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Improving Accessibility of eLearning in Higher Education from Universal Design for Learning Perspective



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As a part of TINEL Erasmus+ project, a "Call for Proposals for Higher Education Institutions" was launched to present the current best practice initiatives for inclusive and flexible education in eLearning and blended learning. The aim was to develop a freely available corpus of best practices in this area and so help staff in higher education institutions to support the widest diversity of students possible – regardless of backgrounds, experiences, learning styles, and abilities. By the deadline for submission of entries, nine proposals had been received. Four out of the nine proposals were extended into articles, providing an overview of the current landscape of inclusive eLearning education from a Universal Design for Learning

(UDL) perspective (hence Universal Design for eLearning, UDeL). These articles reflect the diversity of UDeL cases as they represent a number of different dimensions: from student diversity to strategic and organisational levels.

Towards access to higher education for all

Access to higher education (HE) and equality of access for under-represented people – including for people with disabilities, is considered an important moral obligation for universities and higher education institutions (HEIs). More importantly, it is a legal requirement in European countries. The strategic framework for European cooperation in education and training is part of the United Nations (UN) Education Agenda. Its aim is to “strengthen the capacity of the education system to reach out to all learners” (UNESCO, 2017, p. 7). Furthermore, the UN focuses on a wide level of educational accessibility, such as equal opportunities and active participation, aiming to take into consideration all learners with their differing needs, diverse abilities, and disabilities.

For the last twenty years, Europe has systematically focused on the development of effective inclusive strategies to ensure access for under-represented groups in HE. With an increasingly diverse student population entering higher education, the term “non-traditional students” has been coined, referring to students who differ from their peers in some way. Many students will be “non-traditional” in one way or the other:

- Students who are different with regard to socio-demographic characteristics, for example older students;
- Students who have different life circumstances, for example students who have dependents other than a spouse, are single parents, do not have a higher education entrance qualification;
- Students with disabilities, for example sensory, physical or cognitive disabilities;
- Students with different social backgrounds, for example students without higher education background, migrant students, and students from low socio-economic backgrounds.

To build awareness of this diversity of students in higher education, it is important to develop an inclusive HE using a Universal Design for Learning (UDL) perspective, in order to be able to effectively meet the needs of every student. Universal Design is a concept which originated in architecture and referred to universally built environments, for example buildings and parks that are created with flexibility in mind. It anticipated the need for alternatives and adaptations to meet the challenge of diversity (Rose & Gravel, 2010). Like Universal Design, which was initially conceived to meet the needs of individuals with disabilities but proved to make buildings more accessible and functional for everyone, the UDL framework emphasizes the idea of designing learning environments to foster knowledge and learning skills for everyone. Moreover, within UDL this implies that all means for learning – the pedagogical goals, methods, materials and assessment of learning– are designed with respect to accessibility and inclusion. Add to this the power and flexibility of modern technologies, and the aim to meet the needs and requests of the broadest possible range of students is no longer utopia.

As a result of wider use of eLearning and online delivery of courses, there is expanded access to HE across the population and for many diverse groups. Many teachers in HE do understand that eLearning should be accessible, but not all are aware of what to do so that learning is available for everyone. According to a study of problems related to eLearning by Fichten et al. (2009), students reported poor use of eLearning by instructors. In addition, university instructors revealed that they lacked knowledge of working with eLearning and an understanding of the needs of students with disabilities. Despite the fact that eLearning might offer great opportunities to students with disabilities, there are still few professional practitioners in European HEIs who understand in detail how to make it accessible. Although there are many technical standards and guidelines available to make eLearning accessible, the pedagogic and didactic perspective of accessibility is rarely fully met. Moreover, students can frequently access the eLearning platform, but not the contents, resources, activities, collaboration, and interaction tools it gives access to.

The ambition of the TINEL Project (Towards Inclusive eLearning: Improving Accessibility of eLearning in Higher Education from Universal Design for Learning perspective) is to contribute to a shift from the notion of accessibility for separate – so called *vulnerable or disadvantaged* groups – to an inclusive mindset based on Universal Design for Learning (UDL) thinking. Furthermore, the project has a triple focus on improving inclusive eLearning from a UDL perspective, hence the term Universal Design for eLearning or UDeL. Firstly, the aim is to enhance access, active participation, and learning performance of disadvantaged HEI students. Secondly, the aim is to support the professional development of educators in their pedagogical and technological skills so they will be able to improve the accessibility of eLearning. Thirdly, to contribute to a greater understanding and responsiveness to social, ethnic, linguistic, and cultural diversity amongst students. The objectives of the TINEL project are:

1. to map and explore inclusive practices for eLearning and implementation aspects of a UDeL approach in HEIs;
2. to develop an evaluation tool and a training model for improving accessible eLearning from a UDL perspective; and
3. to develop pedagogical and technological skills for improving inclusive eLearning from a UDL perspective.

UDL and UDeL

The aim of UDL is to provide inclusive educational methods for a heterogenous group of people with different skills and capabilities (Scott & McGuire, 2008; Ostroff, 2011; Ceresnova, Penaz, & Di Bucchianico, 2018, p. 82). Currently UDL can be understood as a framework with principles for guiding educational practices and accessible pedagogy. This framework provides flexible ways for presenting information according to the way students process information, respond, or demonstrate knowledge and skills, and are engaged. It also “reduces barriers in instruction, provides appropriate accommodation, supports, and challenges, and maintains high achievement expectations for all students” (Ceresnova et al., 2018, p. 83). The framework and guidelines for UDL are based on research and practice from education, developmental psychology, cognitive science, and cognitive neuroscience (Rose & Gravel, 2010). The scope of UDL is based on three main principles:

1. providing multiple means of engagement;
2. providing multiple means of representation; and
3. providing multiple means of action and expression.

These principles address means by which students are engaged in learning, means by which information is presented to the student, and means by which the student is required to express what they know. For implementing UDL principles in practice, there are simple strategies which are called Universal Design Instructions (UDI). These strategies are used to design instruction for all potential students with a broad range of (dis)ability, age, reading level, learning style, native language, race, and ethnicity. UDI challenges the instructor to proactively design an accessible course and integrate practice so that it benefits all students. These strategies can be applied to all aspects of instruction; including instructional climate, interaction, physical environments and products, delivery methods, information resources and technology, feedback, and assessment (Burgstahler, 2019).

Online courses already have many advantages for diverse student groups, but as mentioned below, a UDeL approach could improve courses as well reducing problems and risks.

Enhancement-led evaluation entry form and the call

The TINEL project was initiated because there is a lack of UDeL material for teachers. Thus, the first step was to organize an open call for UDeL cases with the purpose of mapping and exploring inclusive practices in eLearning and the implementation aspects of UDL approaches in HEI. The call was designed to reveal good practices that may serve as exemplary and innovative procedures, as well as good examples of dissemination and implementation which could inspire other HEIs. To reveal and map the best eLearning and UDeL practices in HEIs, an open call for submissions in these areas was announced.

In the process of implementing the call, a web-based entry form was designed based on the enhancement-led evaluation principles. Enhancement-led evaluation is strongly based on participation and interaction of different parties in HEI, the goal is to help HEIs to identify their strengths, good practices, and areas in need of development in their operations (Finnish Education Evaluation Centre, 2017). By including self-evaluation questions in the entry form, the evaluation of the applicant's proposal aimed to provide sufficient evidence for evaluation.

By the deadline, nine proposals were received. All proposals were carefully evaluated by the panel of experts selected by the TINEL-project group. Of the nine proposals, these four were selected as nominees for best practice:

- Aalto University, Finland: Nordic Rebels: A Blended Approach to Fix Higher Education [*Nordic Rebels*]
- University of Agder, Norway: Digital Competence – Providing Tools to Create an Inclusive eLearning Course [*Digital Competence*]
- Häme University of Applied Sciences (HAMK), Finland: The Video Documentary "Songs from Life" as a Part of the Final Thesis of Three Students (Bachelors of Social Services) [*Songs from Life*]

- University of Jyväskylä, Finland: Crossing Borders without Travel: Virtual Exchange Practices for Students [*Crossing Borders Without Travel*].

The authors of the above nominated proposals were invited to extend the content of their proposals into articles for the Universal Design for eLearning (UDeL) conference in Jyväskylä, Finland in August 2019. These articles form a diversity of UDeL cases from different perspectives and dimensions. The following dimensions were identified:

- Organisational level, including the societal, institutional, faculty, departmental, course, and teacher-student levels.
- Strategy/approach, e.g. top-down (proactive), bottom-up (reactive), philosophical (reflective).
- eLearning level, including eLearning, blended learning, digital tools used in campus courses.
- UDL level, including UDL/UDeL and individual accommodations.
- Focus, including technical and pedagogical focus.
- Student diversity, including (dis)abilities, personality, age, gender, culture, socio-economic background, financial situation, family situation, work situation, language skills, digital literacy, learning style, pace and preferences depending on different study contexts/situations.

Table 1 gives an overview of the four articles in relation to the organisational level and approach (short titles are used, as indicated in the listing of proposals above). Table 2 gives an overview of the four articles relation to UDL level and technical/pedagogical focus. Figure 1 illustrates the many aspects of student diversity to consider in UDL.

The article *Songs from life*, based on the HAMK proposal, describes a bottom-up approach at the teacher-student level in which the teacher needs to react to a problem that arises during a course to accommodate a specific student situation. This situation or accommodation was not planned or predicted before the start of the course, but the teacher became aware of a situation and a specific pedagogical solution for one student who had difficulties in concentration and textual expression. The solution to make a video documentary, as an addition to a written report, could be planned as an alternative for all students when the course is given again. This is one way of moving towards UDL step by step. When a teacher becomes aware of a particular student's preferences, the solutions to this increased diversity will be consciously planned in the future to improve the course for all students. Introducing digital tools into a campus course also helps the course move towards blended learning in the way it makes UDeL relevant.

Table 1. Overview of relationship of the four articles to Organisational level and Approach. [N.B. Articles Nordic rebels and Crossing borders without travel have two entries as they relate to two organisational levels]

Approach	Reactive	Proactive	Reflective
Organisational level			
Society level			Nordic rebels
Institution level			
Faculty level			
Department level		Crossing borders without travel	
Course level		Nordic rebels Digital competence Crossing borders without travel	
Teacher-student level	Songs from life		

The article, *Digital Competence*, based on the proposal by the University of Agder, makes a contrast to *Songs from Life*, as it describes a top-down, proactive approach to UDeL at course level. Here, the teachers planned and thoroughly tested the accessibility of a new eLearning course with a target group of students who have sight, hearing and language impairments. The test group included users of assistive technology. The focus in this initiative has largely been on technical accessibility of the learning platform and content and on a diversity of students with disabilities. However, there was also a focus on pedagogic solutions in which students could individually choose their path, level of difficulty, pace, workload, and approach.

Table 2. Overview of relationship of the four articles to UDL level and Technical/pedagogical focus. [N.B. Articles Digital competency and Crossing borders without travel have two entries as they discuss both technical and pedagogic aspects]

Focus	Technical	Pedagogical
UDL level		
UDL/UDeL	Digital competence Crossing borders without travel	Nordic rebels Digital competence Crossing borders without travel
Individual accommodation		Songs from life

The article, *Crossing borders without travel*, based on the proposal by the University of Jyväskylä, also describes a top-down, proactive approach at course level. But in this article, the initiative originates at the department level, which encouraged the teacher to introduce the possibility of virtual exchange visits as well as physical exchange visits into a campus-based course. Another difference, when compared to the Digital Competence article, is the wide diversity of students that is considered, students who are able-bodied as well as disabled students. The teacher would like to give students a possibility to gain experience from intercultural dialogues with students from different countries. The common way of doing this is by organizing study exchanges, but this is not a preferred solution for all students for financial, family, work, personal or health reasons. Students might not be able to afford such a visit, or are too shy, to go abroad for a long period, or circumstances could be such that they need to work or take care of a family member at home. Virtual Exchange was the solution to this problem, changing the course from being only campus-based to be a blended learning course with a multitude of interaction possibilities between students. The main focus from the teacher is pedagogic solutions, but also different technology, which is decided between collaborating students from different countries.

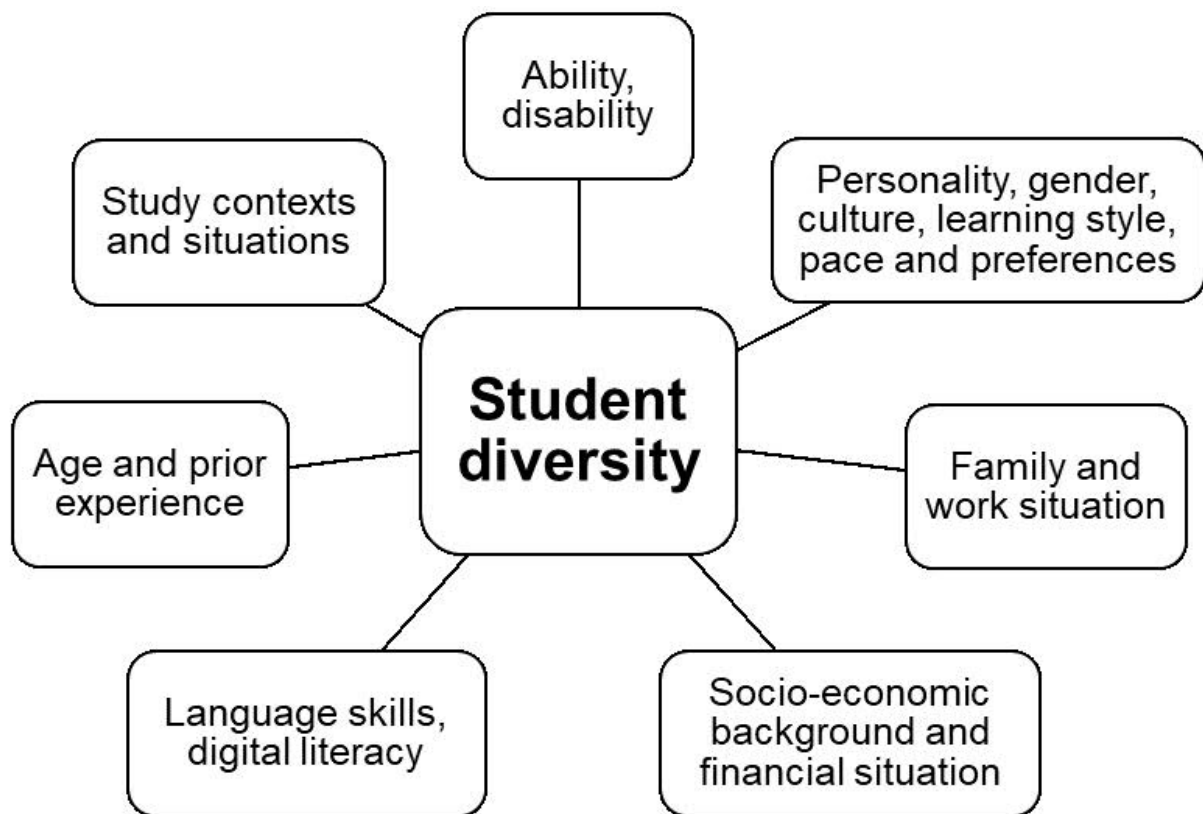


Figure 1. Aspects of student diversity to consider in Universal Design for Learning. UDL is not only a solution for students with disabilities.

The article, *Nordic Rebels*, based on the proposal by Aalto University, has a more philosophical and reflective perspective about how students learn in society and furthermore how university courses and pedagogy should change from being lecture-based to being student-focused, by creating meaningful learning experiences for the students. Blended learning and flipped classroom methods are presented as good examples of how technology can help in going this direction. Thus, the responsibility for learning as well as the learning of their peer students can be moved to the students. The article describes a top-down, proactive approach at the societal and course levels, and portrays UDL as a solution and an aid to understanding academic diversity and individual differences among students, for example a “mixture of

nationalities, genders, disciplines and prior work experience” as well as considering “students working alongside their studies” and being able to study at their own pace, due to varying English skills or prior experience in the subject. Also, by giving the students a sense of course flexibility, the teacher can lower the threshold and allow the students to suggest course changes that support their learning.

As can be seen in Table 1, the four articles present different perspectives of UDL. However, among these four articles there are no initiatives at the institutional or faculty levels, for example institutional strategies to implement UDL within a whole institution or initiatives to educate teachers about UDL and student diversity.

Conclusion and next steps

As stated above, this paper is based on four proposals from the TINEL Open Call 2019. Our intention is that these best practices serve as exemplary and innovative ideas and be of inspiration to other HEIs for development and dissemination of similar UDL and UDeL initiatives in the future.

In line with the open call process, the enhancement-led evaluation entry form was developed. In addition to revealing the best practices, the material produced by the call was expected to serve as research material and was used to 1) map the existing UDL situation in the HE sector; 2) assist in defining the model and guidelines for evaluation of best practices by using enhancement-led evaluation; and 3) define steps in a UDeL process that can be turned into educational information for HE teachers. The next steps of the TINEL project will be focusing on developing a UDL training model, followed by training activities, to develop accessible eLearning from a UDL perspective. Firstly, by developing and executing transnational UDL camps on inclusive e-learning, and secondly, by conducting workshops and webinar sessions about accessible eLearning to reach a wider range of teachers and other stakeholders in HEIs.

Thus, the overall goal of the TINEL-project is to develop resources to support the implementation of UDL practices in HE and the sustainability of those practices. The particular focus is on the everyday use of UDL in teaching and learning activities, and to address questions about how to implement UDL. This includes the factors that are important in applying UDL in eLearning, the processes can be evaluated by enhancement-led evaluation, and the use of feedback from running eLearning courses.

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We would like to thank all the HEIs that submitted proposals for the Open Call of the best inclusive and flexible eLearning or blended learning practices 2019. Your participation is valued and highly appreciated. The aim was to develop a freely available corpus of best practices to help staff in HEIs to support the widest diversity of students, regardless of backgrounds, experiences, learning styles, and abilities. This process has been eye-opening in that it revealed a range of very innovative and interesting initiatives.

We would also like to thank all participants that took part in the evaluation process. Without your valuable time, effort and views this would not have been possible. Thank you!

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