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Coding Manual

Types of teacher supportive behaviour

Events within Event Sampling (EiE)

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Coding guidelines

EiE-coding is always preceded by event sampling (cf. Staats, 2015). EiE-coding consists of three steps:

1. Initial check of the entire event
2. Identification of EiEs, which contain supportive behaviour / scaffolding activities by the teacher
3. Review of EiEs and coding according to the following categories:
 - Explaining instructional decisions (EID) → Code 1
 - Directing students' learning activities (DLA) → Code 3
 - Hints, instructions and explanations with respect to learning content (HIE) → Code 4
 - Positive feedback (PFB) → Code 5
 - Diagnosing (DGN) → Code 6
 - Cooperative dialogue at eye level (CDE) → Code 7

Important note for coders: Avoid interpretation!!!

Differentiation of EiEs

Content-wise, each EiE should form a distinctive unit. This unit may consist of one word, a clause or even several sentences. An EiE starts as soon as the teacher clearly begins to show supportive behaviour or a change in the teacher's supportive behaviour takes place and the interaction can be assigned to a category.

Criteria defining the beginning of a new EiE are:

- Change in communication partner
- Change in the type of supportive behaviour (i.e. change in category)
- Breaks in conversation (e.g. student monologue), applies if break > 1 second

Exceptions:

- **Coding of active listening or affirmative support of a student monologue.** If a student monologue is being supported (e.g. by saying "yes" or nodding), the entire sequence is considered an EiE (see category "PFB"). In this case, the standard value for breaks in conversation > 1 second does not apply. The student monologue must be related to the learning content.
- **No coding of interactive behaviour < 1 second within a category.** Words or interjections such as "eh", "yes?", "really?", "or?", "well...", "ok", "yes" or "great" are often part of a teacher's discourse without aiming at triggering a certain reaction in the students. In order to exclude them from coding, a standard value of one second is set for an EiE. **Interactions < 1 second are not to be coded!**

Interactive behaviour without coding

Not every element in teacher-student-interaction is coded. Besides student behaviour and sequences or interactions that cannot be assigned to one of the categories, there are also some kinds of teacher behaviours that are not relevant in the broader context of student support. These sequences are not coded.

The broader support context includes all kinds of behaviours (organizational and content-related) that can be related to the teaching/learning goals intended to be achieved in a lesson or through a specific task and provide learning support.

Behaviours that must not be coded:

- Student behaviours/actions
- All kinds of reactions to the research conditions
- Direct teacher feedback or reaction to some sort of (mis-) conduct which does not serve the learning progress
- The teacher him- or herself concentrates on the learning content (e.g. does on-the-spot research, thinking), without interacting with the students
- The teacher tries to catch the students' attention with rhetorical questions or phrases
- The teacher gives instructions outside of the support context
- "Private conversations" or conversations that cannot be related to the lesson's or task's teaching and learning goal

Category system

The category system consists of six support categories. A code is allocated to every EiE. The categories are defined and illustrated with examples below. When performing video analysis, an overlap of two categories (resulting from parallel verbal and non-verbal communication) can occur. The following chart illustrates the hierarchy of decisions:



VERBAL → everything the teacher says

NON-VERBAL → the teacher's gestures and facial expressions, e.g. pointing at something when reviewing results

„ACTIVE LISTENING“ → verbal and non-verbal support of student monologues

Explaining instructional decisions (EID) → Code 1

The teacher explains or justifies why a certain type of task, arrangement or the like has been chosen. Sometimes also the expected impact on the learning processes and the objectives are explained. Instructional explanations for e.g. an instruction (category DLA) often start with "because".

Dimensions	Descriptions
Explanations for instructional decisions	<ul style="list-style-type: none"> • Explains why materials are redistributed • Detailed explanation of the following steps in a lesson or instructional sequences • Explains or reasons about future tasks • Explains the learning goals/the learning results
Explanations for instructions / tasks	<ul style="list-style-type: none"> • Justifies his or her own behaviours • Justifies direct instructions • Reasons for methodical decisions • Explains the activating impulse of the tasks

Directing students' learning activities (DLA) → Code 3

The students are instructed what to do and, where appropriate, how to do it. They are thus provided with orientation for their learning behaviour. The impetus is e.g. based on the teacher's classroom management or the clarification of tasks/activating impulses. Directing students' learning activities can be a response to student behaviours (situational).

This category has an organizing character and relates to controlling student behaviour only, not to contents!

Dimensions	Descriptions
Research requests	<ul style="list-style-type: none"> • Makes assumptions, admits uncertainty, asks students for further research • Gives hints as to a source • Invites to independent research • Gives a hint for solving the problem independently by pointing towards a source of information • Points towards expert strategies (search in "help")
Directing student activities	<ul style="list-style-type: none"> • Gives hints as to solution strategies • Gives hints as to possible approaches for problem solving • Points towards the initial topic with questions • Gives instructions about what has to be done • Adds further possibilities for learning activities • Explains further organizational steps to the whole class • Gives information about the course of the lesson • Explains a procedure step by step • Asks which classmates could help • Changes the arrangement • Uses strategies in order to make students reflect and point out problems further • Ends the working phase • Calls for attention ("Please listen!"; "Look at this.")
Task clarification	<ul style="list-style-type: none"> • Gives instructions on how to fulfil the task • Re-phrases the task • Questions the task, gives students hints as to adjust the task

Hints, instructions and explanations with respect to learning content (HIE) → Code 4

The teacher provides the students with content information. The task is clarified with regard to its content. This can be done verbally, e.g. by means of instructions, hints and explanations. Content-related instructions can also be given through demonstrations, in which the teacher for example visualizes the individual steps of a working process etc.. Direct requests to act are not included in this category.

The content is in the focus!

Dimensions	Descriptions
Hints regarding content	<ul style="list-style-type: none"> • Explains that the content has been reduced to its essentials • Refers to sources of information and explains them • Gives hints for problem solving (practice-oriented) • Gives hints for problem solving by calling upon students' prior knowledge • Gives hints as to solutions through gestures • Gives content-related hints / food for thought • Refers to other or alternative contents • Refers to the previous lesson
Content-related instructions	<ul style="list-style-type: none"> • Uses pronouns when explaining actions ("One could either do this or that..." → no direct instruction) • Explains the problem the students cannot solve • Explains solutions • Gives the "right" solution • Solves the problem in an experimental setup, at the PC, on a board, on the task sheet etc. • Shows students how to do something / demonstrates it • Solves the problem giving explanations • In case of misconduct, the teacher takes over without giving much information • Answers students' questions with detailed explanations/ recommendations for action / instruction
Content-related explanations	<ul style="list-style-type: none"> • Gives additional information / background information • Gives a detailed explanation of the case • Explains concept • Uses examples for explanation • Answers content-related question in detail • Re-phrases a source at student level • Reports from own working experience • Explains the effects of a certain choice • Explains based on his or her source • Explains theory • Gives technical explanation • Explains how to relate specialist knowledge to the task • Re-phrases the task (adapts it to student needs) • Explains task using an example

Positive feedback (PFB) → Code 5

This category includes verbal and non-verbal teacher feedback. The student can be encouraged, motivated, pushed, supported etc. verbally. Non-verbally, active listening can be considered positive feedback because the teacher gives his or her students attention which might encourage them to follow a line of thought.

Important when coding active listening and support towards a student monologue: *Not every behavioural act on the teachers side (such as saying "yes", „yes, exactly“ or nodding) is coded individually, the entire sequence in which a student is supported through active listening is coded as **one** EIE!*

Dimensions	Descriptions
Feedback and praise	<ul style="list-style-type: none"> • Confirms facts • Confirms result / solution • Confirms student's assumptions • Praises • Gives summarizing feedback • Says thank you for the hints • Mentions deficient or wrong working results or processes
Encouragement	<ul style="list-style-type: none"> • Encourages students • Supports their activities • Motivates
Active listening	<ul style="list-style-type: none"> • Demonstrates physically that he or she is listening (not only eye-contact) • Supports student monologue by saying "mh" • Supports student monologue by nodding

Diagnosing (DGN) → Code 6

In this category, the teacher tries to find out where students are in their learning process and which problems they might struggle with. A diagnosis can be carried out verbally or non-verbally. A verbal diagnosis is often carried out by means of questions and rewording. As a part of non-verbal communication, the students' working results are reviewed. A corresponding action (e.g. taking the worksheet, bending over to look at the results) or gestures (e.g. pointing at something) must be clearly visible.

Dimensions	Descriptions
Checks prior knowledge	<ul style="list-style-type: none"> • Asks questions about the students' (working) experiences • Asks questions about the learning level • Asks for prior knowledge (definition)
Checks approach	<ul style="list-style-type: none"> • Asks whether students still need the provided materials • Asks if they need help • Asks whether they work on the task • Asks questions about problem solving strategy / procedure • Asks what students are working on • Observes students
Checks learning result	<ul style="list-style-type: none"> • Tries to reproduce student solution • Checks / reads student working results • Asks questions about student results • Asks questions about the state • Examines result • Compares results with students • Reflects student results with regard to the further use of the learning results (e.g. exam preparation).

Asks whether they understand the task	<ul style="list-style-type: none"> • Asks whether they can implement the task • Asks which question they are solving • Asks about uncertainties / the problem • Asks about the student's objective
Tries to categorize student problem	<ul style="list-style-type: none"> • Re-phrases • Formulates the problem in his or her own words • Tries to identify the problem level (procedure, task, prior knowledge etc.) • Asks how they feel

Cooperative dialogue at eye level (CDE) → Code 7

Students and teacher maintain a dialogue "at eye level". The teacher discusses, interprets etc. with the students at eye level in order to approach the problem. The teacher does not have an "edge in knowledge" in this context. Cooperation is necessary to find a solution.

Dimensions	Descriptions
Cooperative dialogue	<ul style="list-style-type: none"> • Joint, free association (of e.g. possible solutions) • Students discuss a topic with their teacher • Common exchange about a source (literature) • Share a PC in order to solve the problem