

Codebook: Video based analyses of motivation and interaction in science classrooms.
- analytical framework for analyzing students' motivation to learn in science classrooms.

Categories		Code	Use of code
A: Students' actions and engagement	1.Content of students' talk	Subject matter (content-related talk)	Is used when students through talking seek or show understanding of the theoretical content of the lesson. Is also used when students, while doing practical work, explicitly refer to the relationship between what they do and the science subject matter.
		Practical organizing	Is used when talk is about arrangements for practical learning activities (when they are trying to understand what to do)
		Socially organizing	Is used when students talk about how to socially organize their work, discussion of division of labour and roles. This can also be in connection to the practical learning activities.
		Other things	Is used when student talk is not connected to science tasks or content.
	2.Students' actions: Indicators of motivation	Student generating ideas	Is used when students introduce their own ideas about science into discussion in class or in group-work. The science ideas do not have to be canonically correct. Is not used when students directly refer to formulation in text- books or other canonical material.
		Content related questions	Is used when students ask questions (of the teacher or of each other) related to the science subject matter
		Student's uptake of peer's ideas	Is used when students incorporate words or directly refer to utterances from other students.
		Gesticulating	Is used when students point or gesticulate in other ways.
		Seeking help	Is used when students <i>actively</i> call the teacher for help. Is not used when the teacher helps without being asked.
	3.Students' actions: Indicators of demotivation	Overruling peers	Is used when students directly tell peers to shut up, or imply that what they say is not relevant directly or indirectly by not listening.
		Easy solutions (shortcuts)	Is used when students' talk or actions directly indicate that students take a short cut to complete the task quickly.
		Helpless (giving up)	Is used when students say that they can't do this task, don't know how to do it etc. Can also be used when students don't finish the task without saying anything, but with a helpless attitude
	4.Students initiative and engagement	Procedural display (doing school)	Is used when students are "doing school": when the talk is about rules and regulations, homework assignments, lengths of these etc.

		Substantial interaction/engagement with academic content	Is used when students are “doing science”: construction, representation and evaluation of knowledge claims and investigative methods, showing that students are involved with academic content and issue.
B: Teacher’s actions, questions and responses	5. Teacher’s actions, questions and responses: indicators of an autonomy supporting teacher	Authentic questions	Is used when the teacher pose a question, which can be answered in various ways. A question not asked to elicit one single pre-specified answer but includes a request for information. Open-ended question with indeterminate answers are a sub-group of authentic but not all authentic questions have to be open-ended.
		High level evaluation	Is used when students get feed back focusing on their further development and learning process. Is also used when the teacher validates a students’ answer or contribution so it affects the subsequent course of the discussion. The response to a student’s contribution must be more than “good” or “good idea” to be coded as high-level evaluation.
		Encourage students’ questioning	Is used when the teacher explicitly incites the students to ask questions (sometimes connected to them posing hypotheses) and when the way the teacher handles a question from a student implicitly reveals continual curious questioning from the student(s).
		Teacher’s uptake	Is used the when teacher is incorporating a part of a students’ previous answer in their subsequent question or answer. Is not used when the teacher is answering a student’s question.
		Practical help	Is used when the teacher helps students with practical things, which may facilitate the implementation of the task, e.g. fetching or collecting things the students need.
	6. Teacher’s actions, questions and responses: indicators of a controlling teacher	Closed question	Is used when the teacher pose a question with one correct answer; a question where the teacher already knows the answer and asks to hear if the student knows the answer.
		Giving solutions/giving the answer	Is used when the teacher gives the answer or the solution to the students
		Directives/commands	Is used when the teacher ask students to do something very specific, in a specified way.
C: Approach to subject matter	7. Communicative approach	Interactive-authoritative	Is used when the teacher leads students through a sequence of questions and answers towards one specific point of view.
		Non interactive-authoritative	Is used when the teacher presents one specific point of view
		Interactive-dialogic	Is used when teacher and students are exploring ideas, generating new meanings, posing genuine questions and offering new answers, listening to and working on different points of view.
		Non interactive - dialogic	Is used when the teacher talk alone but considers various points of view: setting out, exploring and working on the different perspectives.
	8. Content perspective	Everyday perspective	Is used when content related problems are raised in a everyday context
		Scientific perspective	Is used when content related problems are raised in a scientific context