

EMPOWERING EDUCATORS IN DIGITAL ASSESSMENT

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Abstract

In this paper we analyse the design and implementation of a course based on the DigCompEdu framework and integrated in a European project (e-SLP). The module was designed so that the participants realize how digital technologies can enhance existing assessment strategies, how they can be used to create or to facilitate innovative assessment approaches, and how digital technologies can be used in monitoring learner progress, by facilitating feedback and allowing educators to assess and adapt their teaching strategies. The conceptual framework of the module is based on the ideas of assessment for learning and sustainable assessment, in relation to real and professional life.

The study takes a qualitative approach that investigates the work developed by the participants in the module, a group of educators from different countries. Digital evaluation strategies presented in e-portfolios are analysed. We examine the diversity of digital technologies that are used, and the proposed strategies in relation to the different educational settings where the participants in the module act as educators (from basic education to non-formal education).

Results show that the participants reveal some difficulties in identifying forms of digital assessment appropriate to the pedagogical scenarios they present, namely at the definition of competences and valuation criteria. There is a significant diversity of digital tools proposed. Teacher and peer assessment strategies supported in rubrics are elements that also have a significant presence in the evaluation strategies that are described. These elements reveal that training in the area of digital assessment is really extremely relevant and that teachers need to explore different digital technologies in order to adequate them to the competences to be developed and assessed.

Keywords: DigCompEdu, Learning, Digital assessment, Teacher education.

1 INTRODUCTION

The development of educators' digital competences has been included in the political and educational agenda for some years, but the situation on the ground, as several studies and reports have revealed, continues to show important gaps in this field. The recent experience of remote education that many countries had to implement due to Covid19 evidence some of these gaps. In fact, the work in the area of digital competences must be permanent and in the European panorama we believe that the European Framework for the Digital Competence of Educators (DigCompEdu) [1] is a fundamental guiding document. DigCompEdu, launched in 2017, presents a common basis for the development of the digital competences of teachers, as a result of an awareness that teachers "need a set of digital competencies specific to their profession in order to be able to seek the potential of digital technologies for improving and innovating education" (p. 8) [1].

It is important to understand that this framework is not a one size fits all model, but intends to present a background to be used at different levels, such as, the definition of local and national policies, in supporting the construction of curricula in teacher training institutions and in the creation of training proposals for educators in general. We have to take into account that in a fast-evolving technological environment, "Teachers are called on to be activators of meaningful learning, not just facilitators, being creative in choosing from a wide palette of strategies to be mixed and adjusted to context and learner" (p. 357) [2]. Another relevant issue that the same authors highlight is that these guidelines focus on educators' digital competence as a professional competence, "conducive to creating learning experiences that reflect and address the changed skill needs and working patterns in a digital age" (p. 362) [2]. And we know that this is an ongoing challenge.

DigCompEdu has developed 22 of the so-called "elementary competencies", which are organised in six domains: (1) Professional Development, (2) Digital Resources, (3) Teaching and Learning, (4) Assessment, (5) Empowering Learners, and (6) Facilitating Learners' Digital Competence. A team of Universidade Aberta (Open University, Portugal) developed an online module called "Facilitating and

Assessing Learners' Digital Competences". This specific module focuses especially on area 4 - Assessment. This area belongs to a field that raises several difficulties, combining technologies with assessment, which is traditionally a sensitive domain in teaching and learning.

The module was designed so that the participants realize how digital technologies can enhance existing assessment strategies, how they can be used to create or to facilitate innovative assessment approaches, and how digital technologies can be used in monitoring learner progress, by facilitating feedback and allowing educators to assess and adapt their teaching strategies. Upon completion of the course the participants will be able to:

- Design and implement learning activities that generate data for various digital assessment formats.
- Analyse and interpret evidence on learners' activity and progress.
- Enable diverse learners to identify areas of improvement.
- Create and update personal search strategies.
- Evaluate the credibility and reliability of sources of data, information and digital content.
- Use digital technologies in innovative ways and transfer knowledge to new situations.

The module is organised in Learning Building Blocks (LBB) and has a duration of 8 weeks, with 5 ECTS. Each LBB focus on a topic and different tasks/activities are proposed. The module is based on continuous assessment and the final evaluation is based on forum discussions and an individual e-portfolio.

It is also important to mention that this module integrated a course called *Digitally Competent Educators*, developed by 4 universities (University of Jyväskylä from Finland, the FernUniversität in Hagen from Germany, Universidade Aberta from Portugal and Anadolu University from Turkey) in the context of a European project (E-SLP – European Short Learning Programmes for continuous professional development and lifelong learning) [3]. One of the objectives of this project is the definition of the concept and position of Short Learning Programmes (SLPs) as part of higher education-systems and of policies for continuous education and continuous professional development, responding to needs of the economy and personal development. Among the several outcomes of the project is the "Design guidelines for flexible and scalable SLPs" and the course developed was a pilot that applies those guidelines and illustrate how to design international flexible, scalable, accessible and relevant short learning programmes.

In the next sections we will present the conceptual guidelines of the module and the results of the analysis done concerning the work developed by the participants, a group of educators from different countries, and the conclusions of this study.

2 CONCEPTUAL FRAMEWORK

The conceptual framework of the module is based on the ideas of assessment for learning and sustainable assessment, in relation to real and professional life. The assessment for learning aims to promote student learning and integrates the daily lives of students, teachers and peers, based on a process of interaction between these various actors. The assessment for learning distinguishes from the assessment of learning which has as purpose to measure the level of learning at a given moment (end of the year, semester or a stage).

In the present case, we emphasize the purpose of the assessment to prepare participants for professional life, defending the need of assessing competencies. Boud coined the expression "sustainable assessment" [4] questioning the extent to which assessment plays a role in training participants for professional life, criticizing that most assessment activities are inadequate to prepare participants for real life. More recently, several authors presented new initiatives [5] [6] [7], discussing the implications of evaluation design for the development of lifelong learning skills of participants.

The new technologically enriched learning scenarios tend to be more closely connected with most future professional labour contexts where digital technologies are almost always present. The rapid societal changes we are facing and the increasing volatility of the labour market, call for teaching, learning and assessment frameworks that promote the participants' self-regulation competencies, in order to become successful lifelong learners. For that, self- and peer-assessment competencies are essential, as well as the ability to critically analyse the assessment strategies being used. These skills

are cornerstone for what Greet, Fastré, Klink, Sluijsmansa and Merriënboer consider sustainable assessment [8].

The assessment of competences requires a renewed approach where knowledge, abilities and attitudes are integrated [5]. Necessarily, it should make use of a variety of different assessment strategies and tools [9], [10], [11], so as to better assess performance in authentic activities that should be as similar as possible to the contexts in which the competences will be implemented.

Instead of focusing assessment on the results of content centred objective testing, the use of technology supports the design of authentic learning environments where real life competencies such as communication, collaboration, and team work can be evaluated in a variety of formats [6]. It is usual to make use of a diversified set of possibilities made feasible by these new environments, such as online multiple choice tests and quizzes, digital forums, online group work, blogs and e-portfolios [12].

Pedagogical practices in technologically enriched contexts can bring a variety of benefits including the possibility for immediate (or faster) feedback, greater student engagement, interaction and reflection. These practices can be materialized in written essays, reflections, oral presentations (podcasts), digital narratives (storytelling), and artefacts (done individually or in group). Furthermore, these contexts also facilitate the record of the learning process, which can also have a very relevant pedagogical value to promote learning, and also be used as a digital assessment strategy, as figure 1 represents [13].

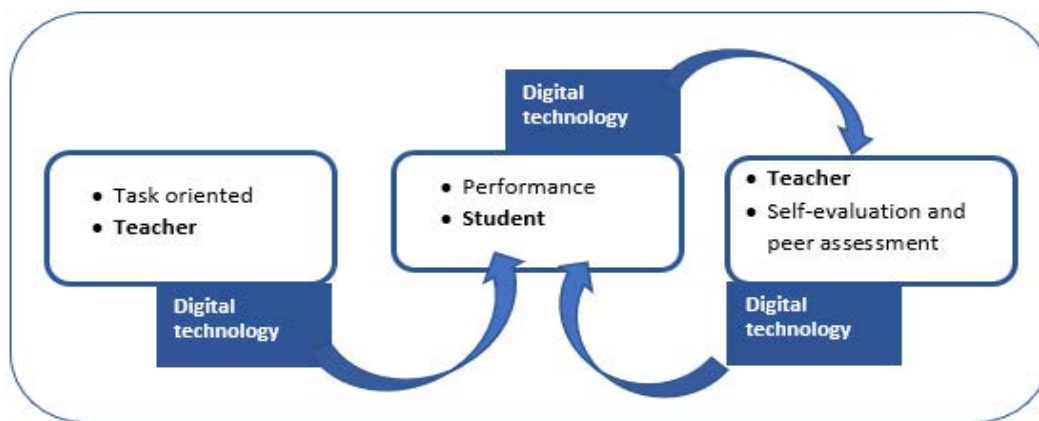


Figure 1. Digital assessment strategy

These new assessment strategies introduce the need of taking into account not only the competences required by real life practices, but also to ensure that the assessment strategies and implemented criteria are valid and fair. This raises the question of how to build an assessment design that guarantees the quality of these new assessment strategies.

3 METHODOLOGY

The study takes a qualitative approach [14], [15] that investigates the work developed by the 17 teachers that have participated and concluded the module with success. These educators are from different countries: Portugal, Finland, Germany and Turkey. Digital assessment strategies presented in e-portfolios were analysed considering the following items: learning context; objectives/competences; activities/instruments and digital tools; evaluators and assessment criteria. We intend to analyse the appropriateness of the objectives to the digital assessment strategy and the alignment between competences and assessment criteria.

We also examine the diversity of digital technologies that are used and the proposed strategies in relation to the different educational settings where the participants in the module act as educators (from basic education to non-formal education).

4 RESULTS

The module "Facilitating and Assessing Learners' Digital Competences" comprises 7 tasks that the participants accomplish individually, with the exception of task 4 and 5 whose final product results

from group work. Along the training path, the participants, in addition to intervening in the forums created for each task, according to the instructions provided, had to build a portfolio with the artefacts they are developing, in a total of 5.

The elements presented below are the result of the analysis of the artefacts built by each participant during task 2 “Selecting Digital Assessment Strategies”. This activity consisted of the following:

- Do an internet search on digital assessment strategies
- Analyse and explore the videos (go to Resources)
- Present in a PPT / Prezi / Infographic a digital assessment strategy (DAS) adjusted to your context as a teacher/educator. To do this, consider the following items:
 - Context (level and / or subject)
 - What do you want to evaluate? (Objectives / competences)
 - How to evaluate? (Activity / instrument)
 - Who evaluates? (teacher / peers / student)
 - With what standards? (rating criteria)
 - How to assess the activity (ies) carried out?
- Share your DAS in the e-portfolio

Several resources were made available for this activity: three articles and a power point presentation that addressed essential concepts, such as assessment for learning/assessment of learning; summative and formative assessment, sustainable assessment and “Digital Assessment Strategies” (DAS). In addition, the participants had also access to four videos that illustrated various ways of achieving a DAS. Three participants did not present a DAS, and also considering GDPR issues (authorization to use data for research purposes) our analysis includes the remaining 12.

4.1 Context: level and/or subject

In relation to the context, there is a diversity of topics covered that relate to the area and / or level of education in which the participants work in their professional life. So we have topics related to the development of citizenship, literature, language learning, among others. For example, P1 chose “Digital Citizenship: a question of security”, for parents and guardians; P2, a Philosophy teacher, chose for pre-university students the theme “Let’s talk about social justice”; P3, who teaches in the area of Social Sciences, proposed “Supporting Ability in Daily Activities” for 1st year students at Social Services; P4, who is a preschool teacher, chose to use a topic about the pandemic with children aged 4 to 5 years: “Understand and know how to act in pandemic context”; P5, who is a teacher in secondary education, chose in the area of literature the topic “Lusíadas, a literary trip” for 10th grade students (remote education) and P6 developed an online course (MOOC) for new students of higher education to orient themselves in their studies.

We also highlight that although most DAS take place in face to face educational settings, some cases refer to an entirely online (3), or hybrid (2) context.

4.2 What do you want to evaluate?

The item *What do you want to evaluate?* (Objectives / Competences) is explained by eleven participants in the form of competencies, in an appropriate way considering the theme, the level of education and the expected activity. For example, P1, whose course relates to digital citizenship issues, considers, among others, the competence “Develop digital awareness actions for healthy and safe experiences online and offline”; P4, whose DAS is aimed at children aged 4 to 5 years, defined the competence “Practice alternative expressions of affection, maintaining an effective social interaction”. P3 enunciated four skills for 1st year students at Social Services, of which the following stand out: i) “recognize the dimensions of functional capacity and are able to evaluate, support and promote human functional capacity” and ii) “can meet people in different life situations, establish professional interaction and cooperation relationship, and develop and reflect their own interaction skills theoretically”.

The remaining participants do not clearly define objectives or present the competences to develop with their students. One of them lists only contents. However, they all present examples of activities and respective assessment tools as we will see below.

4.3 How to evaluate?

For the item *How to evaluate?* (Activity / instrument) all participants indicate activities integrated in their professional practices. There is a considerable diversity of activities and although not all are supported by digital technologies, in the vast majority there are technologies associated with their development (cf. Table 1). We highlight, for example, the proposal to use wiki forums and social networks to evaluate group work, with the use of quizzes for automated evaluations. Word cloud and digital concept maps are also suggested in the evaluation of concepts. There is also a proposal concerning the use of podcast to assess orality (in the context of learning languages), and occasionally the use of video, e-portfolio and e-books is also planned.

It is clear that some participants use a greater diversity of digital tools to carry out the assessment, however we cannot infer that this diversity is associated with greater digital literacy. In fact, the diversity of tools is associated with the nature of the activities to be evaluated, with cases in which one or two tools alone fulfil the objectives of this evaluation. The participants, in general, fit DAS in the formative assessment, approaching the concept of assessment for learning.

Table 1. Digital technologies used in assessment.

<i>Participants</i>	<i>Digital Technologies</i>
P1	Mind map (Popplet), forum (Moodle), wiki, PPT, video, e-book, word cloud, Social networks
P2	Social networks (Facebook), Microsoft Teams, Mind Maps (Mimdomo), Videos, Padlet.
P3	Quiz
P4	Does not indicate digital technologies
P5	Does not indicate digital technologies
P6	Rubric maker; Check List
P7	Microsoft Teams, Quiz, Videos
P8	Forum and Wiki
P9	E-portfolio
P10	Forums; Quiz
P11	Google docs; google forms
P12	Podcast (Audacity), Google forms, Zoom

4.4 Who evaluates?

Regarding *Who evaluates?* (teacher / peers / student), there is uniformity in the proposals. All participants consider that the teacher must make the assessment, with the exception of one participant whose assessment takes place within the scope of a MOOC (on academic skills for students entering university) and which is based solely on self-assessment, through automatic correction of the proposed activities. In another case, concerning a seminar for adults on “resilience at the workplace”, the participant proposes only peers as responsible for the evaluation.

In the course “Digital Citizenship: a question of security”, for parents and guardians, the participant suggests as evaluators, in addition to the teacher and peers, the community in which they are inserted. In the topic “Understand and known how to act in pandemic context”, for small children, it is proposed that, in addition to peers, the family also assess the competences acquired by children. In the course “Camões - a literary trip”, besides the teacher and the students, the teacher librarian also appears as an evaluator. The use of peer-assessment is frequent, registering in ten of the fourteen DAS. Six participants suggest self-evaluation, along with teacher evaluation.

4.5 With what standards? How to assess the activity?

With regard to the evaluation criteria, about half of the participants indicate the rubric as the most appropriate instrument; one participant presents a checklist for students' self-assessment; and the rest do not define any criteria. The remaining participants refer to the criteria set out in the respective rubrics. Four participants indicate criteria but do not have rubrics. Six have specific rubrics, four of which were created by themselves, using digital tools, such as the Rubricmaker. In all cases, the headings consist of 4 levels and 4 criteria with the corresponding descriptors, except for one that has only two criteria. In general, the criteria are aligned with the competencies they intend to assess, as shown in the following example (Table 2):

Table 2. Alignment between competence and assessment criteria.

<i>Competence</i>	<i>Criteria</i>	<i>Descriptor example</i>
Can meet people in different life situations, establish professional interaction and cooperation relationship, and develop and reflect their own interaction skills theoretically.	Personal reflection	All reflections include personal reactions that are descriptive and express in detail the process of involvement in the course or activities

5 CONCLUSIONS

Digital evaluation strategies presented in e-portfolios were analysed. We examined the diversity of digital technologies that are used and the proposed strategies in relation to the different educational settings where the participants in the module act as educators (from basic education to non-formal education).

The results show that different scenarios were considered in the development of digital assessment strategies. These scenarios are interconnected with the participants' professional lives and include both different themes and levels of education (from pre-school to higher education), through formal and non-formal education. At the same time, some participants define a DAS for a course, for a module or just for an activity. We found that not all participants present the definition of objectives / competences aimed at by the digital assessment strategy they propose. This aspect is worth noting to the extent that this definition constitutes a prior and fundamental step in the design of that strategy.

In terms of the digital tools proposed for the assessment situations, there is, in general, a great diversity of tools associated with the nature of the activities to be assessed, which may or may not be integrated into the wider scope of a module or course. However, some participants opt for a single tool, as this relates to the nature of the objectives / competences being assessed. It should also be noted that this diversity may be related to the profile of the target audience, where several participants are master students in the area of technologies in education and / or master students in the distance education modality. This may contribute to a greater mastery of these artefacts.

We remark that the results show that the teacher remains the evaluator par excellence, with only two cases appearing in which his/her action as an evaluator is not considered. At the same time, the relevance given to the peer assessment was evidenced, being considered by several participants. However, self-assessment was scarcely pondered in the DAS proposals presented.

Finally, we note the absence of definition of evaluation criteria, by more than half of the participants. Considering that flaws in the definition of objectives / competencies were also shown, these elements reveal that training in the area of digital assessment is really extremely relevant and that teachers need to explore different digital technologies in order to adequate them to the competences to be developed and assessed.

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REFERENCES

- [1] C. Redecker, *European Framework for the Digital Competence of Educators: DigCompEdu*, Y. Punie (ed). EUR 28775 EN. Publications Office of the European Union, Luxembourg, 2017. Retrieved from <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu>
- [2] F. Caena and C. Redecker, "Aligning teacher competence frameworks to 21st century challenges: The case for the European Digital Competence Framework for Educators (Digcompedu)," *European Journal of Education*, vol. 54, pp. 356–369, 2019. DOI: 10.1111/ejed.12345
- [3] E-SLP Project: <https://e-slp.eadtu.eu/>
- [4] L.K.J. Baartman, T.J. Bastiaens, P.A. Kirschner and C. Vleuten, "Evaluating assessment quality in competence-based education: A qualitative comparison of two frameworks", *Educational Research Review*, vol. 2, pp. 114-129, 2007.
- [5] D. Boud, "Sustainable assessment: rethinking assessment for the learning Society", *Studies in Continuing Education*, vol. 22, no. 2, pp. 151-167, 2000.
- [6] D.M.A. Sluijsmans, F. Prins and R. Martens, "A framework for integrated performance assessment in E-Learning", *Learning Environments Research*, vol. 9, no. 1, pp. 45-66, 2006. <https://doi.org/10.1007/s10984-005-9003-3>
- [7] I. Oliveira, L. Tinoca and A. Pereira, "Online group work patterns: how to promote a successful collaboration". *Computers and Education*, vol. 57, no. 1, pp. 1348-1357, 2011.
- [8] M.J. Greet, M. Fastré, M. R. van der Klink, D. Sluijsmans and J.G. van Merriënboer, "Towards an integrated model for developing sustainable assessment skills", *Assessment & Evaluation in Higher Education*, vol. 38, no. 5, pp. 611-630, 2013.
- [9] S. Dierick and F.J.R.C. Dochy, "New lines in edumetrics: new forms of assessment lead to new assessment criteria", *Studies in Educational Evaluation*, vol. 27, pp. 307–329, 2001.
- [10] D. McConnel, *E-learning Groups and communities*. Berkshire: Open University Press, 2006.
- [11] E. MacLellan, "How convincing is alternative assessment for use in higher education?", *Assessment & Evaluation in Higher Education*, vol. 29, no. 3, pp. 311–321, 2004.
- [12] L. Amante and I. Oliveira (coord.), *Avaliação das Aprendizagens: Perspetivas, Contextos e Práticas*. Lisboa: Universidade Aberta, LE@D, 2016. Retrieved from <https://repositorioaberto.uab.pt/handle/10400.2/6114>
- [13] A. Pereira, L. Amante, I. Oliveira, M.C. T. Pinto, V. Monteiro, J. Paz, R. Oliveira, J. R. Santos and F. Alexandre, *Avaliação Digital no Ensino Básico e Secundário*. Lisboa: Universidade Aberta, LE@D, 2020. Retrieved from <https://aulaberta.uab.pt/blocks/catalog/detail.php?id=52>
- [14] G.A. Bowen, "Grounded theory and sensitizing concepts", *International Journal of Qualitative Methods*, vol. 5, no. 3, pp. 12–23, 2006.
- [15] J.W. Creswell, *Qualitative inquiry and research design: Choosing among five traditions* (2nd ed.), Thousand Oaks, CA: Sage, 2007.