

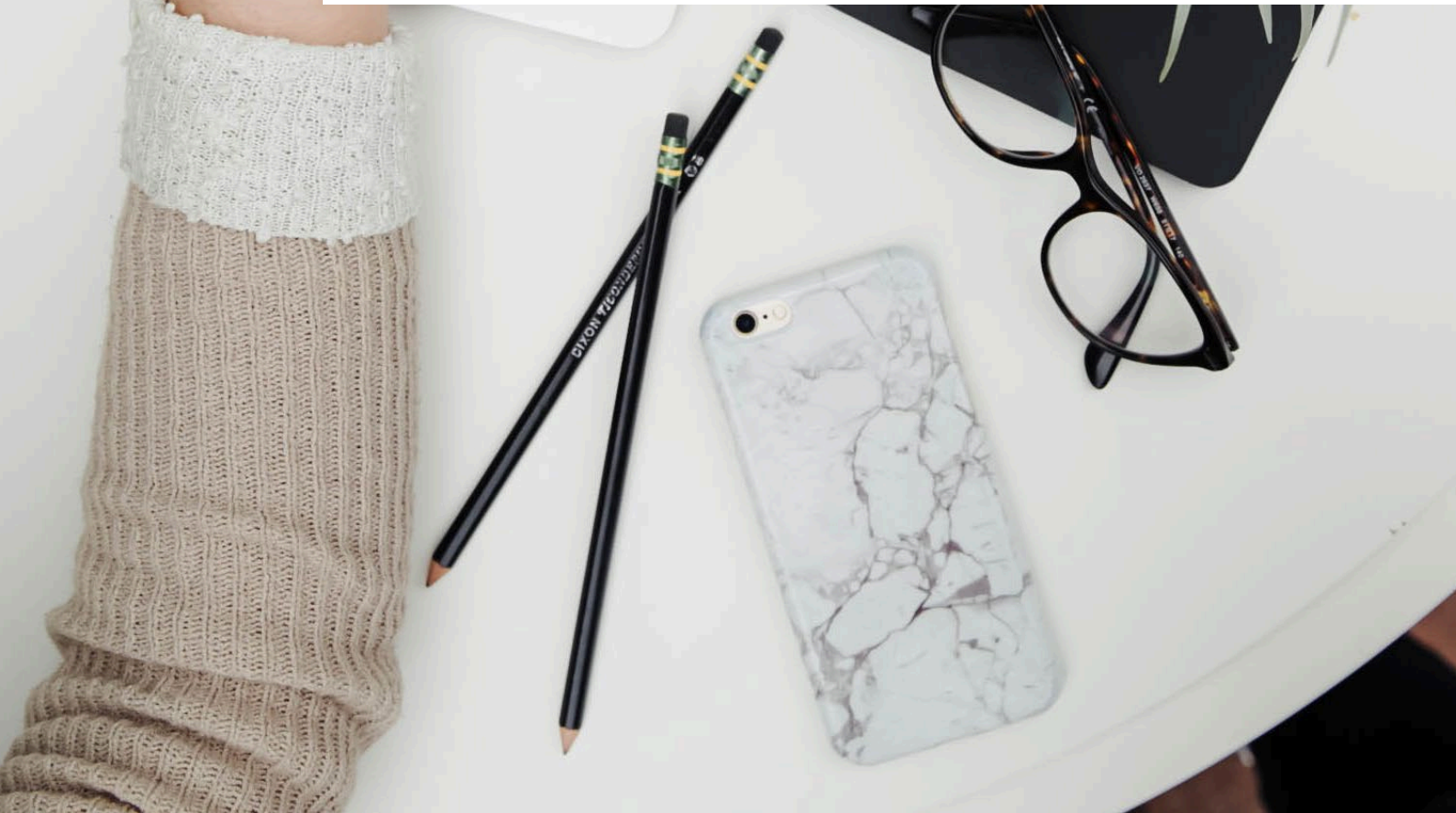


# **NEEDS**

Digital solutions for online learning in societal security

Christer Pursiainen

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## Digital solutions for online learning in societal security

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## Preface: about the NEEDS project

The ‘Needs-based education and studies in societal security’ (NEEDS) project addresses the skills gap and mismatch between higher education and the knowledge needs in this field, as well as the fact that there is a lack of structured transnational cooperation and dialogue between higher education institutions, practitioners, and experts in tackling these issues.

The project is co-funded by the EU Erasmus+ Strategic Partnership (project code 2020-1-SE01-KA203-078013) and runs from September 2020 through August 2023. It is led by the Council of the Baltic Sea States (CBSS) Secretariat, an intergovernmental regional organization with eleven member states. The project partners represent a variety of higher education institutions, regional organizations, and national authorities from Finland, Germany, Norway, Poland, Latvia and Sweden. The objective of NEEDS is to better prepare the next generation working in the field of societal security by boosting their educational experiences with the most relevant, field-specific and up-to-date knowledge and skills. This objective will be achieved through the co-creation of educational materials by cross-sectoral, multi-level and transnational teams, where the input for developing such material is collected directly from those working in practice in the field.

The NEEDS project focuses on the Baltic Sea Region (BSR), made up of eleven countries (i.e., the full members of the CBSS: Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, Russia, and Sweden). Even though the NEEDS project focuses primarily on the BSR, the results may also be relevant for other regions. The project will meet societal security challenges by 1) developing common learning materials for a short online course on societal security for the BSR, as well as 2) establishing a professional networking community and an interface for collaboration. Transnational and cross-sectoral teams will be at the centre of these efforts and will draw upon an innovative pedagogical approach. Nurturing strategic partnerships and cooperation will strengthen trust and deepen understanding between sectors and countries in the BSR, helping to improve common efforts and reduce the risk of conflict and misunderstanding.

The report at hand – using Erasmus+ vocabulary – represents the NEEDS project’s Intellectual Output 4.3 (IO4).

- Digital solutions for online learning in societal security

It will summarize the key observations from the literature and the project partners’ own experiences in this particular field or format of education. The author team is indebted to the project partners and other colleagues for their invaluable information and comments.

## 1. Introduction to higher education digitalization

The digitalization of higher education (HE) is an irreversible tendency that from the perspective of learners and teachers has at least two dimensions or purposes. The first is to give students the digital competence that they will invariably need in their further working life. The second concerns the digital skills and tools that can be used as integral pedagogical elements, arguably providing innovative learning methods. While at best these two purposes are combined and complement each other, and are in any case related, the latter aspect is the focus of the short report at hand.

However, even a cursory look at the already rather extensive literature<sup>1</sup> on the theme reveals that digital tools should not be understood only as technological, instrumental methodological solutions and innovations. They are inevitably embedded in the larger context of the digitalization of social life, which carries with it a number of implicit values, norms, rules and choices. In the field of HE, the implications go far beyond the individual student's learning perception, easily impacting the very structure and core of the education system. In his monograph *Education and technology*,<sup>2</sup> Neil Selwyn poses fundamental questions, such as whether technology really improves learning, whether it makes education fairer, whether it will displace the teacher in the end, or even replace educational institutions.

In the field of societal security, as in any other field, the short-term effect might be that digital education enables studies not restricted by place and time, and, for instance, enables students to be employed and fully integrated into working life at the same time. On the other hand, digitalization may have negative side-effects or unintended consequences, such as a lack of socialization and deeper hands-on connection to the subject.

Given these profound questions, the current introductory chapter is structured to discuss four themes: the promise of digitalization, its challenges, more profound critique, and possible solutions.

### 1.1 The promise

There are multiple reviews of the use of digital technology in HE, mostly emphasizing the potential it provides compared to traditional learning-teaching activities. In an instrumental sense, one of the benefits of digitalization is that digital technologies improve some basic characteristics of data and information, including storage, record retrieval, distribution, density and compressibility, and manipulativity. In a deeper sense, it facilitates self-paced online learning activities, and offers an individual learning path for each student, thus improving out-of-class activities and feedback. Terms such as personalization or learner-centered learning are well aligned with the perceptions of the effects of using digital tools in HE.<sup>3</sup> When it comes to students defining their own learning path, digital tools can be used as the very planning tool for this path. This may include such elements as identifying one's own learning needs and capacities; designing and evaluating an individual learning plan; identifying specific individual learning paths; keeping a record of

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<sup>1</sup> For comprehensive, systematic literature reviews, see: Flores-Ayala, V. G., Gallegos Aragón, C. A., Ríos López, T., SotoRivera, C. M. C., Vásquez-Campos, S. A., & Japura Gregorio, A. (2021). Distance higher education; A review of digital tools for effective communication. *Turkish Journal of Computer and Mathematics Education*, 12(12), pp. 95-103; Spante, M., Sofkova Hashemi, S., Lundin, M., & Algers, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concept use. *Cogent Education*, 5(1): 1519143.

<sup>2</sup> Selwyn, N. (2011). *Education and technology: Key issues and debates*. New York: Continuum International Pub. Group.

<sup>3</sup> Castro, R. (2019). Blended learning in higher education: Trends and capabilities. *Education and Information Technologies*, 24, pp. 2523–2546.

completed tasks and achievements; personally evaluating the learning experience; and describing the impact on practice of the newly acquired learning outcomes.<sup>4</sup>

Some invoke the notion that these new techniques are more entertaining for the students than traditional learning methods and may thus *enhance* social interaction. Digital tools, especially open-source tools, are celebrated for enabling students and teachers to achieve collaborative teaching and learning, and “provide a rather fun and unique experience for the students to interact with each other as well as with the teacher”.<sup>5</sup>

Others emphasize the benefit of avoiding classroom teaching for people that, for one reason or another, want to work at a distance. It is argued that training based on the use of digital tools has indeed been as successful and efficient as face-to-face education. Such factors as flexibility, accessibility, motivation, inclusion, and economy are said to develop a real commitment in the student to their training process.<sup>6</sup>

## 1.2 The challenge

A self-evident challenge of HE digitalization is that before learning digitally, one has to master the respective digital tools. Contrary to the popular assumption, rather recent research indicates that the use of digital tools in even many digitally developed countries is hampered by the students’ low level of digital competence in using the available learning tools.<sup>7</sup> As a rule, only those digital resources that are perceived as easy to use will be adopted by students.<sup>8</sup>

However, at the same time, the research reveals that the students’ demand for digital teaching and learning tools consistently outstrips supply.<sup>9</sup> Some studies have compared student and teacher perceptions of the usefulness of digital tools, with surveys typically showing that students are consistently more positive and teachers more negative as to their usefulness.<sup>10</sup>

This, in turn, indicates that educators are sometimes reluctant to adopt and not capable themselves of using new digital teaching tools. Findings show that for many teachers, digitalization means an increase in their workload and stress levels, and the integration of technology into teaching is connected to organizational and societal processes that they perceive as being beyond their direct control.<sup>11</sup> Thus, it is necessary for higher education institutions (HEIs) to provide proper technical and didactic support.<sup>12</sup> This specific training for professors and

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<sup>4</sup> Mihnev P., Antonova A., Georgiev A., Stefanov K., Stefanova E., & Nikolova N. (2021). Designing a Competence-Based Learning Course with Digital Tools in Higher Education. In: Rocha Á., Adeli H., Dzemyda G., Moreira F., & Ramalho Correia A. M. (Eds). *Trends and Applications in Information Systems and Technologies. WorldCIST 2021. Advances in Intelligent Systems and Computing, vol 1367*. Cham: Springer. [https://doi.org/10.1007/978-3-030-72660-7\\_20](https://doi.org/10.1007/978-3-030-72660-7_20).

<sup>5</sup> Mohammed, Q. A., Rao Naidu, V., Hasan, R., Mustafa, M., & Jesrani, K. A. (2019). Digital education using free and open source tools to enhance collaborative learning. *IJAEDU- International E-Journal of Advances in Education*, V(13).

<sup>6</sup> Flores-Ayala, V. G., Gallegos Aragón, C. A., Ríos López, T., Soto Rivera, C. M. C., Vásquez-Campos, S. A., Vásquez-Villanueva, S., & Japura Gregorio, A. Distance higher education; A review of digital tools for effective communication. *Turkish Journal of Computer and Mathematics Education*, 12(12), pp. 95-103.

<sup>7</sup> Bond, M., Marín, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. (2018). Digital transformation in German higher education: student and teacher perceptions and usage of digital media. *International Journal of Educational Technology in Higher Education*, 15(48).

<sup>8</sup> Lazar, I. M., Panisoara, G. & Panisoara, I. O. (2020). Digital technology adoption scale in the blended learning context in higher education: Development, validation and testing of a specific tool. *PLoS ONE*, 15(7), e0235957.

<sup>9</sup> Bond et al. (2018), op. cit.; Fosslund, T., & Rye Ramberg, K. (2016). *Kvalitetskjdene i Høyre Utdanning - En Guide for Digital Kompetanse Og Undervisningskvalitet*, (n.p., 2016).

<sup>10</sup> Bond et al. (2018), op. cit., see Fig. 3.

<sup>11</sup> Sjöberg, J., & Lilja, P. (2019). University Teachers’ Ambivalence about the Digital Transformation of Higher Education. *International Journal of Learning, Teaching and Educational Research*, 18(13), pp. 133-149.

<sup>12</sup> Pensel, S., & Hofhues, S. (2017). *Digitale Lerninfrastrukturen an Hochschulen. Systematisches Review zu den*

educators is seen as being fundamental to success in online teaching-learning processes, and as contributing to modifying the perceptions of professors.<sup>13</sup>

Furthermore, challenges might arise pertaining to issues such as privacy, as digital tools are ostensibly susceptible to hacking, misconduct and plagiarism.<sup>14</sup> A related challenge concerns intellectual property rights, of which copyright, trademarks, patents, database rights and performance rights are the most relevant non-material property rights with regard to those that may apply to digital content.<sup>15</sup> Besides those already mentioned, such challenges as added preparation time and new administrative responsibilities, particularly for educators, are often mentioned.<sup>16</sup> Moreover, one regularly encounters practical problems such as malfunctioning equipment and the need for backup plans and directives.<sup>17</sup>

### 1.3 The critique

Yet the critique is more far-reaching, and extends beyond challenges. Some scholars note that digitalization has thus far *not* provided any major breakthrough in the HE system to offset its inherent problems. “There remains a gap for structural and technological solutions to create a democratic, decentralized, and personalized education system that succeeds in engaging the majority of students.”<sup>18</sup> The digitalization of HE might indeed increase existing inequalities and create new ones in any country. It has become abundantly clear during the Covid-19 pandemic that developing countries in particular have struggled to handle the shift towards digitalized education, and have suffered setbacks due to their fractured technical infrastructure<sup>19</sup>, academic incompetency and lack of resources.<sup>20</sup>

Hence, the seemingly technical issues reviewed in the previous sections easily become a fairness and equality dilemma, or even a social class problem. Successful digital learning is of particular benefit for those students who have strong self-regulation and metacognitive skills, and are duly able to regulate their learning experiences. Thus, online learning imposes higher cognitive requirements upon learners for effective learning than traditional learning environments.<sup>21</sup> Already some studies show, furthermore, that such attributes as gender and age affect the students’ interest in online learning and thus related achievements.<sup>22</sup> While offering huge potential benefits, digitized technology-enhanced learning may therefore introduce new ethical

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*Rahmenbedingungen für das Lehren und Lernen mit Medien an deutschen Hochschulen.* Retrieved 16 September 2021 from [http://yourstudy.info/wp-content/uploads/2018/01/Review\\_Pensel\\_Hofhues.pdf](http://yourstudy.info/wp-content/uploads/2018/01/Review_Pensel_Hofhues.pdf).

<sup>13</sup> Liesa-Orús, M., Latorre-Coscolluela, C., Vázquez-Toledo, S. & Sierra-Sánchez, V. (2020). The Technological Challenge Facing Higher Education Professors: Perceptions of ICT Tools for Developing 21st Century Skills. *Sustainability*, 12, 5339.

<sup>14</sup> Suleiman et al. (2020), op. cit..

<sup>15</sup> Korn, N. (2016). *Guide to Intellectual Property Rights and Other Legal Issues. Version 1*, (Minerva Project, 2005). [http://www.minervaeurope.org/publications/guideipr1\\_0.pdf](http://www.minervaeurope.org/publications/guideipr1_0.pdf).

<sup>16</sup> Suleiman, M. M., Yahya, A. T., & Tukur, M. (2020). Effective Utilization of ICT Tools in Higher Education. *Journal of Xidian University*, 14 (9), pp. 588-594.

<sup>17</sup> Aljawarneh, S. A. (2020). Reviewing and exploring innovative ubiquitous learning tools in higher education. *Journal of Computing in Higher Education*, 32, pp. 57-73.

<sup>18</sup> Castro (2018), op. cit., p. 2542.

<sup>19</sup> Duong, T., & Nguyen, N. (2021). The Challenges of E-learning Through Microsoft Teams for EFL Students at Van Lang University in COVID-19. *AsiaCALL Online Journal*, 12(4), pp. 18-29.

<sup>20</sup> Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, 1: 100012; see also Suleiman et al. (2020), op. cit.

<sup>21</sup> Gregory, S., & Bannister-Tyrrell, M. (2017). Digital learner presence and online teaching tools: higher cognitive requirements of online learners for effective learning. *Research and Practice in Technology Enhanced Learning*, 12(18).

<sup>22</sup> Hoskins, S. L., & van Hooff J. C. (2005), Motivation and Ability: Which Students Use Online Learning and What Influence Does it have on their Achievement? *British Journal of Educational Technology*, 36(2), pp. 177-192.

challenges, particularly the question of whether digital tools literacy is equally distributed amongst the students.<sup>23</sup> In other words, digital tools help some more than others. As a consequence, digitalization on its own, or by definition or by default, does not make HE better and fairer.<sup>24</sup> Seeing digitalization merely as a set of innovative and helpful tools smuggles neoliberal values into HEIs and their learning systems. Its very design adds to the commercialization of HE by designing and shaping the forms of teaching and learning that take place in universities.<sup>25</sup>

The critical voices in the debates about the digitalization of learning further argue that digital learning too often omits the deeper pedagogical insights of learning: the ways in which learners learn. Digital technologies may obscure important elements of learning, such as the socialization and qualification purposes of education, as well as the political, economic and cultural aspects of the technological systems being used. The use of digital technology may be based on the supposition that the learning process is self-centered individualization.

At the same time, it is assumed that while digitalization enables individual learning paths, it affects the learning results in a similar way, irrespective of the learner's individuality and idiosyncrasies.<sup>26</sup> Thus, the use of digital technology implicitly stems from the idea of education as an overly rational activity, taking little account of the psychological factors of learning, such as emotions, moods, feelings, and personality; in short, the subjective elements of learners.<sup>27</sup>

#### 1.4 The solution?

Obviously, a logical solution in light of the current situation can be found in combining online and distance-based digital learning methods with traditional place-based classroom learning methods – an approach usually referred to as *blended learning*. While intuitively appealing, it has been noted however that there is considerable complexity in its implementation. Some call for educators to not just routinely combine these two learning environments – which in itself is a practical challenge – but to adopt an approach that creates a learning environment combining the *best parts* of both. In this case, this transformative approach poses both intellectual and administrative-organizational challenges that should not be underestimated.<sup>28</sup>

Some scholars have developed rather sophisticated models, with a number of variables and indicators, in order to tailor blended learning to the benefit of the learners while simultaneously supporting university professors in selecting their own efficient, individually blended way to teach.<sup>29</sup> Others have produced literature reviews to identify the most promising trends in blended learning implementations in HE, namely how to best utilize the capabilities provided by the technology, while adding face-to-face learning and teaching to this context. Such trends point to combining the social, organizational, technological and pedagogical perspectives of learning and teaching.<sup>30</sup> To this end, integrating online learning with problem-based learning methods and strong elements of collaborative social interaction in searching for solutions, coupled with proper

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<sup>23</sup> Broadfoot, P. et al. (2012). *Ethical Issues in Technology Enhanced Assessment*. Discussion Paper Nr. 5 in Rethinking Assessment Series. University of Bristol. Graduate School of Education. <http://www.bristol.ac.uk/media-library/sites/education/migrated/documents/ethicalissues.pdf>.

<sup>24</sup> Selwyn (2011), op. cit., pp. 113, 114.

<sup>25</sup> Castañeda & Selwyn (2018), op. cit.

<sup>26</sup> Castañeda, L., & Selwyn, N. (2018). More than tools? Making sense of the ongoing digitizations of higher education. *Journal of Educational Technology in Higher Education*, 15(22).

<sup>27</sup> Selwyn (2011), op. cit., pp. 113, 114.

<sup>28</sup> Lazar, Panisoara, & Panisoara (2020); Castro (2019), op. cit.; Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education*, 7, pp. 95–105.

<sup>29</sup> Lazar, Panisoara, & Panisoara (2020), op. cit.

<sup>30</sup> Castro (2019), op. cit.



support, is proposed as the answer.<sup>31</sup> At best, adding digital tools to traditional learning, it can go beyond participative learning.<sup>32</sup>

## 2. Digital spaces, tools and techniques for learning and teaching

It is not an easy task to comprehend the concept of digital pedagogical or learning spaces, tools and techniques, as the field or issue is so obscure, fragmented, constantly evolving, and thus a moving target that one can never reach and master. Obviously, the discussion below is not and cannot be exhaustive.<sup>33</sup> In this chapter, we have mostly concentrated only on those spaces, tools and techniques used by NEEDS project participants for learning and teaching. We omit mere online information sources and databases as well as such assets as Google Scholar, SCOPUS or Web of Science; even if they are highly useful for students, they are too numerous and somewhat outside of our scope.

We have collected the following opinions from the NEEDS project participants, mostly focusing on positive experiences. But it has to be noted that experiences of these digital spaces, tools and techniques, and their initial attractiveness, vary considerably, depending on the student and teacher in question, their experiences, and taste. While some are dedicated old schoolers, others are – conversely – dedicated digitizers.

In the respective literature, there are, however, some reviews of these tools that try to make sense of them with meta-typologies of some description. Indeed, one has to classify the digital, overlapping pedagogical and learning solutions somehow<sup>34</sup> – into a loose hierarchy. We have chosen to follow the below overlapping structure, focusing particularly on the NEEDS project participants' experiences: digital learning spaces and storage systems; digital communication methodologies; digital support tools; extra-curricular communication spaces; and exam software. Before going to these categories, we will start with some general notions.

### 2.1 Times are changing – but should they be?

A short survey conducted among the NEEDS project partners shows that digitalization has both positive and negative consequences, but no one is really against it. It seems that the Covid-19 pandemic provided a *new reality* almost overnight. As one NEEDS HEI partner noted, the pandemic has caused fundamental changes in their education of societal security. We are dealing with a digital revolution – the sudden and rapid implementation of online learning and remote collaboration tools. The way that students learn and the forms of teaching have changed. On the negative side, one has re-realized how important contact between teachers and students is, and how it influences the effectiveness of the learning process. What will be transferred to the traditional school from cyberspace is the belief that relationships are at the heart of contact and cooperation. Yet both learners and educators have been forced to come to terms with this new reality. Learning from each other, including teachers learning from students, should be a new facet of education. The Covid-19 period of distance learning has demonstrated the great potential of many teachers and students, and their commitment in sharing their knowledge and skills.

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<sup>31</sup> Gregory & Bannister-Tyrrell (2017), op. cit.; Hew K. F., & Cheung W. S. (2011). Higher-level knowledge construction in asynchronous online discussions: An analysis of group size, duration of online discussion, and student facilitation techniques. *Instructional Science*, 39(3), pp. 303-319.

<sup>32</sup> Dommett E. J. (2019). Understanding the Use of Online Tools Embedded Within a Virtual Learning Environment. *International Journal of Virtual and Personal Learning Environments*, 9(1), pp. 39-55.

<sup>33</sup> For a more comprehensive review, see e.g., Meena, M. & Rumao, P. (2021). Survey Paper on Effect of Different Tools Developed for Online Learning Education (Like Blended Teaching Learning Philosophy - TLP) in Engineering Education. *Journal of Engineering Education Transformations*, Volume 35, Special Issue, August. DOI: 10.16920/jeet/2021/v35i0/167025.

<sup>34</sup> Cf. Sousa, M. J., Cruz, R., & Martins, J. M. (2017). Digital learning methodologies and tools – a literature review. *EDULEARN17 Proceedings*, pp. 5185-5192.

One of the premises of the NEEDS project is that societal security is fundamentally a cross-border and even global challenge, and needs therefore transnational educational applications. The flexible online courses and the respective methods of teaching seem to present a good solution as they dismantle barriers and borders by definition. Luckily, there is a wealth of online tools today that can readily supplement HEIs' ability to transfer new knowledge to students.

Online tools can serve as a platform for sharing experience and skills. However, of course, not everything can be shown and shared via such tools. Online digital learning tools enhance a teacher's ability to present information and a student's ability to access that information, but they also have their limits, particularly in terms of a reduction in interaction and engagement. It might also be the case that the expected learning outcomes become less fulfilled than previously, due to a lack of teacher control, student motivation, and clear old-fashioned supervision, with in-person interactivity replaced by Zoom screens, and a sense of detachment brought about by the absence of normal inter-student and student-teacher contact. When it comes to societal security students in particular, it also raises the question of how they would get hands-on instruction from practitioners if they never see them face-to-face.

## 2.2 Digital learning spaces

By digital learning spaces, we mean online interfaces such as Canvas, Google Drive, Dropbox, SharePoint and Exchange, typically designed for sharing documents, videos and so on, and for some communication purposes. Below, we briefly discuss three such interfaces that are used today as a basic digital platform, at least by the NEEDS project's HEIs.

**Canvas.** Canvas was used, and tested in a way, for the NEEDS project's Autumn School (so-called Intensive Study Programme ISP1 in November 2021). It is typically a solution defined on higher level by the HEI – and not by the teacher – and is used by at least two of the NEEDS HEI project partners as the main space where teachers and learners can engage in two-way communication with participants enrolled in the respective HEI or project, both for online and physical courses as well as for sharing materials. Before the Covid-19 pandemic, it was mainly used to provide course participants with information before the course started, and perhaps for sharing materials from speakers afterwards. Since the pandemic, many HEIs have relied more heavily on Canvas to communicate with course participants – before, during and after the course. It has also been a relatively useful networking tool. It can likewise be used for asynchronous summative assessments (via quizzes, discussion forums, submitting homework assignments), as well as for issuing course evaluations.

There are indeed several positive elements of Canvas. Perhaps the main advantage is that participants can communicate directly with each other instead of going via the course leader, and messages can also be shared with participants 'through one window'. Canvas can also be used as a regular return box for assignments, such as essays, which students can upload to the assignment page. Canvas automatic features and gradebook show who has returned the task, and it is possible to impose some penalties for late returns if one so wishes. The speed grader tool is easy to use for evaluating assignments and for giving feedback. Different options to annotate some points in the text and write comments make it possible to give very precise feedback. It is free of charge for participants of the respective HEI that has purchased a licence for the entire university. Another advantage of Canvas is that it is highly adjustable. One can also invite external users to one's Canvas pages and they may access and edit content without having to purchase a licence. Canvas is a highly multi-functional platform for studying and working together, and has been used by the NEEDS project partners as a study platform with study units for blended learning and online learning students. It is possible to modify its appearance considerably, and it is very easy to import and embed external materials. Canvas also allows the instructor to use tasks that are fully automated. They can be created using a quiz tool or by adding some H5P tools, such as a Hotspot task. Fully automated tasks are useful for students who want to practise independently. The responsible teacher can decide whether they wish to allow students to edit the pages or not.

Yet in large-N surveys, there has also been notable variation among Canvas users with regard to its characteristics.<sup>35</sup> For some, the negative elements include the somewhat impersonal wording used for the menu headers (e.g., modules, people, pages, assignments), although the course leader can choose to select and hide these from the students in order to make it more user-friendly. Yet, it is not the easiest system when it comes to formatting the outline of the course for 'old schoolers', if one does not want to speak about 'modules', for instance, but just use the centuries-old and common term 'lecture'. There is also a certain anonymity and mental uncertainty as to whether the messages and material have reached everyone. There is a chat function to enhance interactivity, but experience shows that no one uses it, particularly the students. It is possible to add different visual study material to the platform, such as video clips, but this feature serves as more of a repository for this material than anything else. It is also possible to group participants, but that is a rather complicated process which for many teachers creates more confusion than it provides solutions. Should one use Canvas with several HEIs at the same time, as is the case in multinational projects for instance, it causes some confusion as one gets 'Canvas messages' en masse, which easily resemble spam mail or create information overload and stress. As a technological platform, Canvas is, obviously, also vulnerable to malfunctions and even hacking.

**Moodle.**<sup>36</sup> There are several other learning management systems, either license-based or open source, one of which is Moodle, used by some NEEDS project's HEIs. Users typically acknowledge that it is, from the student's perspective, user-friendly and easy to navigate. From the teacher's perspective, it might be beneficial to use the function that allows different classes to use different rooms, for example. It enables such elements as forums, group chats, direct messages, and the uploading of individual tasks and study materials. Published scholarly analyses of this learning and management platform are typically positive. It is particularly noted that students benefit from having the opportunity to optimize the assimilation of educational material in preparation for classes, and from the use of control elements to improve the quality of their self-regulation.<sup>37</sup> In general, students' learning activity can be performed well without any constraints imposed by limited face-to-face time in class.<sup>38</sup>

### 2.3 Digital communication methodologies

By digital communication methodologies, we mean such technologies as Teams and Zoom, or the older already outdated Skype, among others. They resemble learning spaces such as Canvas in some respects, but are more real-time communication-oriented systems, although Teams makes an effort to combine these types of systems. Within the NEEDS project, we have made some observations about Teams and Zoom, which are the most popular today, also from the perspective of societal security learning and teaching.

**Teams.**<sup>39</sup> Many, or perhaps most, of NEEDS HEI partners use Teams for conducting lectures, practical classes, online meetings with staff and students, exams, and defences of diploma papers, among other things. In addition, teachers and students can upload files and modify them online,

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<sup>35</sup> Anatalia N. Endozo, A. N., Oluyinka, S. & Daenos, R. G. (2019). Teachers' Experiences towards Usage of Learning Management System: CANVAS. *ICETC 2019: Proceedings of the 2019 11th International Conference on Education Technology and Computers*, October, pp. 91-95.

<sup>36</sup> See <https://moodle.org/>; <https://sandbox.moodledemo.net/>.

<sup>37</sup> Zelinskiy, S. (2020). Analysis of the Possibilities of the MOODLE Learning Management System for Organization of Distance Learning in the Conditions of the University. *ScienceRise: Pedagogical Education*, 5(38), pp. 33-36.

<sup>38</sup> Simanullang, N. H. S. & Rajagukguk, J. (2019). Learning Management System (LMS) Based On Moodle To Improve Students' Learning Activity. *Journal of Physics: Conference Series*, Volume 1462, 012067.

<sup>39</sup> See <https://www.microsoft.com/en-ww/microsoft-teams/log-in>.

or download them onto their computer if needed. Teams allows users to create different groups and organize online meetings by sending invitations to those meetings. It has audio, video and chat functions. While conducting classes, teachers can organize discussions between students by dividing them into groups and putting them either automatically or manually into different rooms. To check the presence of students, the teacher can automatically download the list of attendees. Teachers can share their presentations, and relay video/audio material from the internet, as can students. In the opinion of many NEEDS partners, it is a very versatile tool, which provides plenty of opportunities for conducting classes and organizing meetings. User-friendliness is an important aspect of the tool. A negative aspect is that one only has access to the groups in one's own organization. There is no possibility to search and find other groups from other countries or institutions, as one must have a specific link for that. Again, having several Teams from different HEIs may create some confusion.

This tool would be suitable for the NEEDS project purposes in conducting online courses, sharing case studies, conducting intensive courses, organizing meetings for an online community, and communicating with members. Teams works on different devices, such as computers, mobile phones and tablets, and it also has an app. Students, teachers or study group members can communicate with each other using chat or video/audio call. One can also communicate privately using this tool. Web materials can be uploaded or downloaded using the screen-sharing feature, as can computer files. Teams is free when you have a Microsoft account. You can create a user account or simply enter anonymously via the link.

While some controlled tests, found in literature, have indicated that the initial results and feedback from learners to use Teams have been very positive, the work on Teams is still 'in an embryonic stage'<sup>40</sup> as a learning platform (in similar ways as Canvas, for instance). Thus, in most cases it is used only as an online live communication tool and storage of material.

**Zoom.**<sup>41</sup> This is another tool in widespread use, mainly for conferences and meetings, as well as in teaching for supervising and lecturing. You do not have to be a teacher or student to use Zoom. It basically includes the same communication elements as Teams, but does not function as a repository for storing material. Like Skype before it, it is still used for one-time communication for the most part, working for bilateral meetings as well as for lecturing whole classes or conferences. It is basically free, but with limited features and time limits for those without a licence, so an institutional licence is typically needed if one wants to use it in HE from the lecture or meeting organizer's point of view (but then outsiders invited to classes or conferences can enjoy the licence benefits). As in Teams, group breakout rooms can be rather easily managed.

The NEEDS project used Zoom, combined with Canvas, for its online Autumn School in November 2021. The combination, if considered from our satisfaction-rate questionnaires' perspective, worked remarkably well in terms of hosting multinational and multisectoral participants, videos and group rooms. However, the satisfaction is naturally related to the type of education or discipline. When Zoom has been used as the main online learning and teaching tool in such practice-oriented fields as nurse education, surveys have shown that most student and faculty participants prefer in-person, physical learning approaches to Zoom-type platforms. Students' main concern is the lack of relational practice and skill development.<sup>42</sup> The above notions obviously relate to all online education, no matter which 'tool' one uses.

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<sup>40</sup> Martin, L., & Tapp, D. (2019). Teaching with Teams: An introduction to teaching an undergraduate law module using Microsoft Teams. *Innovative Practice in Higher Education*, 3(3), pp. 58-66.

<sup>41</sup> See <https://support.zoom.us/hc/en-us>.

<sup>42</sup> Vandenberg, S., & Magnuson, M. (2021). A comparison of student and faculty attitudes on the use of Zoom, a video conferencing platform: A mixed-methods study. *Nurse Education in Practice*, Volume 54, July, 103138.

## 2.4 Digital support tools

By digital support tools in this context, we refer to those tools that are primarily used for ancillary purposes in communication and learning in formal education contexts. They do not constitute a comprehensive learning or communication platform for an HEI as such, but can be used as the teacher sees fit.

**Padlet.**<sup>43</sup> This is a digital equivalent of the practice of writing yellow sticky notes and arranging them on a physical whiteboard in order to collect brainstorming ideas under defined thematic headings, for example. Padlet is more diverse in its functions, however. While most of the reviews are positive,<sup>44</sup> some find that the efficacy largely depends on the pedagogical approach employed, and may even create barriers to learning.<sup>45</sup>

Padlet is an online-based interactive wall that can be used in multiple ways. The person that creates the Padlet wall needs the respective account, but sharing options can be set so that other people can read or edit the wall if they have a link. This adds to the versatility of the tool, not least because users can post comments, pictures and links anonymously. The new posts are immediately visible to all users so it is possible to use Padlet walls in group work even when working from different locations. Posting new comments is easy, just double click to create a new post or copy-paste to add a link. The layout of the wall can be changed, allowing the user to move their post to any location on the wall, while some other options are more structured.

Padlet can also easily be used as a *link collection*, organized under different headings. The collection is easy to update and can readily be attached to different courses without adding every single link separately. A Padlet wall can be created for principal materials and for additional material alike. In the case of additional material, it is possible to give editing rights to the students and to ask them to post links that they have found. Padlet is also suitable for *collecting ideas and answers* from any group of students; everyone can express their thoughts anonymously on the wall and the teacher can then show the Padlet wall on the bigger screen. This also makes it easier for more reticent students to express their thoughts. The written ideas can then be analyzed and discussed further. This also works with some classroom group tasks: the teacher can write the questions on the wall beforehand and then ask different groups in class to answer them on the Padlet. The answers can then be discussed together. It is also suitable for *small classroom group assignments*. Furthermore, Padlet can be used to *create visualizations or mind maps*. Group members can collaborate and collect material on the Padlet before sharing their work with the whole class. It is also possible for the teacher to distribute material on a Padlet wall and ask students to reorganize the material in a way that makes sense.

The NEEDS project tested this tool during its week-long online Autumn School in early November 2021, with around forty students, practitioners and teachers. The students played the main role in this course. The tool was new to most of them, but it worked well in breakout rooms before being used in the plenary to present the respective arguments. Several students expressed their satisfaction with the tool. It seems that it worked most efficiently when administered by one person (student) rather than having every member in the breakout room record their own ideas on the shared tool, even if that is one of its primary features. As such, it worked in a similar manner to having a rapporteur prepare a PPT to be presented to the plenary. One shortcoming, compared to a PPT representation of group discussion, might be that the presentation tends to

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<sup>43</sup> See <https://padlet.com/>; <https://thedigitalteacher.com/reviews/padlet>.

<sup>44</sup> E.g. DeWitt, D., Alias, N., & Siraj, S. (2015). *Collaborative learning: Interactive debates using padlet in a higher education institution*. In: International Educational Technology Conference (IETC 2015), 27-29 May 2015, Istanbul, Turkey.

<sup>45</sup> Mohd Deni, A.R., & Zainal, Z.I. (2018). Padlet as an educational tool: pedagogical considerations and lessons learnt. *ICETC '18: Proceedings of the 10th International Conference on Education Technology and Computers*, pp. 156-162.

resemble a brainstorming session rather than a well-structured and thoroughly thought-out presentation.

**Miro.**<sup>46</sup> This is an online whiteboard platform for collaborative work. It works well for collecting ideas or for any kind of group work because it lets participants write simultaneously on the whiteboard and everyone can see who is working on what. Some NEEDS partners have used Miro for certain assignments by making a template with some materials and instructions, which students then copy for their groups and start working from there. As an example, one task applied to societal security students was to make a concept map, with some societal security concepts already listed in the template beforehand. Some students have also made use of it later on when studying together.

**Mentimeter.**<sup>47</sup> This is a tool that promotes itself with the slogan 'Engage your audience & eliminate awkward silences'. It does not actually do that, but can be used to take the temperature of the students, so to speak, typically to gauge their satisfaction after a lecture or a whole lecture course. It duly works well as an immediate feedback tool, and has some added entertainment value. It was used every day during the NEEDS Autumn School in November 2021. It provided some hints for teachers on how the course was progressing, but the results remain inconclusive.

## 2.5 Extra-curricular communication and learning spaces

Under this section, we briefly discuss those digital tools that are often connected to HE in their various applications, but are not really incorporated in any formal sense. They include, for instance, social media, wiki solutions, serious gaming, and phenomena such as digital storytelling.

**Social media.** While everyone knows what social media is – typically associated with Facebook, Twitter, and Instagram, for instance – it is more difficult to understand why, how, in what conditions, and in what way it affects HE, including societal security. It is relatively easy to find survey-based research that concludes, for instance, that Facebook groups play a positive role in facilitating communication between students, fostering an amicable social climate, generating dialogue and sharing informal learning material. They may indeed contribute significantly to the students' success and satisfaction. In this respect, they can serve as an additional tool to supplement traditional frontal instruction, integrating social media sites into academic courses and discursive activities.<sup>48</sup>

At the same time, however, social media has been dismissed as just a waste of time from the perspective of HE. Already in early 2001, some scholars concluded that certain digital tools are better than others for educational purposes, and should therefore be evaluated in relation to each other.<sup>49</sup> Even today, there are some rather cogent discussions about the superficiality of digital tools, and social media in particular.<sup>50</sup>

**Wiki solutions.** There are several wiki solutions (following Wikipedia) which provide information sources that teachers and students can use to supplement the typical curriculum literature. While these sources are difficult to officially endorse as part of a course for various reasons (such as the

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<sup>46</sup> See <https://miro.com/>.

<sup>47</sup> See <https://www.mentimeter.com/>.

<sup>48</sup> Davidovitch, N., & Belichenko, M. (2018). Facebook Tools and Digital Learning Achievements in Higher Education. *Journal of Education and e-Learning Research*, 5(1), pp. 8-14.

<sup>49</sup> Lytras, M., & Pouloudi, A. (2001). *E-Learning: Just a Waste of Time*. AMCIS 2001 Proceedings, 43. <http://aisel.aisnet.org/amcis2001/4>.

<sup>50</sup> Adams, B., Raes, A., Montrieux, H. et al. (2018). "Pedagogical tweeting" in higher education: boon or bane? *International Journal of Educational Technology in Higher Education*, 15:19; Tang, T., & Hew, K. F. (2017). Using Twitter for education: Beneficial or simply a waste of time? *Computers & Education*, 106, pp. 97-118; Allan, R., & Bentley, S. (2012). *Feedback mechanisms: efficient and effective use of technology or a waste of time and effort?* In STEM Annual Conference 2012, 12-13 April 2012, Imperial College, London.

fact that they represent non-peer-reviewed knowledge), they are an easy first step that students can take to familiarize themselves with a theme or issue.

The field of societal security has a wiki-based CIPedia,<sup>51</sup> for instance, which is essentially a huge collection of societal security-related conceptual definitions in a pluralistic spirit, meaning that there may be dozens of definitions of the same concept depending on the context, country, organization, and so forth, duly footnoted. The *wiki element* here is that anyone can participate in adding new inputs to this database (via an assigned database moderator), thus enabling the student to move from being a mere passive user of information to a contributor of online information.

**Gaming as learning.** There are several serious games related to societal security, and even those that are not specifically related could be adapted to this effect. Digital escape room<sup>52</sup> is a specific form of thematic gaming in which teams are trapped in a room and have to solve a series of problems to achieve a goal. It is based on problem-solving and time constraints, whereby participants have to escape from the room by solving the problem within, say, an hour. It may include a set of well-narrated puzzles, the resources that are available to solve the puzzles, the strategies required to solve them, and the solution options. The pedagogical benefits would include enhancing collaboration, problem-solving strategies, critical thinking, and creativity. Within the specific field of societal security, there are several good simulation and gaming solutions, from typical crisis management<sup>53</sup> to crises of high politics.<sup>54</sup>

**Blogs, YouTube and digital storytelling.** Although everyone knows what a blog post or YouTube video is, the term digital storytelling is less well-known, despite the fact that it is reportedly being widely adopted in teaching and learning in HE sectors around the world.<sup>55</sup> A typical digital story is a narration lasting several minutes and accompanied by a video and music to present ideas on a certain theme; it should be designed to have an impact on the audience in a clear and effective manner. Obviously, learning this skill, with the talent it demands and skills such as the use of camera equipment, video shooting, editing techniques, and so forth, add to the student's technical, soft and artistic skills. But what is at issue, of course, is whether it adds to those skills that students would need in their core duties. So at least in societal security field, it might work best as an addition to formal learning.

## 2.6 Surveys and questionnaires

By surveys and questionnaires, we refer to such digital tools that have replaced the traditional distribution of paper questionnaires, collecting informants together to fill them in, or devising individual structured, semi-structured or in-depth interviews. These new software and interfaces may be crucial tools, particularly for students of societal security with a social science or qualitative

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<sup>51</sup> See [https://websites.fraunhofer.de/CIPedia/index.php/CIPedia%C2%A9\\_Main\\_Page](https://websites.fraunhofer.de/CIPedia/index.php/CIPedia%C2%A9_Main_Page).

<sup>52</sup> E.g. Makri, A., Vlachopoulos, D., & Martina, R. A. (2021). Digital Escape Rooms as Innovative Pedagogical Tools in Education: A Systematic Literature Review. *Sustainability*, 13: 4587; Kinio, A. E.; Dufresne, L.; Brandys, T.; Jetty, P. (2019). Break out of the Classroom: The Use of Escape Rooms as an Alternative Teaching Strategy in Surgical Education. *J. Surg. Educ.* 2019, 76, pp. 134-139.

<sup>53</sup> Daoudi, I. et al. (2017). Towards a Grid for Characterizing and Evaluating Crisis Management Serious Games: A Survey of the Current State of Art. *International Journal of Information Systems for Crisis Response and Management (IJISCRAM)*, 9(3). DOI: 10.4018/IJISCRAM.2017070105; Di Loreto, I., Mora, S., & Divitini, M. (2012). Collaborative Serious Games for Crisis Management: An Overview. *2012 IEEE 21st International Workshop on Enabling Technologies: Infrastructure for Collaborative Enterprises*, pp. 352-357, doi: 10.1109/WETICE.2012.25.

<sup>54</sup> Mattlin, M. (2018). Adapting the DIPLOMACY Board Game Concept for 21st Century International Relations Teaching. *Simulation and Gaming*, 49(6), pp. 735-750; Mattlin, M. (2021). Anarchy is What Students Make of It: Playing Out Wendt's Three Cultures of Anarchy. *Journal of Political Science Education*, DOI: 10.1080/15512169.2020.1861457.

<sup>55</sup> E.g. Chan, B. S. K., Churchill, D., & Chiu, T. K. F. (2017). Digital Literacy Learning In Higher Education Through Digital Storytelling Approach. *Journal of International Education Research (JIER)*, 13(1), pp. 1-16.

orientation. But they are desiring some rigour. While there are again several commercial, HEI-licensed or free-of-charge digital alternatives, we will introduce only one such tool because they are all more or less similar.

**Online survey tools.** Typically, HEIs and all serious research organizations today have a licence to use a digital survey and questionnaire system of some kind. They are often tailored to the HEI's use. Nettskjema,<sup>56</sup> for example, is a national Norwegian version of this type of software, administered by the University of Oslo but shared by almost all of the country's HEIs. It works in both the national and the English language. The system for creating survey/questionnaire questions is rather rich, including options ranging from simple 'free-text' answers or 'yes, no, do not know' to rather complicated matrix solutions. It demands some, but not too exhaustive, training to master the system, but this is more about how to create meaningful variation with the replies than purely technical challenges. Figures and photographs can be added. When one has tested the draft, one can send it to the potential respondents. There is a way to send only a link by email, or by targeting it at a predefined respondent group.

In societal security, for instance, one could send the questionnaire to hundreds of municipalities, other authorities, or to businesses, or non-governmental organizations. While the results are unlikely to be particularly representative, for a student's degree thesis, this works as a useful additional method or tool alongside other data gathering methods.

Tested in the NEEDS Autumn School in November 2021, the experience showed that the students were quickly able to learn the system and use it to create meaningful, professional looking questionnaires and surveys in the field of societal security – in this case climate change and respective hazards.

## 2.7 Exam software

Currently, typical formal exams are designed and devised in many HEIs by using software to that effect. The field of societal security is no different in this respect. Gone are the days of writing answers on paper, with students struggling with their handwriting and teachers with understanding what they have written. Below, we take a look at only one such software used by some NEEDS partner HEIs for the purposes of exam creation.

**WISEflow.**<sup>57</sup> This is a system that can be used for almost any kind of formal examination, be it implemented in a classroom or at home, with extra material allowed or not. It is licence-based for HEIs and often tailored, and thus not chosen by the teacher but mandatory. Creating an exam calls for a HEI administrator, who inputs the exam questions and often the evaluation criteria – after receiving them from the responsible teacher – and defines the settings such as exam dates, eligible student participants, deadlines for evaluation, and so forth. It requires the teacher and – depending on the HEI in question – often another evaluator (who can be from another HEI, as is typical in some countries) to check the answers and, ultimately, provide the evaluations. The students access the exam on their computers and may be blocked from using the internet while the exam is in progress if the exam takes place in controlled HEI facilities. They type in their answers and add the necessary figures, or even rather complicated mathematical algorithms or models, edit them if needed, and then submit them. A developed 'cheating controller', that is, looking for the percentage of similar text from the internet, is a basic feature of the software. The evaluators, on the other hand, do not know, and cannot recognize from handwriting of course, who or which gender the examinees are, just their number. After receiving their grades, the students can use the system to request evaluation justification or to appeal against the result.

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<sup>56</sup> See <https://nettskjema.no/?lang=en>. For other similar tools, see, for instance, <https://www.wordstream.com/blog/ws/2014/11/10/best-online-survey-tools>.

<sup>57</sup> For a description of WISEflow, see: <https://www.digitalmarketplace.service.gov.uk/g-cloud/services/574276297000639>.



The system can also be used as an evaluation tool for student theses, although it then tends to lose its anonymous quality as a result.

While the system is marketed as fully digitized, if a number of evaluators are required to reach a consensus, some other physical or digital form of communication will be needed as the process can only be performed and concluded with joint or agreed upon grading values.

For teachers and students who are not familiar with this system, a certain learning period and certain amount of supervision is needed as it is sometimes not self-explanatory.

### 3. Conclusions

This report has endeavoured to paint a concise picture of what the so-called 'digital turn' in HE means. Clearly, it entails too many things to cover in one short project report. However, we can draw a few conclusions. The discipline or field of societal security does not seem to stand out as a specific case but, to varying degrees, the digital turn is a relevant issue for all HE fields and disciplines.

First, this development started long ago, and seems inevitable. However, it was considerably accelerated due to the Covid-19 pandemic, which forced HEIs to digitalize their education, for better or for worse. The field of societal security is however somewhat a case in point as it is by definition highly practice-orientated and includes such issues as close-to-real-crisis exercises, which all had to be cancelled for two years or so during the pandemic. Some of these have thankfully been compensated by innovative digital or other solutions. But, obviously, the field of societal security has suffered from Covid-19, perhaps more than it has benefitted from the forced digitalization.

Second, we might note that while digitalization includes promises, such as the democratization or individualization of HE, it also includes challenges and legitimate objects of criticism. It might as well – depending on the academic field, individual or their conditions – work for increasing inequality among students, as not everyone benefits from higher education digitalization. This goes for teachers as well as students.

Third, we looked at a selected set of more functional-technological digital tools, albeit very concisely, that are used in the new world of HE, and especially in the HEIs involved in the NEEDS project. That task alone revealed that there are perhaps too many to master and, rather frequently, that they will be abandoned and replaced with new solutions. This rather hysteric and neo-liberalized search for new digital solutions may overshadow the main purpose of science and HE. True, the students learn to master the ever-changing digital tools, but do they really learn to master their discipline or field? The danger is that they will end up reinventing the wheel superficially again and again with the certain superficiality of interactive brainstorming that many of the digital tools enhance, without ever having had the time to read the classics in their discipline.

In the issue at hand, we clearly have digitalization advocates as well as the old school among educators. The solution, most probably, or at least rationally, then is to adopt the middle ground between relying on digital tools and more traditional educational practices by working towards flexible, blended solutions.



## Partners

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