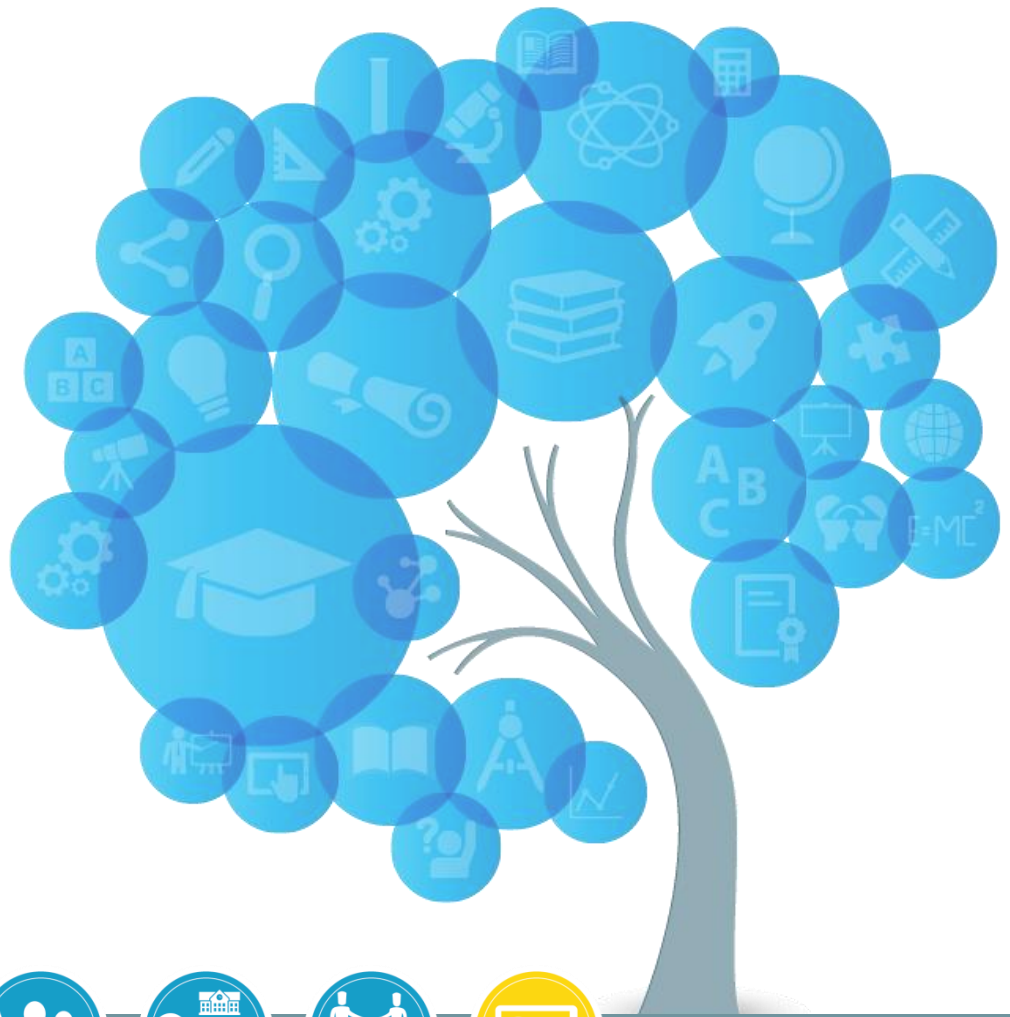




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Digital Assessment 4-5 October 2017

Draft
Key Messages of PLA#6
Tallinn October 2017

Education & Training 2020 Working Group on Digital Skills and Competences

Education
and Training

The sixth Peer Learning Activity (PLA) of the ET 2020 Working Group on Digital Skills and Competences (WG DSC) took place on 4-5 October 2017, in Tallinn. The PLA was one of the events of the Estonian presidency of the Council of the European Union.

The PLA focused on a number of key challenges related to digital assessment and drew in particular on experience from Estonia, Denmark, Austria, Norway, Finland, the ATS2020 project and the Commission's Joint Research Centre. The key messages aim to reflect the overall discussions and key insights. They should not be understood as assent or consensus.

Background:

The integration of digital technologies in learning and teaching is a priority across Europe. Governments spend significant resources on digital infrastructure, devices, learning materials and trainings. Assessment, especially high stakes testing, is often described as a "bottleneck" to innovation and the use of digital technologies in and for education. Yet it is essential to monitor skills of students to identify progress, challenges and needs, and to address gaps in policy-making or implementation. The PLA focused on the topic of assessment and how digital technologies are transforming current practices asking **How are European countries adapting their national assessment methods (high stakes assessment) of different skills and competences?**

On the one hand, specific attention was drawn to the digitalisation of national high stakes examination in a number of countries (e.g. Estonia, Denmark, Finland, Austria and Norway). On the other hand, digital tools to support formative and diagnostic assessment (related but somewhat distinct concepts) were highlighted, illustrating how digital technologies could support more innovative ways of assessment throughout the learning process. Tools, such as diagnostic tests and exercises that students complete at the beginning of their studies, or more or less frequently during the process of learning (formative) help teachers, but also learners, obtain a better knowledge of the acquired competences, skills and knowledge at the beginning and during the learning process.

Key Messages

General

- Digital assessment can facilitate system-level change. As the use of digital technologies for teaching and learning are in many countries a political priority, the use of digital technologies for assessment can particularly encourage and enhance the development of digital competence in the education system as a whole.
- There is no one single approach to digital assessment. There are a wide range of tools, motivating factors and practical approaches to implementation.
- In a first phase, tests might be *distributed* digitally to improve speed, confidentiality and/or to reduce postage costs. Many countries have begun this process, which tends to be a first step towards full digital assessment.
- Approaches towards *digitally-executed* assessment can include distribution of tests, collection of answers, automated or manual assessment (or a combination), quality assurance (e.g. second grading, statistical analysis), archiving, validation or evaluation of results, as well as the distribution of grades.

- Most countries start digital assessment small scale with a few subjects or age groups and gradually scale up.
- Integrating digital assessment is an opportunity for a general reconsideration of learning aims and their assessment, rather than just as a tool for grading and comparison. It can be an opportunity to change from a knowledge-focused curriculum to a competence-focused curriculum. Assessment *for* learning, i.e. continuous 'formative' assessment that allows more timely and detailed feedback to learners and educators can be implemented alongside summative testing of knowledge.
- At the same time, a focus on digital assessment mainly to improve efficiency, comparability and accountability could also lead to an increased focus on tests that allow automated assessment, such as multiple choice tests. This would be a step back from more innovative and learner-centred pedagogical approaches.
- The key questions in implementing digital assessment are *what* to measure and *why*. Design and development should only be begun after these have been decided.
- Valuable insights can be gained across different educational sectors and systems; while school education is often a policy focus, lessons from this sector can be the basis for change in vocational education and training, higher education and even adult education – and vice versa.

Why digital assessment?

- Digital assessment can bring a number of advantages, including: cost efficiency (given a critical mass of tests); time effectiveness for administrative procedures and through whole or partially automated assessment; by enabling the use of more types of materials such as audio/video files, dynamic graphs; in enabling new ways of creative problem solving.
- Digital assessment can help ensure that assessment matches the increasingly digital learning and teaching environment of schools, higher education and all other teaching contexts.
- Integration of digital assessment can be a strong motivator for educators and students to develop digital competences, and to make good use of digital tools also in teaching and learning. Mandatory use of digital assessment can thus act as a catalyst for change in education systems where digital devices are seldom used.
- Assessment can sometimes 'lag behind' the curriculum or teaching practices, in particular where new and more complex competences have recently been introduced. In both cases of mismatch, the process of digitalising assessment can also help to ensure assessment content and methods fit the curriculum and become more responsive.
- Digital tests, in particular when used to provide feedback to educators and learners, can use an adaptive design that adapts to the skill level of the student. If a student answers a question incorrectly, they can be offered an easier question. If, on the other hand, the student answers correctly, a more difficult question is chosen. This means that the test can provide a precise picture of each student's academic level. It can also mean that no two students receive the same test.

How can digital assessment be arranged?

- Digital tests applied on large scale and for formal or high-stakes assessment raise a number of practical issues. Policy and practitioners have to consider in particular:
 - Whether students can use their own devices, which might in some cases imply less possibility for 'control' by the institution, or supplied devices,

- with which the candidates might be unfamiliar and which could imply a major cost.
- Whether internet access is permitted – this can raise concerns around honest test taking and equity (e.g. varying internet speed at different institutions).
 - Security concerns, privacy, access to and use of the same software and websites (e.g. if institutions use different internet filter software).
 - Supplying devices ensures equal access for all students, but could also make it difficult to take account of individual needs (e.g. disabilities) or preferences. Specific assessment software or restrictive operating systems (such as the specific operating system issued on USB sticks for all students for the maturation exam in Finland) can to some degree help ensure equal access but also raise new challenges.
 - Digital assessment might require good connectivity, in particular a stable and sufficient internet capacity, but possibly also local network infrastructure or even sufficient electrical outlets.
 - Technical support and training in how to use devices and/or software are crucial to ensure success and lower anxiety.
 - Use of students' own devices can have benefits, in particular as regards costs and individual preferences, but also raises new issues, such as technical, privacy or security concerns, as well as availability of or the need to instal specific software.
 - If students use their own devices, the test environment needs to function similarly on various hardware (e.g. screen size, processing power, RAM), operating systems or even software. Institutions will need to provide backup computers in case problems arise with some of the student-provided devices.

Teachers are key

- Digital competences of teachers are an important factor to assure digital assessment can succeed. This implies new competences, but also changes in mindset for school management and teachers.
- Teachers need to be supported through appropriate curricula and guidance to ensure students develop competence in the intended subject as well as the ability to express their abilities and knowledge in the expected format.
- Both initial teacher training and in-service training are important components of a successful integration of digital assessment. Support hotlines or other support mechanisms might be necessary.
- In the early stages of introducing digital testing, a challenge is to ensure that all students are equally prepared for digital tests. Mock assessments can be beneficial.
- Teachers require tools and examples on how digital assessment can become part of their teaching. This can imply for digital tests to also be used in a formative way throughout the school year, or that the virtual learning environment used by the school allows for similar practices and acquisition of needed skills.

Assuring honest results

- A key aim of assessment is to measure students' personal aptitude, competence or knowledge. Although cheating during tests has always been a problem in education, the use of digital devices raises a number of new concerns. Policy makers and practitioners are in particular concerned that students might access information saved on their devices or online and use this information to answer questions that are meant to indicate their own ability.
- An approach tried at large scale in Denmark is to allow students to access the internet during exams. In analogy to 'open book' exams, it is not anymore a

concern but rather expected that students have access to factual information, explanations, data or specific references.

- Such assessment requires a re-development of tests away from knowledge and/or recall-based assessment criteria. Assessed are particular competences, understanding and the ability to apply learned techniques or concepts and enables a learning and exam experience that more resembles future life situations.
- However during exams with internet access, educators still want to ensure that students do not interact with fellow students or third parties online, except where this might be part of a specific task. Assessment still aims to capture students' own learning and competence.
- Attempts to prevent cheating tried in European countries include automated plagiarism checks of students' submissions, the installation of software that prevents certain activities, e.g. internet access or copy & paste functions, or specialised testing environments in the form of dedicated software or even entire operating systems, which prevent students from using other software and/or records student activity.
- All these approaches have clear downsides – plagiarism software can deliver both false positives (e.g. if students remember entire definitions) and false negatives (e.g. might not detect custom-made answers, translations or heavy editing), dedicated software can be perceived as intrusive spyware, cause damage to students' devices, limit the usability of the device – e.g. legitimate uses for copy & paste during an exam – or, such as when internet access is prohibited, reduce some of the benefits of digital assessment.
- A positive perspective comes from Norwegian practical experiences spanning several years. In the case of tests where internet access was permitted:
 - teachers adapted their classroom activities to this possibility and placed greater emphasis on teaching students how to find and evaluate information online;
 - students perceived a greater coherence between how they normally work and what they were tested in;
 - students used the internet during such exams in a limited way, mainly for fact-checking and to find precise or updated numbers;
 - there were no differences in time used on the test between low performing students and high performing students;
 - there were no noticeable differences in the occurrence of cheating and plagiarising compared to tests where internet access was not allowed.
- Several PLA participants stressed that rather than worry about cheating, policy and practitioners ought to take a step back and reflect on how to adapt content and assessment to make cheating irrelevant. In a world where information is "an internet search away," exams that focus primarily on measuring students' recall do not reflect the skills and competences students will need throughout life. Students will still need to develop a knowledge of a variety of basic facts, but this should not be understood as the main learning aims and, accordingly, assessment should aim to capture broader competences.

Challenges for implementation

- The implementation of digital assessment needs to be carefully prepared and implemented in small steps and with attention to detail.
- A key question is whether policy should focus first on building educators' competence and experience before introducing digital assessment; or whether teacher training and implementation of digital assessment can occur simultaneously. Depending on local conditions the approach may be different.
- The use of digital technologies for teaching, learning and assessment requires teachers to develop specific as well as general competences. Particularly in its early phases, the integration of digital assessment might also require additional staff time for preparation and follow-up.

- Digital assessment can raise specific technical challenges, e.g. writing mathematical formulae with a keyboard can differ significantly from writing them by hand.
- New forms of assessment will raise uncertainty and imply a need to train teachers, administrative staff and even students in how to successfully use the tool and as regards digital-specific assessment strategies.
- The usability of soft- and hardware as well as the processes are important factors for successful implementation. Complex systems offering much flexibility are normally welcome but can become difficult to use. Systems that are specific to subject or institutional needs can be difficult to implement, train and maintain.
- The digitalisation of assessment should ideally occur in the context of a wider digitalisation strategy. For instance, choices as regarding hardware for teaching and learning determine what materials and support are available for assessment.
- Digital assessment and testing can generate new data on students, educators and institutions at large scale. This data could be used for various policy making purposes and in particular the creation of scoreboards and similar comparison tools.
- Any decision to make use of data should be carefully considered in particular for its impact on (1) assessment design itself, (2) future flexibility – i.e. whether assessment priorities and metrics can be adapted for future needs – and (3) the implied incentive structures and their influence on the key aims of good assessment: to support students, educators and the teaching process. Potential negative effects – such as unintended incentives – should be carefully considered.

Next steps

- Institutions, regions and countries should be encouraged to share experiences and learn from each other.
- Participants raised the question whether it might be beneficial to develop common European guidance or standards for testing systems.
- New types of assessment questions and tasks, and possibly new ways of assessing and grading might need to be developed. While local contexts differ, exchanges of experience of good (and less good) practices will be beneficial.
- Cooperation and exchange in a European context, such as this and future digital-specific working groups, are important. Discussions on this topic should be repeated in the near future.
- The demands students, society and the economy place on education systems are steadily changing. Even if digital assessment is not introduced at this point, both policy and practitioners need to reflect on how tests and exams can simultaneously assess traditional curricula aims and more general key competences, which require students to develop knowledge, skills and attitudes.
- By autumn 2018 the European Commission's Joint Research Centre will publish a report on innovative assessment, including a number of case studies of digital assessment.