Removing barriers in digital education. Deployment and licensing solutions as building blocks to greater inclusivity in the digital transformation

Lieke Veenhuizen [1,2] and Dawn Nell[1]
[1] Academic Software
[2] Academic Software
Lieke@academicsoftware.com, dawn@academicsoftware.com

Abstract

Digital transformation is having far-reaching implications for societies, organisations and individuals. As the digital transformation has seen ICT reach into every part of university learning, concerns have grown around ensuring that digitalisation is inclusive. Inclusivity in education "enables people to be educated in a diversity of spaces at all times, removing barriers and bias regarding their learning potential." Implicit in calls for the promotion of inclusivity in education is the recognition that students are not a homogeneous group. A number of factors can have an impact on the ability of a student to access learning in the university setting, and their engagement with university ICT.

Academic Software has been providing solutions in the educational sector for more than a decade, and its experience points to a shift in which questions of inclusivity in digital education in the European context are increasingly less about access to computers, and more about ensuring the equity objective is followed through in deployment and licensing. This paper is intended to contribute to increasing awareness of the importance of licensing and deployment / provisioning in any interventions aimed at improving digital inclusivity.

1 Digital transformation

Digital transformation is having far-reaching implications for societies, organisations and individuals. Its impact on higher education is not only on content, pedogeological approaches, learning outcomes, and research, but also on the internal operations of the university itself (Baumgarten, Simeon,

& Wilhelm, 2020). A number of characteristics of the digital transformation, which present both challenges and opportunities to universities, are:

1. that whereas the use of software and applications in learning had previously been largely limited to curricula in the fields of science, technology and mathematics, ICT now reaches into every area of learning, from languages to physiotherapy, to architecture to qualitative social science research;
2. desktop computers in on-campus labs have been largely replaced by user-owned devices (BYOD);
3. on-premises ICT infrastructure has been replaced by ICT infrastructure for the cloud;
4. installable software has given way to browser-based software, applications, and learning platforms; and
5. licence keys and volume licences have been replaced by user-based licensing.

2 Digital transformation and inclusivity

As the digital transformation has seen ICT reach into every part of university learning, concerns have grown around ensuring that digitalisation is inclusive. Initially, understandings of inclusivity in ICT coalesced around the idea of ICT accessibility, that is for persons with disabilities to be able to use ICT on an equal basis with others. Definitions of inclusivity, and how it relates to ICT, however began to reflect a much broader conception of diversity and representation. The 2003 UNESCO World Summit on the Information Society declared a commitment to the principle of a "people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential" (United Nations, 2003). The European Union has embraced a similar commitment to digital inclusivity and has adopted a number of outline strategies and action plans based around the implementation of a digitally inclusive society in its member countries (European Commission, 2022).

3 Educational inclusivity

Commitments to digital inclusivity arose in line with parallel societal trends promoting greater inclusivity in education. Whilst inclusion in education had also started with a focus on efforts to better accommodate students with disabilities, definitions of inclusivity expanded to the idea of empowering all students in all the multifaceted distinctiveness of their identities. One UNESCO source describes inclusivity in education as "the removal of existing barriers from within and outside educational systems, enabling every learner to be given a real opportunity to be educated and learn" and "that enables people to be educated in a diversity of spaces at all times, removing barriers and bias regarding their learning potential" (Opertti, Bueno, & Arsendeau, 2021).

Implicit in calls for the promotion of inclusivity in education is the recognition that students are not a homogeneous group, and reflect considerable diversity which needs to be accounted for to ensure they are not disadvantaged in their participation in education. Caregnato, Raizer, Grisa and Miorando (2018) have shown that there are considerable differences in the experiences of and access to resources within the category "student". Thomas and May (2010) has described a four-pronged typology of student diversity:

1. educational (including learning approach, skills, educational background);
2. dispositional (including motivation, self-esteem, preferences, expectations);

3. circumstantial (including employment, caring responsibilities, disability, geographical location, access to IT, access to transport, time available, financial resources); and
4. cultural (including language, cultural capital, beliefs).

Any, or any combination, of these factors can have an impact on the ability of a student or researcher to access learning in the university setting, and their engagement with university ICT that they need for their studies or research. This has been confirmed in studies of students. Various studies have identified ICT literacy inequalities, with disadvantaged sectors including female learners, disabled learners, learners from rural regions, learners from lower social economic sectors, and learners who face language barriers (Seymour & Fourie, 2004).

Higher education institutions that are committed to furthering inclusivity need to find ways of ensuring that students can have equal access to, and use of, digital resources. Inclusive ICT in higher education institutions is not only important because ICT has become so integral to every area of university study and research, but also because ICT use has been shown to have a positive impact on learners in areas such as student motivation, retention, attendance and attainment (Hunt, Davies & Pittard, 2021).

4 Lessons from Academic Software

Academic Software developed its deployment and licensing platform to help educational institutions manage their digital resources in the context of the digital transformation. The Academic Software platform handles all the software, cloud, web application and learning platform needs of an educational institution, automates licensing, and distributes the resources through a variety of deployment methods. Academic Software also provides a multilingual helpdesk to help students, lecturers, staff and researchers access the digital tools they need from the platform, wherever they are and on whatever device they are using.

The last decade has been characterised by the BYOD trend in higher education ICT, which has seen universities move away from providing on-campus computer labs for student use, to students having their own computers and devices, which they can use away from campus. Few of these devices are directly managed by university ICT departments, and managing the deployment and licensing of the software and applications used on these devices has become a significant challenge for university ICT departments to solve. Academic Software has been at the vanguard of this shift towards BYOD, helping educational institutions to find solutions to deployment and licensing.

The challenge in terms of digital inclusion in higher education in the European context is, by and large, not one of access to computers. Research from 2017 from the OECD shows that in most countries in Europe, access to a computer is no longer an issue for most households. The percentage of households with access to a computers ranges from Greece at the lower end with 70% (up from 36.7% in 2006) , to the Netherlands with 97.6% (up from 80% in 2006)(OECD 2022a). Access to the internet has also been growing significantly. Even in the country with the lowest proportion of households with internet access, Greece, 85.07% of households had internet access in 2021 (up from 21% in 2005). In Luxembourg, 99.2% of households have internet access. (OECD 2022b) The average for the EU is 92% (Eurostat 2020).

Evidence also shows that digital skills are high, particularly among people aged between 18 and 25 (Eurostat 2020). And ICT is now considered integral to almost every area of post-school education. "Ten, even five years ago, using software at schools and universities was something niche. Maybe if you did Psychology, you used SPSS once for a research project. And if you did something with languages, you probably didn't use software or online tools. Nowadays everything is software – if you're a translator, you have to learn to work with translation software; if you are a nurse, you have to learn to work with that software; if you do dietary courses, you have to learn to work with dietary software. So it's not like ICT is only for those courses like computer science; it's for all courses, more and more everything gets a touch of ICT." (Barremaecker 2022)

The Covid pandemic accelerated efforts to close any gaps on student access to devices. "When Covid hit and everyone had to work from home, and you had institutions scrambling to get devices out to students as quickly as they could to make sure they had equitable access. And then trying to spin those up, manage those devices quite quickly was a real learning experience" (Barremaecker 2022).

Another significant trend is that devices are becoming lighter – the devices used by students are often not desktop computers, but increasingly laptops, tablets, and smart phones. This reflects a broader trend in Europe. In 2014, 48 % of individuals aged 16 to 74 within the EU used a mobile device to connect to the internet, by 2019 this share had risen to 73 %. In some countries, notably Sweden, Denmark, the Netherlands, Spain, Belgium, Luxembourg, Ireland, Austria and France, more than four fifths of individuals aged 16 to 74 using the internet while on the move (Eurostat 2021).

The use of lighter devices is, in turn, helping to drive virtualisation in the cloud, and careful thought needs to be given to deployment strategies to ensure that the full range of devices students are using can access the software, applications and learning platforms needed for their courses. As on-campus computer labs, maintained and managed by university ICT staff, are replaced by a range of devices, virtualisation in the cloud, and self-help licensing and deployment, deliberation needs to go into the support options for students who need extra help accessing digital resources. Insufficient attention to, and resourcing of, support can lead to a poor end-user experience, frustration and ultimately risk end-users abandoning attempts to install digital resources they need.

Academic Software provides technical assistance and helpdesk support to make sure that end-users can access all their software, web applications and learning platforms. And as such, they have found that the ability to provide a simple-to-use platform with good user support is fundamental in helping to ensure equitable access to digital resources. Students are able to access the support in the form they want, when they want it, and they can be assured that the help will continue until their software or application is installed. The Academic Software helpdesk is available in multiple languages, out of term time, and can solve deployment and licensing issues for any device the student is on. The simplicity of the platform for the end-user is noteworthy – 75% of people who want to access software or a web application can do so via the platform with no extra help. Anyone who is unable to install or access the digital resources directly themselves, is able to get help from the Academic Software service desk, which will follow through until the application or software is installed (Barremaecker, 2022).

The ease-of-use simplicity of the platform is an important feature for students and researchers. One curriculum director of a university said "It's a very transparent system, a very simple system, it's student friendly" (Leenknegt, 2021). Another university said that the platform was "a one-stop shop … the only provider of a total solution to support students with software installations" (HOGENT, 2022). Simplicity of use is a significant priority for students; a finding noted by Anna Pacholak in her exploration of the preferences of "digital native" students (Pacholak, 2019).

5 Conclusion

Whilst we continue to collect evidence on the specific ways in which the Academic Software platform contributes to digital inclusivity, we urge institutions formulating strategic plans for ICT in response to digital transformation, which include inclusivity goals, to not neglect the potential positive impact of deployment methods and licensing in achieving these goals. The challenge of getting computers or devices into the hands of students has largely been solved in Europe. But what can students do with their devices once they have them? Can every student access the software, web applications and learning platforms they need to follow their curriculum and develop their digital skills as part of their education? How can we make sure that self-service provisioning does not abandon some students and leave them without the tools they need? How do you support students who need help when they are far from campus? We believe the Academic Software platform provides a model for following through on inclusivity in digital transformation, by backing up simple-to-use self-service licensing and deployment with guaranteed helpdesk support. More broadly we argue that licensing and deployment need to form an integral part of any strategy to develop digital inclusivity.

6 References / Citations

Barremaecker, Pieter. Interview, 24 February 2022.

Baumgarten, C., Simeon, A., & Wilhelm, M.C. (2020) *Citizen developers driving the digital campus. European Journal of Higher Education IT, 1*.

Caregnato, C, Raizer, L., Grisa, G., & Sfredo Miorando, B. (2018). New audiences and new educational stratifications in Brazilian higher education in the 21st century. *All Ireland Journal of Higher Education, 10, 1*.

European Commission. (2022). *European digital rights and principles.* https://digital-strategy.ec.europa.eu/en/policies/digital-principles.

Eurostat. (2020). Individuals' level of digital skills (until 2019) (online data code: ISOC_SK_DSKL_I) https://ec.europa.eu/eurostat/databrowser/view/ISOC_SK_DSKL_I__custom_2408558/default/bar?lang=en.

Eurostat. (2021). Digital economy and society statistics - households and individuals.

Futurelab and National Foundation for Educational Research in England and Wales. (2009). *Using digital technologies to promote inclusive practices in education*. Slough, UK: NFER.

HOGENT University ICT. (2022). Questionnaire. Internal questionnaire for Academic Software.

Hunt, M., Davies, S., & Pittard, V. (2011). *British Educational Communications and Technology Agency (BECTA), Evidence on the progress of ICT in education*. London: BECTA.

Leenknegt, Rik. (2021). Interview for Academic Software.

Marien, Ilse. (2010). Implementing digital inclusion: technical & pedagogical barriers (IST). European Commission: Brussels. https://joinup.ec.europa.eu/collection/einclusion/document/implementing-digital-inclusion-technical-pedagogical-barriers-ist.

OECD (2022), Access to computers from home (indicator). doi: 10.1787/a70b8a9f-en (Accessed on 31 March 2022)

OECD (2022), Internet access (indicator). doi: 10.1787/69c2b997-en (Accessed on 31 March 2022)

Opertti, R., Bueno, C., & Arsendeau, P. (2021). *Inclusion in education*. Geneva: UNESCO.

Pacholak, A. (2019). Digital university: student perspective. *European Journal of Higher Education IT, 1*.

Palmer, E. (2017). Summary of research and findings: inclusivity within higher education. https://www.academia.edu/31352753/Summary_of_Research_and_Findings_Inclusivity_within_Higher_Education.

Seymour, L., & Fourie, R. (2004). ICT literacy in higher education: influences and inequality. https://www.academia.edu/1533550/ICT_literacy_in_Higher_Education_Influences_and_Inequality.

Thomas, L. & May, H. (2010). *Inclusive learning and teaching in higher education*. York: Higher Education Academy.

United Nations. (2003). *Declaration of principles building the information society: a global challenge in the new millennium*. Document WSIS-03/GENEVA/DOC/4-E.

7 Author biographies

Lieke Veenhuizen is a school consultant for Academic Software. She obtained a Master's degree in clinical psychology at the Vrije Universiteit Brussel in 2015, and has a previous professional background in education.

Email: Lieke@academicsoftware.com

LinkedIn: https://www.linkedin.com/in/liekeveenhuizen/

Dawn Nell is in the Marketing and Communications team at Academic Software. She completed her D.Phil. at the University of Oxford in 2004, and subsequently held fellowships at the University of London and the University of Surrey Business School, working on aspects of consumer research, branding, and internationalisation.

Email: Dawn@academicsoftware.com

LinkedIn: https://www.linkedin.com/in/dnell/