

SMK 1: Teachers' knowledge of facts and concepts related to living, technological and physical systems; earth and space systems; mathematical systems

- 1-1 Understanding of the meaning of isolated facts and concepts
- 1-2 Understanding of the relation between facts and concepts of:
 - 1.2.1 different science sub-disciplines
 - 1.2.2 the same science sub-discipline
- 1-3 Understanding of when and how to apply facts and concepts

SMK 2: Teachers' understanding of inquiry skills (Observe; pose questions and predictions; examine books and other resources of information to see what is already known; plan investigations; carry out investigations using tools to gather, analyze and interpret data; propose answers, explanations and predictions using data; communicate and justify results)

- 2-1 Understanding of the meaning of isolated research skills
- 2-2 Understanding of the relation between the research skills
- 2-3 Understanding of when and how to apply research skills

Science PCK 1: Pedagogical design capacity – Lesson preparation and adaptation of curriculum

- 1-1 Understanding and response to an individual pupil's interests, strengths, experiences and needs in order to teach meaningful content and context (taking into account prior knowledge; cognitive developmental stage; learning style; interest and language level related to age, gender, socio-economic, cultural and/or linguistic background; formal science lessons and experience)
- 1-2 Understanding and response to context: time, space, location, materials
- 1-3 Understanding and response to aims mentioned in standard document
 - Ministry of education final curriculum goals for final year pupils (Kerndoelen)
 - Detailed curriculum goals for each age group of primary school (Tussendoelen Stichting Leerplan Ontwikkeling)

Science PCK 2: Teachers' facilitation of scaffolded inquiry

- 2-1 Ability to ask pupils to make their prior ideas explicit
- 2-2 Ability to ask (divergent) questions about facts and concepts, and encourage and help pupils to apply this knowledge
- 2-3 Ability to ask questions about appropriate use of research skills, and encourage and help pupils to apply this knowledge
- 2-4 Ability to stimulate discourse, debate and discussion in small groups about research questions and predictions, answers and explanations
- 2-5 Ability to discuss and/or visualize pupils' thinking (including mistakes) to generate class discussion in order to enhance meta-cognitive awareness

Science PCK 3: Teachers' evaluation and assessment

- 3-1 Ability to connect new knowledge and understanding to prior knowledge
- 3-2 Ability to connect new knowledge and understanding to real life context
- 3-3 Ability to connect new knowledge and understanding to the overarching science concepts

Science PCK 4 and 5: Teachers' attitudes toward science education

- 4 Attitudes toward teaching science
- 5 Attitudes toward learners and learning science

Teachers' attitudes 1, 2 and 3

- 1- Attitudes toward science
 - importance of science for society, pupils' daily life and environment, economy
 - pleasure
 - nature of science
- 2- Attitudes toward themselves as science teachers – self efficacy
- 3- Attitudes toward competence development of science and science teaching