

Towards a Data-driven Framework for the Assessment of Digital Readiness in Higher Education Institutions

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Abstract.

During the pandemic period, higher education institutions increased the use of digitally enhanced learning and teaching methods, taking advantage of their potential. In the post-pandemic era, blended and hybrid learning approaches are expected to become even more widely used. However, there is a growing concern regarding the impact of this accelerated transformation on the quality of provided education. The digital readiness levels of individual instructors, for example, and the degree of online teaching pedagogy knowledge, need to be assessed. Taking into account these concerns, the digital readiness of higher education institutions, and its systematic measurement becomes very important. In this paper, we present DigiReady+, a project that aims to define a digital readiness framework and develop relevant tools (in the form of web-based applications) that allow digital readiness measurement. The ultimate objective is to contribute towards supporting quality assurance processes of European higher education institutions.

Keywords: digital readiness, higher education, data-driven framework, assessment, measurement, digital transformation.

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1 Introduction

The main objective of the DigiReady+ project is to define a computational framework and to develop tools for supporting the measurement of the digital readiness of higher education institutions. Additionally, we aim to validate and demonstrate the effectiveness of this approach in terms of obtaining an objective and reliable measurement of digital readiness and to identify proper action recommendations for different stakeholders. The overarching goal of DigiReady+ is to integrate the proposed framework into the quality assurance processes of European Higher Education institutions (HEIs).

Existing frameworks for the measurement of digital competence, and digital readiness of learning institutions require further adaptations in order to be successfully integrated and adopted in the European tertiary education sector. It is worth mentioning that most of the existing frameworks, once analyzed in detail, tend to be implemented in the strict form of self-assessment questionnaires which clearly have a marked subjective character. Also “most questionnaire items are statements that the participants need to rate, with no room for more detailed explanations or comments” (Volungeviciene et al. 2021).

The need for a reliable index to measure the capacity or the readiness of an individual or organization regarding the digital potential is evident, given the importance of digital technologies and services today. For a given organization, digital readiness is a complex construct that needs to be monitored at multiple levels (for example, institutional, instructional, technical, and administrative levels). In other words, it should “allow flexibility and interpretation in context” (Volungeviciene et al. 2021). Digital transformation, among its benefits, also generates an outstanding amount of data related to teaching and learning activities. All of this information is collected. Therefore, we can have quantitative insights into the interaction between tutors and learners. Thanks to digital media all these traces and content can be well analyzed. This data can help us understand the process between learners and tutors, but also how performance is or can be measured.

In this landscape, we envision DigiReady+ as an opportunity to innovate because it combines existing self-reflection tools with evidence-based measurements of digital readiness. The DigiReady+ project aims to define and validate an evidence-based digital readiness framework and tool focusing on digitally enhanced learning and teaching in European Higher Educational Institutions (HEI).

2 Related Work

Currently, there is an increased interest in digitally enhanced learning as a direct consequence of the Covid-19 pandemic which “helped universities to better understand the crucial role people and the entire social environment play for the learning experience” (Gaebel et al. 2021). It is an ideal time for HEI to review and enhance their digital readiness. There have been many attempts so far, in defining instruments measuring digitally enhanced learning and teaching in HE. For example, frameworks proposed in recent times by UNESCO (Lim, Wang, 2015), European Commission JRC (Kampylis et al. 2015), JISC (Killen et al. 2017). Another example

of a very interesting project is SELFIE which is “a tool for schools to reflect on how they embed and use digital tools in their organization and learning process” (Broek, 2021).

DigiReady+ builds upon these state-of-the-art readiness assessment frameworks and tools by augmenting them with a quantitative component that produces evidence derived from learning and institutional analytics data. This complements self-reporting’s subjective character and, as a consequence, can increase the output’s objectivity and validity. The project relates directly to the horizontal objectives of "Addressing digital transformation of higher education institutions and "Supporting digital capabilities of the HE sector". DigiReady+ aims to contribute to the state-of-the-art research in the following ways:

a) delivering digital tools for higher education stakeholders to support their practice in the digital era. The DigiReady+ tool will work as an institutional dashboard of digital readiness, which can be used as a multipurpose application by HEI’s stakeholders (for example, policymakers, administration councils, faculty, and degree committees). The tool will provide information regarding potential issues and risks in the process of designing from scratch or adapting existing curricula or learning activities to meet the needs of digitally enhanced learning and teaching. Institutional stakeholders will be able to follow an evidence-based structured approach regarding the assessment of digital readiness. Such an opportunity will be of great help in order to take the most appropriate and effective decisions during critical transition periods, just as we’ve seen with the Covid-19 pandemic crisis;

b) supporting HEI’s stakeholders, such as policymakers, in order to create appropriate strategic plans based on data-based insights. To that end, we aim to provide constructive and accurate feedback concerning crucial aspects of online learning, such as pathways for acquiring self-regulation skills, sustaining motivation through the course, and emphasizing the feeling of belonging to an academic community and its activities.

c) allowing the expansion and customization of the framework and associated analytics to address stakeholders’ needs and achieve expected outcomes according to their special and unique conditions. We envision that the use of the framework will support sustainable adoption and the significant positive impact of the different HEI practices due to its flexible and open nature.

d) providing the opportunity to all stakeholders to take advantage of a variety of content and materials, such as best practices, training materials, datasets, and much more through an open Knowledge Repository. All these materials will be developed throughout the DigiReady+ Project and we envisage that they can support stakeholders who face new or challenging scenarios in the context of digitalization of learning.

3 Methodology

DigiReady+ is based on exploiting the developed synergies and complementary profiles among our consortium and all the members that are part of it. The consortium includes three Higher Educational Institutions across Europe: University of Patras - UPAT (Greece); Universidad de Valladolid - UVa (Spain); and University of

Duisburg-Essen - UDE (Germany), EDEN Digital Learning Europe, a non-profitable organization with over 200 institutional members, and the Greek Universities Network (GUNET) which represents 25 Greek HEIs.

The consortium works on the implementation of a series of specific activities that will help the project reach its goal. In particular, DigiReady+ aims to define the DigiReady+ framework using as a base the existing self-reflection, qualitative instruments that have been used over the last few years in European institutions towards the idea of generating a “*reference framework that adopts a systematic approach can add value by promoting transparency, comparability and peer-learning*” (Kampylis et al. 2015). Then, we will map these qualitative indicators to data that can be retrieved from the HEIs information systems, such as learning management systems (LMSs) (Chounta et al. 2019). We will implement the proposed framework in the form of a web application by defining an Application Programmers Interface (API), which can be used by HEIs for connecting the tool to their own information systems.

Taking into consideration the importance of our goals we plan to perform a feasibility study across three European universities: the University of Patras, the University of Valladolid, and the University of Duisburg-Essen. It is very important to remark that these universities have different levels of digital readiness. Therefore, this semi-comparative study will allow us to gain insights into the diversity of the institutions concerning digital readiness. This is also a cornerstone action in order to demonstrate the effectiveness of the framework and tool.

A key point of DigiReady+ is to provide constructive and effective recommendations taking into consideration their measured level of digital readiness. To achieve this, we will develop a knowledge repository that will be connected to the DigiReady+ tool. To assess the impact of our project, we will involve associate partners and universities beyond the project’s consortium. To that end, we plan to recruit key agents through various multiplier events and workshops. The results and conclusions of the evaluation will be presented in the final report of the project and be communicated publicly

4 Work in progress and Outlook

The DigiReady+ Project consortium is currently working on two intellectual outputs (IOs): Designing an Integrated Framework for assessing HEIs Digital Readiness based on Institutional and Instructional Data Analytics (IO1) and a Knowledge Repository (IO3). The finalization of IO1 is expected for October 2022 and will result in a mixed-methods, methodological framework for the assessment of digital readiness in HEIs. IO3 aims to document and share best practices, training materials, and datasets produced during the project and to design and implement a sustainable and open knowledge base. For both IOs, we have carried out six participatory workshops within the three academic partnering institutions. The workshops focused on the application of self-assessment frameworks, good practices, and digital readiness measures. A follow-up report that will document and communicate the results from this first project phase is expected to be published in July, 2022.

The DigiReady+ project will continue its progress with the implementation of an open-source toolkit and Application Programming Interface (IO2) which aims to collect and analyze data from different organizations in order to assess digital readiness and inform the respective stakeholders regarding their strategic planning. Finally, the project will start its last phase in IO4 where a large-scale validation study will take place with 3 to 10 associate partners. During the final month of the project (January 2025), individual reports will be collected and compiled into a volume. The document will be presented at the European Conference of DigiReady+ Framework.

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