Note: All self-assessment items are collected in a pre-post test design using a 5-point Likert scale (5 = agree, 1 = disagree).

**Informatics-specific self-assessment items – version 1**
(oriented to the recommendations of the German Informatics Society for primary education (Best et al. 2019) and learning area 3, grade 4, in the current Saxon primary school curriculum of the subject "Werken" (engl. handicrafts) (Staatsministerium für Kultus Freistaat Sachsen 2019, p. 14 f)).)

- Areas of requirement: E I = Reproduction | E II = Reorganization and transfer | E III = Reflection und problem solving (Röhner et al., 2016)

| | | **Informatics specific self-assessment items** |
|---|---|---|
| Coding data | E I | I can roughly describe the encoding of text by informatics systems. |
| | E II | I can explain the encoding of images by informatics systems in detail. |
| | E III | I can characterize the similarities and differences between the encoding of text and images in informatics systems. |
| Data and information | E I | I can roughly describe the difference between data and information. |
| | E II | I can explain the difference between data and information in detail. |
| | E III | I can characterize the process of transformation from information to data. |
| Informatics systems lifeworld | E I | I can list examples of informatics systems in my environment. |
| | E II | I can argue that a given example (e.g., a fitness tracker) is an informatics system. |
| | E III | I can compare examples of informatics systems in my environment in terms of their range of functions and derive conclusions. |
| Structure of informatics systems | E I | I can associate components of an informatics system (e.g., keyboard, mouse, printer) with the IPO model (involving input, process and output). |
| | E II | I can explain the IPO model (involving input, process and output) in different informatics systems in my own words. |
| | E III | I can justify why the IPO model (with input, process and output) is a fundamental model for how informatics systems work. |
| Functionality of informatics systems | E I | I can describe that 1 (power on) and 0 (power off) is a basis for informatics systems. |

| | | |
|---|---|---|
| | E II | I can explain the ways in which computer systems operate with 1 (power on) and 0 (power off). |
| | E III | I can assess the technological limitations of informatics systems. |
| Functionality of the Internet | E I | I can name components of the Internet. |
| | E II | I can explain how data transmission on the Internet works. |
| | E III | I can explain why data transmission problems can occur on the Internet (in terms of components and structure). |
| Properties of algorithms | E I | I can name the properties of algorithms. |
| | E II | I can explain the properties of algorithms using examples. |
| | E III | I can justify why certain properties of algorithms are necessary for the functionality of informatics systems. |
| Comprehending algorithms | E I | I can name processes in my everyday life that can be described by an algorithm. |
| | E II | I can comprehend algorithms (e.g., the process of booking a ticket on the Internet) step by step. |
| | E III | I can compare different algorithms (e.g., the process of booking a ticket on the Internet or ordering meals on the Internet) in terms of their effectiveness. |
| Formulating algorithms | E I | I can order given steps of an algorithm (e.g., steps in brushing teeth) according to an objectivs. |
| | E II | I can formulate an algorithm for a pre-structured situation (e.g., the process of installing an app). |
| | E III | I can develop an algorithm for an unknown situation (e.g., machine production of a hiking boot). |
| Programming | E I | I can understand a given program code in a (block-based) programming language. |
| | E II | I can implement a given program idea (e.g., a traffic light circuit) in a (block-based) programming language. |
| | E III | I can develop my own program (e.g., a mini game) in a (block-based) programming language. |
| Software development | E I | I can name sub steps in software development. |
| | E II | I can use an example to explain the sub steps of software development. |
| | E III | I can explain why the sub steps of software development lead to a successful software development process. |

**Self-assessment items for teaching** (based on Kultusministerkonferenz, 2004, p. 9)

- I have an idea of what content and concepts informatics education encompasses.
- The teaching of informatics competencies is of great importance to me.
- I know points of contact for informatics content and competencies in current primary school curricula.
- I have an idea of how to integrate informatics education into my teaching.
- I can draw from a selection of existing materials for the implementation of informatics education in primary school.
- I can develop teaching-learning concepts that enable informatics education for students.

**Self-assessment items for transfer and confidence** (based on Prescher, 2014, p. 240; Kultusministerkonferenz, 2004, p. 9; Hildebrandt, 2019)

- I have the confidence to test given teaching-learning concepts with a small group (max. 10 participants), which enable informatics education for students.
- I have the confidence to try out given teaching-learning concepts with a class that enable informatics education for students.
- I am confident in my ability to work with students to develop informatics content and skills.
- I am confident in my ability to get students excited about informatics content.
- I have the confidence to answer students' individual questions about informatics content.

**Concept Informatics** (free-text tasks)

- Please complete the sentence! - I associate ... with informatics.
- Please complete the sentence! - In my opinion, in regard to informatics, primary school students should learn about ...

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