

INFORMATION LITERACY AND TECHNOLOGY TO IMPROVE LEARNING AND EDUCATION

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Overview

Introduction

Multilevel theory

Methods: three examples and results:

- development research
- experimental research
- national monitoring

Discussion

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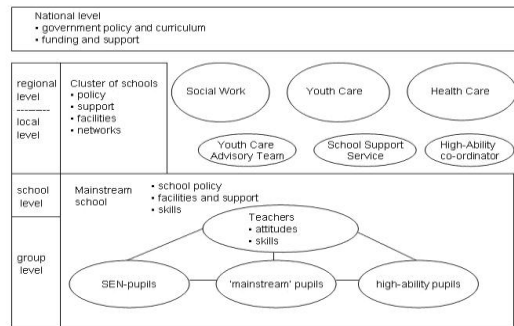
Introduction

‘Information Literacy is the ability to identify what information is needed, understand how the information is organized, identify the best sources of information for a given need, locate those sources, evaluate the sources critically, and share that information. It is the knowledge of commonly used research techniques’

http://www.webs.uidaho.edu/info_literacy/

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Multilevel perspective on inclusive education



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Confusion of levels, learning and assessment

Norm- or age-based learning:

- whole-group learning with individual or small group adapt.
- mean-based tasks and specific (ad-hoc) adaptations
- tasks or activities may not fit individual competences

Criterion-based learning:

- small group or individualised learning in larger settings
- series of tasks according to psychometric criteria
- curriculum: absolute evaluation, appropriate continuity in progress at own levels of competence
- kernel of optimal education

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Research question

HOW TO DESIGN AND USE INFORMATION TECHNOLOGY, TO SUPPORT OPTIMAL EDUCATION FOR AND LEARNING OF PUPILS WITH DIFFERENT ABILITIES?

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Multilevel theory:

Educational contextual dimensions:

- * Differentiation of learning materials and procedures
- * Integration by and use of ICT support (individual, small group, class, school, group of schools/district, national)
- * Strategies to improve development and learning (at and between different levels)

Combination with four learning aspects:

Diagnostic, instructional, managerial, systemic (at and between different levels)

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Scheme of dimensions and learning aspects:
Guidelines to realise optimal education

Multilevel educational contextual dimension:

Learning aspect:	Differentiat.	ICT support	Improv. strat.
Diagnostic	1	6	11
Instructional	2	7	12
Instructional	3	8	13
Managerial	4	9	14
Systemic	5	10	15

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Hypothesis

Compared with their learning in traditional education, in optimal education – learning conditions both low and high ability pupils will improve their social, emotional and cognitive information processes and their corresponding learning processes and effects.

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Methods: Three examples of research

Development

- Development of prototype Ped. Did. Kernel Struct.
- Development of prototype software
- Collaborative pilots in preschool / primary school

Experimental

- Two experimental longitudinal intervention projects

National monitoring

- ICT-based monitoring of school safety prim./second. ed.

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Development research

Pedagogical-Didactic Kernel Structure

Competence domains: sets of curriculum-relevant concepts indicated by norm-based tests:

- language
- general - cognitive
- social - emotional
- arithmetic / mathematics
- physical - medical
- general - psychological
- motor

Completed with criterion-based learning materials / evaluation supplied by teachers and schools

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Implementation

Pilots in preschool and primary education

- collaboration with pre- / primary school teachers
- screening of entry characteristics of four-year olds
- experiences in practice:
 - * Information exchange and collaboration parents - teachers
 - * multi-perspective communication pupil's competence levels
 - * introduction of other levels of play and learning materials
 - * further specific educational support in small groups

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Experimental research

1. Experiment cognitively gifted pupils in special schools
 - design 10 schools, specific curricular support
 - 3 multilevel assessments; experim. – control schools
 - complexity different organisational structures / supervision
2. Experiment cognitively excellent pupils in regular schools
 - design 41 schools, highly interested
 - 3 multilevel assessments; time-varying interv. all schools

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National monitor school safety

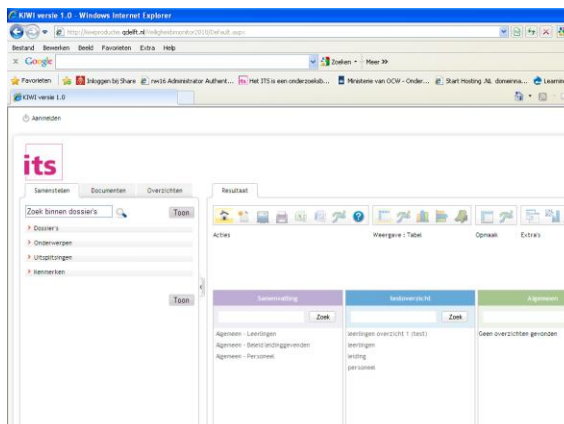
- Two-yearly internet-based monitor (Ministry Educ.)
- All types of secondary education (reg. & special) / PE
- Digital pilot questionnaires
- Organisation in collaboration with school locations
- National measurements: 2006, 2008, 2010
- Reliability and homogeneity (scale construction)
- Representativeness (type educ., urbanisation)
- Digital feedback: national and per school location

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Feedback to all participating schools

- Internet: schools can conduct on-line queries and construct/download tables with own results (one-, two-, or threedimensional)
- Internet: norm-based national benchmarks and comparisons with results of own school
- Management summary: pdf per e-mail with norm-based results, comparison with school results, and within-school longitudinal results

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Feelings of safety of pupils (2010: national vs school)

	National	School	Differ.	Eta
Score from 0 - 100; higher score is more favourable				
Behaviour rules within school				
Behaviour rules are present in school	96.3	97.9	1.6	-
--- in the information map about school	85.3	91.8	6.5	-
--- in the corridors	46.7	25.7	-21.0	0.22
--- in the classrooms	53.7	43.8	-10.0	-
--- at the Internet	67.5	33.0	-34.5	0.34
--- are presented at meetings with parents	75.2	50.0	-25.2	0.26
Persons of school contribute to the formulation of the behaviour rules	77.3	63.4	-13.9	0.24
Teachers and pupils collaborate in formulating and checking pro-social behaviour rules	60.1	63.8	3.7	-

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Feelings of safety of pupils (longitudinal within-school)

	'05-'06	'10-'11	Differ.	Eta
Score from 0 - 100; higher score is more favourable				
Behaviour rules within school				
Behaviour rules are present in school	94.1	97.9	3.8	-
--- in the information map about school	89.6	91.8	2.3	-
--- in the corridors	27.6	25.7	-1.9	-
--- in the classrooms	29.5	43.8	14.2	0.14
--- at the Internet	24.4	33.0	8.5	-
--- are presented at meetings with parents	57.9	50.0	-7.9	-
Persons of school contribute to the formulation of the behaviour rules	65.3	63.4	-1.9	-
Teachers and pupils collaborate in formulating and checking pro-social behaviour rules	68.5	63.8	-4.7	-

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Overview of promotive variables regarding pupils' feelings of safety and safety policy scores

Independent variables	Dependent: Feelings of safety			School safety policy score (0=no, 1=yes)*
	at school	surround	at home	
Education level of pupil (pupil information)	.072	.049	.058	1
Pupils of school used drugs (pupil information)	.047	.026	.050	0
Year of data collection	.046	.072	.072	0
Verbal violence indicated by pupils (pupil scale)	.045	.032	.032	0
Age in years (young-old)	.034	.037	-.011	0
School measures against playing truant (pupil information)	.033	.023	.020	1
Family is intact (pupil information)	.028	.018	.038	0
Mild physical violence indicated by pupils (pupil scale)	.024	.020	.016	0
Degree pro-social formul. and check of rules of conduct (pupil scale)	.024	.019		1
School measures against weapons (pupil information)	.018		.014	1
School size, number of pupils in school	.015	.015		0
School attentive to pupil involvement in school (man. scale)**	.014	.016		1
Played truant myself (pupil information)	.009	.020	-.018	1
External procedures and police assist with incidents (man. scale)		.025		1
Degree of urbanisation of school location (T. Mooij & E. Smeets ECER 2011)		.017		0
School has tailored Dutch language policy (management item)		.010		1

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Outcomes

Most promising school strategies to improve the pupils' feelings of safety at school and in the school surroundings:

- * enhancement of pupils' level of attainment
- * taking measures against playing truant and weapons
- * stimulating pro-social formulation and shared control of rules between teachers and pupils
- * attention to pupils' involvement in school
- * involvement of external institutions and the police in school safety procedures
- * having a tailored Dutch language policy in the curriculum

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Discussion

1. Information literacy and adequate problem analysis
2. School-based, systemic multilevel process information and ICT-development in collaboration with teachers, pupils and national policy
3. Longitudinal monitoring and (quasi-)experimental research

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