Assessment of Metasubject and Personal Learning Outcomes at School

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How do we measure metasubject learning outcomes?

Master ‘creative and exploratory problem solving techniques’ and acquire ‘logical operations of comparison, analysis, synthesis, generalization and classification’

FSES: https://fgos.ru/

• These constructs are complex: they consist of various subcomponents, each of which can also divide into separate elements
• Traditional tools: use of experts, observation, surveys
• To assess such complex constructs, it is necessary to observe how students make decisions and act in real-life challenging situations
International experience in measuring complex constructs

• PISA (Programme for International Student Assessment): international comparative studies of the quality of education

• Facilitator: OECD, every 3 years

• Scope of assessment: mathematical, reading, and science literacy of students aged 15

• PISA-2015: collaborative problem-solving. Implemented through chat-based communication; students collaborated with one or several avatars (modelled by members of the problem-solving team).

• PISA-2018: Global Competence assessment. Case study assignments. The cases described real-life situations and were based on real factual evidence.
A complex construct measuring tool should:

- allow students behaviorally demonstrate the complex structure of the skill
- make the test case as real as possible (DiCerbo, 2014)
- encourage honest and enthusiastic test-taking (Sundre & Wise, 2003)
- take into account the assignment completion process (Davier et al., 2019)

New approach: computerized performance-based scenario assignments (Bennett, 1999)

- Scenario assignments refer to authentic assignments: they are relevant to the real communicative environment and occur in real life
- For example, searching for information from reliable sources to complete the assignment, appropriate response to the message, writing a letter, online ticket purchase, etc.
How do we measure complex constructs?

- Measuring tool — computerized scenario assignments: test-takers immerse into the prepared scenario and complete several tasks
- To allow test-takers demonstrate skills, the assignments are made interactive
- Each scenario provides for capturing the observed actions
- Actions should: a) demonstrate the skill; b) align with the scenario
Methodological framework

• Evidence-Centered Design (ECD) framework or ‘evidence-based reasoning method’ (Mislevy, Steinberg, & Almond, 2003)

• Builds the logical framework for tool development, from concepts of the construct to the assessment of observed behavior

• Advantages: high level of validity, opportunity to assess not only respondents’ responses, but also their behaviour in tests (time spent for completing the test, task completion strategies, etc.), convenience of administration, processing and presentation of results.
Monitoring 4C competencies

- Measuring 4 competencies at the end of primary school (grade 4) and in the middle of secondary school (grade 7):
  1) Critical thinking
  2) Creativity
  3) Communication
  4) Cooperation

- **Computerized**, implementation through the Internet

- **Game-type scenario assignments**

- Duration: 30-40 minutes

- **Instant processing** of measurement results and feedback using Bayesian networks

- 3 levels of competencies: advanced, basic, intermediate

**Distinctive features:**
- Contemporary design and interesting content
- Automatic processing of results
- No workload for school staff

Website: https://ioe.hse.ru/monitoring/4k
Reading literacy
(functional semantic reading)

• Theoretical framework compatible with PIRLS
• Narrative dynamic ‘hypertexts’ written specifically for the tool
• Computerization
• 4 groups of reading skills:
  ✓ Search and retrieve information presented explicitly
  ✓ Simple inferences, drawing simple/straightforward conclusions
  ✓ Integration and interpretation of what was read
  ✓ Assessment of the text content and form, shaping personal opinion regarding the text content and form
Identifying bear tracks is not difficult. This heavy beast leaves wide tracks up to 30 cm long with five toes and claws. Their hind legs have heels and resemble human feet.

Raccoon tracks are hard to confuse with tracks of other animals. Their long, thin, well-developed toes and naked soles leave tracks resembling human hands.

Fox tracks are easy to confuse with dog tracks. Dog tracks are more rounded. Their footprints are clearer, but the claws are less visible than those of a fox.
Digital literacy is an ability to use digital technology, communication tools and networks to search, analyze, create and manage data in order to address personal, educational and professional needs as well as for collaboration and teamwork in a digital environment with due regard for fundamental information security, ethical and legal standards for handling information.
Test assignments in the digital literacy assessment tool

- Computerized scenario test assignments of various difficulty

- Assignment context: academic, personal (for students)

- Each assignment represents a situation as close as possible to the real life of the student, which contains a task to be completed.

- Wide range of digital technologies, including e-mail, text editors, presentation software, spreadsheets, graphic editors, databases, multimedia tools, Internet communities
Assessing SES, motivation and well-being in primary and secondary schools

- Based on the international research framework and the Big Five model (John, Srivastava, 1999, OECD, 2015)
- Designed for mass assessment
- Feedback to teacher and principal
- Development of recommendations on improving SES following the results of the research

Related to FSES in primary and secondary education in terms of personal educational outcomes
Social and emotional skills are the skills that allow people recognize and control their emotions, address conflicts successfully, understand and show empathy for others, build and maintain positive relationships, observe ethics, make a meaningful contribution to their reference communities, set and achieve goals (Abrahams et al., 2019)

Subjective well-being is defined as an individual's subjective belief that his/her life is pleasant and good (Wilson, 1967)

Motivation are the motives shaping the desire to learn, gain knowledge in general and in particular subjects. Self-determination the Theory considers three aspects (Ryan, Deci, 2000):

- Intrinsic motivation
- Extrinsic motivation
- Value motivation
Tools for primary and secondary schools

Social and emotional skills:
- goal achievement
- collaboration with others
- control over emotions

Learning motivation (intrinsic, extrinsic, value):
- motivation for reading / literature
- motivation for mathematics

Subjective well-being:
- subjective well-being in school,
- peer relationships
- physical subjective well-being

Format: self-report, computer or paper-based tests

Scenario scales

Format: self-report, computer or paper-based tests

Format: self-report, computer or paper-based tests
Thank you for your attention

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