

Codebook

Online supplement with:

Geography Teachers' Pedagogical Content Knowledge, a Literature Review

	Code	Quotes referring to teachers' knowledge and behavior on:
Knowledge of instructional strategies		
Teacher activities	fieldwork	Field work activities, excursions, projects outside the classroom
	inquiry based learning	Students following (different stages of) inquiry, either student or teacher led
	practical work	Experiments, lab work
	facilitate learning	Activities which aim at improving or facilitating student learning: i.e scaffolding, differentiation etc.
	using resources (GST, maps etc.)	The use of various general and geographical resources, including geospatial technologies, fieldwork equipment and maps
	general class discussion	Activities in which there is conversation between teacher and students
	lecture	Activities in which the teacher presents or lectures with hardly any interaction with his/her students
	Other	Other teacher activities such as brainstorming, narrative writing, project work etc.
Student activities	describing/relating concepts	Students give a description of a concept or make connections between concepts
	using concepts in context	Students apply concepts in a context
	analyzing maps, graphs, data	Students analyze statistical information in tables, maps or graphs
	analyzing photos, movies, stories	Students analyze picture movies and/or stories
	analyzing spatial problems	Students analyze spatial problems or socio-scientific issues
	analyzing regions	Students analyze geographical regions
	futures thinking	Students visualize or think about possible and preferable futures

	opinion forming	Activities which aim to promote opinion forming, i.e. debate, arguments, statements
	problem solving	Student think of different solutions to (spatial) problems
	create maps	Students create maps
Teaching orientations		
Approaches to learning	Constructivist approach	Approaches derived from social constructivist theory, in which students take active part in knowledge acquisition
	Transmissionist approach	Approaches in which there is direct instruction and the teacher transmits / sends out information to his/her students
School geography goals	Knowledge	Goals which aim at acquiring (geographical) knowledge
	Skills	Goals which aim at practicing (geographical) skills
	Attitudes	Goals which aim at attitude forming, opinion forming, elucidate values
	Take action	Goals which aim at action competence, participation in conservation
	Prepare for life / careers	Goals aiming to prepare for career opportunities or future citizens
	Geography teaching strategies	Teachers opinions and beliefs about 'what works' when teaching geography
	Teacher identities	How geography teachers identify themselves professionally
Nature of geography	Spatial relations	Geography is about spatial relations
	Human-physical dichotomy	Geography has a strong distinction between human and physical geography
	Human- environment relationship	Geography is about the interaction between humans and their environment
	Interdisciplinarity	The interdisciplinary nature of geography
	Socio-scientific issues	Geography is about socio-scientific issues, sustainability etc.
Knowledge of curriculum		
	Themes & skills	Themes and skills which are part of the geography curriculum
Curriculum influences	National curriculum	Descriptors of the national curriculum, state frameworks, national standards etc.
	Text books	Text books teachers use
	Teacher interest	Teachers' own interest or preference to teach a topic

	Sequence of topics	The topic which is taught prior or after the current topic, sequence of topics through learning years
	other	Other curriculum influences such as the local environment, current affairs etc.
Knowledge of student understanding		
	Student knowledge	Student's (prior) knowledge or abilities
	Alternative conceptions	Students' alternative conceptions of geographical phenomena or processes
	Engaging students	Whether students are easy or hard to engage for a topic
	Student attitudes	Students' attitudes on a certain topic
	Level of abstraction	Students experience difficulties because of the level of abstraction
	Student diversity	Students' diversity in cultural background, religion, gender, urban/rural etc.
Knowledge of assessment		
	Formative assessment	Activities which aim at elucidating student progression in learning, such as written or oral feedback or diagnostic testing
	Graded task	A task which is summative assessed
	Written test	A test which is summative assessed
	Geographical test item	Test items geography teachers use for assessment

Experienced constraints and challenges		
	Lack of PCK	Teachers experience a lack of pedagogical content knowledge when teaching a certain topic
	Lack of SMK	Teachers experience a lack of subject matter knowledge when teaching a certain topic
	Lack of resources	Lack of time, financial resources or lack of equipment and materials
	Misalignment with teaching orientations	A misalignment between teachers' orientations and their instructional strategies
	Misalignment with curriculum	A misalignment between teachers' beliefs about geography and the national curriculum
	Lack of location knowledge	Teachers experience a lack of knowledge of the local surroundings of their schools

	Misalignment with mentor	Misalignment between (pre-service) teachers beliefs about teaching geography and their school based mentors'.
	Other	Other constraints and challenges such as language barriers or the proximity to use areas used as examples