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World-Wide Projects in Technology-Based Assessment



SKOLEN I DIGITAL UTVIKLING
Oslo, 14 November, 2012

Overview

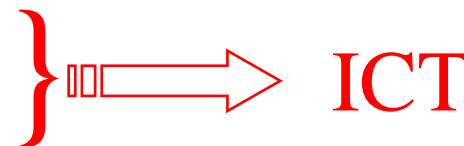
- New assessment needs in the 21st century
- Possibilities and challenges in technology-based assessment
- International initiatives: the ACT21S project
- Technology-Based Assessment in the PISA
- Large-scale TBA projects in the USA
- The Hungarian diagnostic assessment project

New assessment needs in the 21st century

Measure what is measurable, and make measurable what is not so.”

Galilei

- The relevance of measurement in general
- The role of feedback in complex systems
- Evidence-based decisions, research informed interventions
- Success stories in educational assessment
 - Large-scale international projects (PISA, TIMSS, PIRLS)
 - National assessment systems
- New needs
 - Assessment of new constructs
 - Assessment for learning



ICT

New assessment needs (1): Assessment of new constructs “21st Century Skills”

Patrick Griffin · Barry McGaw
Esther Care *Editors*

Assessment and Teaching of 21st Century Skills

 Springer

CURRENT PERSPECTIVES ON COGNITION, LEARNING, AND INSTRUCTION

TECHNOLOGY-BASED ASSESSMENTS FOR 21ST CENTURY SKILLS

Theoretical and Practical Implications from Modern Research

edited by

MICHAEL C. MAYNATH
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21st century skills

Rethinking How Students Learn

John Barell
Linda Darling-Hammond
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Howard Gardner
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David W. Johnson
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Cheryl Lemke
Jay McTighe
Alan November
Bob Pearlman
Brian Pete
Douglas Reeves
Will Richardson
Elliot Seid

Some skills getting more relevant in the 21st century

From the ACT21S project:

- Ways of thinking
Creativity, critical thinking, problem-solving, decision-making and learning
- Ways of working
Communication and collaboration
- Tools for working
Information and communications technology (ICT) and information literacy
- Skills for living in the world
Citizenship, life and career, and personal and social responsibility

New assessment needs (2): Assessment for learning

- Formative and diagnostic assessment
- Embedded in learning and teaching
- Based on a better understanding of learning and development
- Detailed, frequent
- Provides immediate feedback
- Helps to determine the directions of intervention

Promises and challenges of technology-based assessment

TBA enhances the functions of assessment

- Technology facilitates current developments in assessment, such as moving
 - From macro/system level of instruction to micro/student level of learning
 - From accountability of schools to supporting teaching and learning processes
 - From summative to formative assessment and diagnostics
 - From static/cross-sectional data collection to developmental approach and longitudinal data collection
 - From assessing achievements of individuals to assessing teamwork and group processes

TBA improves quality and increases quantity of data, speed of assessment

- Technology improves the precision of measurements
- A large amount of data can be collected, this supports the shift
 - From producing single indicators to providing rich contextualized data sets
 - From single testing to complex systems of assessment
- Logging, tracking, process mining
- Technology accelerates assessment and shortens feedback cycles

Technology revolutionizes the process of assessment

- Item development
 - Authoring software
 - Automated item generation
 - Item banking, storing of items and item meta-data
- Tests administration through a variety of delivery methods
 - Removable media
 - Computer labs
 - Online (Internet-based or local server)
 - Tablets, mobile technologies
- Automated scoring
- Automated feedback, analysis and reporting

Technology vitalizes testing situation and improves validity

- Innovative task presentation, including multimedia
 - Texts, pictures
 - Animation, video
 - Sounds (speech, music, real-life noises etc.)
 - Simulation, interactive items
 - Games
- Response capture by a variety of input instruments
 - Innovative use of traditional input instruments (keyboard, mouse)
 - Touch screen, drawing
 - Voice recognition
 - Specific interfaces for capturing complex movements

Technology opens new areas for assessment

- Domains where technology is essential for the definition of the construct
 - ICT literacy
 - Problem solving in technology rich environment
- Domains where technology is instrumental for the assessment
 - Assessing dynamics
 - Interactive assessment
 - Teamwork through network connection
 - Technology for assessing students with special educational needs

International initiatives

The Assessment and Teaching of
21st Century Skills project



atc21s.org

The Assessment and Teaching of 21st Century Skills project

- Initiated by CISCO, Intel and Microsoft
- First phase
 - four working groups
 - defining the contents, methodologies, technologies, and environments of the assessment
 - results published in a book
- Second phase
 - devising instruments for two domains
 - collaborative problem solving
 - ICT literacy – learning in digital networks
 - implementing the instruments in the partner countries

Technology-Based Assessment in the PISA

Transition from paper-based testing to TBA

- Challenges in an international assessment program
 - diversity in equipment
 - differences in the readiness of teachers and students
- The priority of preserving the possibility of trend estimation
 - alternative strategies for the shift from paper to technology

TBA in PISA

- 2006, major domain: science
 - Technology-Based Assessment of Science
 - international option
- 2009, major domain: reading
 - Electronic Reading Assessment
 - international option
- 2012, major domain: mathematics
 - Computer-Based Problem Solving
 - innovative domain
- 2015, major domain: science
 - Computer-based assessment at all domain
 - Collaborative problem solving as innovative domain

Large-scale Technology-Based Assessment projects in the USA

Educational tests in the USA

- The culture of testing in the USA
- The impact of “*No Child Left Behind*”
- Negative effects of the frequent usage of simple multiple-choice tests
 - teaching for testing
 - what is not tested is not taught
- Negative effects of the high-stake accountability
 - test coaching, cheating
 - test-score inflation
- Educational initiatives of the Obama administration
 - “*Race to the Top*”

Assessment in the “*Race to the Top*”

- “Adopting standards and assessments that prepare students to succeed in college and the workplace and to compete in the global economy”
- “Building data systems that measure student growth and success, and inform teachers and principals about how they can improve instruction”

Characteristics of the assessment projects in “*Race to the Top*”

- Two grant categories
 - Comprehensive Assessment Systems
 - High School Course Assessment
- Coalition of states
- Two large coalitions received approximately \$330 million
- Partnership for Assessment of Readiness for College and Careers (PARCC) \$170 million
- SMARTER Balanced Assessment Consortium (SBAC) \$160 million

The Hungarian

“Developing Diagnostic Assessment”
project

A project implemented by the
Center for Research on Learning and Instruction
University of Szeged

Two phases: 2009-2011, 2012-2014

edia.hu

http://edia.hu

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Diagnosztikus
Mérések
Fejlesztése



MAGYARORSZAG MEGÚJUL



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SZÉCHENYI TERV

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- Részprojektek
- Továbbképzések
- Pályázatok
- Eredmények
- Publikációk
- Sajtó
- Rendezvények
- Galéria
- Esélyegyenlőség
- eDIA partneriskolák
- DEMO teszt
- Fórum

Diagnosztikus mérések fejlesztése

Számos országban a tanulói igények

English

inulást közvetlenül támogató, az egyéni mérési rendszerek fejlesztésére irányuló elméleti Kutatócsoportja a

TÁMOP-3.1.9-08, 1-2009-0001 (1. fázis) és a TÁMOP-3.1.9-11/1-2012-0001 (2. fázis) pályázatok által támogatott "Diagnosztikus mérések fejlesztése" című program keretében egy ilyen, a személyre szóló visszajelzést biztosító rendszer magyarországi kiépítését kívánja megalapozni (1. fázis), majd kivitelezni (2. fázis).

A fejlesztő munka a diagnosztikus rendszer összes lényeges elemére kiterjed. Magában foglalja a diagnosztikus méréseket tudományosan megalapozó standardok kidolgozását a három nagy műveltségterületen (olvasás-szövegértés, matematika és természettudomány), további tizennégy területen a fejlesztő munka elindítását, a feladatírást, feladatbankok építését, a hazai és a nemzetközi felmérések adatainak másodelemzését, valamint az érintett pedagógusok, szakemberek felkészítését. A projekt fő célja az 1-6. évfolyamos diákok készségeit, képességeit mérő, azok fejlődését egyénileg követő, a tanulási problémákat feltáró papír alapú (1. fázis) és elektronikus (2. fázis) értékelő mérési-értékelési rendszer kialakítása.

Az oktatás eredményességének, minőségének és hatékonyságának fejlesztésére irányuló projekt több modulból (munkacsomagból) áll, melyek megvalósítása mind az első mind a második fázis során egymással összehangoltan, nagyrészt egymással párhuzamosan folyt és folyik.

eDIA partneriskolai regisztráció (felkérő levél)



Online Diagnostic Assessment System

- A complex system for supporting learning and teaching
- Based on the analysis of learning and developmental processes, and the outcomes of learning
See -> framework development
- An online accessible assessment platform
See -> eDia
- An item bank containing thousands of items in innovative formats
See -> demo test for item formats
- Teacher training
preparing the teachers for the utilization of the system
- Developing intervention materials (e.g. computer games) for enhancing students' skills if needed

Result of the Framework Development



FRAMEWORK FOR
DIAGNOSTIC ASSESSMENT
OF READING

*Edited by
Benő Csapó • Valéria Csépe*



FRAMEWORK FOR
DIAGNOSTIC ASSESSMENT
OF MATHEMATICS

*Edited by
Benő Csapó • Mária Szendrei*

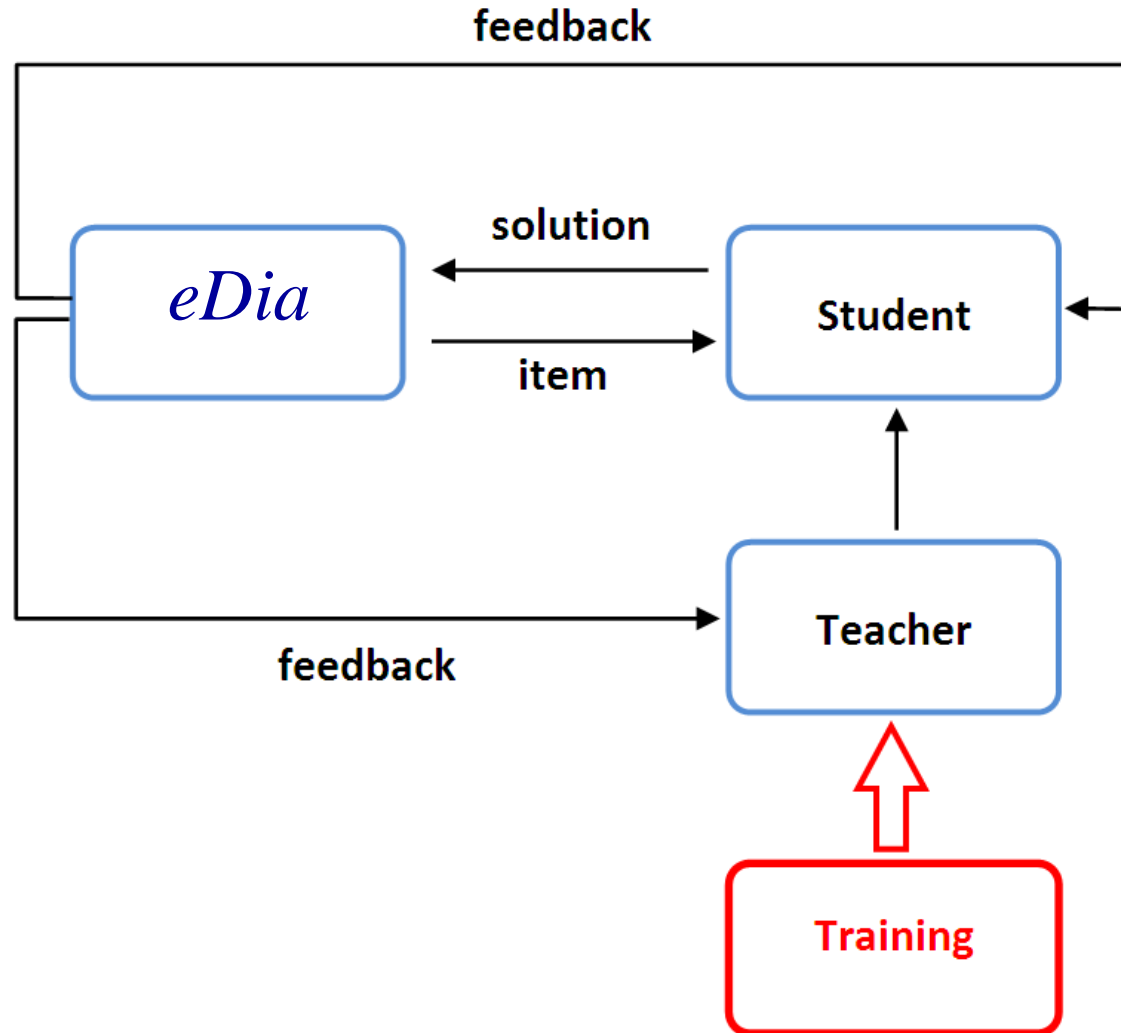


FRAMEWORK FOR
DIAGNOSTIC ASSESSMENT
OF SCIENCE

Three volumes, published both in
Hungarian and in English

May be downloaded in .pdf

The Online Diagnostic Assessment System integrated into the learning/teaching processes



Characteristics of the Online Diagnostic Assessment System

- Serving ca. 500 000 students (grades 1-6)
- Communicating with ca. 20 000 teachers
- Making the service available in ca. 2 000 schools
- Managing ca. 9 000 test items
- Maintaining and analyzing students' data
- Providing both students and teachers with sophisticated feedback in user friendly format

Content of measurements in the Online Diagnostic Assessment System

- Reading, mathematics and science are the major domains
 - Each major domain is measured on 3 different scales
 - Large item banks are used to measure the major domains
- There are 15 minor domains in the system
 - E.g. school readiness, social skills, English as a second language, financial literacy, learning to learn, visual skills, civic competencies, reasoning skills, etc.
 - Test batteries are prepared for the minor domains

Technology makes it interesting ...



Cognitive laboratory experiments for devising the online tests



Thank you for your attention.

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