken down phonetically.

Mrs Dane's practice showed that iconic and metaphoric gestures can be used deliberately by interested teachers as a teaching resource. Her practice demonstrates how the *choreography* of the event (Erikson 1982) can be taught to young learners, embodied through teachers' enactment and then used deliberately in teaching and learning. In South Afrika, Chikiwa and Schafer (2019) assert that:

> It is therefore important that the appropriate use of gestures be recognized as a legitimate teaching strategy that supports good teaching, and I argue that for gestures to be meaningful they should be used strategically (p. 4)

The idea that teachers might or should learn to teach using congruent gestures leads to the question of whether it is possible for teachers to deploy this semiotic strategically while they are also presenting content verbally and managing learning. The practice of Mrs Dane suggests that it might be. I return to this point in the conclusion.

Teachers' postures in reading on the Mat

In contrast to the research into gestures, little has been done to examine the role of postures in teaching. However, a salient feature of the three teachers' practices was that they all assumed and held seated postures for extended periods as they taught on the Mat. Taylor (2014) suggests that non-verbal 'silence' is not possible (p. 3) and the postures on the Mat asserted aspects of the teaching and learning while teachers were not speaking.

The analysis showed four clearly identifiable postures with a functional link to activities. The three teachers all communicated the work of the group in postures of *attending*, *teaching*, *directing* and *receptivity*. Each posture was expressed in its own cluster of non-verbal signals and, very importantly, was also confirmed verbally to the learners, for example, 'I can't hear you' (*attending*), 'I hope you're watching, you two' (*teaching*), 'Follow. You must follow', (*directing*) or through social exchanges in the *receptive* posture. Learners and visiting adults showed that they also understood these postures by waiting until the posture and therefore the group's activity changed. Like gestures, therefore, these four postures provided an archetypal communication frame to teaching on the Mat. The features of each posture are tabulated in Appendix 1 against the indicators developed by McDermott et al. (1978), and the differences between teachers' practice are also captured there.

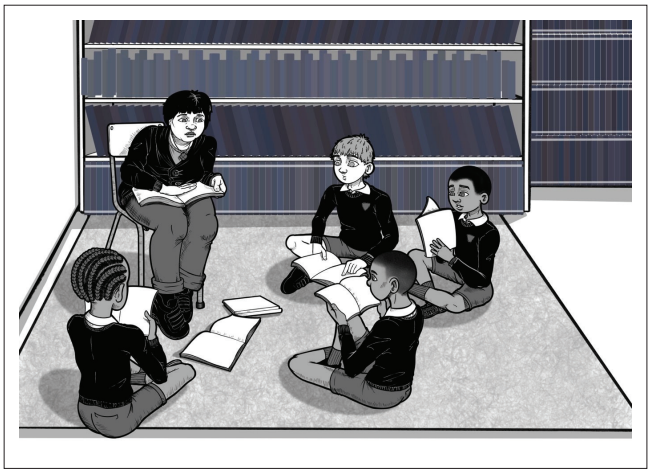
Postures differ from gestures in being static. In addition, communications made through postures had a markedly different function. Postural communications were not related to learning content but were instead adopted to regulate learners' behaviour. Teachers' postures signalled their expectations regarding learners' participation, that is, whether they should read or say words (*attending*), pay attention to instruction (*teaching*), correct their behaviour (*directing*) or initiate social exchanges. It therefore relates to critical theory that suggests that the body is a site of power negotiation and of identity construction in young readers. The following sections describe and interpret each posture in greater detail.

Posture one: *Attending*

Teachers took up the *attending* posture when learners read aloud and it showed that they were monitoring an individual's performance. The *attending* posture had two variations, firstly a *listening* pose, like that depicted in Figure 6, in which the teacher leaned forward with an ear inclined towards the reading learner. The second variation was a *watching* posture, like that depicted in Figure 7, in which teachers focused on the faces of reading learners, especially learners' eyes and lips as they formed words. In this posture, teachers responded to any signs of the learners' cognitive processes such as frowning, looking away or pointing to words. With their heads held still, teachers'

Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 6: Mrs Samuel *attending: listening.*



Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 7: Mrs Michael *attending: watching.*

glances flicked between the text and the learner's face. This aligned with Jordan and Henderson's (1995) observation that 'Gaze clearly plays an important role not only in coordinating conversational interaction … but also in carrying out physical tasks' (p. 44).

In both the *attending* postures the teachers' faces were immobile, even when they praised learners. Their head-eye orientation was towards the reading learner and their focus was intense and exclusive. They might become fixed in this posture until the learner had finished reading. Teachers' vigilance of the rest of the group was reduced until the reading ended. This rigidity and the continuous glancing between the text and the learner presented the Mat as a place of assessment as well as learning. Verbal communication from the teacher in this posture was minimal. Instead, there were long silences while a learner decoded words in the text. Both *attending* postures were accompanied by instructions to look at or to point to words in the text. The teacher sometimes joined the reading or provided a correct word, confirming her own focus on the activity. From this posture, the teacher directed turn-taking, sometimes verbally, but mostly non-verbally with a nod or glance as described earlier by McDermott et al. (1978). Because teachers were focused on the learner as well as on their reading this posture contributed to the strong group boundary or external border work maintained on the Mat.

When the teacher was in either of the *attending* postures the reading learner's head–eye orientation was to the book and other learners' postures usually copied this. They usually conformed to the 'sit nicely' rule described later. However, while the teacher was *attending* the learners who were not reading were also most likely to show distraction or resistance. Then the teacher might signal her displeasure by entering the *directing* posture and holding it until learners conformed again.

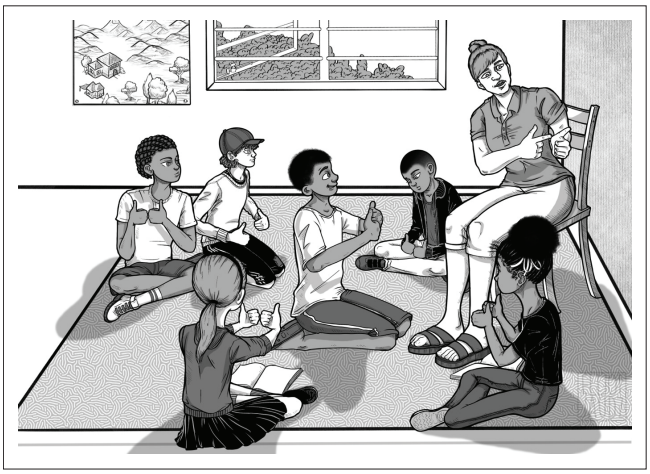
Posture two: *Teaching*

Teachers adopted the *teaching* posture when they explained reading strategies or the meaning of texts. In this posture, teachers asked questions and asked for repetitions. *Teaching* was directed to the whole group and teachers' head-eye orientation was to individual learners in turn (Figure 8). This was the most dynamic posture on the Mat with the most variation in the paralinguistic qualities of the voice: its speed, volume and pitch. Teachers exaggerated the face and lip movements necessary for correct pronunciation.

In the *teaching* posture, teachers' focus on the group was intense and they ignored outsiders markedly. They might reduce the distance between themselves and the learners by moving forward into the circle. Gestures were larger and more animated and became faster or more aggressive. Mrs Samuel jabbed cards at learners for emphasis. Figure 9 shows her demonstrating with her own hands. Note the twisted posture and the gesture across her body.

Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 8: Mrs Michael *teaching*, demonstrating meaning.



Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 9: Mrs Samuel *teaching* the difference between *b* and *d*. Learners embody their learning.

The *teaching* posture was characterised by more attention-getting movements like pointing, tapping, shrugging, twisting, finger clicking and clapping. In this posture, teachers scanned the whole group and made focused, deliberate eye-contact with individuals, using gaze to demand attention as Jordan and Henderson (1995) described earlier. In this posture, teachers touched books, texts and learners more than in other postures. Mrs Michael and Mrs Samuel shook pens or used them as pointers.

When teachers were in this posture learners' focus on the teacher was high and the teachers verbally ensured that it remained so, frequently saying 'Look here' or 'Look at me'.

Posture three: *Directing*

The *directing* posture was used to instruct, correct and reprimand and therefore corresponds in the non-verbal mode to Bernstein's *regulative discourse* (Singh 1997) with which teachers create and maintain order in their classes. It was usually directed to individuals rather than the whole group.

Metaphoric gestures, that is, gestures that symbolise rather than refer to an object or demonstrate a shape, were used overwhelmingly to regulate learners' behaviour, like the archetypal gesture depicted in Figure 2: *Stop*. Teachers used the *directing* posture as they established the day's activities and it was also triggered by noise or inattention. Because of this, it often blended with elements of the *teaching* posture.

The *directing* posture lasted as long as it took for approved behaviours to reappear. In this position, teachers' head–eye orientation was to the misbehaving individual and they patted or touched inattentive learners. Their bodies became rigid and tense. Teachers frowned or raised their eyebrows and also used metaphoric gestures like head-shaking or finger-to-lips. They might also clap (Mrs Michael) or click fingers (Mrs Dane and Mrs Samuel). Gestures might be abrupt or aggressive. The most vigorous gestures in this posture were the big hand and arm movements that told outsiders learners to go away and confirmed the strong group boundary on the Mat.

Significantly, in Mrs Dane's and Mrs Samuel's practices, the reprimanding aspect of the *directing* posture seldom made its way into the verbal domain. For them therefore, regulative discourse on the Mat was strongly non-verbal and postures and metaphoric gestures were used as a separate mode for controlling behaviour. The consequence was to reduce verbal communication on the Mat and to enable teaching and reading to continue uninterrupted while non-verbal direction and behaviour regulation took place at the same time. Transcriptions showed that Mrs Michael used nearly twice as much speech as Mrs Samuel or Mrs Dane because she regulated behaviour verbally while she was also teaching content, disrupting the pedagogic flow significantly.

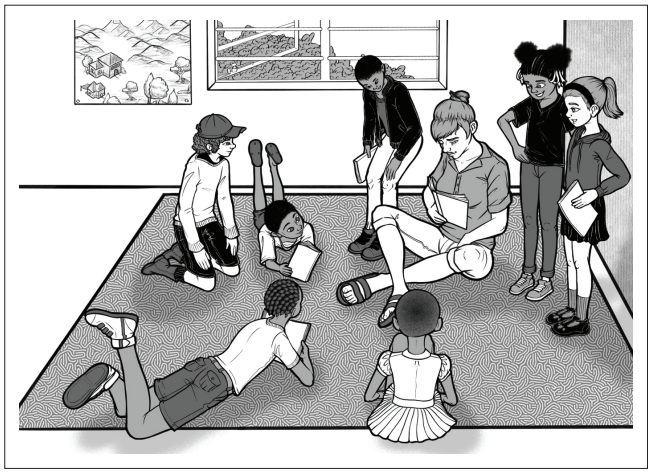
When teachers were in the *directing* posture they frequently told learners to *sit*, to *sit back* or to *sit nicely*. The approved reading posture was with legs crossed, fingers pointing to the book and head–eye orientation to the text. Mrs Michael would not start an activity until every learner was sitting like this. For Mrs Dane *sitting nicely* meant the school *hook and look* posture with legs crossed and arms crossed across chest. The most obvious purpose of this instruction was to draw learners' attention to the text, but it also emphasised the formality of Reading on the Mat by insisting on postural uniformity. However, it was also a norm that teachers immediately relaxed and learners sat sideways, lay, knelt or sat on their ankles without reprimand. See for example Figure 10. The correct reading posture represented the core purpose of the group and so teachers viewed it as outward, visible evidence as compliance with and attention to all activities on the Mat. This explains why teachers relaxed the rule: as long as learners' focus was observably high and they performed tasks successfully the postural signs of compliance were not needed. If a learner was inattentive, the teacher used the *sit nicely* rule as a euphemism for *pay attention*. Mrs Samuel made the link explicit when she said: 'Nolundu, we are reading this now. Put that down. Come, sit up! What is this, Nolundu?'

When teachers were in the *directing* posture, learners' vigilance regarding the group activity was high. They were alert and immobile, and their head–eye orientation was towards the teacher.

Posture four: *Receptive*

Finally, teachers expressed relaxation and availability through a receptive posture. This posture also communicated satisfaction with learners' independent activities on the Mat such as silent reading or word building.

Unlike the other three postures, the *receptive* pose did not have an identifying verbal instruction. Instead, in this posture, teachers responded to learners' spontaneous questions and comments and their responses were social as well as guiding. There was little monitoring of the group. In this posture, teachers increased their distance from the group by leaning back and stretching out their legs as Figure 11



Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 10: Learners in Mrs Samuel's class breaking the 'sit nicely' rule.

Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

FIGURE 11: Mrs Dane in the *receptive* posture. A learner asks for an opinion on her work.

shows. There was no particular head–eye orientation and all gestures were slower, more moderate and less emphatic. Teachers raised their heads and viewed the whole class or lowered their gaze and attended to administrative matters or the work of learners not in the group. Their faces relaxed and they nodded and smiled more readily. They might call out instructions to learners in the class or have conversations with adult outsiders openly, thus also relaxing the boundary of the group. In this posture, learners might pat or tap the teacher for attention or lean against her: touch in this posture was usually initiated by learners.

The teachers in the study used the *receptive* posture differently. Mrs Dane entered this posture after any instruction that learners should work independently. She also assumed this position as she waited for learners to leave or arrive. Mrs Michael and Mrs Samuel, however, attended to administration or to the requests of outsiders more readily and therefore also moved in and out of this posture when learners were reading. This created a mixed non-verbal message for viewers. Early in the year, learners stopped reading when they saw Mrs Michael and Mrs Samuel in the *receptive* posture and waited for their teachers to take up the *attending* posture again. This showed that they understood the communicative intention of the posture. When teachers were in the *receptive* posture learners' vigilance was at its lowest and they usually became absorbed in activities of their own like packing or interacting with each other.

Differences in enactment

There were differences in the clarity of teachers' non-verbal communication which are worth noting. Mrs Dane signalled the activity of the group not only by taking up each posture according to the function of a particular phase of Reading on the Mat, but also by holding each posture for extended periods to the point of theatricality. Because Mrs Dane's postures were clearly defined from each other, they provided reliable ongoing information about the work of the group and her expectations of the learners.

For Mrs Michael and Mrs Samuel, however, there was sometimes confusion between the *attending* and *receptive* postures as described earlier, although the *teaching* posture was always easily identifiable. This was because Mrs Michael and Mrs Samuel were more likely to follow the reading in their own text, rather than to watch the learner or to adopt a *listening* posture. For Mrs Michael, the difference between *teaching* and *directing* could also be blurred as she was most likely to reprimand learners.

Discussion

This research investigated teachers' gestural and postural enactments during reading literacy instruction in the Foundation Phase. It identified and described these enactments to understand their function. However, research that examines the subtle nuances of interaction must work in the microcosm and a limitation of this research is that it reports on only three teachers' practices in a single teaching event. Nevertheless, it is possible to make useful observations from these teachers' practices.

A first key finding of the research is that teachers of young children enact their teaching using archetypal as well as idiosyncratic gestures. Iconic and metaphoric gestures dominated the practices of these teachers while deictic gestures indicated texts and materials. One teacher showed that is possible to develop iconic and metaphoric gestures in the service of verbal instruction. Through gestures she embodied learning deliberately to enhance the word recognition skills of young readers.

The second key finding is that teachers used similar postures when teaching young learners on the Mat and that these were distinguishable by their function. The function was confirmed to the learners and to the researcher verbally by teachers. This both ensured that the learners aligned themselves to the purpose of the group and validated the researcher's observations.

Non-verbal elements maintained a strong group boundary and the postures and gestures of the teachers declared that Reading on the Mat was a valued, protected space for learners. At the same time, there was a high work focus on the Mat and the underlying mood was one of seriousness. Especially when *teaching* on the Mat, teachers' gestures were energetic, and they engaged directly and physically with learners. They demanded cooperation and attention. Seriousness was also conveyed by the rigidity of postures and the length of time they were maintained.

Teachers offered themselves as a resource on the Mat, most noticeably in the *receptive* pose but also by responding to learners readily, cuing and pointing to help them with their reading task. The underlying meaning of the gestures and postures was that the reading learner had a right to claim teachers' time and attention on the Mat.

Conclusion

These findings confirm observations of the non-verbal in other educational contexts that teachers use this semiotic in a variety of ways to enhance meaning and embody learning. The description derived from analysis points to the potential value of gestures and postures both in teaching and as a tool of interpretation in educational research. This has implications for a range of interested practitioners, teacher trainers and researchers.

For teachers, there is the opportunity to enhance their instruction by associating deictic, iconic and metaphoric gestures with teaching content in embodied learning. They can encourage learners to copy teachers' actions and the intimate group may encourage learners to adopt this learning style. Mrs Dane's practice exemplified this potential.

Teachers at all levels can be made aware of postures and gestures as non-verbal semiotics and can be encouraged in this route to embodying instruction. All teaching has a performance element that dovetails learning with demonstrations and movement. There was a theatrical element in the way in which Mrs Dane took on and maintained a pose, suggesting that it was partly conscious. Teaching for many practitioners is a dramatic encounter that could benefit from an awareness of this resource.

Teacher trainers therefor have a potential role in encouraging student teachers to experiment with and to master gestures and postures. This research suggests that South African teachers are using this semiotic in ways that can be expanded on. However, these findings also point to the need for further research into the gestural and postural enactments of teachers from other cultural or language backgrounds. There are doubtless valuable variations of practice in groups not represented by these middle aged, English speaking, white South African women.

Research into naturalistic educational environments benefits from the triangulation possible when both the verbal and the non-verbal are sifted together for meaning or significance. While there is debate on the universality of gestures, it is possible to confirm interpretations from the concurrent verbal mode.

Finally, as COVID-19 and other imperatives push practitioners towards online teaching it is worth considering the potential loss to teaching instruction in electronic modes that may exclude gestures and postures from teaching interactions.

Acknowledgements

The author thanks Elliot J. Oliver, elliotjaudz@gmail.com, whose line drawings from video stills illustrate this article.

Competing interests

The author declares that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Author's contributions

C.R.v.d.M. is the sole author of this research article.

Ethical considerations

Ethical clearance to conduct this study was obtained from the Rhodes University Faculty of Education, Department of Education Higher Degree Committee.

Funding information

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data availability

The data that support the findings of this study are available from the corresponding author, C.R.v.d.M., upon reasonable request.

Disclaimer

The views and opinions expressed in this article are those of the author and do not necessarily reflect the official policy or position of any affiliated agency of the author.

References

Alibali, M.W. & Nathan, M.J., 2012, 'Embodiment in mathematics teaching and learning: Evidence from learners' and teachers' gestures', *Journal of the Learning Sciences* 21(2), 247–286. https://doi.org/10.1080/10508406.2011.611446

Alibali, M.W., Nathan, M.J., Church, R.B., Wolfgram, M.S., Kim, S. & Knuth, E.J., 2013, 'Teachers' gestures and speech in mathematics lessons: Forging common ground by resolving trouble spots', *ZDM Mathematics Education* 45, 425–440. https://doi.org/10.1007/s11858-012-0476-0

Arzarello, F., Paola, D., Robutti, O. & Sabena, C., 2009, 'Gestures as semiotic resources in the mathematics classroom', *Educational Studies in Mathematics* 70(2), 97–109. https://doi.org/10.1007/s10649-008-9163-z

Barsalou, L.W., 1999, 'Perceptions of perceptual symbols', *Behavioral and Brain Sciences* 22(4), 637–660. https://doi.org/10.1017/S0140525X99532147

Barsalou, L.W., 2008, 'Grounded cognition', *Annual Review of Psychology* 59, 617–645. https://doi.org/10.1146/annurev.psych.59.103006.093639

Beilock, S., 2015, *How the body knows its mind: The surprising power of the physical environment to influence how you think and feel*, Atria Books, New York, NY.

Bloome, D., Carter, S., Christian, B., Otto, S. & Shuart-Faris, N., 2005, *Discourse analysis and the study of classroom language and literacy events – A microethnographic perspective*, Lawrence Erlbaum Associates Publishers, London.

Chikiwa, C., 2021, 'Gestures and the spoken language: A crucial semiotic and symbiotic relationship in multilingual mathematics classes', *EURASIA Journal of Mathematics, Science and Technology Education* 17(12), em2034. https://doi.org/10.29333/ejmste/11279

Chikiwa, C. & Schäfer, M., 2019, 'Visualisation processes in mathematics classrooms – The case of gestures', in M. Graven, H. Venkat, A.A. Essien & P. Vale (eds.), *43rd annual meeting of the international group for the psychology of mathematics education*, vol. 4, pp. 4–24, PME, Pretoria.

Chikiwa, C. & Schäfer, M., 2019, 'Teachers' use of verbal language to evoke visualizations in multilingual mathematics classes', *Perspectives in Education* 37(2), 124–140. https://doi.org/10.18820/2519593X/pie.v37i2.9

Cienki, A. & Müller, C., 2008, *Metaphor and gesture*, John Benjamins Publishing, Amsterdam.

Cochet, H. & Vauclair, J., 2014, 'Deictic gestures and symbolic gestures produced by adults in an experimental context: Hand shapes and hand preferences', *Laterality: Asymmetries of Body, Brain and Cognition* 19(3), 278–301. https://doi.org/10.1080/1357650X.2013.804079

De Koning, B.B. & Tabbers, H.K., 2011, 'Facilitating understanding of movements in dynamic visualizations: An embodied perspective', *Educational Psychology Review* 23, 501–521. https://doi.org/10.1007/s10648-011-9173-8

De Koning, B.B. & Tabbers, H.K., 2013, 'Gestures in instructional animations: A helping hand to understanding non-human movements?', *Applied Cognitive Psychology* 27(5), 683–689. https://doi.org/10.1002/acp.2937

Deacon, R., 2006, 'Michel Foucault on education: A preliminary theoretical overview', *South African Journal of Education* 26(2), 177–187.

Department of Basic Education [DoE], 2023, *PIRLS 2021: South African Preliminary Highlights Report*, Department of Basic Education, Pretoria.

Department of Education, 2008, *Teaching reading in the early grades: A teacher's handbook*, Government Printer, Pretoria.

Department of Education, 2011, *Curriculum and Assessment Policy Statement: English Home Language Foundation Phase*, Government Printer, Pretoria.

Edwards, L.D., 2009, 'Gestures and conceptual integration in mathematical talk', *Educational Studies in Mathematics* 70, 127–141. https://doi.org/10.1007/s10649-008-9124-6

Erikson, E., 1982, 'Audiovisual records as a primary data source', *Sociological Methods and Research* 11(2), 213–232. https://doi.org/10.1177/004912418201100200 8

Fountas, I.C. & Pinnell, G.S., 1996, *Guided reading: Good first teaching for all learners*, Heinemann, Portsmouth, NH.

Fountas, I.C. & Pinnell, G.S., 2017, *Guided reading: Responsive teaching across the grades*, Heinemann, Portsmouth, NH.

Gallagher, S. & Lindgren, R., 2015, 'Enactive metaphors: Learning through full-body engagement', *Educational Psychology Review* 27, 391–404. https://doi.org/10.1007/s10648-015-9327-1

Glenberg, A.M., 2010, 'Embodiment as a unifying perspective for psychology', *Wiley Interdisciplinary Reviews: Cognitive Science* 1(4), 586–596. https://doi.org/10.1002/wcs.55

Glenberg, A.M., 2011, 'How reading comprehension is embodied and why that matters', *Journal of Elementary Education* 4, 5–18.

Goldin-Meadow, S. & Alibali, M.W., 2013, 'Gesture's role in speaking, learning, and creating language', *Annual Review of Psychology* 64, 257–283. https://doi.org/10.1146/annurev-psych-113011-143802

Goodwin, C., 2007, 'Participation, stance and affect in the organization of activities', *Discourse and Society* 18(1), 53–73. https://doi.org/10.1177/0957926507069457

Goodwin, C., 2010, 'Multimodality in human interaction', *Calidoscópio* 8, 85–98. https://doi.org/10.4013/cld.2010.82.01

Govender, R. & Hugo, A.J., 2020, 'An analysis of the results of literacy assessments conducted in South African primary schools', *South African Journal of Learnerhood Education* 10(1), a745. https://doi.org/10.4102/sajce.v10i1.745

Hare, A. & Sinclair, N., 2015, 'Pointing in an undergraduate abstract algebra lecture: Interface between speaking and writing', *Proceedings of PME39* 3, 33–40.

Howie S.J., Venter E., Van Staden S., Zimmerman, L., Long, C., Scherman, V. et al., 2007, *PIRLS 2006: Progress in International Reading Literacy Study Summary Report. South African Learners' Reading Literacy Achievement*, University of Pretoria, Pretoria.

Howie, S.J., Van Staden, S., Tshele, M., Dowse, C. & Zimmerman, L., 2012, *PIRLS 2011: South African Children's Reading Literacy Achievement Report*, University of Pretoria, Pretoria.

Howie, S.J., Combrinck, C., Roux, K., Tshele, M., Mokoena, G. & McLeod P.N., 2017, *PIRLS Literacy 2016: South African Highlights Report (Grade 4)*, University of Pretoria, Pretoria.

Hutchins, E. & Palen, L., 1997, 'Constructing meaning from space, gesture, and speech', in L.B. Resnick, R. Saljo, C. Pontecorvo & B. Burge (eds.), *Discourse, tools, and reasoning: Essays on situated cognition,* pp. 23–40, Springer-Verlag, Sage Publications, London.

Hutto, D.D., Kirchhoff, M.D. & Abrahamson, D., 2015, 'The enactive roots of STEM: Rethinking educational design in mathematics', *Educational Psychology Review* 27, 371–389. https://doi.org/10.1007/s10648-015-9326-2

Hymes, D., 1974, *Foundations of sociolinguistics: An ethnographic approach*, University of Pennsylvania, Philadelphia, PA.

Iriskhanova, O.K. & Cienki, A., 2018, 'The semiotics of gestures in cognitive linguistics: Contribution and challenges', *Voprosy Kognitivnoy Lingvistiki* 4, 25–36. https://doi.org/10.20916/1812-3228-2018-4-25-36

Jordan, B. & Henderson, A., 1995, 'Interaction analysis: Foundations and practice', *The Journal of the Learning Sciences* 4(1), 39–103. https://doi.org/10.1207/s15327809jls0401_2

Kendon A., 1988, 'How gestures can become like words', in F. Poyatos (ed.), *Cross-cultural perspectives in nonverbal communication*, pp. 131–141, C.J. Hogrefe, Lewiston, NY.

Kendon, A., 2004, *Gesture: Visible Action as Utterance*, Cambridge University Press, Cambridge, MA.

Kress, G., 2010, *Multimodality: A social semiotic approach to contemporary communication*, Routledge, Abingdon.

Kress, G. & Van Leeuwen, T., 1996, *Reading images: The grammar of visual design*, Routledge, London.

Kress, G. & Van Leeuwen, T., 2001, *Multimodal Discourse: The Modes and Media of Contemporary Communication*, pp. 21–22, Edward Arnold, London.

Lindgren, R. & Johnson-Glenberg, M., 2013, 'Emboldened by embodiment: Six precepts for research on embodied learning and mixed reality', *Educational Researcher* 42(8), 445–452. https://doi.org/10.3102/0013189X13511661

Luke, A., 1992, 'The body literate: Discourse and inscription in early literacy training', *Linguistics and Education* 4(1), 107–129. https://doi.org/10.1016/0898-5898(92)90021-N

Lye, J., 2008, *The discourse on language by Michael Foucault*, Brock University, viewed 14 December 2021, from http://www.jeeves.brocku.ca/english.courses/4F70/discourse.php.

Macedonia, M., 2019, 'Embodied learning: Why at school the mind needs the body', *Frontiers in Psychology* 10, 1–8. https://doi.org/10.3389/fpsyg.2019.02098

McDermott, R., Gospodinoff, K. & Aron, J., 1978, 'Criteria for an ethnographically adequate description of concerted activities and their contexts', *Semiotica* 24(3 & 4), 246–275. https://doi.org/10.1515/semi.1978.24.3-4.245

McNeill, D., 1992, *Hand and mind: What gestures reveal about thought*, University of Chicago Press, Chicago, IL.

McNeill, D., 2005, *Gesture and thought,* University of Chicago Press, Chicago, IL.

Roth, W.M., 2002, 'Gestures: Their role in teaching and learning', *Review of Educational Research* 71, 365–392. https://doi.org/10.3102/00346543071003365

Sabena, C., 2018, 'Exploring the contribution of gestures to mathematical argumentation processes from a semiotic perspective', in G. Kaiser, H. Forgasz, M. Graven, A. Kuzniak, E. Simmt & B. Xu (eds.), *Invited Lectures from the 13th International Congress on Mathematical Education*, pp. 541–559, Springer, New York, NY.

Shapiro, L., 2010, *Embodied cognition*, Routledge, New York, NY.

Singh, P., 1997, 'Review essay: Basil Bernstein (1996). Pedagogy, symbolic control and identity', *British Journal of Sociology of Education* 18(1), 119–124.

Skulmowski, A. & Rey, G., 2018, 'Embodied learning: introducing a taxonomy based on bodily engagement and task integration', *Cognitive Research: Principles and Implications* 3, 6. https://doi.org/10.1186/s41235-018-0092-9

Spaull, N., 2023, *2023 Reading panel background report*, Oxford University Press, Cape Town.

Taylor, R., 2014, 'Meaning between, in, and around words, gestures and postures: multimodal meaning making in children's classroom communication', *Language and Education* 28(5), 401–420. https://doi.org/10.1080/09500782.2014.885038

Taylor, S., Cilliers, J., Prinsloo, C., Fleisch, B. & Reddy, V., 2017, *Improving early grade reading in South Africa*, viewed 08 February 2022, from https://www.3ieimpact.org/sites/default/files/2019-03/GFR-pw2.10-Early-grade-reading southafrica.pdf.

Tran, C., Smith, B. & Buschkuehl, M., 2017, 'Support of mathematical thinking through embodied cognition: Nondigital and digital approaches', *Cognitive Research: Principles and Implications* 2(16), 1–18. https://doi.org/10.1186/s41235-017-0053-8

Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.

Watson-Gegeo, K.A., 1992, 'Thick explanation in the ethnographic study of child socialization: A longitudinal study of the problem of schooling for Kwara'ae (Solomon Islands) children', New directions for child development, no. 58. Winter 1992. Jossey-Bass Publishers, Hoboken, NJ.

Wehrle, M., 2016, 'Normative embodiment. The role of the body in Foucault's genealogy. A phenomenological re-reading', *Journal of the British Society for Phenomenology* 47(1), 56–71. https://doi.org/10.1080/00071773.2015.1105645

Yeo, A., Ledesma, I. & Nathan, M., 2017, 'Teachers' gestures and students' learning: sometimes "hands off" is better', *Cognitive Research: Principles and Implications* 2, 41. https://doi.org/10.1186/s41235-017-0077-0

Appendix starts on the next page →

Appendix 1: Non-verbal behavior

TABLE 1-A1: Behavioural features of the postures (based on categories from McDermott et al. 1978:259).

Context of the posture: Indicators	Posture one: Attending (Listening to reading or observing reader – monitoring or assessing)	Posture two: Teaching the group (Explaining texts or pictures – questioning)	Posture three: Directing the individual (Enforcing behaviours – signals disapproval)	Posture four: Receptive (Allowing or approving – signals relaxation)
Talk – the degree to which the teacher consistently produces a particular kind of speech act	Child reader/children in unison. Teacher assists by joining or leading. Mrs D allows silence.	Explanation and demonstration on text. Pointing to draw attention. Repetition. Rhetorical and real questions. Paralinguistic variation.	Reprimand (very seldom) Mrs D and Mrs S not recorded; Mrs M seldom. Use non-verbal to discipline and verbal to teach (Mrs D most, Mrs M least).	Little talk. This is where social conversation takes place. Relaxed face, smiles, nods.
External border work – the degree to which teachers actively mark themselves off from others by gaze aversion, etc. D's attention to others is discreet; M & S more public	Intense, but Mrs D's boundary is permeable to silent Ls who read over the shoulder. Teachers are not unconscious of others, just appears to be.	Intense, to the extent of being unaware of outsiders rather than merely ignoring them.	Intense, until behaviours are at an acceptable level.	Weak border work: accepts outsiders openly and conducts conversations. Mrs M not. Mrs S and Mrs D signal that they are available for interaction. Mrs M usually focuses on admin – not available to outsiders
Internal border work – the degree to which teachers have access to learners and resources. Approach. Touch.	Generally: established through seating at the beginning of RoM. The ability to see the child is key. Touch draws learners' attention. Mrs S: most emphatic with weakest. Careful not to obscure text. Mrs D handles books for Ls, not for herself. Blocks strategically. Mrs S and Mrs M use pencils. Mrs S adept at demonstrating on text.	Decreases distance by entering the middle of the circle with materials or body. Increased size of gestures. High levels of touch of books, cards, children. Mrs S and Mrs M use pens/pencils	Touch. Finger to lip. Head or finger shake. Movements may be abrupt or vigorous. May deflect discipline onto seating instruction. See Mrs S.	Increases distance by leaning back, raising head OR bending over writing etc. Touch initiated by learner with Mrs S and Mrs D – hand on shoulder. For Mrs D this posture signals a 'your choice' activity/silent reading.
Focus – the degree to which the teacher directs her head-eye orientation towards children.	Generally: intense, alert, focused. Glance quickly from text to child Appears more assessing. Two modes: (1) the listener (hunched, head lowered). (2) the observer: intense focus on the child's face. M and S: Watching and listening go together. Watch text and child together. During unison text reading Mrs M withdraws focus.	Animated. Attention-getting body language – pointing, eye contact. Glances sharply round group to check attention. Mrs D: More emphatic in card-work Mrs M: More emphatic in word hunts and rhyming words Mrs S: More emphatic in word focus; animated for 'good reading'.	Intense. Gaze locked on misbehaving child.	Gaze is withdrawn from circle. No particular head-eye orientation.
Vigilance – the degree to which the teacher actively monitors group members for response	Little, unless in round-robin /unison reading. Mrs M shows 'scanning gaze' most during reading rather than child-to-text.	Intense – check constantly for attention. Mrs M: After instructions monitors closely to see individuals are complying.	Triggered by noise or inattention – vigilance relaxes when the levels are acceptable.	Weak – little monitoring; casual.
Concerted activities – the degree to which the teacher moves in apparent response to identifiable contexts. Also: the size of the gesture; vigour OR rigidity and immobility. Mouth and face animation.	Minimal, within individual variation (Mrs S = restless; Mrs M & Mrs D still). Face immobile. Mrs D and Mrs S: when learners are reading may become more rigid and immobile: locked onto the reading child. Mrs D: high five for finished reading. Mrs S: Over-enunciation with exaggerated facial movement. Mrs S: 'cuing look' mimed expectation with open eyes & raised brows. Also silent nod = 'read' Mrs D shapes mouth to coming word. Gestures may be more emphatic with word work/cards.	Maximal. Most animated. Big gestures, click fingers Individual styles emerge: Mrs D: flirtatious, coy, teasing: head to side. Mrs S: vigorous. Big. Energetic. With cards kneels, crawls, twists. Mrs M: intense, urgent.	Body rigid and tense (Mrs M and Mrs S). Aggressive finger pointing. Mrs M: claps hands for emphasis, or pats hands together	Slower head turns and hand gestures NB: Mrs M and Mrs S mix attending and receptive postures, usually because they attend to outsiders (S) or admin (M) during reading.
Vigilance of children – the degree to which the children must monitor the teacher for instruction/guidance	Problematic during reading as learners need to attend to the text not the teacher. If this is high their focus is fragmented.	High focus on teacher.	High: Alert and immobile.	Low – usually absorbed in own occupation. Little attention on teacher.

Source: Van der Mescht, C., 2013, 'Positions on the mat: A micro-ethnographic study of teachers and learners' co-construction of an early literacy practice', PhD thesis, Education Department, Rhodes University, Grahamstown.