Language and Meaning: How We Learn
Multimodal learning

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Hi, I'm Rosie Flewitt and this podcast is about analyzing video recordings of multimodal interaction. It forms part of the Open University Masters level module E852, called Language, Literacy and Learning in the Contemporary World.

I've been involved in multimodal research of interaction in home and classroom contexts for over a decade now, and I'm particularly interested in how students and teachers negotiate learning processes through multiple modes, not only through talk, but also through the use of gaze, body movement, posture and through the material world, for example how space and objects are used in teaching and learning contexts.

In this video, I'm going to show you how to combine sociocultural theories of learning with multimodal analysis, and how to make multimodal transcriptions of video data.

I hope this will help you to gain new insights into your own professional lives, and to reflect on how you might re-design your teaching to support your students' learning more effectively.

You'll find this video particularly useful if you plan to use multimodal analysis in your end-of-module assessment.

We'll begin by analysing a short extract from the video you first watched in Part 3 about teaching and learning in an inner London primary school.

Watch this 2 minute video clip of Arif and Tanya completing a set task that involves cutting out and piecing together a map of the London underground. As you watch the children and listen to the teacher talking, think about how the pedagogic approaches used in this class shape the children's learning experience.
(Play short extract of 2 minutes 15 seconds extract from Woodberry Down classroom video: from time code 11:10:12 - 13:25:02: i.e. beginning with teacher saying 'what I want you two to do…' to girl saying 'which colour shall we do now?')
> Teacher talking to the children at their desks

Sarah Mather
so what I want you two to do is talk to each other about how you might solve it OK. And I want to hear lots and lots of speech about how you are going to solve the problem. I want you to talk to each other about it OK. Describe what you're doing as you're going along Tanya OK.
Close up of teacher talking to camera
In terms of children teaching. They're not only benefiting the child that they are teaching but they are also um having benefits from that themselves. And that in order for them to teach its necessary for them to know the subject knowledge and for them to know what they're going to teach quite clearly so they can pass that information on in a very concise and very um well explained way.

Boy and girl working together with a tube map puzzle

Tanya
That ones goes there alright? Sudbury. Nope. See it don't match, it's not it. So …

Arif
It doesn't match.

Tanya
No. So fine. So we look at this one. And we put it together.
CU of teacher talking to camera

Sarah Mather
I would quite carefully choose which children teach each other. You certainly want to choose children to be teachers who would be able to build the confidence and self esteem of other children in the class. And also you would want to make sure that the child who was being the teacher was going to be a good model.
Boy and girl working together with a tube map puzzle

Tanya
Nope

Arif
No, that's not matching because that's too …

Tanya
It don't match does it? Ok. So we know that this, um, goes there. Let's try and look for the dark blue lines. So, this could be one. Does that match?
Children working together with map

Arif
That's upside down. South.

Tanya
South. Yeah, so that's one. No we can't have them. This is one, because it's South Acton. There's one.

So here's one and here's one.

I think that might be necessary. Yeah you found one.
OK, OK, here's another one. It looks like it can't be this one cos it goes from, it can't be this one cos it goes from, down then it goes up so it might be this one.

Arif
This one … this one, this one.

Tanya
Its' this one. Yep, OK which, which colour shall we do now?

(Play short extract of 2 minutes 15 seconds extract from Woodberry Down classroom video: from time code 11:10:12 - 13:25:02: i.e. beginning with teacher saying 'what I want you two to do…' to girl saying 'which colour shall we do now?')

> (sound track from video)

(RF talking to camera)
So wWhat insights can multimodal analysis bring to this short video clip of two pupils collaborating in a set task?

Of course, there are many different ways to approach this data, depending on what your research interests might be.

For example you might want to focus on how this school supports learning with and through a second language; or how the teacher and pupils use different types of talk for learning; or how the students are encouraged to collaborate in their learning.

There are always many different ways to view and interpret even the smallest data sample.

Research Question
    The first thing we need when conducting any kind of analysis is a clear research question or research aim. For the purposes of this short analysis, our question is:

Research Question
  How is collaborative learning constructed through multiple modes in this sociocultural context?
(Text appears as words are spoken)   How is collaborative learning constructed through multiple modes in this socio-cultural context?

Background Information
Research Site:
Research Participants: To begin our analysis, we need to 'set the scene' by first describing what we know about the social and cultural contexts we are studying.

Pause the podcast here and take a few moments to note down some of the key points that you know about the research site and the participants.

(Bullet points are added as they are spoken)
Background Information
Research Site:
•   inner city, multilingual primary school in London, England
•   well established ground rules and pedagogic approaches to promote an 'environment of learning' (e.g. 'hand up' and 'folded arms' signals to help children focus)
•   physical layout and resources are shaped by the English National Curriculum
        Here are a few things that we know about the socio-cultural context where this video recording was made:

The data was collected in an inner city, multilingual primary school in London, England.

The school has well established ground rules and pedagogic approaches that have been developed to promote what the teacher refers to as an 'environment of learning'. These include particular classroom communicative practices, such as the 'hand up' signal and 'folded arms' signal which are used to help children focus on what the teacher is saying or on what they are doing.

In our multimodal analysis of the video frame in the pre-viewing activity, we identified how the physical layout and resources in this particular teaching and learning environment are shaped by the English National Curriculum and its goals.

Background Information
Research Participants:
•   diverse cultural and linguistic backgrounds
•   many children are not proficient in English

        We also know something about the research participants. We know that this school has children from very diverse cultural and linguistic backgrounds,

and many of them are not proficient in English.

From a socio-cultural perspective, we need all this information in order to understand how the classroom interaction is situated in what Hymes refers to as 'the flux and pattern of communicative events' in this particular context.
(Video still of teacher- do not show time code)

We also know from the teacher interview that 'talk partners' are used in thise school to stimulate communication. When working with a talk partner, children can sometimes share their home languages or use more informal language with each other.

The rationale behind talk partner activities is that they provide a safe platform for children to experiment with their ideas, perhaps talking in their home language or using more informal language with each other, and this should increase their confidence and help them to construct answers to questions, before they have to speak out in front of the whole class – which could be quite daunting, particularly for newcomers who are unfamiliar with the language or with the classroom context.

(Bullet points are added as they are spoken)
Talk Partner Dyads
• child 'teacher' gives information in a concise and clear way to scaffold the other child's learning The teacher explains that she sometimes uses these talk partnerships for one child to take on the role of the teacher, with the aim of benefitting both partners:

the 'child teacher' has the opportunity to give information in a concise and clear way and to scaffold the other child's engagement.

Talk Partner Dyads
• child 'teacher' gives information in a concise and clear way to scaffold the other child's learning
• child 'learner' can exchange views 1-to-1 environment with peer
On the other hand, the 'child learner' has the chance to exchange views in the relative security of a 1-to-1 environment with a peer.

(Still frame from beginning of video clip that follows, show time code).
Now watch again this very short extract of the teacher setting up a talk partner task between two children. As you watch, notice not only what the teacher says, but also how she positions her body and directs her gaze as she talks:

(Show video 11:10:01-11:23:00 – begin as soon as teacher is visible between the two, and finish when she is no longer visible. Keep time codes).   Teacher in classroom talking to two pupils
Sarah Mather
OK so what I want you two to do is talk to each other about how you might solve it OK. And I want to hear lots and lots of speech about how you are going to solve the problem. I want you to talk to each other about it OK. Describe what you're doing as you're going along Tanya OK.

(Sound track from video)

(Freeze final video frame on screen)   So how would we go about transcribing what is happening here?
Teacher: Ok so what I want you two to do is talk to each other about how you might solve it ok and I wanna hear lots and lots of speech about how you're gonna solve the problem I want you to talk to each other about it ok describe what you're doing as you're going along Tanya ok?   Here is a basic transcript of the language that the teacher uses.

You'll notice that only the words have been transcribed here, and I took a decision to write them as I heard them, that is, to transcribe 'wanna' instead of 'want to' and 'gonna' instead of 'going to'. I did this so the transcription reflects the informality of the language spoken.
Teacher: Ok so what I want you two to do (.) is talk to each other (.) about how you might solve it (.) ok and I wanna hear lots and lots of speech about how you're gonna solve the problem I want you to talk to each other about it ok (.) describe what you're doing as you're going along Tanya ok? I could give more information about what is said, for example, by using a full stop between brackets to indicate brief pauses
Teacher: (leaning forward between the children and touching each one lightly on the arm as she talks) Ok so what I want you two to do (.) is talk to each other (.) (retracts both hands to

stop her hair from falling forwards) about how you might solve it (.) ok and I wanna (makes circular movement with right hand as talks) hear lots and lots of speech about how you're gonna solve the problem I want you to talk to each other about it ok (.) describe what you're doing as you're going along Tanya ok?

I could also add notes on the teacher's actions as she talks, as you can see here. This transcript now gives quite a lot of information about the teacher's contribution in this brief interaction, but its focus on language means that the other participants, Tanya and Arif, are left out. Does this mean that they are not participating in the interaction? From the language transcript, we can't answer this question.

NB In screen shots below, we'll show the whole script with the first spoken paragraph, like a page on the screen.

For 2nd para, use full screen width and focus on 11:08:10 transcription.

For 3rd para, focus on 11:13:30 transcription

For 4th para, zoom out to show whole script again as a page

Time

Time code/Ppt	Gaze	Action	Speech
11:08:10			
Teacher	flits from Tanya to Arif to Tanya, then rests with Arif	leans forward, touching each child lightly on arm as she talks	Ok so what I want you two to do (.) is talk to each other
11:08:10			
Tanya	to scissors	cutting out piece of underground map	
11:08:10			
Arif	to Tanya's cutting action	points to piece of underground map, retracts hand, nods in agreement with teacher's instruction to talk	
11:13:30			
Teacher	from Arif to Tanya	retracts both hands, holds her hair back	about how you might solve it (.)
11:13:30			
Tanya	to scissors	cutting out	
11:13:30			
Arif	to Tanya's actions	watching Tanya	
11:15:00			
Teacher	to Tanya	makes circular movement with right hand as talks	ok and I wanna hear lots and lots of speech about how you're gonna solve the problem I want you to talk to each other about it ok (.)

Here I have transcribed the same data in a multimodal matrix, with separate columns for the timecode and participant, and for the modes of gaze, action and speech.

At the first timecode in this multimodal transcript, marked 11:08:10, we can see in the 'Action' column that Tanya has taken the scissors and is already busy cutting out pieces of the underground map.

From the 'Gaze' column, we can see that Arif is watching Tanya's actions attentively. The teacher is dividing her gaze attention between Tanya and Arif, and Arif responds to her instructions by nodding, whereas Tanya shows no sign of responding.

At the second time code, marked as 11:13:30, we can see that Tanya is still At the At the second time code marked 11.13.30 we can see that Tanya is still focussed on cutting out and Arif is still watching her, but the teacher's gaze now switches away from Arif and remains fixed on Tanya throughout the rest of this brief episode, which is effectively telling Tanya that she is in charge of this teaching/learning dyad.

In this transcript I have only used the mode of language to represent the multimodal data, but it is also possible to include video stills or sketches of body posture as part of multimodal transcription.

The multimodal transcript therefore helps us to recognise how the teacher's talk, gaze and actions all contribute subtly yet distinctly to the meaning of this interaction.

(Bullet points are added as they are spoken)
• ideational meaning
• interpersonal meaning
• textual meaning In this brief extract, the teacher expresses ideational meanings principally through language, telling the children what she wants them to do.
Arif contributes ideational meaning through action rather than words, by nodding his head in recognition of what the teacher is saying.

Interpersonal meanings are established principally through gaze direction. By fixing her gaze on Tanya, the teacher allocates responsibility to her, and the role of 'teacher';

Tanya assumes this role readily, fixing her attention on the task in hand, whilst Arif averts his gaze and has not been given an active role. This places him in the position of 'learner'.

The teacher's more informal talk ('gonna' rather than 'going to' for example) also shapes the interpersonal meanings here.

 and tTextual meanings are therefore built up through the interplay of diverse modes.

(RF talking to camera)
Transcribing any data takes a long time, and multimodal transcription of video data is a painstaking process that involves repeatedly viewing, reviewing and checking short extracts.

It is very easy to under-estimate how long this process takes.

It is essential therefore to plan carefully not only how you are going to transcribe your data, according to your research aims, but also which particular data extracts you need to transcribe.

One useful technique when conducting multimodal analysis of video data is to view sections of the video without sound, ands this can help you to focus on what is happening in modes other than language, so let's try that now.

Show still frame, show time code

Watch this short video clip where the sound has been edited out, and focus on Tanya and Arif's actions, their gaze direction and their body posture.
(Show video time code 11:46 to 12:05, without sound). NB START video as soon as children appear on screen, and END on the last frame before the teacher reappears talking to camera.
        (Silence)
(Video still, as shown, with time code)
        You probably noticed how at the beginning of the activity, that the roles of the two children are quite clearly delineated: Tanya assumes a dominant body posture with her hands in control of the set task on the table, while Arif is allocated the more menial activity of cutting out the sections of paper.

(Video still frame, as shown, with time code)
        Once all the pieces have been cut out, Tanya begins to role model how to complete the activity by placing the pieces together to reproduce a map of the underground.

The gaze of both children is directed at the pieces and there is no gaze exchange. When one glances up, the other tends to avert his or her eyes to the task on the table.

This suggests that they are getting to know each other within the context of this activity, where Tanya has been given the role of teacher.

(Video still frame of beginning of next extract, i.e. 12:25) In the next episode we can see that the children's roles have begun to evolve. Watch this short extract and make a note of Tanya and Arif's speech, gaze direction and body movement.

(Play video 12:25 – 12:48, with sound)   Tanya

Ok. So we know that this, um, goes there. Let's try and look for the dark blue lines. So, this could be one. Does that match?

Arif
That's upside down. South.

Tanya
South. Yeah, so that's one….

(Video sound track)
(Video still frame, as shown, with time code,Tanya looking at Arif)   In this extract, we can see that Arif is now more actively involved and he is taking the initiative to select and comment on whether the pieces match or not.

Tanya is encouraging this by asking him questions, such as 'this don't match does it?', but she has also uses her body posture to open up the learning space for him by sitting in a more upright position. And This invites Arif to begin to handle the pieces and to point to where they might go.

The two students are now collaborating more equally in the activity, and although Arif's gaze remains on the task, Tanya begins to direct her gaze towards him occasionally, rather than focussing it on the task.

(Video still frame, as shown, with time code, Arif looking at Tanya)
          Now watch this final clip, and as you watch, note how Arif changes his gaze direction as he continues to play a more active and assertive role in the activity.

(Play 13:10-13:25 with sound and timecode.)   Two children working together in the classroom
Tanya
…. this one cos it goes from cos it goes from, down then it goes up so it might be this one.
Arif
This one yellow … this one, this one.
Tanya
Its' this one. Yep, OK which, which colour shall we do now?

(Video still frame, as above)   Arif's body posture, gaze direction and use of talk show how his confidence is increasing. Rather than being an observer, he is now fully included in the activity.

Tanya responds positively to his suggestions and raises her gaze to him as she hands over control by asking 'which colour shall we do now?'
Research Question

How is collaborative learning constructed through multiple modes in this sociocultural context?   So what does this brief teaching and learning episode tell us about collaborative multimodal learning in this socio-cultural context?

How is collaborative learning constructed through multiple modes in this sociocultural context?
•   Task set up as a scaffolding activity   This video clip is very short, but our brief analysis has revealed that the teacher set up the task as a scaffolding activity, in the sense of Wood, Bruner and Ross' definition.

How is collaborative learning constructed through multiple modes in this sociocultural context?
•   Task set up as a scaffolding activity
•   Meanings constructed through the interplay of modes   We have identified that the ideational, interpersonal and textual meanings were constructed not through language alone, but through the subtle interplay between modes, particularly gaze, action and talk

How is collaborative learning constructed through multiple modes in this sociocultural context?
•   Task set up as a scaffolding activity
•   Meanings constructed through the interplay of modes
•   Task evolved as 'guided participation' (Rogoff, 1999)   As the task progressed, the children's collaboration began to look more like Rogoff's notion of guided participation, that is, a collaborative process where Arif played the role of apprentice while Tanya supported his use of the particular learning tools used in the socio-cultural setting of this particular inner London primary school.

(Use still frames to illustrate the points made, e.g.
Frame 1: Arif less involved and Tanya in charge of the task
Frame 2: Arif actively engaged and children exchanging gaze   By closely observing how this process was negotiated through multiple modes, we have seen a dynamic shift in the development of both children's engagement in the learning task.

We have observed how Arif began by conforming to the less active role he had been given, but gradually and through multiple modes, he began to assert his independence to take on a more active role.

If the two children continued to work together and to build up mutual trust and respect, then their collaborative learning might begin to look more like Eve Gregory's notion of 'synergy'.

To be able to explore this more fully, you would need more video clips of the children working together, or you could contrast this activity with video of other dyads.

(Show a series of shots/ video stills from the video extract studied here)   So ILet's just recap on what we've considered in this video demo.

We've looked at how to analyse video recordings of multimodal interaction, and we've discussed the need to identify a clear research question before embarking on a piece of research.

For socio-cultural theory, we've also seen how it is important to understand and write about the background to any research study – where it is taking place, and who the participants are. We used a video still of the setting to help us identify some of these features before watching the video, and we also learnt a lot from the interview with the teacher.

We've looked at different ways of transcribing interaction, from a bare-bones transcription of language to a multimodal matrix,

and we've shown how ideational, interpersonal and textual meanings are negotiated through multiple modes.

Finally we've considered how to apply socio-cultural learning theory to classroom interaction, and how this can give telling insights into students' learning.

(RF to camera)
If you have access to a video camera and video editing software, you might choose to conduct multimodal analysis of teaching and learning processes in your own teaching situation for your end of module assessment. Remember though, that you will only need a small amount of video data, and from this you will select key samples for in-depth analysis.