
Framework for the Quality Assurance of e-Assessment



FRAMEWORK FOR THE QUALITY ASSURANCE OF E-ASSESSMENT



March, 2019

Authors

Martin Foerster, Anais Gourdin, Esther Huertas, Jana Möhren, Paula Ranne, Roger Roca



This project has been co-funded by the HORIZON 2020 Programme of the European Union. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.



Project Number: 688520 – TESLA – H2020-ICT-2015/H2020-ICT-2015
Agreement Number: 688520

The contents of this guide are covered by a Creative Commons Attribution-Non-commercial-No Derivative Works 3.0 license. Their reproduction, distribution and public communication are permitted provided that the name of the author is stated and that they are not used for commercial purposes.

For the full license, see: <http://creativecommons.org/licenses/by-nc-nd/3.0/legalcode>



CONTENTS

Executive summary	5
Foreword	6
1. Introduction	8
2. Purpose and applicability	10
3. Methodology	11
4. Standards, indicators and minimum evidence for the quality assurance of e-assessment	12
1. Policies, structures and processes for the quality assurance of e-assessment.....	12
2. Learning assessment.....	14
3. Authenticity, transparency and authorship.....	15
4. Infrastructure and resources.....	16
5. Learner support.....	17
6. Teaching staff	18
7. Learning analytics	19
8. Public information.....	20
5. Conducting the quality assurance of e-assessment	21
<i>Annex I</i> – Glossary	22
<i>Annex II</i> – Alignment of the framework standards with the ESG	23
<i>Annex III</i> – Acknowledgements.....	24

Executive summary

Assessment is a key aspect of the teaching and learning process in both online and blended environments. The methods used for assessment are of prime pedagogical importance as they have a direct bearing on both teaching and learning provision and the learner's experience. They need to be planned and aligned with the intended learning outcomes of programmes and integrated into the quality assurance procedures used by institutions for the quality enhancement of e-learning.

The **Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)** have provided the overarching framework for internal and external quality assurance in higher education in Europe since 2005. Since then, the provision of e-learning and related processes such as e-assessment have increased significantly.

The Horizon 2020 project **"An Adaptive Trust-based e-Assessment System for Learning" (TeSLA)** developed a system to facilitate online examination that ensures learner authentication and authorship. Seven universities participating in the project pilot

tested the **TeSLA** system, covering aspects including educational and e-assessment frameworks, data privacy mechanisms and the **TeSLA** instruments for voice, face and keystroke recognition integrated into each university's virtual learning environment.

The project's work package on quality assurance looked at ways to best evaluate and assure the quality of e-assessment and ensure learner authentication and authorship in online and blended learning environments. The objective of the QA activities in the project was to formulate a framework that accommodates the specific characteristics of e-assessment and narrows the gap between traditional and online education provision, as well as to better address the distinctive features of e-assessment and further enhance its quality and reliability.

The framework was designed in line with the **ESG** so as to support higher education institutions in the implementation, use and continuous development of e-assessment procedures and to assist QA agencies in the review and evaluation of e-assessment at all higher education institutions.

Foreword

António Moreira Teixeira
 Universidade Aberta, Portugal
*Chair of the Head Panel
 in the peer-reviews of
 the TeSLA project*



Assessment plays a key role in the educational process. As opposed to the mere marking and certification of learning and recognition and validation of skills and competences, it enables the collection of relevant data on learner performance. This is crucial for underpinning the quality and efficiency of learning practices as it enables them to adjust more precisely to learner needs, thereby contributing to the enhancement of learning outcomes.

As educational practices progress towards student-centred and collaborative-based models, the introduction of digital technologies to support assessment allows for even greater adaptability and flexibility. Electronic assessment, also known as e-assessment or digital assessment, permits the gathering of continuous information, thereby facilitating the datafication of learning, feedback and scaffolding, as well as peer assessment and peer feedback. It fosters the design of personalised and adaptable learning environments in which learners can solve problems related to authentic situations and to real life contexts, assess and be assessed by their peers and also monitor their own progress in real time. Recent research has also been investigating the use of analytics to digitally assess dimensions of learning that are broader than just academic knowledge. One example is the use of multimodal data of eye gazes, facial expressions of emotions, heart rate and electrodermal activities to infer mental states associated with learner engagement.

Digital technology has clearly accelerated the transition to new advanced models of assessment that are better adjusted to the skills and competences of the 21st century. As a result, higher education institutions and other exam awarding bodies, particularly those that provide distance and online learning courses and that have multiple or international study centres, are increasingly embracing e-assessment. Nevertheless, the shift from traditional paper-based exam assessment to fully electronic assessment is complex.

The fact of having a responsive IT infrastructure is not enough to ensure a successful transition to e-assessment as this is only one part of the equation. Institutions are also required to have the necessary policies and processes in place, together with appropriately trained teaching staff and a conducive organisational culture. Furthermore, they need to demonstrate their capability to ensure stringent levels of security and reliability that prevent different forms of academic dishonesty and misconduct, such as identity fraud and plagiarism. Other requirements that need to be met include the ability of institutions to develop a holistic and strategic approach to e-assessment implementation.

By introducing a set of minimum quality standards for reliable and secure digital assessment practice, this Framework for e-Assessment helps higher education institutions, QA agencies and governments alike to successfully meet the above-mentioned challenge. Designed primarily for the European Higher Education Area, this innovative and highly valuable research-based tool provides a comprehensive approach to e-assessment implementation and evaluation that allows it to be used in other regional contexts. The framework therefore represents an important breakthrough for quality assurance in higher education and a major contribution to the development of technology-enhanced and online learning worldwide.

1. Introduction

The **Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)** provide the overarching framework for internal and external quality assurance in higher education with the purpose of enabling the assurance and improvement of quality of higher education, supporting mutual trust and providing information on quality assurance in the **European Higher Education Area (EHEA)**.¹

The **ESG** were adopted at the Ministerial Conference of the Bologna Process in 2005 following a proposal prepared by the **European Association for Quality Assurance in Higher Education (ENQA)** in co-operation with the **European Students' Union (ESU)**, the **European Association of Institutions in Higher**

Education (EURASHE) and the **European University Association (EUA)**. Given that considerable progress was made after 2005 in quality assurance and in other Bologna Process lines of action (including qualifications frameworks and the recognition and promotion of the use of learning outcomes), a Ministerial Communiqué in 2012 invited the stakeholder organisations (which at that time also included **Education International**, representing teachers; **BUSINESSEUROPE**, representing employers; and **the European Quality Assurance Register/EQAR**) to prepare a proposal for a revised version of the **ESG** to improve their applicability and usefulness.² The revised version of the **ESG** was adopted in 2015 and is based on the following **four principles**:

1. Higher education institutions have primary responsibility for the quality of their provision and its assurance;
2. Quality assurance responds to the diversity of higher education systems, institutions, programmes and students;
3. Quality assurance supports the development of a quality culture; and
4. Quality assurance takes into account the needs and expectations of students, all other stakeholders and society.

The **ESG** consist of three parts that address internal quality assurance, external quality assurance and quality assurance agencies in higher education. These three parts are intrinsically linked and form the basis for a well-functioning QA system that applies to all higher education offered in the **EHEA** regardless of the mode of study or place of delivery. This means that the **ESG** cover both e-learning and traditional face-to-face learning alike. Any process or procedure

related to online learning, such as e-assessment, should therefore be assessed within the framework of the **ESG**.

Although several European systems have yet to fully develop systematic approaches to address the quality assurance of e-learning (only 23% of all national agencies devote specific attention to e-learning)³, some agencies have opted to create specific criteria,

¹ Standards and Guidelines for Quality Assurance in the European Higher Education Area (2015). Available at: <http://www.enqa.eu/index.php/home/esg/>

² European Association for Quality Assurance in Higher Education: Standards and Guidelines for Quality assurance in Higher Education: <https://enqa.eu/index.php/home/esg/> (website visited on 11 February 2019)

³ Gaebel M., Kupriyanova V., Morais R., Colucci, E. (2014). E-learning in European Higher Education Institutions. Results of a mapping survey conducted in October-December 2013. EUA. http://www.eua.be/Libraries/publication/e-learning_survey

indicators and quality assurance methods to address this form of delivery. Others have chosen to integrate e-learning into an overarching framework designed to cater appropriately for all forms of delivery.⁴ In order to narrow this gap, a report was published by ENQA with considerations for the quality assurance of e-learning provision to support higher education institutions and QA agencies in addressing the specific characteristics of e-learning.⁵

In overall terms, the adequate quality assurance of e-learning and e-assessment is crucial for gaining public confidence in any form of technology-enhanced education provision. Bearing in mind the increased supply of e-learning provision and its direct link to e-assessment, it is important to investigate the use of general quality assurance procedures to more specifically evaluate different forms of e-assessment as an integral part of the learning process in e-learning systems, and how this can be better integrated into general QA practices.

The Horizon 2020 project “An Adaptive Trust-based e-Assessment System for Learning” (TeSLA), which ran between 2016 and 2019, developed a system to facilitate online examination in a way that can guarantee learner authentication and authorship. A total of around 23,000 students and 500 teachers from the seven universities that participated in the project tested the TeSLA system. Pilot testing covered aspects such as educational and e-assessment frameworks, data privacy mechanisms, and TeSLA instruments such as voice, face and keystroke recognition that

were already integrated into higher education virtual learning environments.

The TeSLA project work package on quality assurance looked at ways to best evaluate and assure the quality of e-assessment processes in higher education, and in particular to assure authentication and authorship in the various stages of learning in online and blended learning environments. This framework was developed in accordance with these objectives.

A Horizon 2020 project “An Adaptive Trust-based e-assessment System for Learning” (TeSLA) running between 2016 and 2019 developed a system to facilitate online examination in such a way that it would guarantee learners’ authentication and authorship. Some 23,000 students and 500 teachers from seven universities participating in the project tested the TeSLA system. The pilots covered elements such as educational and e-assessment frameworks, data privacy mechanisms, and the TeSLA instruments such as voice, face or keystroke recognition already integrated in the universities virtual learning environments.

The work package on quality assurance in the TeSLA project looked into ways on how to best assess and guarantee the quality of e-assessment processes in particular, to ensure learners’ authentication and authorship in online and blended learning environments. With these objectives in focus, this framework was developed.

⁴ Ossiannilsson E., Williams K., Camilleri A. F., Brown M. (2015). Quality models in online and open education around the globe: State of the art and recommendations. Oslo: International Council for Open and Distance Education - ICDE.

⁵ Huertas E., Biscan I., Ejsing C., Kerber L., Kozłowska L., Marcos S., Lauri L., Risse M., Schörg K., Seppmann G. (2018). Considerations for quality assurance of e-learning provision. ENQA, Occasional papers 26. Available at: <http://www.enqa.eu/indirme/papers-and-reports/occasional-papers/Considerations%20for%20QA%20of%20e-learning%20provision.pdf>

2. Purpose and applicability

As defined in broad terms within the TeSLA project, e-assessment refers to methods and practices that utilise digital technologies to measure, evaluate and support the learning experience of learners. The objective of this framework is to increase consistency and transparency in any form of e-assessment applied in evaluating and measuring learning outcomes. One key element is to ensure that assessment processes

are student-centred, relevant, authentic, reliable and trustworthy. The framework is not intended to restrict the creative use of e-assessment methodologies and technologies, but rather to provide minimum standards and to guide users towards the thorough implementation and reliable and secure practice of e-assessment.

The framework is based on the requirements of the **ESG**, with the evaluation of e-assessment being considered an integral part of the internal and external QA procedures implemented by higher education institutions. The purpose of the framework is two-fold:

- 1. To assist higher education institutions in the implementation, use and continuous development of their e-assessment procedures, and**
- 2. To support QA agencies in the review and evaluation of e-assessment procedures at higher education institutions.**

The framework can also function as a source of information and inspiration to all stakeholders in higher education, including policy makers, government representatives and QA experts. In this respect, this document contributes to a common understanding

of the concepts of e-assessment and its quality assurance. The document may also prove useful for the training of peer-review experts for the external quality assurance of higher education.

3. Methodology

The first steps in formulating the standards for the framework involved the identification of the existing practices in the quality assurance of e-learning, together with a thorough analysis of the applicability of the **ESG** to e-assessment. On the basis of this analysis, a first version of the standards and indicators was drawn up.

This draft document served as the basis for the pilot evaluations carried out at the higher education institutions that form part of the TeSLA project consortium and where the TeSLA system was tested. A second round of pilot testing involved seven online evaluations, with a third pilot consisting of one online evaluation and six evaluations that included one site visit.

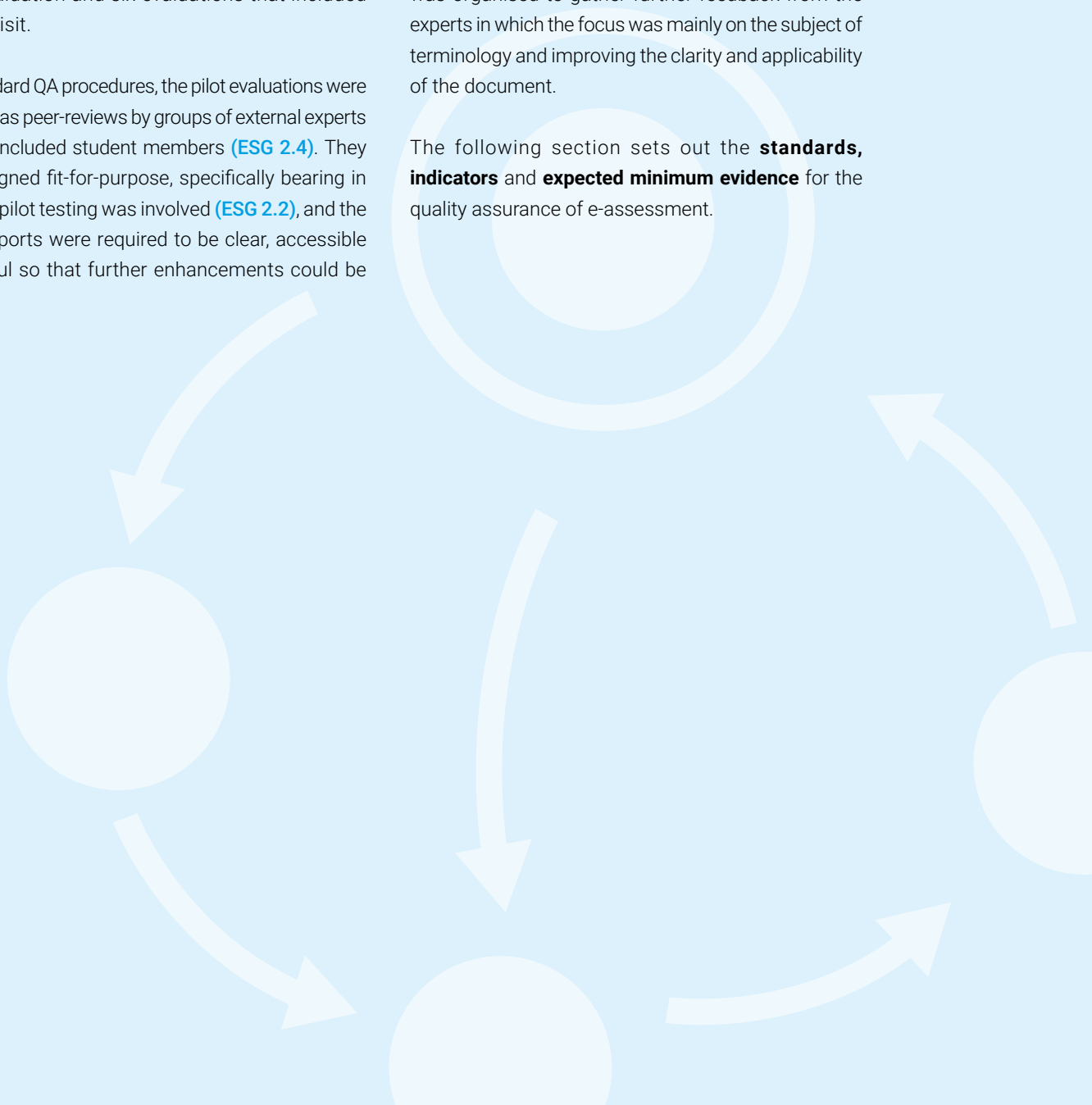
As in standard QA procedures, the pilot evaluations were organised as peer-reviews by groups of external experts that also included student members (**ESG 2.4**). They were designed fit-for-purpose, specifically bearing in mind that pilot testing was involved (**ESG 2.2**), and the panels' reports were required to be clear, accessible and helpful so that further enhancements could be

made to the TeSLA system (**ESG 2.6**).

Pilot evaluation of the TeSLA project provided an interesting context in which to test the feasibility of the framework given that the participating universities represent a variety of contexts in terms of their geographical scope, size, QA practices and virtual learning environments. Throughout the three stages of the pilot evaluations, both the experts applying the standards and the participating institutions provided feedback on the applicability of the standards and indicators and identified minimum evidence requirements for the draft framework.

Following completion of the evaluations, a workshop was organised to gather further feedback from the experts in which the focus was mainly on the subject of terminology and improving the clarity and applicability of the document.

The following section sets out the **standards, indicators** and **expected minimum evidence** for the quality assurance of e-assessment.



4. Standards, indicators and minimum evidence for the quality assurance of e-assessment

1. Policies, structures and processes for the quality assurance of e-assessment

STANDARD

The institution has appropriate policies, structures and processes to ensure that e-assessment conforms to ethical and legal standards and is embedded in the organisational culture and values. In addition, the e-assessment proposal is aligned with the institution's pedagogical model and academic and legal regulations and ensures its objectives are achieved on a constant basis.

INDICATORS

1. The institution has appropriate policies, structures and processes in place to provide guidance on:
 - a. E-assessment organisation and protection against academic fraud.
 - b. Accessibility to learners with disability, illness and for other mitigating circumstances.
 - c. Proper and timely technical support for e-assessment platform use for learners and teaching staff.
2. The institution uses a clearly articulated policy framework and governance structure when deciding on the adoption of new technologies to ensure the expected quality of e-assessment.
3. The e-assessment system is aligned with the educational objectives, regulations and pedagogical models of the institution and it has mechanisms and processes in place for the review and continuous improvement of e-assessment methods.
4. Quality assurance procedures and security measures are in place for external partners that provide e-assessment systems and/or services.
5. The institution has a policy and code of practice for electronic security measures and the use of learner data that cover privacy, security, consent and the purposes for which learning analytics are carried out. This policy and code of practice must ensure information integrity, validity and data protection.
6. The institution has an e-assessment strategy that includes a clear description of responsibilities, roles and procedures. The e-assessment strategy is part of the institution's development plans.

THE MINIMUM EVIDENCE REQUIREMENTS ARE AS FOLLOWS:

- Transparent definition of the quality expectation for e-assessment methodology and outputs from processes, in line with institutional assessment regulations and quality assurance procedures (i.e. mechanisms, instruments and responsibilities to check the quality of system functionality).
- Policy for the sustainable provision of the technological system with regulations for data security, data and privacy protection that are in line with European and national regulations.
- Assessment regulations, including regulations for learners with disabilities and/or mitigation circumstances. Rules for alternative digital assessment methods and pedagogical models. Outputs from transparently defined processes, instruments and allocated responsibilities for e-assessment methodology reviews and updates, based on a cyclical approach.
- Policy and guidelines for external sourcing of the technological system and contractual relationships with external providers and partners.
- Evidence of institutional oversight of assessment procedures and outcomes including reports to institutional committees responsible for academic standards and quality.
- Evidence of institutional oversight of an e-assessment strategy with description of responsibilities, roles and procedures.



2. Learning assessment

STANDARD

E-assessment methods are varied, they facilitate pedagogical innovation and they rigorously determine the level of achievement of learning outcomes. They are designed to assure the timely and fair assessment of learning. As such, they are authentic, transparent and consistent with learning activities and resources. Digital assessment should also promote the participation of learners and adapt to the diversity of both learners and educational models.

INDICATORS

1. Stakeholders, in particular teaching staff and learners, are informed of the e-assessment methods and grading criteria.
2. E-assessment methods are consistently applied and allow learners to demonstrate the extent to which the intended learning outcomes have been achieved; they reflect innovative pedagogical practices and an understanding of the diversity of learners and groups of learners; these methods are in place and encourage the use of a variety of evaluation and assessment methods (formative, continuous, summative).
3. Mechanisms are in place to ensure that feedback on constructive and developmental learning is given to learners and that it is timely.
4. Feedback on the e-assessment methodology and technical arrangements is collected from learners, teaching staff and managers.
5. Learner appeals processes are in place to ensure fairness.
6. Processes and mechanisms are in place for reviewing new and existing e-assessment and traditional assessment methods that are based on feedback from stakeholders (especially teaching staff and learners) and state-of-the-art developments in pedagogy and technology.

THE MINIMUM EVIDENCE REQUIREMENTS ARE AS FOLLOWS:

- Guidelines for teaching staff on available assessment methods and for the design of e-assessment criteria.
- Guidelines or policies for the alignment of assessment methods, teaching methodologies and intended learning outcomes. Guidance on assessment methods and criteria for learners are provided (i.e. learning guides). Details of learning unit accreditation and approval processes.
- The outcomes of feedback surveys (learners, teaching staff, academic managers, etc.) or any other method used to evaluate satisfaction with e-assessment procedures
- Definition of key areas and quality indicators for the collection of data from stakeholders as input for the subsequent steps of analysis, review and renewal of e-assessment methodology.
- Register of appeals.
- Reports from review panels/groups analysing feedback from stakeholders and providing suggestions, papers and reports on new pedagogical models and new technological developments.

3. Authenticity, transparency and authorship

STANDARD

The development and implementation of e-assessment include protective measures that guarantee learner authentication and work authorship. The e-assessment system is secure and fit for purpose.

INDICATORS

1. The institution has an all-inclusive fail-safe technology development plan, including learner authentication and anti-plagiarism technologies that guarantee learner identity and work authorship, as well as procedures for data protection and privacy requirements.
2. The institution has an all-inclusive fail-safe technology development plan, including a system that provides support to the building and maintenance of the infrastructure for e-assessment and processes for the ongoing review of learner authentication and anti-plagiarism technologies.
3. The code of conduct for learners includes specific elements related to cheating and plagiarism and the sanctions (consequences) that may be imposed, as well as guidance on good practice.
4. The system has the capacity to operate with the maximum number of users in the learning units.
5. Higher education institutions assure the integrity of data collected and used, together with the system's security.
6. Assessment procedures must follow national and international regulations on personal data protection.

THE MINIMUM EVIDENCE REQUIREMENTS ARE AS FOLLOWS:

- Guidance for learners on technologies that monitor their behaviour.
- Outputs from clearly defined processes to upgrade the technological system, as and when necessary.
- Code of conduct on academic integrity and regulations including sanctions.
- A record of incidences and mitigation actions regarding system capacity (for instance the number of failed connections, the number of requests for technical support, etc.).
- A record of security incidents detected and mitigated.

4. Infrastructure and resources

STANDARD

The institution utilises appropriate technologies that match intended learning outcomes and enhance and expand opportunities for learning.

INDICATORS

1. Procedures are in place for feedback (from learners, teaching staff and managers) with the learning environment and the educational digital technologies (including the institutional virtual learning environment) used and include the following aspects:
 - a. Ease of use for all learner profiles (including SEND learners and learners with a different technical background or diverse hardware profiles).
 - b. Ethical and legal (privacy in relation to personal data, legal requirements and ethical aspects involved).
 - c. Constant updates to reflect technological changes.
 - d. Support of a variety of methods and tools.
2. The technical infrastructure and operating systems ensure sufficient coverage and alignment with the different e-assessment methods. This has been sufficiently tested prior to use.
3. The technical infrastructure ensures accessibility to the e-assessment system for SEND learners. This has been sufficiently tested prior to use.
4. Sufficient resources are allocated to ensure the uninterrupted running of the system (technicians, updates, maintenance of running systems, etc.).
5. Compatibility with institutional virtual learning environments.

THE MINIMUM EVIDENCE REQUIREMENTS ARE AS FOLLOWS:

- Guidance for learners is provided on use of the learning environment and educational digital technologies.
- Definition of infrastructure requirements, taking into account the system coverage (net coverage) and testing of the technical functionality of assessment methods and different access technologies.
- Feedback surveys, including aspects related to ease of use, privacy, etc. Resource plans indicate the allocation of resources for the maintenance of technology in the respective learning environment.
- Evidence on compatibility with institutional virtual learning environments.

5. Learner support

STANDARD

Learners are aware of, have access to and use effective and well-resourced support services for counselling, orientation, tutoring and facilitation in order to increase student retention and success. Learner support covers pedagogical, technological and administrative related needs and is part of established institutional policies and strategies.

INDICATORS

1. Procedures are in place to identify the support requirements of learners, including SEND learners.
2. Institutions implement learner support policies and strategies by:
3. Providing access to support services including tutoring and facilitation, technical help-desk, administrative support and choice advice.
4. Ensuring that support services are timely and adequate to learners' profiles and needs.
5. The taking into account of learner IT skills.
6. Feedback procedures are in place.
7. Learners are provided with adequate guidance on digital literacy and academic integrity.

THE MINIMUM EVIDENCE REQUIREMENTS ARE AS FOLLOWS:

- Public information on institutional learner support policies and strategies, support resources and contact points for different user groups.
- Qualified pedagogical, technical and administrative support staff.
- Learner retention and achievement figures.
- KPI for technical support.
- Feedback from learners on learner support provision and the accessibility of advice and guidance.
- Report on the number of learners who have registered for the specific course of study (for the monitoring of platform use).

6. Teaching staff

STANDARD

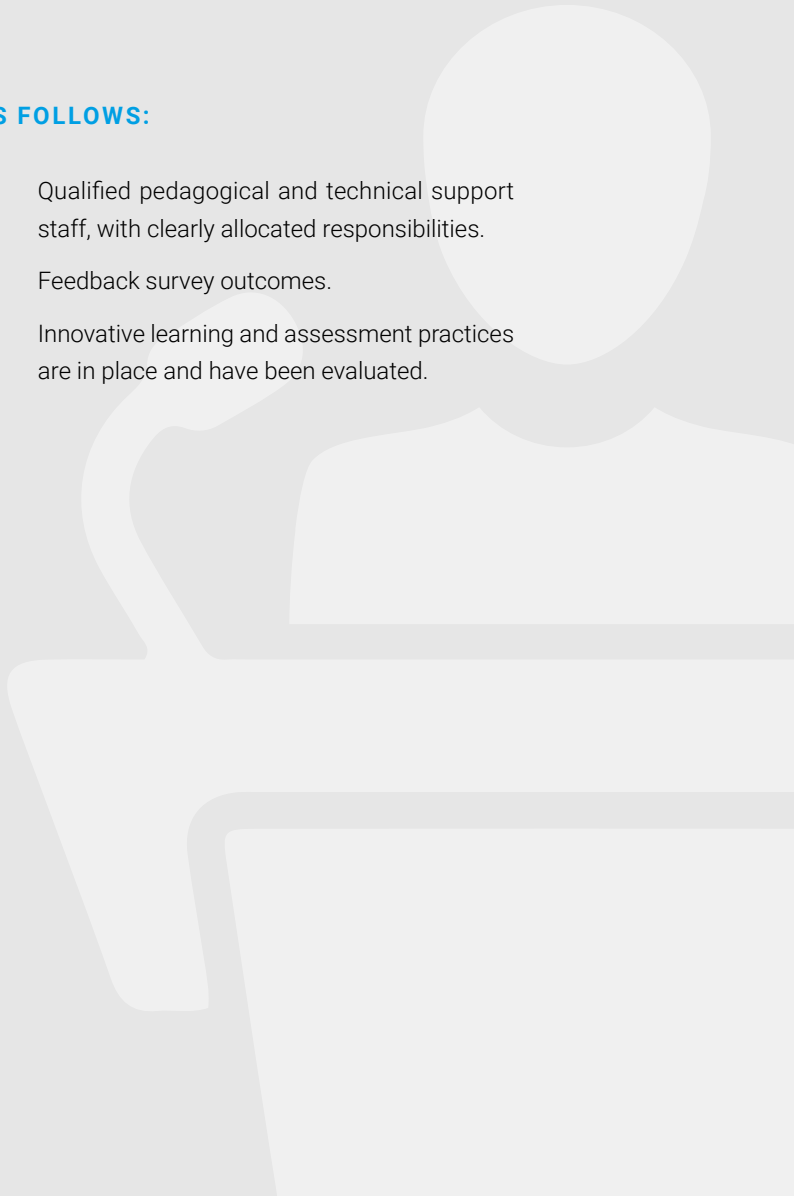
Teaching staff are skilled and well supported in relation to the development of the technological and pedagogical requirements and e-assessment methods.

INDICATORS

1. Procedures are in place to identify the support requirements of teaching staff.
2. Teaching staff are trained and proficient in the use of digital learning technologies and e-assessment methods.
3. Technical and pedagogical support services for teaching staff are adequate, accessible and timely.
4. Feedback procedures are in place for teaching staff in relation to institutional support that they have received.
5. Support is available for the development of innovative practices in e-learning delivery and e-assessment.
6. Teaching staff are provided with adequate references on digital literacy and academic integrity.

THE MINIMUM EVIDENCE REQUIREMENTS ARE AS FOLLOWS:

- Responsibilities and outputs from procedures dealing with pedagogical and technical aspects are clearly allocated among support staff.
- Training and continuing professional development in the use of e-assessment are provided and widely subscribed to by teaching staff.
- Qualified pedagogical and technical support staff, with clearly allocated responsibilities.
- Feedback survey outcomes.
- Innovative learning and assessment practices are in place and have been evaluated.



7. Learning analytics

STANDARD

The institution has an information management system that enables agile, complete and representative collection of data and indicators derived from all aspects related to e-assessment methodology and authenticity and authorship technologies.

INDICATORS

The institution:

- Ensures the collection and dissemination of relevant information from stakeholders (learners, academic staff, support staff, etc.) for effective management and enhancement of the e-assessment methodology (including authenticity and authorship technologies).
- Analyses relevant information for effective management of the e-assessment methodology.
- Uses relevant information for effective management of the e-assessment methodology to promote improvements in the learning experience of learners.

THE MINIMUM EVIDENCE REQUIREMENTS ARE AS FOLLOWS:

- The institution has effective processes in place for systematic data collection and management.
- Available data are analysed for output. Indicators to monitor learner performance are defined and accessible to teachers and students.
- Learning analytics are consistent with the institution's pedagogical approach and are used to monitor progress and promote continuous improvement.

8. Public information

STANDARD

The institution appropriately informs all stakeholders of e-assessment methods and resource requirements. Learners are informed of hardware requirements, learning resources technology and the provision of technical support.

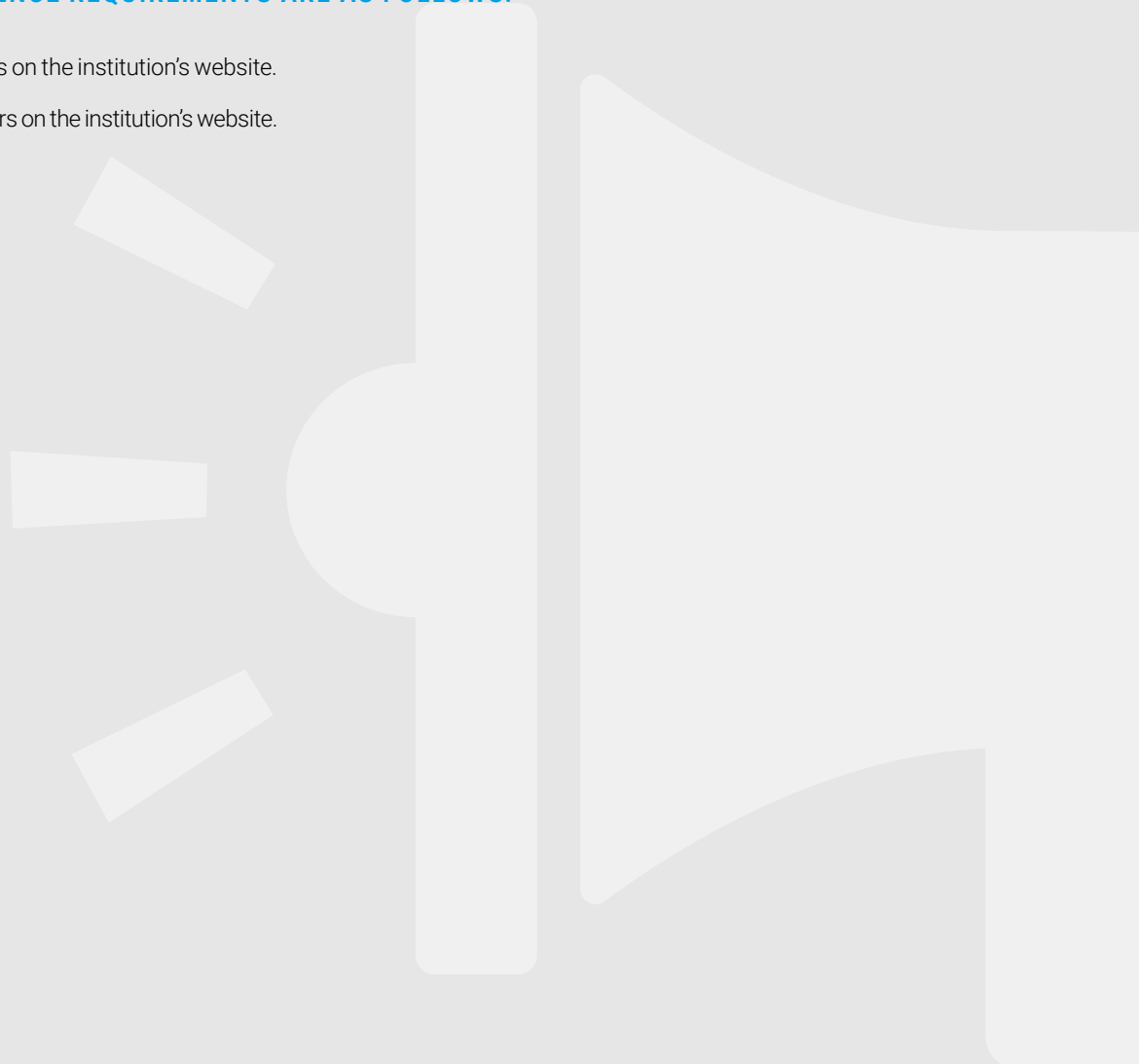
INDICATORS

The institution publishes and makes available reliable, complete and up-to-date information to learners prior to and after enrolment on:

- The e-assessment methods (criteria, regulations and procedures).
- The pedagogical model on which these are based.
- The minimum hardware requirements to make full use of the system.
- Learning and technical support from the institution.

THE MINIMUM EVIDENCE REQUIREMENTS ARE AS FOLLOWS:

- Open access pages on the institution's website.
- Feedback from users on the institution's website.



5. Conducting the quality assurance of e-assessment

Based on the evidence gathered during the TeSLA project and in particular during the pilot reviews conducted against the standards of this framework, it was possible to extract a series of recommendations concerning the quality assurance of e-assessment. These recommendations refer mainly to the practice of the quality assurance of e-assessment and can be summarised as follows:

- E-assessment should be considered from a holistic perspective. It should be evaluated within the context of wider pedagogical developments, course design and course delivery, including intended learning outcomes. As it is not a stand-alone process, institutions should consider ways to integrate e-assessment processes with their regular procedures and organisational culture.
- Given the specific nature of e-assessment, the need for e-learning expertise in peer-review panels is crucial. The transparent and appropriate selection and training of external peer-review experts should therefore be ensured accordingly. In this regard, all review panels should include at least one member with knowledge of e-learning.
- Reporting on e-assessment practices should form part of the institution's internal quality assurance system and therefore be embedded in regular institutional self-assessment procedures and include information on course evaluation procedures and feedback surveys. Higher education institutions should ensure that external experts are provided with all necessary information to conduct peer-review efficiently.
- The evaluation of e-assessment practices requires the involvement of a wide range of stakeholders during the different stages of the process (self-assessment, site visit, etc.). In particular, these include learning and technical support staff, IT managers and representatives of outsourcing partners.
- Examples of best practices should be recorded and openly disseminated in order to facilitate the widespread adoption of effective e-assessment.



Annex I – Glossary

ICT	Information and Communications Technology
EHEA	European Higher Education Area
SEND	Special Educational Needs and Disabilities
IT	Information Technology
KPI	Key Performance Indicators
TeSLA	An Adaptive Trust-based e-Assessment System for Learning
ESG	The Standards and Guidelines for Quality Assurance in the European Higher Education Area
QA	Quality assurance

Annex II – Alignment of the framework standards with the ESG

Framework of e-assessment	ESG (2015)
1. Policies, structures and processes for the quality assurance of e-assessment	1.1 Policy for quality assurance 1.9 On-going monitoring and periodic review of programmes
2. Learning assessment	1.3 Student-centred learning, teaching and assessment 1.4 Student admission, progression, recognition and certification
3. Authenticity, transparency and authorship	1.3 Student-centred learning, teaching and assessment
4. Infrastructure and resources	1.6 Learning resources and student support
5. Learner support	1.6 Learning resources and student support
6. Teaching staff	1.5 Teaching staff
7. Learning analytics	1.7 Information management
8. Public information	1.8 Public information

Annex III – Acknowledgements

The creation of this framework was funded by the **TeSLA project** (Grant Agreement Number: 688520 – TeSLA – H2020-ICT-2015/H2020-ICT-2015).

Special thanks go to head panel members **António Moreira Teixeira** (Universidade Aberta, Portugal), **Stephen Jackson** (Assessment, Research & Evaluation Associates Ltd, United Kingdom), **Esther Andrés** (ISDEFE, Spain) and **Inguna Blese** (University of Latvia), as well as to **all the external peer-review experts** in the project.

