Design and evaluation of video portfolios : reliability, generalizability, and validity of an authentic performance assessment for teachers

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Apendices

Appendix 1 Aspects of learning activities

	Aspects of learning activities	Coaching interventions
Cognitive learning activities	**Orientation towards the complex task** The orientation towards the complex task involves determining what goal should be achieved and what domain-specific task requirements and task conditions are involved. Students need to take this domain-specific context into account while engaging in realistic planning and choosing an appropriate approach to fulfilling the task. It all comes down to learning to consider different approaches to realizing a product that complies with the requirements. Students have to learn to choose the best approach in the specific context. The orientation towards the task also includes determining what is needed to fulfill the task in terms of domain-specific knowledge, skills, materials, etc.	Questions - What are important task requirements that you should take into account? - Why did you choose this approach? - What are the advantages of this approach in this situation? Feedback - Alerting students to important task requirements that they should take into account. - Alerting students to knowledge that they need to fulfill the complex task. - Giving examples of appropriate approaches in different contexts. - Proposing alternative approaches.
	Searching for and organizing relevant information Searching for and organizing relevant information involves determining what information is needed to complete the complex task. Students need to know where relevant information can be found, and they should be able to judge the quality of the information obtained. Students should also be capable of selecting and organizing information.	Questions - How did you determine what information you needed to complete the complex task? - Where did you search for relevant information? - Are there any other sources where you can find information about x? - Is this information relevant in this case? - Do you think this information is up to date? Feedback - Giving clues as to where to find relevant information. - Giving examples of how to find relevant information.

	Aspects of learning activities	Coaching interventions
Cognitive learning activity	**Comprehending and using relevant subject matter** This learning activity involves comprehending and using technical facts, constructs, formulas, rules, routines, norms, and techniques. Students working on complex tasks run into problems like misconceptions of constructs or principles, or discover they are not acquainted with relevant facts, rules, or norms that should be applied. Students should be supported in this.	Questions - What is a cavity slat? - What kind of materials do you need to build a dam? - What calculation do you use to determine the volume of a ditch? - What is the standard height of a door? - If you choose to place a concrete floor, what are the consequences for the foundation? Feedback - Referring students to relevant theory.
Meta-cognitive learning activities	**Planning** Students must be able to make a complete plan. They should allocate a realistic amount of time to different subtasks and make a realistic estimation of necessities (in terms of information and materials). A plan should also contain information on the approach chosen to accomplish the task.	Questions - What is the advantage of using a plan? - In what way can you estimate the time you need for x? - Where in the plan can I see how much time I can spend on building y? Feedback - Alerting students to possible bottlenecks in the planning. - Alerting students to omissions in the plan. - Giving examples of how to estimate how much time is needed for a specific job.
	Evaluating This learning activity involves being able to indicate what went well and what went wrong while carrying out the complex task. Among other things, students should pay attention to the extent to which they have reached personal goals: what have I learned and how will I do this next time?	Questions - What went well and what did not go so well in completing the task? - What things are you going to do different in the next task? How are you going to do that next time? - What did you learn while you worked in this complex task? Feedback - Alerting individual students to specific things they should pay attention to in the following task. - Alerting individual students to their progress in x.

Appendix 1 Aspects of learning activities (Continued)

	Aspects of learning activities	Coaching interventions
Meta-cognitive learning activity	**Monitoring and adjusting** Students should check whether the proceedings are in line with the plan made, and whether the chosen approach will lead to the desired outcomes. Based on the outcomes of the check, students have to decide whether adjustments to the approach are needed.	Questions - Which (sub)tasks are finished and which (sub)tasks are not yet finished? - How can I see in the plan which (sub)tasks should be finished? - You haven't finished task x yet; what are the consequences for meeting the rest of the plan? - To what extent does the product meet the requirements? - How can you make sure to finish the (sub)task in time? - If you don't adjust your approach, what are the consequences? - How can you make sure that you meet the product requirements? Feedback - Alerting students to the importance of checking the plan with regard to finishing the (sub)tasks in time. - Giving examples of how to check whether you meet the planning or not. - Alerting students to the requirements that the product should meet. - Giving examples of how to adjust the planning so that the task can be completed in time. - Giving clues as to how to adjust the approach to make sure that the product meets the requirements.
Learning activity concerning collaborative learning	**Communication** Students have to work together on complex tasks, so it is important that they possess some communication skills: introducing new ideas to other students, presenting their opinions to other students, explaining things to other students, listening to other students, giving other students the opportunity to explicate their ideas, etc.	Questions - How can you explain in another way what you should take into account when you build a house? - How can you make sure that everyone has the opportunity to share his/her opinions and ideas with the rest of the group? Feedback - Alerting students to the fact that everyone should be allowed to share his/her opinions and ideas. - Alerting student to the fact that they should let a person have his/her say. - Giving examples of how to introduce ideas to the group.

	Aspects of learning activities	Coaching interventions
Learning activity concerning collaborative learning	**Contribution to the group process and product** Students are supposed to work collaboratively on a complex task, which means that every student has to contribute to the process and to the product. This involves agreeing on what to do and keeping appointments. They also should establish an allocation of tasks that is equal for all participants, and be able to make decisions as a group. In addition, they should consult each other on work that is done, and be able to take responsibility for it.	Questions - Did you make agreements with regard to x? - Did you include the agreements in the minutes? - Dave, do you know what Pete's task is? - Susan, do you know when Dave should have finished his task? - Richard, did you call Jessica to account for not finishing her task in time? - Did you all have an equal share in completing the task? Feedback - Giving clues as to how to call a person to account for something. - Giving clues as to how to tune individual tasks to the group task.
	Contribution to group climate This learning activity involves contributing to a positive climate within the group. This requires that students respect each other, listen to each other, and independently resolve conflicts.	Questions - Do you think that this attitude will contribute to a positive group climate? - How do you think David feels right now? Feedback - Giving examples that show the importance of respecting other students in collaborative working. - Giving advice on how to solve a conflict between students.

Appendix 1 Aspects of learning activities (Continued)

	Aspects of learning activities	Coaching interventions
Affective learning activities	**Maintaining self-confidence, positive expectations, motivation, dedication & persistence, and concentration** While working on complex tasks, students experience emotions that lead to specific attitudes towards working on complex tasks (positive, neutral, negative). These emotions can influence the learning process dramatically. To develop a positive learning attitude, students need to maintain self-confidence, positive expectations, motivation, dedication & persistence, and concentration. These learning activities are an important condition for carrying out other relevant learning activities.	Questions - How do you motivate yourself to finish tasks that you don't like? - What do you like about this task? Feedback - Complimenting students on their efforts and the results.

Appendix 2 Score form for assigning a score to a video episode

Name:……. Video episode:……
Teacher judged:……..…. Learning activity judged:…….

Video episode		**Interviews**	
Step 1: Collecting evidence - Which coaching interventions do or do not provide opportunities to improve students' performance of learning activities? - Which coaching interventions do or do not provide opportunities for students to improve in constructing realistic perceptions of professional thinking and acting in practice?	Score (1-4)	Teacher	Student(s)
Consider all the available evidence for constructive as well as for practice-oriented coaching: - What evidence is important, and what is less important? - How can positive and negative evidence be counterbalanced? - Does all evidence direct to a specific level of competence, or are contradictions perceived in the evidence? - After you have assigned a score, check whether it represents all the available evidence.			
Step 2: Assigning scores to teachers' coaching performance Why should the assigned score be a 1, 2, 3, or 4? Write a brief summary in which you substantiate the scores assigned. In the summary, refer to or cite important arguments and evidence.			

Appendix 3 Score form for assigning an overall score

Name:……. Teacher to be judged:….……

Step 3 Assigning an overall score to teacher performance across video episodes Assign an overall score for constructive and practice-oriented coaching based on the performance levels, for all video episodes concerning coaching aimed at (a) domain knowledge and skills (b) regulation, (c) learning attitude, or (d) collaborative learning.		
The assigned overall score does not have to be equal to the average of all scores assigned to the individual video episodes, since you can weigh scores in order to correct for differences in video episodes with regard to complexity, or for differences in (extremely) high or low contributions to improvement in learning activities and perceptions of professional thinking and acting.		
Light (L)	Average (A)	Heavy (H)
Teachers' coaching performance had a small impact on students' growth or perception of practice. And/or The coach situation was extremely simple or complex, so that the teacher did not got the opportunity to show how well he/she can coach students.	Teachers' coaching performance had some impact on students' growth or perception of practice.	Teachers' coaching performance had a crucial impact on students' growth or perception of practice.

Overview scores assigned to separate video episodes

Video episode	1	2	3	4	5	6	7	8	9	10	Overall score
Learning activity coached											
Score and weigh	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

- In what way can the performance in the individual video episodes be counterbalanced? - Does the entire performance direct to a specific level of competence, or are contradictions perceived? - After you have assigned a score, check whether the score represents all the available evidence.
Why should the assigned overall score be a 1, 2, 3, or 4? Write a brief summary in which you comment on the scores assigned. In the summary, refer to or cite important arguments and evidence concerning individual video episodes.

Step 4 Consulting a fellow-assessor - After judging the video portfolios individually, discuss the assigned scores and written rationales with a fellow-assessor. - Compare assigned scores and explicitly discuss differences in assigned scores and cited evidence and arguments. - After the consultation, determine whether to stand by the original judgment(s) or to make adjustments.

Appendix 4 Codebook for coding evidence and arguments

	Step 1 Type of state-ments	**Step 2 Valence**	**Step 3 Aspect of competent coaching**			**Step 4 Fostered learning activity**
Consistent with the conceptual framework	Citation	Positive	**Evidence with regard to coach situation**	**Evidence with regard to teachers' behavior or appearance**	**Evidence with regard to students**	Coaching of orientation of the complex task
	Inference	Negative	Students' problem	Asking questions	Students' reaction to the interventions of the teacher	Coaching of searching and organizing relevant information
	Judgment	Neutral	Groups' problem	Providing feedback	Question to the teacher	Coaching of comprehending and using relevant subject matter
			Content of the coach session	Asking questions and providing feedback (coaching interventions)	Reaction to another student	Coaching of planning
			Aim of the teacher	Other teacher behavior	Students' learning	Coaching of monitoring
			Context factors that influence coaching	Teachers' interventions are (not) appropriate with regard to students' needs or the context	Students' thinking	Coaching of adjusting
				Missed opportunities in coaching	Students' understanding	Coaching of evaluating
					Students' growth	Coaching of motivation and dedication
					Students' awareness	Coaching of communication
						Coaching of contribution to the group process and product
						Coaching of group climate

Appendix 4 Codebook for coding evidence and arguments (Continued)

	Step 1 Type of state-ments	**Step 2 Valence**	**Step 3 Aspect of competent coaching**			**Step 4 Fostered learning activity**
Not consistent with the conceptual framework			Only a judgment is made (good/bad) and no arguments are reported	Only a judgment is made (good/bad) and no arguments are reported	Only a judgment is made (good/bad) and no arguments are reported	
			Learning climate	Interventions to direct the discussion		Group dynamics
				Teachers' style		Positive learning climate

Score form assessor 1		**Step 1**	**Step 2**	**Step 3**	**Step 4**
Evidence:	Judg-ment				
- Teacher: in the overview, sand to fill up; do we need sand?	2	Citation	Negative	Teachers' behavior (questions)	Comprehending and using relevant subject matter
- Belongs the sand to the category 'groundwork' or 'street work'?	3	Citation	Positive	Teachers' behavior (questions)	Comprehending and using relevant subject matter
- So, sand belongs to groundwork?	2/3	Citation	Neutral	Teachers' behavior (questions)	Comprehending and using relevant subject matter
- We agreed that we would cluster the activities according to categories	2/3	Citation	Neutral	Teachers' behavior (feedback)	Comprehending and using relevant subject matter
- When do we work with sand?	3	Citation	Positive	Teachers' behavior (questions)	Comprehending and using relevant subject matter
- Teacher explains the differences between groundwork and street work	-	Inference	Neutral	Teachers' behavior (feedback)	Comprehending and using relevant subject matter
- The apron is almost complete, what do I miss here?	2/3	Citation	Neutral	Teachers' behavior (questions)	Comprehending and using relevant subject matter
- (teacher asks Pete, but John is answering, the teacher asks Pete another question)	2/3	Inference	Neutral	Teachers' behavior (interventions to direct the discussion)	Group dynamics
- How do we attach the boards?	3	Citation	Positive	Teachers' behavior (questions)	Comprehending and using relevant subject matter
- How do we attach the sole?	3	Citation	Positive	Teachers' behavior (questions)	Comprehending and using relevant subject matter
- What are spring bolts?	3/4	Citation	Positive	Teachers' behavior (questions)	Comprehending and using relevant subject matter
- What do spring bolts look like?	3/4	Citation	Positive	Teachers' behavior (questions)	Comprehending and using relevant subject matter
- Is it important to know what spring bolts look like?	3	Citation	Positive	Teachers' behavior (questions)	Comprehending and using relevant subject matter

Score form assessor 1				
Summary:				
This coach session can be clearly divided in three parts: (1) ground and street activities, (2) attaching the apron, and (3) attaching the purlin.	Inference	Neutral	Coach situation (content)	Comprehending and using relevant subject matter
The teacher asks the right questions.	Judgment	Positive	Teachers' behavior (questions)	-
And after a sequence of questions, he provides the students with a short explanation.	Inference	Neutral	Teachers' behavior (questions & feedback)	-
He relates the domain specific knowledge to relevant situations in practice.	Inference	Neutral	Teachers' behavior (other teacher behavior)	Comprehending and using relevant subject matter
I think that the students certainly learn from these interventions. The judgment will be a 3 or 4.	Judgment	Positive	Consequences for students (students learn)	-
The reason for assigning a 3 instead of a 4 is that the teacher provides a lot of theory to the student. I don't think that students, who do not take notes, will remember what the teacher tries to learn them.	Judgment	Nega-tive	Teachers' behavior (teachers' interventions are not appropriate)	-