

# Types of Assessment in Education

Assessment in education has different strategies, depending on the very purpose of the assessment. Some of the possible categorizations of assessment types are:

- **formative** and **summative** assessment,
- **norm-referenced** and **criterion-referenced** assessment,
- **objective** and **subjective** assessment,
- **paper-based** and **computer-based** assessment<sup>1)</sup>.

## Formative and summative assessment

One of the possible categorizations of assessment in education is into formative and summative assessment.

### Summative assessment (assessment of learning)

Assessment of learning or summative assessment is a process that usually takes place at the end of instruction and measures degree to which the instructional objectives have been achieved.<sup>2)</sup>

Summative learning also:

- describes level of **student's achievement** or **level of learning** in the context of the course objectives,
- usually takes place at the end of a unit or course,
- usually comes in form of (standardized) **exams**.

### Formative assessment (assessment for learning)

Assessment for learning or formative assessment is a procedure, generally same as summative assessment, but including

- *"feedback which indicates the existence of a 'gap' between the actual level of the work being assessed and the required standard. It also requires an indication of how the work can be improved to reach the required standard."*<sup>3)</sup>

Formative assessment:<sup>4)</sup>

- comes usually as **feedback** used **to improve student learning**,
- takes place **during the learning process** and usually does not include grades,
- the teacher gives students frequent quick feedback in form of **written comments**,
- can provide significant benefits for students' learning<sup>5)</sup>

## Formative vs. summative assessment

Although there are clear differences between formative and summative assessment nicely illustrated by the quotation:

- *"When the cook tastes the soup, that's formative; when the guests taste the soup, that's summative."*<sup>6)</sup>,

many theorists still emphasize that all assessment is **preceded by a summative assessment** (a judgement), which can be both implicit (and just the formative focus made explicit), or both processes can be explicit.<sup>7)</sup>

## Norm-referenced and criterion-referenced assessment

### Norm-referenced assessment

A norm-referenced assessment is any assessment which uses results of all students to determine the standard or grades.<sup>8)</sup> For example, **grading on the curve**, (also: *curved grading*, *curving*) means assigning grades to students in a way that will fit a predetermined distribution (usually Gaussian distribution) or predetermining the proportion of students who will be given every grade.

### Criterion-referenced assessment

Criterion-referenced assessment is an assessment type in which an absolute **standard is set before the assessment**, and not after obtaining results of all students.<sup>9)</sup> For example, this would mean not to give the best grade to a student who is better than most others, but to the student who has proven his proficiency by satisfying certain criterion.

## Objective and subjective assessment

Objective assessment and subjective assessment usually refer to whether questions forming the assessment have predefined correct and incorrect answers or are open-ended. An objective test typically includes true/false, short answer questions, and multiple-choice questions. This kind of tests can foster rote learning in students.<sup>10)</sup>

## Paper-based and computer-based assessment

While the difference between paper-based and computer-based assessment (and e-assessment in general) is obvious, a number of findings suggest different test scores as the result of administering the same test in a paper-based (also: *Paper-Pencil-Test (PPT)*<sup>11)</sup>) and computer-based version. Such findings and their causes are usually considered to be a part of the **test mode effect**.<sup>12)</sup>

The early findings about the test mode effect have mostly favored paper-based tests suggesting a slightly higher score on a paper-based test.<sup>13)14)</sup> This was explained as the result of

- 20% to 30% lower reading speed, when reading from the computer screen,<sup>15)16)</sup>
- faster eye tiring when reading from a computer screen<sup>17)</sup>
- lower reading accuracy<sup>18)</sup>, and
- poorer understanding of the information presented.<sup>19)</sup>

Recent findings, however, suggest that although absolute equivalence of performance on computer-based and paper-based test is not possible, technological advances and good practices largely contribute to this goal. Although studies still sometimes provide different results, more and more of them find no difference between two modes of tests<sup>20)21)</sup> and introduce new [advantages of computer-based tests \(e-assessment\)](#).<sup>22)23)</sup>

<sup>1)</sup>  
Computer-based assessment is here used as synonym for e-assessment. Specific types of e-assessment are elaborated in the [e-assessment](#) section.

<sup>2)</sup>  
[Zakrajsek, Dorothy, Lois Carnes, and Frank E. Pettigrew. Quality lesson plans for secondary physical education. Human Kinetics, 2003.](#)

<sup>3)</sup> <sup>7)</sup>  
[Taras, Maddalena. Assessment – Summative and Formative – Some Theoretical Reflections. British Journal of Educational Studies 53, no. 4: 466-478, December 2005.](#)

<sup>4)</sup>  
[Zhang, Dengsheng. Concepts of Assessment.](#)

<sup>5)</sup>  
Inside the black box citirano od Assessment of learning Napisao/Ia Wynne Harlen p118

<sup>6)</sup>  
[Stake, R. cited in Earl, L. 2004. Assessment As Learning: Using classroom achievement to Maximize Student Learning. Experts in Assessment. Corwin Press Inc. Thousand Oaks, California.](#)

<sup>8)</sup> <sup>9)</sup>  
[Newble, David, and Robert Anthony Cannon. A handbook for medical teachers. Springer, 2001.](#)

<sup>10)</sup>  
<sup>11)</sup>  
Computer-Based & Paper-Pencil Test Comparability Studies

<sup>12)</sup>  
[Clariana, Roy, and Patricia Wallace. Paper-based versus computer-based assessment: key factors associated with the test mode effect. British Journal of Educational Technology 33, no. 5: 593-602, November 2002.](#)

<sup>13)</sup>  
[Bunderson, C. Victor, and And Others. The Four Generations of Computerized Educational Measurement, June 1988.](#)

<sup>14)</sup>  
[Mead, Alan D., and Fritz Drasgow. Equivalence of computerized and paper-and-pencil cognitive ability tests: A meta-analysis. Psychological Bulletin 114: 449-458, 1993.](#)

<sup>15)</sup>  
[Dillon, A. Reading from paper versus screens: A critical review of the empirical literature. Ergonomics, 35, 1297-1326, 1992.](#)

<sup>16)</sup>  
[Dillon, A. Designing usable electronic text: Ergonomic aspects of human information usage. London: Taylor & Francis, 1994.](#)

<sup>17)</sup>  
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For example Wilkinson, R.T. and Robinshaw, H.M. Proof-reading: VDU and paper text compared for speed, accuracy, and fatigue. Behaviour & Information Technology , 6, 125-133, 1987.

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For example Belmore, S. M. Reading computer-presented text. Bulletin of the Psychonomic Society , 23, 12-14, 1985.

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Kröhne, Ulf, and Thomas Martens. 11 Computer-based competence tests in the national educational panel study: The challenge of mode effects. Zeitschrift für Erziehungswissenschaft 14: 169-186, May 2011.

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