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Digital Competence and Capability Frameworks in Higher Education: Importance of Life-long Learning, Self-Development and Well-being

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Abstract

The paper compares the EU's 2013 and 2016 digital competence (DigComp) framework with the UK education's 2009 and 2015 digital capabilities (DigCap) framework. The similarities are in the increased focus on data within privacy/overall literacy and the inclusion of well-being. Among the differences, DigComp focuses on life-long learning whereas DigCap is more holistic. This is explained by diverse target audiences, as DigComp has to be relevant to various stakeholders across the EU, whilst DigCap serves the UK higher and further education sector. Although education is dominant within DigCap, both frameworks agree on the importance of digital skills, knowledge and attitudes to the fields of education, training and employment. The paper discusses a UK HE case study of a technology enhanced learning toolkit. It concludes by arguing for a human-centred approach to digital competence and capability frameworks, in which learning, self-development and well-being play a vital role.

Keywords: competence, capability, framework, TEL, toolkit, education, well-being

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1. Introduction

Despite the number of efforts in promoting and developing digital competence across varying social spheres such as education, health and policy, the study *Measuring Digital Skills across the EU* (2014) found that 47% of the EU population has insufficient digital skills, whilst 23% has none at all, as well as that 39% of the EU workforce has insufficient digital skills with 14% having no digital skills, and lastly 64% of disadvantaged people (aged 55-74, low educated, or unemployed) have an insufficient level of digital skills and 38% have no digital skills at all [1]. The study adds that *information* and *communication* skills are higher than *content creation* and *problem-solving* skills among the EU population. This represents a key challenge for institutions educating young adults. Although college and university students often seem technologically competent, they might have a narrow knowledge and set of skills connected to specific platforms (e.g. social networks) and technologies (e.g. mobile phones) [2a, b], as well as a limited awareness of opportunities and issues these can potentially bring to their personal and professional lives [3].

It however is not digital competence or capability that is important in the context of higher education, but inclusive, effective, life-long learning. This should act as an enabler and encompass the learning of staff and students that it embodies. Education of all levels is preoccupied with complex literacy and the ability to navigate self-learning for continuous development [4]. Digital competence and capability therefore plays, or should play, an essential role in both enhancing immediate, and enabling life-long, learning. Recognising this, EU and distinct local organisations – such as Jisc in the UK – have developed and acknowledged a number of digital competence and literacies frameworks for the purpose of encouraging and underpinning various educational and other initiatives. This paper reviews the frameworks, positions

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them within the HE context and explores their practical implications through a single UK institution case study of a technology enhanced learning toolkit.

2. EU-Commissioned Digital Competence Frameworks

The European Parliament and the Council published recommendations on key competences for lifelong learning that included *digital competence* in 2006, whilst defining *competence* as 'a combination of knowledge, skills and attitudes' and clarifying that *key competences* are those 'which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment' [5]. This life-long learning reference framework approaches digital competence as a confident, informed, critical, reflective, responsible, ethical, and legal use of *Information Society Technology (IST)* – its tools and complex information – for personal, cultural, social, creative, innovative, and/or professional purposes.

The EU established here that digital competence penetrates all aspects of life at all stages, but there was no strategic framework in place until *Europe 2020* and its *Digital Agenda* (2010) made of seven pillars with one being 'promoting digital literacy, skills and inclusion' [6]. The *Digital Competence* (DigComp) project was commissioned by the EU DG for Education and Culture in 2011, leading to the publishing of the first *The European Digital Competence Framework for Citizens* framework two years later [7]. The *Tables 1* a *2* below summarise and compare the core areas of the digital competence frameworks from 2013 and 2016 developed and updated by the Joint Research Centre (JRC) of the European Commission.

Table 1. Digital competence frameworks 1.0

DigComp 1.0 (2013)
1. Information
Browsing, searching and filtering information
Evaluation information
Storing and retrieving information
2. Communication
Interacting through technologies
Sharing information and content
Engaging in online citizenship
Collaborating through digital channels
Netiquette
Managing digital identity
3. Content creation
Developing content
Integrating and re-elaborating
Copyrights and licences
Programming
4. Safety
Protecting devices
Protecting data
Protecting health
Protecting the environment
5. Problem solving
Solving technical problems
Identifying needs and technological responses
Innovating and creatively using technology
Identifying digital competence gaps

Table 2. Digital competence frameworks 2.0

DigComp 2.0 (2016)
1. Information **and data literacy**
Browsing, searching and filtering **data**, information **and digital content**
Evaluating **data**, information **and digital content**
Managing data, information **and digital content**
2. Communication **and collaboration**
Interacting through **digital** technologies
Sharing **through digital technologies**
Engaging in **citizenship through digital technologies**
Collaborating through digital **technologies**
Netiquette
Managing digital identity
3. Digital content creation
Developing **digital** content
Integrating and re-elaborating **digital content**
Copyright and licences
Programming
4. Safety
Protecting devices
Protecting **personal** data and **privacy**
Protecting health **and well-being**
Protecting the environment
5. Problem Solving
Solving technical problems
Identifying needs and technological responses
Creatively using **digital** technologies
Identifying digital competence gaps

creation, innovation, communication, collaboration, participation or engagement, and digital identity. In addition to these and, as mentioned earlier, the latest versions of the frameworks both added 'well-being'. DigCap justified this, on one hand, by the research finding that the expectations of staff to deliver 'digital practice' as a source of stress and concern among teachers (e.g. workload) and students (e.g. cyberbullying and time management, and on the other hand, by stating that '[e]veryone can suffer if digital technologies are used without attention to human and environmental health, and without considering whether digital practices are fully inclusive and equitable' [15]. Whereas the first argument is grounded in Beetham and McGill's primary research, the second is fully consistent with the EU Digital Agenda's aim to build 'inclusive, equitable and sustainable European information society' [16] as well as with other EU frameworks (e.g. Education 2030: Incheon Declaration and Framework for Action towards inclusive and equitable quality education and lifelong learning for all [17]).

The difference in the frameworks' target audiences is visible in the DigCap's areas of scholarship, learning and development that belong among the key capabilities. It is understandable that DigCap for higher and further education can be more specific, whereas DigComp for all EU citizens must be more general. Despite that, learning and development is covered within DigComp's 'problem solving' area stressing the competence of identifying and evaluating needs and self-development opportunities that can be fulfilled through/with digital technologies. Furthermore, DigComp highlights the importance of understanding 'where one's own digital competence needs to be improved or updated', as well as to 'be able to support others with their digital competence development' [8]. One's own life-long learning as well as the support of others is therefore embodied in both frameworks despite their diverse contexts and target audiences.

The following section will use the case of Bournemouth University (BU) and its digital toolkit, which takes into account student and staff life-long learning, development and well-being, in order to discuss the practical implications of DigComp and DigCap.

4. Technology Enhanced Learning and Self-Development: Case of BU's TEL Toolkit

BU's digital toolkit, developed by the Centre for Excellence in Learning (CEL), will serve here as a case study that helps to illustrate abstract ideas through examples of real situations [18]. The case study approach is popular in educational research [19] as it allows a phenomenon such as digital competence and capability learning to be set within its context [20]; here being higher and further education in the UK and, by extension, the EU.

The mission of CEL is to make a significant contribution to the strategy of fusing education, professional practice and research by enhancing the student learning experience across the University, with one of the major themes being technology enhanced learning (TEL). This theme seeks to harness available technology to develop the competencies and confidence of staff and to engage and enthuse students in their learning and self-development activities. As Heppell (2016) argues, 'one significant impact of new technologies in education has been to give teachers and learners a voice through the many "bottom up" channels' [21]. Although TEL tools have been in use at BU for many years, their uncoordinated growth led to the situation where many, sometimes duplicate, tools were being used, the support was sporadic and information on the tools was spread across many university systems.

The TEL Toolkit was envisioned as a way of bringing together these disparate resources in one place so that staff, students, partner institutions and the wider academic community would know where to go for publicly accessible TEL information [22]. Support for and promotion of the Toolkit is provided by Learning Technologists and representatives from IT and Library, ensuring that the Toolkit is relevant and contemporary. Students interface with the Toolkit via the practice of lecturers and independently via exploration of the website, experiences that act to raise student expectations of the use of TEL.

An important aspect of the Toolkit is the six learning pedagogies it incorporates. The first four – blended learning, feedback and feedforward, flipped classroom, and assessment – are relevant to the EU's educational frameworks (e.g. European Framework for Digitally Competent Educational Organisations [23]) and Jisc's DigCap, whereas the remaining two – collaboration & co-creation and engagement – are directly aligned with both DigCap and DigComp. For each area, there is an explanation of why the pedagogy is important to teaching and learning, how staff can use the approach and the TEL tools available to develop their practice.

The TEL Toolkit is supported by an online questionnaire based on the EU's DigComp and Jisc's DigCap models that enables staff to self-assess their confidence in using tools and their wider digital literacy awareness of the areas listed in Figures 1 and 2. The rationale for the questionnaire is two-fold. The first is focused on teachers' well-being. By completing the questionnaire, staff gain a better understanding of their own digital skills and can identify areas for self-development through personalised support. This also enables them to access University workshops and training sessions, and this may reduce technology related stress. Secondly, CEL uses the information to make informed decisions about how and where to focus attention and invest resources to best support academic staff.

To date, almost 60% of academic staff have completed the questionnaire. The picture is constantly changing as more staff undertake the assessment and there is a general decline in confidence levels as academic staff who are more reluctant to engage in TEL are encouraged to participate in the assessment. Their generally lower levels of confidence are reducing the averages created by staff more engaged and confident with TEL who completed the questionnaire when it was first made available. Work continues to encourage the remaining 40% of staff to complete the questionnaire using a variety of techniques including raising awareness in meetings

[26]. Components such as realisation of human potential and personal growth [27] relevant to self-development and life-long learning reflect the broader themes introduced in this paper. It can be argued that, despite the Alkire focus on public policy, there potentially is a space for measuring the effectiveness of an institutional TEL toolkit in a similar way. In undertaking such an analysis, a new understanding of relationship between staff and students' digital capability/competence and potential stress 'tipping points' in the context of higher education could potentially be identified. Stress related to using (or not using) digital technologies, or 'digital stress', has been so far explored within well-being research in the work context [28] and home environment [29], whilst there is a gap of research on digital stress in higher education [30]. As a research by Darabi et al. [31a,b] exploring well-being and stress among UK academics suggests, stress can also be motivational, leading to self-development and learning if coped with well, for example, with institutional support.

Therefore, the authors call for further significant research exploring TEL toolkit effectiveness, potentially in the context of HE staff and students' psychological well-being. Funding has been secured to further investigate the impact of TEL toolkits and the frameworks associated with these at higher education institutions in the UK and across the EU, led by BU and entitled 'An Ontology of digital toolkits' which will provide a framework for mapping to be shared across the sector.

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