Digital Pedagogy, New Media Literacies and Open Educational Resources.

Exploring the Impact of Digital Resources in Higher Education.

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Abbreviations:

HE – Higher Education	OER – Open Educational Resources
DT – Digital Technologies	DP – Digital Pedagogy
NML – New Media Literacies	DD – Digital Didactics
DD* – Digital Divide	IP – Intellectual Property
CC – Creative Commons	MOOC – Massive Open Online Course
DLP – Distance Learner Program	DMD – Digital Media Device

Introduction

Digital technologies are today encroaching in every layer of our lives, from our social circle to our work situation. Education is no different. The increasing use of digital technologies have had some large ramifications for Higher Education, not only in the way that information is found and consumed, but also in how it is created, spread and reused.

This thesis will look at the way digital technologies affect Higher Education and how they possibly will shape education in the time to come. In order to achieve this, three focus areas; Digital Pedagogy, New Media Literacies and Didactics, will be explored in detail. These are some wide frames to work with, so a reflection on how classic disciplines as Pedagogy and the multidisciplinary concept of Literacies have developed in the face of digital technologies will be carried out. The concept of didactics is of particular interest regarding how it is impacted by digital resources. In this thesis, the transfer of knowledge in digital environments will see particular attention, often outlined by examples to provide context.

Open Educational Resources (OER), nowadays, can be used as powerful resources as a means to both organize and transform knowledge and information. What both students and educators alike are experiencing is a new way of structuring knowledge compared to the classic form of books and papers into a mesh of knowledge that is now operating outside the influence of powerful publishing houses and stakeholders. We will look at the history of the Open movement, how it started and why it became such a sought after notion. The Open movement is an umbrella term that encompasses different ideologies of Open, such as open access, open source, open

education, open science. (opendatahandbook.org). This will be done to in order to better understand the ideology and possible impacts OERs and the Open movement can have. Examples will be provided outlining different ways of using Open Educational Resources in Higher Education and the possible outcome they might have.

As is the case with all content that is authored and published, a legal framework is needed to prevent misuse, exploitation, copyright infringement and unlawful use. Intellectual properties, licensing and copyleft movements are some of the topics that are of importance here. As a part of this, we will be looking at the general perception that digital technologies are of blurring boundaries between ethical and unethical, between lawful and unlawful actions, e.g. the dissemination of authored content. It is therefore important to establish a contextual frame, in which we will try to better understand the various predicaments of the "Open" dimension and how OERs might affect various aspects of Higher Education. The future shape of Higher Education is the main hypothesis of this thesis and we will explore how it is organically linked to digitalization and the digital transformation of learning and teaching. We will also look at how Higher Education will be affected in the years to come, extrapolating this from the examples set forth.

The different chapters will provide context and contextual frames surrounding the various topics that are being addressed throughout the thesis. They will be structured as such:

Chapter one, will provide an introduction into pedagogy and politics surrounding higher education. Here we will go into details on what pedagogy is, why it is transforming and means that Higher Education can take, or must take, in order to keep up with the digital transformation of education. It will serve as a general foundation for the thesis and will deal with general issues and concepts concerning HE and those connected to it.

Chapter two, consists of exploring what literacies are and what they are becoming when we are talking about New Media Literacies. Personal, is the key word here, and most of this chapter will deal with the notion of personal development and personal skills in using digital media. Didactics and digital didactics will also be explored, what this is and how it is changing as digital transformation occurs.

Chapter three, provides information on what OERs are, as well as diving into the affects and impact they have in shaping the educational environment as a whole. Examples on different use of OERs will be presented to highlight the diversity of what an OER can be.

Chapter four, sets out to deal with the more nitpicky parts of Higher Education, that of Intellectual Property, licensing, copyright and copyleft. It will showcase that there are external influences on HE that can affect the learning environment as a whole, as well as provide context to why OERs are becoming increasingly more used and why new licensing policies have taken effect.

Chapter five, is an exploration of the possible futures of Higher Education. Here we will look at the findings of the thesis so far and try to base a discussion on the future of HE in light of this. A project being developed in Germany will also be described in detail, as it models several different outlooks on HE in a relatively close future.

Chapter six, will be a summary and a conclusion, where the research question once again will be brought up and if the thesis has fulfilled its purpose of trying to explain and answer it. Further thoughts on DP, NML and HE will also be presented here.

It is important to note that when we are talking about Open Educational Recourses, that this does not necessarily imply that these sources are publicly accessible and free of charge. Some are freely accessible to both use and modify, some are not. There are OERs that enforce access restrictions, for instance to students of a specific country or university. “Open” does not necessarily translate into Free and Public. A public library can serve as an OER just as a University library can. While potential users of the university library needs to be enrolled in the university to be able to use its library, it is still an OER in its own capacity.

Throughout the thesis, I will provide examples that will highlight the different scenarios that are being discussed, as well as using my personal experiences to further add to this. For two consecutive years, I have attended the Open Education Resources Conference in both Bristol and Galway, (OER18, OER19), where I have taken an active part in discussions and debates concerning the Open Community. In addition, I have travelled to both Dresden and Hannover in

Germany in order to visit designers and developers on different OER projects and conducted personal interviews with project developers and project leaders.

In the light of all the technological advances and the quest for a more open and sustainable future for higher education, we will explore some of the aspects of HE that seem unsustainable in the future landscape of the Higher Educational environment. Such as costs vs income for universities. The tuition, material and living costs of students attending HE in certain regions. Current educational politics and how they are affected by the digital transformation of society that is ongoing now. With this in mind;
My research question will be as follows:
How are traditional educational frames being transformed with digital technologies and in what ways are OERs affecting Higher Education and educational policies.

The Predicament of Digital Pedagogy in Higher Education.

> Today, many contend that the entire educational system has been frozen in the pedagogical approach, ever since the initial application of pedagogy in the eighteenth century. (Ozuah, 2005. 83)

The term pedagogy can trace its roots back to the seventh century, it is an old term, derived of two Greek words, paid, which means child, and agogus, which can translate into, leader of. Pedagogy is therefore said to literally mean "the art and science of teaching children". (Ozuah, 2005) Ozuah paraphrases Malcolm Shepard Knowles in his article in the Einstein journal of Biology and Medicine, were he goes on to write that pedagogy at that time was based on several assumptions about the learners. First of these was the assumption that the learner did not know and could not know their own learning needs. Based on the first assumption, the second based itself on the fact that teaching needed to be subject centered, by extension, curriculums were made in order to structure the teachings. (Ozuah, 2005)
Further on, it describes the pedagogical model of the 18th century, the one that is claimed that we are mired in, is a fundamentally teacher centered model. This means that, according to Ozuah`s writings, "[…] pedagogy is fundamentally a teacher-centered model, where the teacher determines what will be learned, how it will be learned, when it will be learned, and if it has been learned." (Ozuah, 2005. 83)

We know today that it is not up to each individual teacher to determine what will be learned and in most cases, how it is to be learned. They are however in a position to judge *if* something has been learned. Countries around the world have their respective political instances that are responsible for education, it is up to these to now determine the how and what, that will be taught. This will be explored in further detail as we progress in this chapter.

"Learning to teach is a highly personal activity, that evolves from a person`s core beliefs, values, past experiences and key policy documents." (Redman and Rodrigues. 2014. 3) Learning can and will be personal, and from the very beginning of your educational road to a university degree and beyond, you will have personal contact with teachers and other students. At University level you will have acquired different skills that are personal to you, which it will be a lecturer's role to exploit in order to maximize the learning outcome. A study by Nikole Bonacorsi, Sarah Izzo and Abigail Quirk, highlights different aspects of personal learning, and why learning become more effectual if it has personal elements, rather than a distant and objective. Personal learning environments, student centered learning and pervasive learning will be key terms when addressing personal learning.

These topics will be addressed in different parts of the thesis, later on in this chapter, the chapter on NML and when discussing Distance Learner Programs (DLP).

"Research into online environments has consistently shown that interactivity leads to better learning outcomes". (Bonacorsi et al. 2014, pp1.). This is not to say that any online environment leads to better learning outcomes, but rather those that are tailored to and meant as educational or informative. As the use of online or digital tools increase in higher education, it is fair to assume that those that provide greater means of interactivity will provide more useful for learners. Interactivity can also provide learners with increased collaboration with each other. This will help to provide a greater learning outcome than static or those that are lacking interactivity and collaboration. (Bonacorsi, et al. 2014)

A different aspect of digital pedagogy is the notion of collaboration, working in tandem with others on a shared document, via either email or networks. Collaboration is nothing new, digitalization and online tools makes it that much easier to reach a wider audience and collaborate in a grander scale. The skillset learned by collaboration with others on school assignments is a much-needed tool that will most certainly be of use later in life, seldom will you be working alone with no one to collaborate with or having to communicate with. Learning how

to adopt and implement best practices of collaborative techniques can be arduous, as everyone works and behaves different in a group dynamic. Teachers must have the skills and knowledge to be able to utilize digital technologies and in addition, be able to transfer preexisting knowledge of pedagogy into a digital format. It is imperative that teaching such skills should be highlighted during teacher education. Even working in a group that has bad group dynamics is a learning experience, and using digital means to foster discussion and collaboration amongst students is a good way for teachers to transfer their pedagogical knowledge onto a new format.

This is not to say that digital pedagogy is all about learning to work together with digital technologies, DP is so much more than just that, but still, collaboration is a key feature that is just as important in DP as it was thirty, forty or even a hundred years ago. Beyond this, Digital Pedagogy is a way forward, a path for pedagogy to follow as the educational landscape transforms with the rise of digital technologies. Web 2.0 is a bustling hub of activity, and provides a plethora of different tools for education, most notably for students to create Personal Learning Environments (PLE). Now such PLE`s can be facilitated by universities, the teachers or by using already existing tools online. What a study by Ebrahim Rahimi, Jan van den Berg and Wim Veen show is that building PLE`s in cooperation with teachers yield the greatest effect on a students learning outcome.

> "This student-driven approach to personalizing learning and constructing learning environment has been suggested as a necessity to form the nature of the relationship between institutions and students in today's rapidly changing technological advancements and develop self-regulated learning competencies among students" (Rahimi et. al. 2014. pp235).

Facilitating such PLEs can serve as ways to empower students in asserting control over their own educational process, as well as designing and constructing their learning environments. (Rahimi et. al. 2014). It is important that we distinguish between PLEs and student centered learning, as one is the students personal way of engaging with learning and the other is a method of teaching directed at students. PLEs are all about facilitating student autonomy, giving them the tools to work independently towards their goals. Digitalization of education and Web.2.0. is helping to drive forward the momentum of PLEs with increased access to learner materials, such as OERs and forums that entices collaboration. (Rahimi et al. 2014).

The P in PLE can besides personal also mean pervasive, meaning something that spreads through multiple layers or environments. As digital technologies become more popular in both production and use, we see that learning is becoming a constant, not just something defined by the frames of education. We read and write, search and consume information at a rapid pace, every day, every week, all year around. Therefore, when we say that PLE can be both Personal and Pervasive learning environments, we define it as a ongoing personal learning process that is in effect even before and after you leave school.

An article by Liyana Shuib, Shahaboddin Shamshirband and Mohammad Hafiz Ismail, published in Computers in Human Behavior, introduces the notion of looking at the smartphone as a pervasive learning tool.

> "The assimilation of pervasive learning with mobile phones marks an incredible venture forward. The incorporation of mobile technology and pervasive learning can enhance the effectiveness and accessibility of learning activities in the future. This new innovation has changed the conventional idea of learning in as much as we are now continually surrounded and submerged in learning encounters." (Shuib, Shamshirband, Ismail. 2015. 239)

Pervasiveness is also reshaping the notion of access, as with the help of digital technologies, access is no longer restricted to physical space. E.g. a teacher can grade submissions on the universities digital platform while in sitting on a train. A VPN can be used to access the universities digital library from foreign countries. The same is true for students, as they can also access material at any given time and place, something that was previously restricted in access due to closing hours.

There are plenty of different digital tools available to teachers and students, e.g. the Canvas system by Instructure, that many universities are currently using, i.e. UiB. The It`s Learning platform that Norwegian schools have been using, or Valamis, a up and coming system for digital transformation of learning, as they so aptly put it themselves, are also examples of such tools. These tools also work on mobile devices, allowing everyone involved to carry with them the tool wherever they go. Students may upload a file or download a text with their phone, a teacher may proof a assignment during the daily commute and so forth. Educational podcasts can be downloaded and be played during a workout program at the gym. The notion of pervasive

means that you are not limited by time and place any longer, you can access the information you need wherever whenever, as long as you have a mobile device or a laptop computer that is connected to the web.

> "Mobile pervasive learning, also named universal processing, is a rapidly growing range of data engineering. The term alludes to the incorporation of data innovation into the lives and situations of individuals. In versatile learning, devices, for example, PDAs and mobile phones, are associated with the Internet and remote communication advances like Wi-Fi, Bluetooth and so forth, which, together, empower learning at any time and any place. Mobile pervasive learning is learning upgraded with updated technology, a savvy environment and connection mindfulness."
> (Shuib, Shamshirband, Ismail. 2015. 241)

The art of educating a student is a process that requires a few years of education and involves training in pedagogy on top of disciplinary knowledge. Having pedagogical skills in HE, are required, to ensure the quality of the teaching and the correct presentation of material. There are several other aspects of education someone, from parents unto children, social settings with friends, communities' one might be engaged with, instructional videos or even guides and manuals. These will not be covered in this thesis, as I will try to keep my focus on Higher Education, and only include a few examples from other parts of the school system in order to provide more context. As for my home country of Norway, as a part of the governments Kunnskapsløftet, an educational reform, all hired teachers must have completed their education, and needs to meet a specified list of requirements in order to be able to work in a classroom. (Regjeringen.no). This does not on the other hand count for those hired in temporary positions or those substituting for others. This reform was made to ensure that teachers have strengthened pedagogical knowledge and a better understanding of how didactics affect their students. Universities in Norway are <u>not</u> bound by this reform, and rule almost sovereignly over the different curricula taught, the choice of courses that are being offered or terminated and on the didactical aspects, e.g. how different teaching modules will be designed. This provides Norwegian Universities with many opportunities to create and facilitate student centered PLEs, in order to help students transition from the familiar boundaries of school and into the more open and student centered way of Universities. There are of course certain criteria's that must be met

by universities and there is a national educational plan that to some extent should be followed. Being a teacher or an educator is not just about being able to pass information from one person to the next, it is also about using ones knowledge to the best of their ability, to guide students through their education. As such, having an understanding of what one is teaching is paramount in order to be able to pass on this knowledge, as well as having the understanding to acknowledge when your students also reach this understanding. Governments around the world usually have a ministry of education that is in charge of overseeing the requirements and demands that schools and educational instances should be measured by. Some countries differentiate between education and higher education, and might fit HE in a different ministry, such as the ministry of Higher Education and Research. As with any political instance, the speed at which things are implemented and changed may not always be the most expedient one. Towards the end of the 20th century, The European Union started the Bologna Process, a result of the Sorbonne Declaration from 1998, which was a joint process of creating a common frame of reference within EU and HE. The original four countries where France, Italy, Germany and the UK.

"The process relating to higher education within the wider context of the European process, formally launched by the Sorbonne Declaration and taken forward with the Bologna Declaration and the Prague Communiqué" (Rozsnyai, 2003. 280). The Bologna Process today consist of 48 countries, that has a goal to create an implement structural reforms and shared tool for HE. The focus of which, as they state on their website, is to promote certain values, such as freedom of expression, autonomy for both institutions and students, freedom of movement with the help of exchange programs and academic freedom. The Bologna Process is an initiative to increase the quality of higher education across the board, this also means the inclusion of eastern European countries. A glaring issue that has marred HE in certain European regions it that of quality insurance, which didn't seem to be a focus of HE institutions in parts of eastern Europe until the 1990`s.

> "In many countries of Western Europe, where quality assurance has had a decade's advantage over the Central and Eastern European countries, many studies have been, and continue to be, conducted by higher education institutions and external agencies on the influence of quality assurance on the quality of education". (Rozsnyai, 2003. 274)

The lack of quality insurance can stem from a variety of situations, one of them being the lack of funding to upgrade or install new technologies, which has seen use in western Europe for some time. Being included and partaking in European Higher Education Area (EHEA) and adhering to the Bologna Process means that eastern European countries can gain access funds that would otherwise be unobtainable to them. The EU has financial instruments in place to help countries that implemented the Bologna Process reforms. Having more countries sign up and implement the BP also means a greater unification and common practice across Europe, which in itself is the end goal of EHEA. (Toderas, Stăvaru, 2018)

The cost of upgrading systems, buying new technologies, having to undergo new training and facilitate for implementations of new systems, tech and hardware is very high, massive in fact. As a result, it is common to find outdated systems or technology, something that will hurt the process of keeping up to pace with the rapid development of technology in the world. For Eastern European countries especially, where a strong economy is lacking, finding funding for such a process can be hard. Thankfully though, there is an extensive cooperation between European countries, as well as funding for such processes.

> "In addition to the global changes undergone by higher education during the last decade, both the new member states of the EU and the non-EU members have had access to specific streams of funding (e.g., European structural funds, World Bank) and have been involved in massive higher education reforms in which the Bologna Process played an important role as a driver and a framework for reforming within a European context." (Sursock, Smidt.2010. pp17).

With funding from the EU, institutions of HE in eastern Europe can provide their staff and students with access to digital technologies, such as functioning computer labs. This will in turn help students with their personal learning and autonomy, as they now have the potential to access online and digital resources that previously might have been inaccessible. Digital pedagogical competences will also potentially see a boon from this, as the reform includes focus on digital technologies and educational mobility.

Finances play an important role here, as keeping up with technology and providing computer labs with the right amount of equipment can be very costly.

In an article by Brandon Butler for the website Networkworld, a survey about technology in

federal government is being highlighted and the issues they have with properly funding education. “The results shine a startling light on inefficiencies in the federal government stemming from a lack of investment in new technologies” (Butler, 2016).

A study done in Latvia on the effects of funding systems on higher education from 2006 shines a light on the issues surrounding funding, and one of the major points in the study is that even added funding might not solve the issue of modernization of higher education. (Krumins et. al. 2006) When the study was published, the agency in charge of allocation funding to the different instances of higher education was the Ministry of Education and Science. The results shown by the study are that even with Latvia joining the EU in 2004, and having received additional funding through that and the world bank, the amount of funding compared to budget was lacking. “State budget funding forms the smallest part of income in many state institutions of higher education. For example, the budget of the University of Latvia, the largest university in the three Baltic countries, included only 29 per cent budgetary subsidy in 2005” (Krumins et. al. 2006. 6). Another issue highlighted in this study was the lack of transparency in the resource allocation system back in 2006. Even in recent times, a study from 2017, done by the Latvian government in cooperation with the World Bank, still states that transparency is lacking. “Enhancing the internal funding models’ transparency and impact requires a more thorough understanding by institutional members. However, systematic, regular information campaigns and processes have not yet been established by Latvian HEIs” (LV.Gov.WB. 2017)

The topic of this thesis is Digital Pedagogy, why so, are budgets, funding and transparency important parameters to look into? Simply put, the EHEA in the timeframe 2018-2020 has a strong focus on improving digital education.

> “We will enable our education systems to make better use of digital and blended education, with appropriate quality assurance, in order to enhance lifelong and flexible learning, foster digital skills and competences, improve data analysis, educational research and foresight, and remove regulatory obstacles to the provision of open and digital education”. (BFUG. 2018)

This is a statement from the Bologna Process Follow up Group (BFUG) work plan 2018-2020, under the section on Learning and Teaching.

It is important to understand that students today have access to digital tools and know how to use

them, so it is equally important for Universities to have the same access, or equivalent, in order to facilitate the best learning environment. Worth mentioning in regards to transparency, is the notion of underhanded tactics or possible illegal agreements between universities and private actor. A university might receive a large sum in the form of a donation with a clause or under the table agreement that in the foreseeable future, any computer lab upgrades will only happen with purchases from a certain company, or perhaps they will gain exclusive rights to all scientific publications done at that university. This does not equate to funding being the only way to engage and work with DP, but it helps to have the right tools for the job, it is however important that governments commit the right amount of funding for such tools and that there is transparency concerning where other funding comes from. We will revisit funding and the increasingly growing issue of industrialization of education later in chapters dealing with copyright and licensing. Digital tools are needed for both students and Universities in order to stay on top of their studies as more and more become digitized and connected to the online world. By 2018 over 4,1 Billion people across the globe have access to internet in one form or another, be it via cellphone, tablet or a computer.

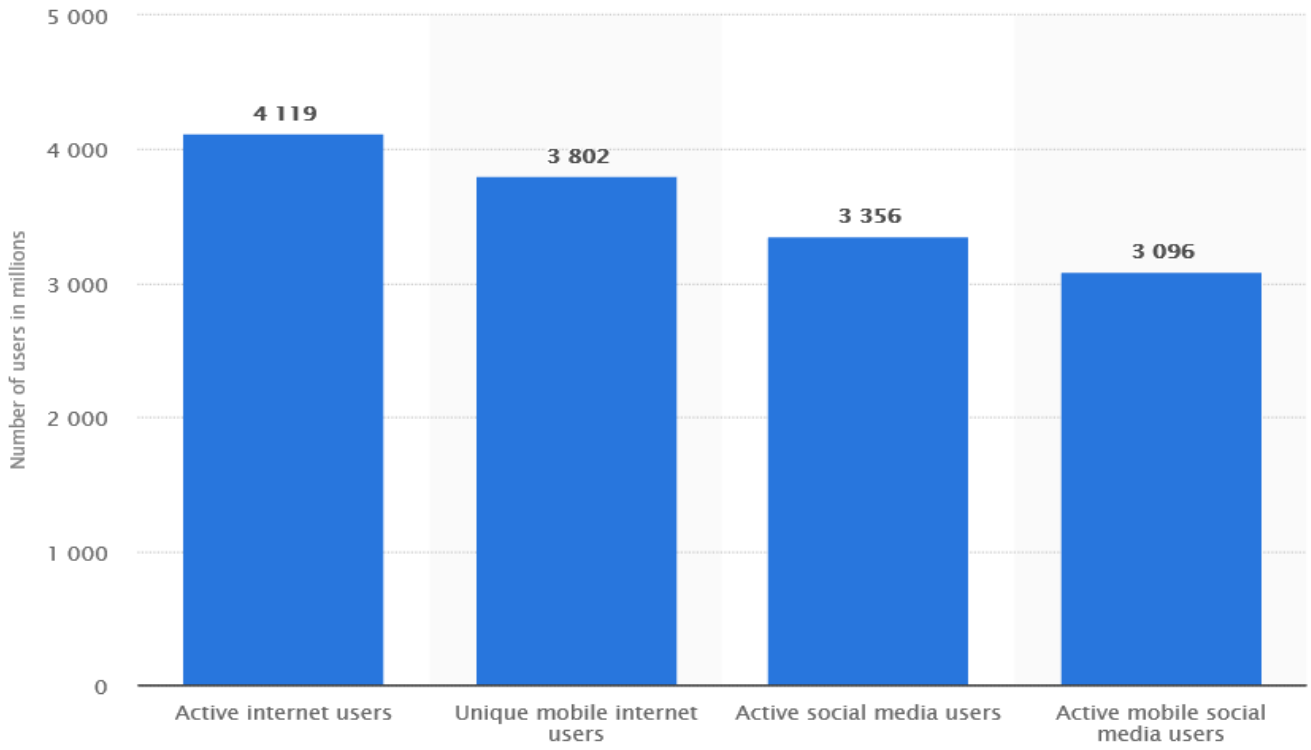


Illustration 1, number of internet users by 2018. Statista.com.

Having almost unlimited access to the web no matter where you are is cause for both joy and regrets, things can now be shared online almost the instant it happens, for good or worse, at the same time as access to information, knowledge and across borders are now at your fingertips. With the rise digital media devices, a demand for increasingly mobile and modern technologies are in demand, it is up to the institutions of HE to participate in this digital transformation to keep up to par with its user base. This includes developing countries, where mobile technologies are amongst the most sought after digital technologies and those that are most commonly used and in one's possession.

Digital pedagogy is still quite new, at least when we compare it to traditional pedagogy and its long history and merits. We have still not fully reached a level of understanding on how it affects both students and teachers alike. Research is being done as we speak, measuring effects and affects, looking at different models and comparisons. That which is missing, as off now, that will only come with time is data, big data. Massive quantities of data that can be scrutinized and processed in such a way that we will see the big pictures.

A concern that has been growing in unison with the rapid expansion digitization of everyday life is the lack of pedagogical interest in digital media providers e.g. Twitch or YouTube. In 2012 UNESCO delivered a in depth report on the pedagogies of media and information literacies, in which they heavily argue for critical thinking, being able to discern personal from objective statements and to be fully aware of pre-existing factors that may color the facts that you are given.

> "Media exert their power in choosing whose views get represented and whose are left out. The choices of a single journalist have a great effect on how the receiver reads the message and sees the reality.
>
> Through media people perceive the majority views. The theory of the 'spiral of silence' suggests that a certain view can be hidden away from the public eye because people express only those views they have understood — through media — to be in the majority. Consequently, the media believe these views to genuinely be the predominant ones and concentrate on them."
>
> (UNESCO Institute for Information Technologies in Education. 2012. 65.)

The issue with media is that of discourse, the media controls which discourse it uses when presenting news, and as such, can steer or guide viewers/listeners in their favor. This will be addressed further in the second chapter of this thesis. Media activities are more and more a private matter now, still, people are of course using their phones and tablets in public spaces, and so what does this mean? Posting on social media, or browsing social media is a private matter, and having someone looking over your shoulder trying to peak at what you are writing or looking at is an invasion of personal space. Even if you do this at a public space, like a bus or in a café, it is still considered private and a part of one's personal space.

This is why tools that can help a pervasive learning environment thrive is of such high importance in DP, learning is no longer only done in an educational setting or at home with your book. The digital learning environment tends to become personal and pervasive, and as such, it is important to keep track of detrimental habits and to master skills that will prevent this from becoming a hindrance to the learning outcome and the quality of work done. We will come back to what these skills are and how to prevent bad habits from cementing later in this chapter.

As previously mentioned, governments may have a hard time keeping up with the pace of modern technology in a educational sense, even regional differences and private funding can affect how well equipped a university is. Media providers like YouTube, Twitch or other popular websites on the other hand are if not the ones creating new tech, most certainly are very quick at exploiting and implementing it. The ability to keep up with or being the creator of such technologies are what these media providers strive for, and is that keeps them in the loop. If these media providers stay popular and trendy, they will get more visitors and traffic on their site. Just look at how streaming services has developed over the past few years, and how social media sites either adapt or die off.

What then, will educators do to prevent exposing students to material that can be detrimental to their education, mental health and integrity, if a lack of competence among educators and trainers is present.

A study done in Germany shows us that the daily use of digital medias can prove to be quite a burden on the mind e.g. the need to constantly be up to date on current events, checking mail, social media and others forms of media outlets. Tasks such as there may prove straining for those

involved. Having too much to keep up to date with and to many areas of interest can cause stress and in worst-case lead to depression.

> "While the potential dangers of information overload and perceived stress originating from ICT use at the workplace and in corporate contexts are well documented, the consequences of information overload arising from personal and private online communication remain largely unknown. Due to the lack of representative studies that would allow for a test of the effects of private communication load in the general population and over the life span, it also remains unclear whether adolescents and young adults, who are particularly enthusiastic users of social media and mobile Internet, are equally susceptible to the potential negative effects of communication overload as older users." (Reinecke, et.al. 2016. 91)

Mental health constitutes a real issue in digital learning environments in a higher educational setting, e.g. online bullying, exclusion from group conversations, alienation on social media are just some issues that one might be faced with. Educators are not supposed to be psychologists, but, should never the less acquire skills that will allow them to recognize and deal with such potential situations. Most universities do have tools in place to help students that might buckle under the pressure, or that might struggle with anxiety due to stress, such as a student psychologist or in some cases a priest you can talk too. Within DP it is important to keep this in mind, and to also be able to guide students in a way that lessens any detrimental impact on their learning outcome. The issue not about restricting access or only working within closed confines of a single program, it is about being knowledgeable and informed of certain "traps" or "pitfalls" that can dangerous, such as active exclusion from groups or activities. A teacher's role should be, additional to being an educator within their field, a guide, aware of the specifics of digital learning environments and mediated interaction patterns and practices. In addition to acquire specific skills to prevent and address possible dangers linked to online interactions. This is not always as easy as it sounds, and in some cases, the lack of digital training and competence, especially in educators who lack a technological understanding, may not provide the correct means to navigate a digital learning environment. There are also those that have a dislike for technology, or those that abhor it, as with Luddites, though this will not be discussed at length in this thesis.

This brings us to another issue that has been a focal point for discussions within education, The Digital Divide (DD*) – a term used to describe the knowledge gap between two points of interest, be it people, institutions or nations. There is also the term, the Global Digital Divide, concerning the difference in technological development in western society compared to that of the Global South. The Global South is a common denominator used when talking about Latin and South America, Africa – particularly Sub-Sahara -, Asia and the Caribbean. This will not be the focus, instead, the attention will be directed towards the Digital Divide in Higher Education, the age gap and the knowledge gap between teachers and students. (Waycott et.al. 2010)

The digital divide between teachers and students, may cause disruptions in a teaching environment, both physical and digital, more so than not, if students believe they have mastered digital competences from heavy use alone. Being able to use a computer and use social media, or any digital media does not create an expert, as with all things, experience comes from learning, and no one uses and learns more about digital media then children and young adults. What then, of teachers? Should DP be a simply be a course to take, with a diploma at completion? Should it be an extension of the education already done, such as a six month, or a year long full time study? Should DP become its own form of education on the same level as a teachers education is today? This discussion is raging at the moment, as no common ground is found, and no definite answer is to be had. It is such a individual process, to master pedagogy, and equally so for those venturing into the digital realm, so as long as there is no common thread, or institutionalized standard for how to approach DP, we will see that the disagreement on what/who and how will be persistent. The Norwegian Center for ICT in Education had a workshop in 2014 where they presented a proposal for a formative assessment of student teachers professional digital competence. (Ottestad et.al. 2014)

This proposal was seen as a means to which digital competences could be formalized and structured in a system, while also invite future contributors in the field to engage in a precise debate on the concept of digital competences.

The DD* is not solely based on the knowledge on digital tools and media, it is very much linked to the socio-economic state of each individual, the country you are based in and the level of education on the person in question.

> "Research on digital divide has shown that several socio-economic factors lead to asymmetries in ICT adoption and use between individuals: income, age, and educational attainment, among others (Dewan & Riggins, 2005). Education, in particular, reveals itself as an extremely important factor because, not only are more educated individuals more likely to have less difficulty coping with technology's complexity (Rogers, 2005), but they will also most likely be exposed to ICT in their professional and personal lives." (Cruz-Jesus. et.al. 2015.72)

Digital pedagogies can differ and vary greatly depending on what region of the world, or country one might find oneself in, just as we will see with literacies, DP is intertwined with cultural context, socio-economic, developed literacies and cultural norms. Keep this in mind when we closer examine these notions in the chapter on New Media Literacies, where these contexts play a critical role. We can only assume that students will in most cases have a better comprehension and expertise in digital media compared to their teachers, given the amount of time and experience in using digital media. (Fossland, 2015)

This is of course a "temporary" problem, when those that grow up today, the so-called Millennial and Gen Z generations make it into work life, the knowledge gap will slowly fade. This is also tied into the terminology surrounding digital natives and digital immigrants, referring to those that grow up with digital technologies vs those that are introduced to it at a later stage in life. This thesis will not explore those concepts in any more detail.

The common factor for the Millennials and Generation Z is growing up with, and having a very keen understanding and competence with technology. As such, when some of them will start working in education, they will have a much easier time to comprehend and work with technology compared to the knowledge and age gap that we see today. There is no fixed definition on these two demographics, but the wiki definition states that Millennials are born around early 1980`s and up to year 2000, while Generation Z are generally defined as borne around the mid 1990`s to mid-2000. Common for both these groups are starting to use digital media at an early age and having a high proficiency with digital media and online activities and norms. Still, the modern university may not always be at peak performance when it comes to digital technologies, even if there is eagerness to implement these. Research done by the Digital Clarity Group in 2016 supports this, with their key findings in HE pointing towards a slow

uptake on new technologies, often due to factors beyond the control of the practitioners. “Even as leaders in higher education acknowledge the risk of moving slowly, they are unsure as to how to proceed or they are stymied by myriad factors that slow progress, many of which are beyond their control (such as uncertain funding).” (Elliot et al. 2016. 28)

In a rapport by three senior members of the Norwegian Center for ICT in Education, there are references to research done on digital competences in teachers, were the findings all point to the fact that training teachers in digital competences will greatly benefit themselves and their students.

> “There are few studies and texts that describe what should comprise the specifics of a teacher’s digital competence, i.e. competence that enables the teacher to foster students’ digital skills through work with academic subject material. In this context, teacher education is of foremost importance for the development of digitally competent teachers.” (Ottestad, et.al. 2014. 243)

The importance of having teachers that are not only confident in their use of digital media and have digital competences cannot be stressed enough. This is key in order for them to be able to pass on this knowledge to their students and to set up a successful digital aided curriculum for their students to access. Competences will need to be built with education in mind, for such is the way that in some aspect competences in digital media will evolve from personal use, this use however is generally not done with competence building or academic thought in mind. Further on, Ottestad and his colleagues makes note of a trend found by external research;

> “Tømte, Kårstein and Olsen (2013) found that the development of professional digital competence all over is weakly instituted at the management level of teacher education programmes, and that most programmes lack a comprehensive approach to the development of such skills. Furthermore, they found that teacher educations institutions’ academic profiles on the topic are poorly developed, and that the expertise of the academic staff is highly variable.” (Ottestad, et.al. 2014. 243-244)

Teachers cannot teach correctly if they do not have the knowledge how, building these digital competences for educational purposes is highly needed for the ability to pass on this knowledge and make full use of it in an educational environment. In addition to building these competences,

the teachers needs to keep up with digital media in practice, because having just theoretical knowledge in this matter is not enough. A teacher must not forget to actively engage in digital media in order to keep up with their students. Remember that the students, who use digital media as a part of their studies will learn key aspects of digital academics, which they can further make use of on their private time.

Practice makes perfect as they say, and as they are called, Millennials and Generation Z are spending on average almost three hours online every day. This will mean that there is potentially several hours a day where these people hone their digital competences and engage in pervasive learning.

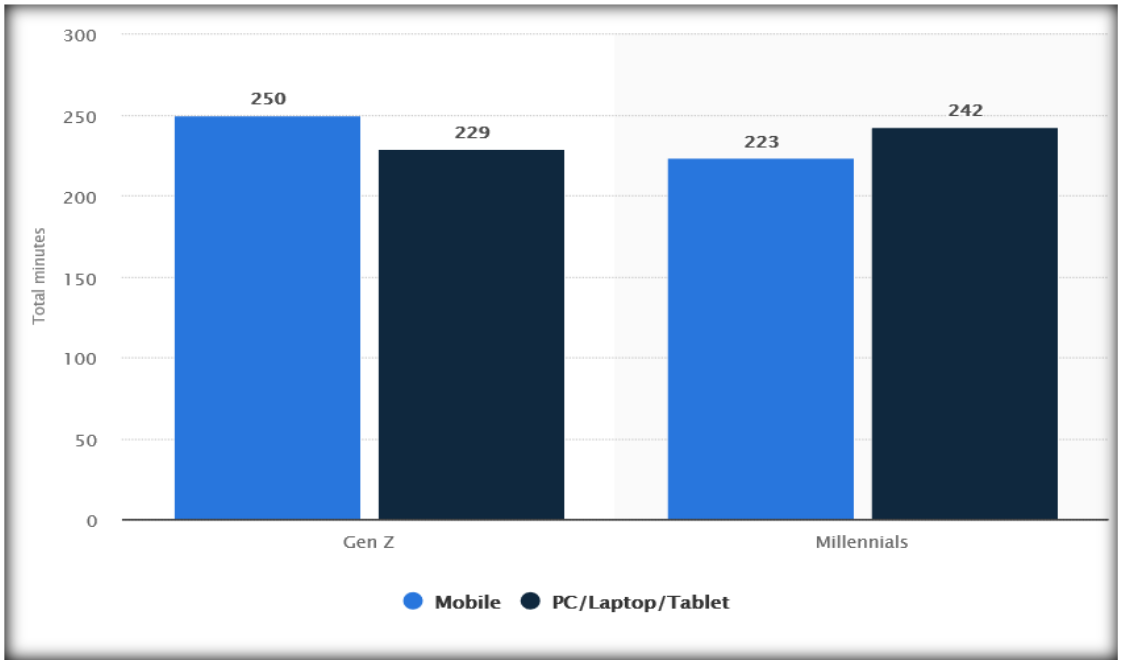


illustration 2, time spent online, Statista.com.

(https://www.statista.com/statistics/736727/worldwide-teen-average-online-time-devices/)

Students at Universities today will, as the graph shows, spend a large amount of time every day online, interacting with social media, reading news or streaming content on the different media outlets. This leads us back to the pervasive learning and how the need for a proper educational app or framework. As mentioned, learning is an ongoing process that does not start and end with school. It is a constant, and as such, there should be tool in place that can help to turn casual browsing of the internet into a learning environment that students are actually aware of and can easily interact with. There are so many missed opportunities for pervasive learning, if only the tools where in place, and with children and young adults becoming increasingly technologically

sophisticated, it would be the logical next step.
A study from India, published in International Journal of Applied Engineering Research, highlights the need and use of Big Data in a higher educational setting.
If you are unfamiliar with the term Big Data, it refers to every single piece of information about movement online, anything that can be gathered, stored and extrapolated in order to create a big picture of dynamics online.
In the research, the authors are arguing for the need and use of more pervasive technologies and how they can properly be implemented for students and educators in higher education. (Huda. et.al. 2017) The biggest effect on this would be having the possibility to use big data in order to create a learning environment based on searches, research material and the subject the students might be working on. This could lead to big data being used to create tools of pervasive learning specifically catered to target certain groups of students, seeing them have access to educational tools made just for their field of study.

In summary, Digital Pedagogy is an amalgamation of competences that are derived from the subjects presented in the previous part of the thesis, it can also be viewed as twofold, the notion of Digital Pedagogy itself, and that of being a digital Pedagogue. Digital Pedagogy, will therefore be defined as to include; good knowledge of digital media, competent understanding of pedagogical theory and the ability to employ this in a digital educational environment, the ability to both utilize or create digital tools to be used in education and an awareness and ability to deal with new threats and issues relating to the digital transformation of education. A Digital Pedagogue will be an individual that have these competences and the ability to use it in an educational setting.

Learning something new

> "In recent years, as so many more people have started to rely on the Web for such vitally important forms of information as news, scholarly research, and medical as well as investment advice, the lack of general education in critical consumption of resources found online has become a public danger." (Rheingold. 2012. 81)

As a result of spending so much time online, learning all the social norms and habits of browsing, the young generations develop some finely tuned crap detection skills, or shit filters as it also might be referred as.

In his book "*Net Smart: How to thrive online.*" Howard Rheingold explains how to develop your crap detection filter and tips on how to employ and improve it. (Rheingold, 2012. Chapter 2)

With crap detection, Rheingold is talking about sorting through false or fake information, source checking and being able to on one`s own separate and analyze information into what is useful and what is useless. These filters are not something that you can just get, it is learn by doing, experience that lets us distinguish between what is fact and not. As both students and teachers are concerned, in higher education more so then not, the ability to sift through massive amounts of information and come out with the few gold nuggets are paramount. Source checking, source critique, discerning between what is a personal sentiment and what is a professional one, on social media or a blog is a skill that needs to be honed and stay sharp. Digital pedagogy is linked to the ability to teach and learn critical discourse, working with and learning how to correctly facilitate this for students, and for students to use the proper tools and abilities in order to achieve the desired outcome. The need for such a "shit filter" is important when faced with DP and OERs due to the fact that we live in an age where rumors and false truths are being spread almost as fast as or faster than truths. Human nature, it seems, get in our way. Our need for gossip and slander on the internet is abundant and with it, half-truths, false, or incorrect information is being spread.

> "People are the principal culprits, according to a new study examining the flow of stories on Twitter. And people, the study's authors also say, prefer false news.
> As a result, false news travels faster, farther and deeper through the social network than true news." (Lohr, 2018)

As DP is concerned, the ability to discern between right and wrong information in an academic setting is important and there are common challenges here for both teachers and students when dealing with the challenges of filtering through online information. E.g. can a source be cited? Does it provide references? What information is available on the author? These are some of the issues one can face and that DP will help to address.

For students, who already have some of their filters in place, all they need are some guidelines

that will provide them the context they need to properly work with digital material. Such guidelines for dealing with OERs could be worked out on an institutional level or be a part of an educational reform, set forth to deal with new issues that arise from the digital transformation of HE. An example of what such a guideline can include:

- Does the source provide references, if so, what kind?
- Who is the author and what is his/hers background?
- Is the knowledge presented also represented elsewhere?
- Is the work published and by whom?
- Are the facts presented disputed or agreed upon?

This is a basic example of some simple guidelines that can be followed in order to ensure the quality of the material that one might present. It would be advisable to have a work-group in charge of developing a in-depth guide which could be distributed to staff and students each semester.

The impact of the Digital Divide in HE can be lessened with the inclusion of such guidelines, teachers and academics might not have had enough time to hone their filtering skills on social media, such as students might. With the addition of a guideline to be used in academic work, the need to spend as much time online will dissipate, it could also lead to teachers being more confident in what and how they present information, as they now have clear guidelines to help them. Knowledge and information may also change drastically with the passage of time, as newer knowledge becomes available, or more extensive research is being conducted in the field. A perfect modern day example of this is that of the chemical substance known as $S^{2-}(aq)$ that proved to actually not exists…

Meaning that several decades of research is by any given standard, faulty, since they include the presence of a substance we now know does not exist at all. (May et.al.. 2018)

This example is one of extremes thought, but the application toward student projects or other works in academia still stands, using information that is not correct can prove quite catastrophic. It is also important to understand that there is a difference in scientific errors that are made unwillingly and fake news and fake science purposely created to mislead the readers. By developing critical reading skills and literacies, one might have a much easier time discerning between them and correctly ascertain whether it is true or not.

We are in the unique situation of being “the first” meaning some of us, being a millennial myself, born in 1985, growing up in a time without internet, and in a time when it was all new, are the first to encounter issues such as DP and the Digital Divide on a scale unprecedented as little as 20 years ago. This is not to say that we are the first to experience and use the internet, not by a long shot. Arcade machines and early generation consoles where available long before the millennial generation, but they were not nearly as popular or in-demand as they became when I grew up. We are on the other hand one of the first generations growing up when it is publicly available, affordable and increasingly popular to have. Personal computers or digital media devices being commonplace in most western households. Being a child, growing up in such a situation is quite different from someone already entering adult life or older, the way we interact with and build understanding of something differs with age. The vanguard of Digital Pedagogues started in the 80s, when computers started being introduced into the educational system as more than just a novelty. Due to this, the Digital Divide is not as markedly obvious in HE compared to traditional schools, as HE institutions generally have more funding, better economics and are more active at using new technologies.

Now that society gradually transforms in a digitalized way, and technology surrounds us at all times, it is almost hard to think back to a time where this was something exotic and not publicly available to the degree it is now. I still remember growing up without a computer or a cellphone, in a time before tablets and other sources of digital media existed. Personally, I first started using the internet when I was around 11 years old, first in a private capacity and later, as the technology developed, in a school capacity as well. Back in 1997, only 9 % of the Norwegian population had access to a private internet, but between 1998 and 2000, this number increased to 39 %. (ssb.no) Spending time reading and using newer and more advanced technologies has become an almost obsessive compulsion for Millennials.

One of the issues that can seriously impede Millennials and Gen Z in their work as educators will be the lack of up to date technology in the educational system. Presumably, when the two generations start working in HE, schools or even politics, it might be possible to influence the politics of education and provide governments with a multitude of reasons as to why it is important to invest in educational technologies.

Children and young adults today have grown up with digital media, being almost surrounded by

them on a daily basis, while the older generations have gone from a analogue to a digital life. The hardship of having to keep up with the constant change and flux of digital technologies can prove to be quite challenging for someone who is not interested in it, or otherwise digitally incapable. There is a plentitude of grown adults that have a fascination and keen interest in staying in touch with modern technology, some even embrace it fully, yet, this is not the case for everyone. Those that choose not to engage with the digital transformation of education will find themselves at a disadvantage when it comes to engaging with students. An educational institution might have an online system that is being used to hand in assignments, have them graded and commented and passed back to the students. Having the knowledge on how to use such a system is needed, even if one does not like using it, as one cannot demand that students turn in their work in paper form instead of online.

The cost of re-schooling teachers, implementing new technologies and maintenance of equipment, old and new, is also an issue HE has to face. With the rapid growth of technology as well as the pace at which software is becoming obsolete, it is a heavy budget cost to be able to keep all systems up to date at any given time. The adaptability and flexibility of teachers and staff will also have to be addressed, as there might come a point where the constant pressure to stay updated and on top of the new technologies taker its toll. Later on, we will be addressing the issue of re-schooling and how that might be addressed in relation to OERs, the AHEAD Project, presented in the chapter on the future of Higher Education, will serve as an example to contextualize this.

In a guide on how to reimagine the role of technology in education published by the US Department of Education, the author(s) mention some easy steps for cutting the costs of old equipment in order to make room for new technology and updated software.

> "As technology enables new learning opportunities and experiences, it also can render existing processes and tools obsolete, freeing up funds to pay for technology. Three obvious examples are copy machines (and related supplies and services contracts), dedicated computer labs, and replacing commercially licensed textbooks with openly licensed educational resources." (US Department of Education. 2017. 48)

What is eye opening here is the third point that is mentioned, openly licensed educational resources. For a government, in a country with so strong regulations on licensing and intellectual

properties, it is quite astounding and refreshing to see that they openly advocate for the use or OERs as a way to cut costs, for both schools and students alike. Educational economy and educational policies will need to be transformed with the rise of digital technologies as well, simple steps can only do so much, to truly make an impact, larger changes will be needed. This will be addressed in detail later in the thesis, in the chapter on copyright and licensing concerns surrounding OERs and how to properly address Intellectual Property Rights.

Learning new skills is not always easy for teachers in HE, and depending on age, competence, and the traditions and norms interred in their academic disciplines, getting to know and master digital technologies in a pedagogical setting, can turn into an ordeal. E.g. when teachers experience critical skill gaps are faced with the possibility of being outsmarted by their own students. The importance of digital competence is something that cannot be underestimated, and with the digital transformation of society and education, the competences to navigate a digital landscape is becoming just as crucial as navigating a physical one. Being able to spot ill intention such as trolling or toxic behavior or possible hazards is vital in order to successfully come out on top in a digital landscape and in digital pedagogy. Trolling is online slang used for an individual that is that is deliberately being disruptive and seeks to create conflict in a digital setting, while toxic behavior is in a digital capacity akin to bullying and harassment.
There are academic networks available on most major social media and some more obscure ones, but that does not mean that they are free or erroneous information or in worst case, spreading false information. A digital Pedagogue that has mastered the competences previously outlined will be able to build or utilize already existing digital architecture to create a networked interaction between learners, educators and between students and educators.
Twitter is an example of such networked architecture that allows for both a social and pedagogical aspects, while still existing in public view. Twitter does of course have its limitations in both structure and use, but it does have very strong networking capabilities in how it uses hashtags to connect and network both people and information. I have myself used Twitter as a part of a class I took one semester, where the students used a certain hashtag (#) to connect information and to notify the teacher and their fellow students of their findings, or simply what was on their mind, related to the course. We also used the network to draw attention to our academic blogs, which we wrote as a part of that semester theme which was research-networked seminar. The course had two classes participating, one from Kean University New Jersey, and

the other here at UiB. We used Twitter to stay in touch with each other just as much as we did it to broaden our networking skills and using twitter in a professional and academic sense. The most important things we worked on, by ourselves and in class were the ability to differentiate between fact and falsehood, as well as finding sources of the claimed information. We did this with the aid of our professor and by employing the various skills we acquired during the semester pertaining to safety and the guidelines we were given.

The importance of critique, source checks and in some cases, licensing and copyrights, though the most important aspect in this case will be to do source critique and checking. The source that tweets might not be as proficient as you are, so always fact checking is paramount in order to achieve success.

An example of a source that can easily and without restriction spread false information are Blogs. Blogs are not bound by restrictions of facts or ethics, and people can blog their biased opinions without repercussions in most cases. Bloggers makes a living by spreading their view on event and information, they may also receive sponsorships and gifts in order to promote certain items. As such, blogs can be a cesspool of false information and biased commentaries, this is of course not always the case, as you have not only personal blogs, but the blogs of companies, research groups, academics and researchers. The ability to differentiate between an academic and personal blog is important, as one will be written much like a article, while the other will feature personal comment, ideas and thoughts or other unsubstantiated forms of information.

A good example of an academic blogger is Henry Jenkins, and his blog on participatory culture. www.HenryJenkins.org

The blog features interviews, personal thoughts, commentaries and podcasts, all of which are Jenkins works. He writes in an academic fashion, but as is noticeable, he does not provide a reference list at the end as you would see in a published academic work, but he does rather include links and certain references to other works in his text as he writes, or conduct interviews. Now using this blog as a reference itself can be done, since Henry Jenkins is an established expert within several fields, and his blog is notoriously academic in appearance. Jenkins uses his blog to convey information from the field of his expertize, something he has been working on for several decades. On the other hand you have influencers and their blogs, which are wholly personal and with little to no *academic* expertise. These types of blogs are the ones you should

be careful with, since the bloggers write from a biased and personal standpoint, with little or misguided knowledge about the issues they address.
A present day example of blog that (un)knowingly spread dangerous knowledge that could potentially lead to severe illness is the blog Fox meets Bear. What happened here is that the blogger, Johnna Holmfren, runs a blog where she describes her foraging for items such as edible roots, mushrooms and berries. As a result of this blog, a cookbook with recipes published, only to soon after have it recalled, taken off shelves and have all sale stopped.
The reason was that she put in several different ways to prepare and eat food that you could forage yourself that could potentially prove life threateningly dangerous if not prepared correctly or if you incorrectly cooked it. (dailymail.co.uk)
Some of the recipes in the book where for the preparation and consumption of certain types of raw mushrooms, which could lead to severe illness, ranging from heavy vomiting and stomach problems, to acute kidney failure and internal trauma to certain organs.

Being able to discern what information that can be used or that which should not be used is as stated quite important, not only as a safeguard but as a tool for critical thinking as well. Where DP is concerned, teaching and learning such skills is something that should be on the agenda for any institution of higher education. Teachers need to be active and trained in digital pedagogy for the sake of transferring learning culture, academic culture and ethical standards onto a digital educational landscape. With the digital transformation of Higher Education being an ongoing process as we speak.
It is no longer just about the books and reading lists of any given curriculum, made easier with digitalization, a good student can look at the reading list, and supplement to it with similar readings or pieces of information that is easily available online. This is a much simpler task than to go down to the library in order to look up similar works that might or might not be available. This is one of the reasons why it is important to have a functioning crap filter, since anyone search up information, share links and read websites, it is however a different matter to actually look up the author or a publication in order to verify its quality. The search engines might utilize biased search algorithms, or have certain search results be paid for to be presented first. Academic publishing houses have a certain trustworthiness to them, which is transferred to published works, since it would not serve them at all to publish anything that is not correct. When you are reading such a book and would like to cite or quote from it, you know that it is a

safe choice. The credibility of the author has been verified by the publisher, and the publisher themselves have gone to lengths in order to verify that what they actually publish is correct. In the publishing world, it is all about quality and reputation. No one buys books from a publisher that is notoriously known for controversies. The issue for DP here is that online, reputations can be altered, manipulated or otherwise changed in order to present something in a different light. Online, generating clicks and amount of visitors mean more than the quality of what is presented. This is where we come back to the human nature of spreading rumors and fake news, and the importance of checking sources and verify information. How well do you know the website and their publications, the authors of the article or journal? Some websites does not even list who wrote the article, so how then, will you be able to do a fact check?

There are of course plenty of legit, safe and trustworthy websites that provides you with all or any information you need, so one should not be dismissive of what you find online, as long as you employ your shit filter and reflect a bit on what you are presented with.

Environment and motivation

Universities are more commonly hosting online courses or degrees now, with little to no requirements of attendance at campus or in physical lectures. This opens up a lot of doors around the world, doors that would be closed due to travel, financial and economic issues or perhaps other handicaps that would hinder one from attending a university.

When the university than offers the same course online, which you can sign up for and literally do from your own living room, the situation changes. As long as you are accepted, the previously mentioned restrictions are no longer valid. You can do an online degree from an established university literally anywhere in the world. On the other hand, what are you missing out on? Campus life, for sure. Social engagements with other students in our field, most likely yes. A group of peers to talk to and interact with, most certainly.

> "Attachment to groups must be understood within the context of the profoundly social nature of human beings as a species. Group living is part of human evolutionary history, inherited from our primate ancestors but evolved to a level of interdependence beyond that of any other social primate" (Brewer, 2007. 730)

A key feature in work life is working with others, group tasks and assignments, leading or being a part of a network of peers working towards a common goal.

When doing an online study, via either a university or a MOOC you are missing all of these socializing aspects of being a student.

Yes, it is possible get a degree and have experience with the field of interest, while at the same time miss out on a very human thing, that of cooperation and participation with peers. There are of course ways for students to interact with each other and with their teachers, be it via forums, closed networks or mandatory video conferences. This is no substitute for working closely with others though, having the ability to sit in a study hall surrounded by peers, or having the ability to just go and see your teacher in order to quickly solve an issue. Going to a school or university is not just about being taught and getting a degree, it is "training" for what is to come, actually problem solving with peers, working with other, whom you might not even get along with, but hey, that's life. Courses can be engineered to behave more like a work life environment, giving students the opportunity to experience and train for certain situations as a part of the education.

> "The advantage in learning from people we know is that they are, or have been, in a similar position to ourselves. They have faced the same challenges as we have in the same context, they talk to us in our own language and we can ask them what may appear, in other situations, to be silly questions." (Boud et.al. 2013. 1)

Working by alone can be hard and procrastination can become a real issue for students who does not have someone or something that keeps pushing them in order to get the job done, be it finishing a paper or a project. Building a portfolio can be a helpful motivation in this case, letting future employers know that you have self-discipline enough to work hard by yourself and that you do not have an issue with working outside a group. It is important to have peers you can bounce ideas on of and that can relate to your work in a different way than a teacher or professor will. What is now easily accessible and mere seconds away is a global network of peers on a unprecedented scale before Web.2.0. As a student now, it is possible to connect with peers from across the globe, to network and discuss and as such, academics are becoming increasingly exposed and visible. Academic works and educational reforms can be freely be discussed on open forums, some of which e.g. Reddit, also offers apps for mobile users, making academics even more pervasive than previously possible. Even if possible, these online interactions do not provide the same context as that of working with someone in person.

Students that are working in smaller groups, for instance a masters class that has somewhere between 5 and 15 students will have a better dynamic than a large class with 30 or 40 students. The need to perform, to compete and to grow in tandem with the others students is an important part of the learning environment, as it fosters a healthy basis for the studies. A teacher's role will also be to have a close connection with each student and to make sure that this environment is productive and not detrimental.

For anyone involved in teaching, and especially distance learner programs, the DP of engaging students that have no other way of interacting other than being online is quite tricky. Students motivate each other, drive each other and compete against each other, so how can this be achieved if all of your students are sitting in their living rooms with a computer causally in their lap. The only engagement they have are via forums or the occasional video conference between student and teacher. Re-creating an academic environment online is almost an impossible task, since so much of what is being a student comes down to the capacity to interact with ones environment in a physical sense. Does one just gamble that the students have enough self-discipline to keep themselves engaged with the course material and assignments, or are there other tools to keep students from disengaging from the studies? (de Barba et.al. 2016)

Digital Pedagogy is also instrumental in recognizing these issues and be able to address them, not only for students that are in DLPs but to those in a physical classroom as well.

There are several of ways to increase motivation though, be it through measurable goals, achievements and progress milestones that indicate what is done and how much is left. Positive reinforcement of progress is also an important feature, no matter what kind of education you a participating in, having someone confirm what you are doing can be a very powerful motivator.

Learning environment is not only meant as that which takes place in a educational setting, it is also the environment that the student and or teachers resides in. External factors might greatly impede the teaching and learning factor. Depending on the universities location, the surrounding area may be an impediment for all involved parties, criminal activities like drugs and vandalism or even the dangers of weapons being brought onto campus will severely inhibit the academic environment. It does not matter if you are the best teacher or brightest student if all your efforts are being thwarted by outside forces such as the lack of funding or educational policies. Being in a distance learner program can possibly remove some of these hindrances, but will also add different ones.

Access to a stable internet connection for starters, or in some isolated cases, a stable power source is not something everyone in the world have. Not being able to go online will affect a students ability to participate, which may lead to motivation fading over time, and as a student falls further and further behind it will become increasingly difficult to stay motivated and keep up with the progress of the course.
Some of these distance learner programs do offer the entire course as a downloadable package, but then everything is solely in the hands of the students, and the motivation they can muster. Interaction with fellow students and teachers will be even more limited in these cases.

Working with technology and DP means that one is supposed to be not only an educator but a motivator as well. Finding ways to motivate students and having them try their best in order to succeed is clearly a part of the role as an educator, but it is not more so enforced just because you are dealing with digital technologies. The shifting roles of classroom and digital space means new learning environments, new challenges and different ways of addressing old problems. Digital Pedagogy is all about setting standards, creating safe spaces in a digital environment and lead by example. It is more of an exchange of knowledge then it is a one-sided giver and receiver situation. Millennials and Gen Z can be just as much an expert in digital technologies as those that are teaching them, having spent so much time online that they by all accounts have accumulated extensive knowledge about how they work, and as such, the flow of knowledge in an educational setting might go both ways.

In summary, it is evident from the examples provided on DP, its use and value, that there should be a focus on strengthening educator's competences and understanding of DP and how to transition a learning environment into a digital format. A formal and structured reform towards DP may be necessary in order to achieve both increased competence and lower the knowledge gap and digital divide between educators and learners.

New media literacies and its application in Higher Education

> "Competing definitions of literacy and competing approaches to teaching it have divided the field of literacy, so much so, that they have been widely referred to as the 'literacy wars'. The theoretical disagreements centre on whether literacy is a cognitive skill or a

> social practice, either-or thinking that generates further binaries: phonics or whole language, bottom up or top down, back to basics or meaning making, popular culture or the literary canon, genre approaches to writing or progressive approaches and so on ad infinitum." (Janks, 2010. Xiii)

Hillary Janks puts it quite straightforward, the term literacy is something we seem unable to lock down under a single definition. This chapter does not set out to create yet another definition on what literacies are, instead, what it will be exploring is the notion of literacies, looking at different models and definitions and how they are used, especially in the face of New Media. The focus will be on literacies and how it can be so much more than just competence in reading and how to improve said skills. With such a diverse amount of definitions that its being called a definition-war, exploring and mapping some of those in the light of DP and HE will be the main aim of this chapter. New Media Literacies and digital pedagogy goes hand in hand for the most part, DP makes use of digital tools and media.

New Media can be defined as digital media, modes of communication that uses the internet or other digital means. Another way to view it is as a transformation of communication, just like the WW2 radio broadcasts, or the televised political debates that are seen as landmarks in communication. Such is new media also being described, and in the increasingly digital landscape we reside in, our communications have been transformed with the emergence of widely accessible digital tools and technologies. (Mills, et al, 2014)
Different types of new media can be Blogs, social media, online newspapers or digital games. New media can also be old ideas that have been reformed and re-imagined to work in a digital space in order to bring it to life. (Bolter, Grusin, 1996). Take Netflix as an example, first it served as a digital platform to rent movies in a physical format, functioning like an online version of a rental shop. At later stage, Netflix started providing movies you could stream directly from their website. In that capacity they started functioning like a library, curating and offering movies and series to their audience. Netflix in itself can be seen as a remediation of several existing ways of distributing media. Additionally, the service started producing their own products for consumption, trying to remediate the classic viewing of a movie, adding in interaction from the audience to change and drive the narrative of the movie.
Bandersnatch is one such movie, which is an interactive and allows you yourself to control the

progression and outcome of it. By utilizing multiple-choice events throughout the movie, those that watch are in control of which direction the movie should take. You can later go back and re-watch the movie, make other choices and end up with a completely different story, main character or ending.

This notion of reforming or re-imagining is nothing new and is also referred to as Remediation. (Bolter, Grusin, 1996). Remediation has been happening for a long time, one can generalize it and say that any development of an already existing technology is a form of remediation. Going from painting on cave walls to using leather, using papyrus to draw and create schematics, using paper instead of papyrus, the Gutenberg printing press instead of writing and so forth and so on. In modern times and in our digital landscape remediation happens all around us at a rapid pace, so much so that Wendy Chun argues that New Media is no longer remediating, but updating, updating to remain the same (Chun, 2017). Once it has stopped being updated, it stops being used and fades into obsolescence.

> "New media, if they are new, are new as in renovated, once again, but on steroids, for they are constantly asking/needing to be refreshed. They are new to the extent that they are updated. […] **New media live and die by the update**: the end of the update, the end of the object." (Chun, 2017. 2)

Dealing with the notion of literacy can be tricky, as it may refer to the consumer and not the product, literacy as a concept can be taught and learned, but literacies can also understood to be personal and wholly determined at an individual level. Literacies encompass an individuals ability to read, write, understand, process and consume information, it is also the cultural, social, personal, environmental and socio-economic status of each individual, that wholly shapes and affects the way their literacy develop. Any change that directly affects this, such as moving to a different country, can have an effect on how that individual perceives literacies. There are other ways of defining literacies where one also distinguishes between literacies and Academic literacies.

> ""Academic Literacies" is a critical approach to the researching and teaching of writing and literacy and to the role and potential of these activities for individual meaning making and academic knowledge construction in higher education. In broad terms,

> "Academic Literacies" draws attention to the importance, for re-search and pedagogy, of adopting socially situated accounts of writing and text production." (Lillis et.al. 2015. 4)

In this chapter, it will not be attempted to distinguish between literacies and academic literacies, instead the understanding of literacies in this thesis will encompass all facets that includes personal and academic literacies. Different examples and definitions of literacies will provide context to this statement, readers should also be aware that this chapter will not address the term academic literacies directly, rather, it will describe literacies within and outside of educational purposes.

From a historical perspective, we differentiate between literate and non-literate societies, meaning those who have a rich developed written and recorded history and those who mainly have an oral tradition to pass on knowledge.
As such, literacies is not only the sum of "personal literacy skills", but is also a literate history which incorporates socioeconomic and cultural development of a society and how literacies have been passed down. (Goody. 1963).
There is a wide array of definitions and uses for the work literacy being used by scholars and academics and few actually define the word and its use in the same way. The simple fact is that, your own grasp on literacies and its meaning will change the way you define it. We will look at a few different definitions and see their relevance in accordance to the red thread of this thesis, namely Digital Pedagogy and the impact of Open Educational Resources in Higher Education. Literacies can be taught and learned, yet it is still something individual and personal, you will be in possession of abilities that are uniquely suited to you, since they are closely linked to your personal and life situation. Some may have similar skills and approaches, but in the end, no one has an identical approach to their literacies. All of us learn and develop literacies unknowingly as we progress through social life and the different levels of education, it is a process that in truth never ends, as we develop, society develops and our minds mature. Goody argues that literacies as a concept are institutionalized, in the regard that from ancient times and even now, the power of literacies resides with those that teach, develop, and hold these skills, from the ancient Egyptian libraries to the catholic transcriptions of religious works and to the academic world.
"Literacy has always been dictated by the developments of technology: Papyrus, parchment, quills, pencils, paper, pens, typewriters, computers." (Janks, 2010. 4)

In today's age, with access to DMDs, we have a brand new way of passing on information, the new media literacies are encompassing more than ever. We have the ability to convey messages not only with words and text, video and sound, we can also use digital imagery or even emoticons or emoji's as a means of communication or passing on information.

Can you manage to make heads of this emoji sentence? Just like the cave paintings of old, writing in pictures is a normal way of communication between people, perhaps not in full sentences like this, but never the less by emoji. The sentence reads: Took a taxi to the airport, got on the plane and slept to landing, took a taxi to the hotel and got changed into swimwear and ran to the beach.

Literacies has for a long time been connected with power and control. From the earliest times when the Clergy of different religions decided who could learn to read and write, passing on this knowledge to their own devotees and not many others. At later stages, literacies has been utilized by other leading figures such as politicians to dictate what literacies are the correct ones or not (Janks, 2010). In more recent times we have seen how political figures have used their power to further their own political agenda, or that of the party they belong to, such was the case of George W. Bush, that Janks describes in her book.

> "For example, under George W. Bush, quantitative psychometric research on literacy was increasingly viewed as the only valid "scientific" research – it was the research that received government funding and informed government policy. Constructed as the "true" discourse about literacy, this effectively excluded qualitative research based on ethnographic research methods and socio-cultural theory of literacy." (Janks, 2010. 50)

Changing the discourse, like the Bush administration attempted to do with how to scientifically approach literacies, can also change how we view what is presented to us, and if we are not properly informed, it can be used as a tool to either deceive or steer the population in a wanted direction. The discourse that was attempted to be set aside is the very same that throughout this chapter will be brought up, that of literacies being closely tied to culture, socioeconomic and ethnographical situations. Janks argues that what we need to teach and be taught are critical

literacies, whose work is amongst others to make visible the workings of power and reveal them as constructed representations (Janks, 2010). These representations, used in a political landscape can be seen as serving the interest of some at the expense of others, taking advantage or exploiting the lack of critical literacies in a demographic in order to further an agenda in one direction. Janks also describes critical literacies as a emancipatory project that are saving groups from – what she cites from Eagleton, 1991 – false consciousness. (Janks, 2010. 36)
Controlling the discourse can be a powerful tool in order to steer discourse in the direction that is most favorable for a wanted outcome, and with it, the lack of or denouncement of any criticism directed at it. As we saw in the example from Janks, where the discourse of literacies was led towards quantitative research and away from qualitative. We live in increasingly digital times, where almost everything is or can be digitized, we have toilets connected to internet and to your doctor's office (Smart toilet), we have watches that are also a phone, mp3 player and health monitor (Fitbit), and we have cars with apps that detect collisions and automatically calls you or an ambulance (HeERO).
It is therefore important that the learning the limits, strengths and possible risks of these digital technologies starts early, not only to prevent bad habits from cementing, but also for the sake of teaching digital responsibility and to prepare for what's ahead.

The term Literacies is widely used, have a plethora of different definitions and is subject to professional bias, what bias is implying is the academic background and personal sentiment towards the term literacies that will influence the way it has defined and used. Participatory culture is a key instrument in NML, with the digital educational landscape allowing for collaborative participation in both open and academic settings. Collaborative open textbooks, academic forums and social networks can all be said to be a part of Participatory culture. New Media Literacies are instrumental in facilitating participatory culture, which in turn can provide grounds for the Open movement to thrive and for OERs to gain solid foothold in the digital transformation of education.
We can start by looking at Henry Jenkins and his work with NML, his professional bias and the way he incorporates the use of the term literacy in his work.
For most of his career, Jenkins has been working with Participatory Culture, now centered on the digital participation of schoolchildren, students of HE and online participation in open communities. Participatory Culture is from Jenkins point of view;

> "A participatory culture is a culture with relatively low barriers to artistic expression and civic engagement, strong support or creating and sharing one's creations, and some type of informal mentorship whereby what is known by the most experienced is passed along to novices. A participatory culture is also one in which members believe their contributions matter, and feel some degree of social connection with one another (at the least they care what other people think about what they have created)". (Jenkins et al. 2006. 3)

As such, the term literacies for Jenkins has a bias towards participatory culture. When reading his blog and published articles or when looking at how NML is defined on the website of his current project, it usually stems back to participatory culture, his use of the term literacies is therefore influenced by his work and his academic background.

In 2006, Henry Jenkins et al., published a white paper concerning participatory culture and new media literacies, a call to arms about the arising need to further teach and implement teaching on new media literacies at a young age, in such a way that children will grow up competent with NML and digital skills. In this text, Jenkins described NML as a part of participatory culture. "Schools and afterschool programs must devote more attention to fostering what we call the new media literacies: a set of cultural competencies and social skills that young people need in the new media landscape." (Jenkins, et al. 2006. 4)

Participation are act that one engages with throughout life, after school activities like soccer or handball, participating in a group project at school or participation in a rally, all of this is transferable to a digital format. Instead of playing on a soccer team, it is possible to be on a team in a computer game and a school project can be worked on in the form of a collaborative document that all participants can access. A digital environment can be seen as a way of transferring already existing models of participation into digital form. Everyone starts their learning somewhere, and the amount of focus on NML in schools will dictate how competent a student might be once they reach the upper echelons of education. We have to look at the beginning to understand the growth, development and end result of the literacies a person achieves. The focus will be on HE, but the road to that place and all development along the way is equally as important to mention even if not explored in detail.

In the white paper, three main problems are highlighted as potential critical issues when dealing

with the lack of proper schooling in NML, even if they are generalizing they issues to some extent.

“Some have argued that children and youth acquire these key skills and competencies on their own by interacting with popular culture. Three concerns, however, suggest the need for policy and pedagogical interventions;
The Participation gap – The unequal access to the opportunities, experiences, skills, and knowledge that will prepare youth for full participation in the world of tomorrow.

The Transparency problem – The challenges young people face in learning to see clearly the ways that media shape perceptions of the world

The ethics challenge – The breakdown of traditional forms of professional training and socialization that might prepare young people for their increasingly public roles as media makers and community participants”
(Jenkins, et al. 2006. 3)

The foundation on which the future competence you acquire is built, starts early and evolves with use and the change of NML. Having that solid foundation being laid at an early age and within pedagogical and educational frames is paramount for a healthy and thriving educational framework both early and later in life.
Participatory culture is also a major part in most students life, as the courses and seminars are done in plenum and not in private. You will work in groups of two or more, debate in front of your seminar group, work in colloquial gatherings and socialize outside of the school hours. This participation and group dynamic is what Jenkins talks about when he is talking about NML. Students develop their literacies by working together and giving each other feedback on certain matters. The campus life also adds to this, as it is an academic environment, where most people present are connected to the university on one way or another.

Judging by Jenkins view on participatory culture and use of the word literacies by his definition, students that do DLP are at a disadvantage due to their limited options in engaging with the other students. Tuan Nguyen argues in his publication in the MERLOT journal of online learning and teaching, that the traditional classroom education is slowly becoming outdated and replaced by online learning. Nguyen and Jenkins are stark contrasts here, as they both make valid points as to

why community learning or participatory culture is better or not, than DLP programs and online studies. They have different approach to how they deal with students and curriculum, this is true, and students will have to participate online, at different hours and at different intervals. From an academic standpoint, students of DLPs are according to some research actually modestly outperforming those that go to physical classes, but in the view of literacy, by Jenkins definition, they will fall behind on that area.

> "There are a large number of studies that find positive statistically significant effects for student learning outcomes in the online or hybrid format compared to the traditional face-to-face format. Some of the positive learning outcomes are improved learning as measured by test scores, student engagement with the class material, improved perception of learning and of the online format, stronger sense of community among students, and reduction in withdrawal or failure". (Nguyen, 2015. 310.)

Students that engage with DLP may develop other literacies that might differ from those going to a traditional university. A more careful examination of the course material may be needed as there are fewer opportunities to discuss it with teachers. Using forums to ask questions make it easier to formulate precise questions want to ask, thought it might not be replied to straight away. Teachers will also get a better chance to prepare a proper answer for such questions, given that an answer is not needed immediately.

A student may also become more adapt at searching up information without assistance, using the criteria`s of the course material to guide in the search. There are pros and cons to being either type of student, be it either DLP or University, the literacies skills developed will be affected by how active and engaged a student is, independent of where or what he or she is studying.

When exploring the views offered by Jenkins and Nguyen, it does not take long to realize that one has a rather utopian outlook while the other has a much more pragmatic and realistic view. One of the opening arguments Nguyen makes is that the price of tuition, lack of student loans following the economy and inflation and the general cost of being a student is spearheading the rise of DLP. The quality of the education provided by DLPs rival that of traditional University degrees and in some cases see a higher amount of students finishing their degree and a lesser drop off rate. (Nguyen, 2015. 310)

Jenkins on the other hands does not mention in depth the cost of studying or being a student, or

what range of quality and statistics of completion around being a student. He focuses extensively on the notion of participatory culture and how this is a game changer within the new media and modern education.

Where Jenkins focuses more on how to improve, mold and inspire new and more participatory approaches to education, Nguyen has a much more detail oriented approach as to why and what will cause DLP to come out on top. It will be interesting to see if at some point down the line, a merge of these two views will arise and challenge the current concept of education.

As media studies and media related studies become increasingly popular (Schmitt, 2014), it is imperative that the students have a solid foundation on how to approach the NML. This foundation is the sum of the accumulated knowledge and knowhow that will have been accrued over the course of interactions with literacies. Not only because it is a part of their education, but further on in life as well, as most jobs with few exceptions today have several digital aspects to them. One prevailing issue when dealing with NML is the participation gap, which will make itself known if there are students with a vastly different understanding and competence within an educational setting. It can be the case that some students may already have been exposed to DP and have been taught some of the competences already covered in the chapter on DP. While other may not have been engaging with DP and as such, may have relied on their own skills and competences. The importance of having a unified approach to DP in education again makes itself known. As a student in HE, being self-taught can have detrimental consequences as you may be in an age and state of mind where habits are becoming increasingly cemented. Those that come back to HE for re-schooling or after an hiatus may already have cemented habits that they have picked up in their previous encounter with education or from their place of work. Changing a habit can be a difficult thing, and will require great effort in order to actually achieve a change, something that takes time and a focused mindset.

> "Realistically, though, most people cannot change significant amounts in their life without serious effort and time. You cannot ask or expect someone to change all of their routines or habits, even if it may help them stay healthy in the long run. As humans, we're just too used to and comfortable with our routines." (Grohol, 2018)

If not made aware of the critical competences such as source checking or being able to discern fake, false or true information that is needed in order to safely and efficiently work with media

consumption in HE, students can be at a disadvantage compared to students whom from an early age has been engaging with these competences.
The participation gap here is not whether a student actually participates, but the gap in knowledge and quality of the participation according to Jenkins. The gap might further lead to exclusion from parts of the student community or colloquia groups, as the lack of understanding towards source critique, fact checks and referencing does not meet the standards of the other students.

As a comparison to Jenkins understanding and use of literacies, there is social anthropologist John Rankine Goody. Goody is known for pioneering the comparative anthropology of literacies back in the 1960`s. According the article published in 1963 by Goody and Watt, the rise of science and philosophy in ancient Greece could be attributed to the creation of the alphabet. Making use of the phonetic sounds as single letters make words and their meaning unambiguous, easily interpreted and understandable by anyone capable of reading them.

> "The success of the alphabet (as well as some of its incidental difficulties) comes from the fact that its system of graphic representation takes advantage of this socially-conventionalized pattern of sound in all language systems; by symbolizing in letters these selected phonemic units the alphabet makes it possible to write easily and read unambiguously about anything which the society can talk about." (Goody and Watt, 1963. 316)

The result would be a uniform understanding of the meaning of what was written and laid the basis for what would become philosophical and scientific works of great renown, produced by the great minds or ancient Greece.
Where Jenkins definition leans towards participatory culture, Goody`s leans towards society, written traditions and the development of literary techniques that has arisen over the past millennia.
The ancient Greek philosophers, according to Goody, laid the foundation for the disciplines that would later become the staple of western society, e.g. categorizing, cataloguing and writing skills. These tasks, which we in modern society make great use of on a daily basis, are some of what Goody argues created the modern literacies we have today, and it is what separate us from non-literary societies.

> "The same process of dissection into abstract categories, when applied not to a particular argument but to the ordering of all the elements of experience into separate areas of intellectual activity, leads to the Greek division of knowledge into autonomous cognitive disciplines which has since become universal in Western culture and which is of cardinal importance in differentiating literate and non-literate culture." (Goody and Watt, 1963. 331.)

As the Greek people became increasingly literate, they also started documenting events of importance, such as natural phenomenon, the positions of the stars or who was the head of state. Documentation arose on politics, artisanship and on the philosophic subjects, most important of these, as we know it is of course the political documentation. It is commonly understood that the literateness of the Greek people led to the development of what we today know as the modern democracy. "Democracy as we know it, then, is from the beginning associated with widespread literacy […], in the Hellenic world diverse people and countries were given a common administrative system and a unifying cultural heritage through the written word". (Goody and Watt, 1963. 332.)

A society's literacy will develop in accordance with the literary skills of its inhabitants, how many has learned the skills to read and write and who in such societies are allowed to learn. History has taught us, that for quite some time, only a select few where allowed to learn the art of writing and reading. Scholars, scribes and religious figures where the only ones allowed to learn, not only that, but governments and the clergy through the times has been known to keep these skills from the public in order to control and manipulate people.

Goody argues that it can take up to millennia from the written word starts seeing use to the time it starts to change and alter a society , much of this timeframe is directly affected by a societies attitude towards spreading the knowledge of reading and writing.

The two ways of defining literacies that we have now seen are not polar opposites or mutually exclusive in any way, but they are markedly different from one another. Jenkins draws on participatory culture, while Goody looks at society and history more than the individual. If we look at it from a different perspective, it is possible to argue that the participation of the general public in ancient Greece helped spread literacy. As mentioned, the people partook in voting, reading and writing as a community, participatory culture as Jenkins would argue. Even if Jenkins and Goody approach literacies from different perspectives, they do share some

similarities. Participation is needed, and that is also what Jenkins argues when he defines literacies as a part of participatory culture, it is important to note that many of the different definitions on literacies presented here, are proving to be two sides of the same coin.

> “But the most significant elements of any human culture are undoubtedly channeled through words, and reside in the particular range of meanings and attitudes which members of any society attach to their verbal symbols. These elements include not only what we habitually think of as customary behavior but also such items as ideas of space and time, generalized goals and aspirations, in short the weltanschauung of every social group. In Durkheim's words, these categories of the understanding are "priceless instruments of thought which the human groups have laboriously forged through the centuries and where they have accumulated the best of their intellectual capital".” (Goody, Watt, 1963. 305)

The Digital Divide, which was mentioned in the chapter on Digital Pedagogy, is just as prevalent in digital literacies, spurned forth by NML. It is understood that a person that does not actively partake and use digital media will have a kind of stunted growth of digital literacies, the word stunted is used because no matter what, coming in contact with digital media now a days is nigh unavoidable.

Looking at this through the lens of education, we see that countries that are not as wealthy, or do not have a good source of funding for education will face a possible divide amongst students and teachers. There may also be a technical Digital Divide amongst institutions of education, where some have received funding while others have not.

The heritage and culture of these countries will of course influence the literacy skill of those who reside there, according to Goody, but when we are faced with digital literacies, boarders and regions dissipate and everyone connected can be viewed as a part of a global digital community. While the elders of the population may cling to their traditional values and have little regard for modern technologies, it is not so for the younger population, who can prove eager to engage with digital technologies. In an article by Danica Radovanović et al., concerning the divide in digital literacies and collaboration, it is highlighted that students routinely learn new technologies while university faculties are merely playing catch-up. (Radovanović et al. 2015)

In the article several key issues regarding the digital literacy divide are brought up, which serve

as the basis for their research. They do address issues that are similar to that of digital pedagogy and the digital divide.

> "We identify communication gaps and collaboration issues between professors and students. Below, we show that digital literacy is a structural problem where individuals are reluctant to constantly re-learn skills, defer to non-experts, and cope with uncertain infrastructure. Consequently, this article illustrates institutional problems of stratification itself as authority is being upended by the demands to learn new technology, to coordinate differently, and to seek out sources that are not traditionally validated with academia." (Radovanović et al. 2015. 1734).

A different issue that the article brings up, is that of social class, status and power, building on Max Weber`s work on sociology. Social and socio-economic status and power are issues that in some, but not all countries or societies, will restrict or grant access to new technologies. Items such as the newest smartphones, tablets, smartwatches or home computers are in essence a luxury commodity, not everyone can, or will afford themselves to buy the newest or most trendy items. This means that it is no longer just a case of unwillingness to conform to the new technologies and the rapid pace of its development, it is a case of economy as well. Not being able to afford, or being willing to take the cost of investing in items of digital technology will help to widen the gap in digital literacies and increase the digital divide in NML.
Younger generations may be more willing to spend money on such luxuries, while the elderly may rather use that currency for something else. One can almost call the digital literacy divide self-inflicted in some narrow cases.
In the chapter on DP, we saw the importance of funding and economy for schools and for universities to embrace new technologies and employ them in their educational practices. Radovanović`s article details how Serbian universities are not always technologically up to date, and that some professors have to use their personal devices in order to provide a digital platform to work on in class. The lack of technology will hamper the acquisition of digital literacies in an academic sense, and may further prove detrimental to any future employment. The article further concludes that what literacy skills students have are severely lacking from a pedagogical and academic standpoint; source critique, fact checking and the gathering of relevant information are missing or at best faulty. What skills the students have can be described as being able to "google

information", yet, they are proficient with social media, their networking skills and their understanding of rapidly changing digital norms are high.

> "One professor from the Faculty of the Organizational Sciences in Belgrade says that students do not care "much about the quality of the information in Wikipedia entries" [P13]; her impression is that "for [students], the most important thing is to work off the essays and they don't think too much about the information credibility" [P13]. Where digital literacy would enable students to consider Wikipedia as a possible starting point for much research, a lack of digital literacy means that professors parrot the typical critiques of Wikipedia without appreciating its modest but relevant use as a resource." (Radovanović et al. 2015. 1743)

This sentiment is a common one, "do not cite or quote directly from Wikipedia", yet it is evident that a lacking digital literacy can cause just this. Wikipedia in itself can be great and valuable source of information, if the knowledge on how to properly use it is in place. Most of the information found on Wikipedia is referenced to, and as such, it is possible to check the reference list at the bottom of the wiki page and go directly to the source.
This also underlines the importance of having digital competence, literacies and pedagogy as a part of an educational system, as such skills are now becoming increasingly important and relevant. Both DP and NML will benefit from having the competences previously outlined be taught and present in a digital educational environment.
Having the ability to differentiate between correct and incorrect information, to be able to conduct advanced searches and to know how to properly find and check sources, are now skills that should be taught at early stages of education. Increasing in complexity as the academic level and complexity of the education increases.

Understanding literacies as a concept can prove quite the task seeing how its definition and use might change according to the person and background that person has. Already mentioned are Henry Jenkins and his definition, that is centered around participation, and Goody who`s describing society and culture as paramount to ones literacies. Some languages does not have a word for literacy, the concept of it is something that has to be taught in order to be understood. The social and cultural aspects are most certainly there, just as participatory culture is present and a part of both academic and casual life. Take Norwegian for instance; there is no word for

literacies, there is a word for being literate, but that is not the same as literacies. Neither is there wording to wholly capture the essence of the word literacies and all its subtle meanings. It can be described with the proper knowledge and understanding, even when taught literacy skillsets and there is an engagement in digital pedagogy, Norwegian students still have to actually learn what the word literacy entails. As there are many external and internal factors to understanding literacies, the quality and comprehension can vary from person to person or region to region. External factors can be hard to overcome, as they are not something that are easily changed, factors such as university funding, the socio-economic state and environmental situation are among some of these.

Students that partake in Distance Learner Programs will generally engage more with digital literacies than those that attend physical education. This is because most their interactions with other students, teachers and course material can be done online, their assignments, discussions and even teacher/student conferences may be held in a digital environment. As such, students that engage in DLP can be engaged with NML more regularly than those that have classroom education. There are pros and cons to both sides, as the DLP students may be left out of group dynamics, learning to work in groups or to have someone to discuss drafts and ideas with.

Project New Media Literacies describes multiple points that is of importance for students to succeed in education and in a job environment later on.

Most notable of these are; Distributed Cognition, Collective Intelligence, Judgement, Networking, and Transmedia Navigation.

The other points, which are worth noting, but not as critical, as they are something we engage with normally on a daily basis are; Play, Performance, Simulation, Appropriation, Multitasking, Negotiation and Visualization. (Jenkins et.al. 2006. 4)

These points also refer back to the competences and skills connected to DP and NML and the importance of having a understanding on how they work.

Being a student in the 21st century means being a student in a digitally transformative age, it is being a content creator, media consumer, publicly accessible via social media and a part of the global digital community, a netizen (Hauben, 1992). Most users of the internet and digital media can be seen as prosumers (Toffler, 1980) a term used to describe those who both produce and consume, as is evident in participatory culture and NML. Blogs are being written, forum posts submitted and Instagram pictures with stories and hashtags create digital networks. Everyone

that has access to digital media engages in NML in some form or another, even if unaware or unintentional. This reiterates the need and usefulness of a pervasive learning tool, as mentioned in the previous chapter. As we engage in NML in most aspects of our lives, having a tool that would help us identify and make visible the different aspects of learning outcomes one comes across while using digital media could have widespread effects on anyone's ability to learn. Learning is an ongoing process that may affects daily routines in a number of ways, and as we go about our daily business in education or other settings, our literacies develops. In the face of New Media, it is evident that literacies have changed. Society's dependence on digital tool such as tablets, smart phones, computers and laptop have forever changed how interaction with the world and by extension, our literacy skills have changed with it. New Media brought new skills, new talents and a new way of interacting with each other, that before digital media became widespread was unheard of. There are changes to how we now engage with the world around us and both Goody and Jenkins are in their right here, due to the complete digital globalization and the participatory nature of digital media and New Media Literacies. Using the different features of new media is to engage in participatory culture, but also, they are heavily influenced by environment, culture and upbringing. This is one of the reasons why NML can hard to define, it is a wide reaching notion, which makes a singular definition not really function and a general definition to broad to be of use.

Didactics in transformation

There are several ways to explain or define what didactics are, for the purpose of this thesis we will be using the most common approach, that didactics are the science of teaching, the "how, why and what" of teaching. This approach is common practice in traditional education in western society, where educational material tends to be presented in a structured and formal setting. What is interesting is that if you look up Didactics on Wikipedia, the introductory page has a line that is worth noting, where is says simply that didactics are the opposite of open learning. Where Open learning consists of unstructured parts and where self-learning and self-regulation plays a large part in achieving success, didactics follow a path where educational instances offer frames and structure and where teachers functions as guides who`s role is to increase knowledge in their students by following predetermined parameters.

If didactics are indeed a contrast or opposition to open learning, how then, will didactics fare

now that education itself is becoming more open, connected and less restrictive in who gets to study where?

As with pedagogy and the introduction of Digital Pedagogy, the digital transformation of education may force new didactics to emerge, Digital Didactics are emergent, and with it, we need to rethink our approach to the matter.

Digital didactics will play an important role in higher education for the most part, whereas Digital Pedagogy will play an important role at all levels of education. The reason for this is that for HE, student autonomy is enforced at a greater level than earlier stages of education, it is therefore important to have strong didactical frames in which the students can operate freely. Now in a digital landscape, the student autonomy and previous didactics will need to be transformed to also meet the needs of a digital educational environment. Higher Education is the place where work at an individual level is encouraged, finding one's own paths to knowledge and engaging with educational material without being handheld or guided at every step. Educators do still play a crucial role in HE, not as guides, but as that of facilitators, those that facilitates the quest for knowledge that students embark upon.

In a Swedish research study done to highlight the need to reimagine designs for teaching and learning, digital didactics are brought up as a key element in doing so.

> "Our research studies illustrate how teachers create new designs to do teaching and to support learning. They show new design principles and themes of Digital Didactics in co-located arenas where ICT and the classroom have been merged into new teaching spaces." (Jahnke et.al. 2014. 8)

This is where the didactics change, as the frames of learning change so does didactics, even more so in face of a digital age where we are ever connected and have such a vast amount of different educational possibilities. Instead of talking about didactics, we need to talk about didactical value in a digital environment and the emergence of digital didactics.

Didactical value will be the measure of knowledge gained by students who are actively engaging with digital media in an educational setting. The value will present itself in how much knowledge the student will be able to appropriate, assimilate and redistribute. The redistribution will be when students use the knowledge they have gained in their papers or in their discussions with their teachers or peers and in their examinations. Didactical value in digital media may be

harder to measure than the didactical value in a digital educational environment, as in educational context there already exists clear roles, clear motives, clear guiding principles and an established frame of reference that just needs to be transferred into a digital format.
In an article published in the European Journal of Contemporary Education, a team of Russian researchers writes about Contemporary Didactics in Higher Education in Russia. Their findings on DD, or, didactics in E-learning, as they present it as, are based on comparing New Media today with the New Media of old. E-learning is compared to educational videos created a few decades ago, videos such as those are even more suited now than they were back then, seeing how the popularity and emergence of laptops and digital media devices have become. What they argue is that the didactical value of these videos can be transferred onto the digital plane. The videos can only be interacted with in so many ways, whereas in digital media, you have potentially a whole plethora of possibilities. Programing, java scripts, flash player and interactive media offer the same as the videos of old did, while also being able to convey a broader amount of knowledge and information. Using of hyperlinks or embedding video content into material are also examples of how it could work. The didactical value is increased in the New Media format, as it is possible to convey more knowledge than ever before. “It is possible to include the elements of a modern interface with a didactic purpose in the training program, such as pop-ups, which contain the necessary knowledge from a related discipline, creating its local subject field.” (Shershneva. et.al. 2016. 365)

The example above also ties heavily into the notion of Remediation, which has already been covered, earlier in this chapter.
As explained, didactics are the scientific approach to learning, it also supposedly is in opposition to open learning in the regard that if follows a strict scientific approach of presenting knowledge, so why are didactics and New Media Literacies talked about in the same section? The answer to that is simply that NML and didactics are becoming intertwined.
We know from earlier in this thesis, that the aspect of literacies deals with one`s own ability to assimilate and understand information, as well as external forces, such as social status, economy and cultural identity, the sum of the whole that shapes individual skills. Didactics on the other hand is the approach of being presented knowledge at a predetermined rate by a system set in place to facilitate all of this in a structured manner. With the emergence of NML, the lines blur. As using digital media devices in an educational setting is becoming increasingly normal, a

scientific approach on how to best utilize and exploit these assets for educational purposes is needed. This will be the DD, and as such, NML will greatly influence how this functions and in what way they will affect education and an educational environment.

A Spanish study conducted in 2014 tried to assess the impact of digital media devices in higher education, where they also tried to measure the didactic impact of using such devices in a learner setting. One of the things the authors noted on didactics and digital media devices is that they will be instrumental in shaping the DD strategies needed in higher education.

Their research and the results of their questionnaire shows that students felt that by using digital media devices they gained ease of access to didactic material and academic activities. This, in turn, is also tied into the aspect of pervasive learning, by having these devices and being able to access learning materials almost at any time is an act of pervasive learning.

This furthers the need for an established frame of reference for DD and furthermore the competencies needed in educators to be able to work with this knowledge.

Classic didactics are centuries in the making, DD are not, and where didactics used to be only affected by educational reforms and new teaching methods, DD may need to be more fluid as digital technologies are developed and digitalization continues to transform education.

> "Without doubt, ubiquitous learning forms a new educational paradigm that stems from new media and technology resources based on the principles of mobility, collaboration, and active participation. This provides alternative learning interactions and access to a great variety of contents and resources." (Sevillano-García and Vázquez-Cano, 2015. 114)

In summary, having a understanding on what literacies are, how they shape individual learning and how to relate this to a digital transformation is key when dealing with NML. Participatory culture is affecting both social and educational environments and as such, there is a need to further develop didactical structure that can also take into account the digital transformation of HE. Digital didactics could help learners by creating a understandable frame of context while also providing educators with the knowledge and competences needed to deal with NML.

Intellectual Property, Copyright and Licensing.
Issues related to the digital transformation of Higher Education.

> Long before the internet was conceived, copyright law regulated the very activities the internet, cheap disc space and cloud computing make essentially free (copying, storing, and distributing). Consequently, the internet was born at a severe disadvantage, as preexisting copyright laws discouraged the public from realizing the full potential of the network. (Jhangiani and Biswas-Diener. 2017. 30)

This chapter will look at the evolution of Intellectual Property (IP), Copyright and Licensing in a digital environment and the open movement and the copyleft movement.
An introduction to what these terms are and how they arose, especially concerning digital mediums, will serve as an entry portal for the discussion to come.
By highlighting different examples that deal with these issues a basis for a debate will be made towards OERs and their sustainability in times when Copyright laws and Licensing are having an big impact on HE.
Asserting ownership is nothing new, for millennia it has been tradition to sign our name to creations and claim ownership over that which is created. Human history is filled with great artists, tinkers and thinkers, inventors and engineers who has made something that is of significant importance to themselves or society as a whole.
There is evidence of cavemen, some 30.000 years ago adding their hand prints cave paintings, there are many tablets from ancient Mesopotamia where merchants or traders have signed their name to tablets alongside the merchandise they traded in. (Krulwich, 2015).
So signing with identifiers or names is an old and common practice.
When did we start to claim ownership and monetize our work and creations?
One of the earliest examples and descriptions of this is from Venetian artisans guilds that in around year 1300, were in the business of creating lenses for spectacles. An unnamed Arabic scientist worked out how to make spherical lenses all the way back in 1036, later, in 1266, Roger Bacon asked if these lenses could not help people with poor eyesight. The artisans guild proceeded to learn how to make the lenses in question, while in the process, demanding that those who learned the knowledge of creating these lenses and spectacles were prohibited to leave

Venice once they had learned this craft. This was to keep the knowledge within the guild and prevent competition or a widespread knowledge of how to craft the items. (Lienhard. 2006)
Ever since ancient times, sharing knowledge has been one of the driving forces of society, learning from each other and passing that knowledge on to our children, our neighbors and our countrymen. Traders and explorers traveled the land and seas to bring new knowledge wherever they went and they brought a wealth of knowledge back with them. Such is our history, and such is the way of us humans.
Teaching our young the skills and knowledge they need to succeed in life has been a part of life for a long, long time. Fathers trained sons in their profession and mothers taught their daughters handcraft and cooking.

Sharing has and always will be a normal human act, we share knowledge, share insights and share resources. Who have not borrowed something from their neighbor, or borrowed toys as a child, borrowed books from one another as a student? I remember as a child, sharing cassettes with music and Nintendo games amongst the kids on my street, I would trade my racing game for a Super Mario game, or swap my father's music cassettes for someone else's cassettes. As we grew up, we shared other things, VHS tapes we had bought of recorded, cd`s with music or computer games. In truth, we were a gang of underage criminals. We had that one friend with a high-speed internet (at the time) that would download music or hacked games, which he then would burn to whomever provided him with a blank disc. - To specify, burning a cd was a late 90s and early 2000s slang for copying items of information onto a blank disc using a CD/DVD writer on your computer. This still happens widespread today, but the slang of burning a cd is no longer as prevalent as it used to be -. Or you could buy from him with a disc included for only 50kroners, a blank cd at the time cost 20kroners per, but the album would costs around 150kroners if you bought it at the store, and the computer games would cost double that again. We created our own little micro economy on our street from sharing and selling illicit goods. For us at the time, we never saw it as an illegal action, we were not aware of copyright laws or theft of intellectual properties, we were simply children finding music and games that we shared amongst each other like we had always done.

> "Surveys suggest that the line between legal and illegal activity around copyright is, for many, a blurred one, and the increasing number of sites and technologies through which

> we access media has only added to the confusion, with streaming, downloading and sharing legitimated through above-board platforms and subscription-based or advertising-supported services. Furthermore, the distinction between sharing analogue and digital versions of media, while significant to media companies and creators, isn't always recognized by users who may view digital sharing as a simple extension of an activity which has long taken place between friends and family members." (Klein et al. 2015. 1)

All through life, we share with each other, and now, in a digital age where we have such an obscene amount of knowledge right readily available, we continue this sharing culture, both within and outside the boundaries of the law. It is hard, as Bethany Klein (2015) argues, to discern legal from illegal today, with so many sources of information being available to us.
For your average netizen, browsing the web, whether or not the information is legal or not is not of particular concern, the information is not distributed or used other than for the sake of gaining personal knowledge. A student on the other hand may be presented with a more ethical dilemma of sorts. Consider this; a student obtains a illegally copied version of a book, which is downloaded from a website at the students behest. The student is well aware that it's a illegal act, but the book is of great value and would be to costly for the student to purchase. The book and its author is cited and referenced in the students' work, but there is no way to verify that the book was obtained illegally.
Such is the way of the internet and modern technology now, you can find most of what you are looking for online, either legally or illicitly, and its nigh impossible to discern for a teacher or university if in fact, parts of the referenced works in a thesis or assignment are unlawfully used.

Copyright laws are in place to protect the owners of IP or certain works and to make sure they are compensated for sales and use, even as far back as the 17th century, copyright existed to protect news article writers in England. The Statute of Anne from 1709 or 1710 (this date is disputed by scholars) is generally considered the origin of modern day copyrights.
Klein et al. writes that 1709 was the year, but Yale Law school`s Avalon Project clearly states that the Statute is from April 10th 1710. The website Copyrighthistory.com by Karl-Erik Tallmo, has a paragraph stating that on several cases 1709 is wrongly used to date the Statute, while 1710 is the correct one, as clarified by John Feather in his book, "*The Book Trade in Politics: The Making of the Copyright Act of 1710*, "Publishing History", 19(8), 1980, p. 39 (note 3)." (Karl-

Erik Tallmo)

As a reflection, this brings us back to the chapter on DP and the part concerning fact checking, sources and validity of information. Klein et al. has done an honest mistake here, and is in no way seeking to subvert or mislead their readers. It does however serve as a good reminder of why fact checks and research beforehand is paramount.

Sharing between friends or peer is something that is a part of every day life, but there are certainly legal issues concerning the legality of sharing copyrighted or licensed materials without consent. Eric Eldred, Hal Abelson and Eldreds lawyer, Lawrence Lessig had a legal dispute concerning copyrights and licensing. Starting with Eldreds website where he published works after their copyrights had expired, the Sonny Bono Copyright Term Extension Act (1998), passed by US congress meant that all of his work could become restricted for another 20 years. Eldred and a group of likeminded peer created Copyright Commons and took the ruling to court. in 2001, Eric Saltzman suggested a name change, from Copyrights Commons to Creative Commons (CC), a change that was unanimously agreed upon.

The legal battle to rule the Sonny Bobo Act unconstitutional was lost January 15th, 2003. By this time, Creative Commons had already begun its work towards copyright licensing and open access licenses. One hour after the ruling, the Hewlett foundation donated 1,000,000USD$ to Creative Commons to properly launch the project. (Geere, 2011.)

Creative commons is now organization that helps structure, divide and categorize different levels of open access and licensing. How material may be used or reused and how to credit the original creator, author or owner of such material.

At their website, Creative Commons refers to itself as “Creative Commons helps you legally share your knowledge and creativity to build a more equitable, accessible, and innovative world. We unlock the full potential of the internet to drive a new era of development, growth and productivity.” (creativecommons.org)

Creative Commons licenses are not always as beneficial and open as it might seem, in certain cases, CC licenses might actually hinder OERs to be used to their fullest potential.

Such a license is the CC BY ND license, which indicated that the original author has to be acknowledged and that no derivatives of the work is allowed. This means that any work with a CC BY ND license is not possible to alter in any way, not even translate it into another language

in order for it to be used in a language besides that the original work was published in. A license such as this ensures that the work, though free and open, cant in any way be remediated or re-used to fit a specific curriculum or course as course material. It can however freely be used as citations or as a source in a work, as long as the text is not altered, and the author is given credit. Massachusetts Institute of Technology Open Course Ware (MIT OCW) is large collection of educational materials does not have a CC BY ND license on it, which means that all the course material that is available can be used, reused, remixed and otherwise be altered to fit other courses or scholarly works. MIT OCW does however have another form of license, CC BY NC, NC being Non Commercial, meaning that it is not allowed to use the material to create commercial works for profit. MIT OCW will be revisited in detail on page 70.
One of the reasons why MIT could create and distribute open courseware online was grants given by the Hewlett foundation, one of the biggest contributors to creating OERs.
"Since 2001, the Hewlett Foundation has provided just over US$170 million to develop and extend the reach and effective-ness of OER." (Jhangiani and Biswas-Diener. 2017. 9)

MIT got million dollar grants in order to organize and create the MIT OCW. Other such organizations that have donated money for major OER projects are the Gates Foundation, which are supporting Khan Academy, one of the most famous examples of OERs next to MIT OCW (Jhangiani, Biswas-Diener, 2017) and the Shuttleworth Foundation.
The Shuttleworth foundation help innovation and developing ideas within Open Access, giving grants to those that have worthy ideas. "To help us get there, we identify amazing people with innovative ideas, give them a fellowship grant, and multiply the money they put into their own project by a factor of ten or more." (Shuttleworthfoundation.org)

In opposition to the copyrights and locking down of intellectual property behind paywalls by publishers or private companies exists the copyleft movement and FLOSS, which stands for Free/Libre/Open Source Software. These groupings came to be as a way of combating what is described as "Excessively restrictive conditions" by Charles Ess in his book Digital Media Ethics (Ess. 2014. 94). These movements or groupings function as a middle way between the illegal appropriation of others works (such as the downloading of books, music, movies etc. from sites like Pirate Bay) and the restrictive and often costly use of intellectual properties that are owned and sold with no possibility of reuse, remix or redistribution.

What`s interesting in the realm of copyright and ownership of property rights it the ethical discussion concerning the justification of illegal use, if the result is beneficial for the community as a whole. It is no secret that if you search long enough, or visit the right websites, that you can find almost anything you want, be it academic papers, computer games or software. Legal or not, these items are up for grabs for anyone who knows where to find them.
Ess describes in his book an example where a person goes into a store, steals a cd and walks out, than proceeds to compare this do downloading the same cd via a website. Both acts are illegal, but one has a much higher threshold of being done, it is not hard to figure out which.
There are scenarios in which you might think you are doing something with the law on your side, but in reality are have not, such as if you purchase a cd, then proceed to download the same cd late on, because you want the music available on your computer or mp3 player. Even though you have purchased the cd, you have bought it and own it, downloading the same album for your private use is still seen as illegal, as you have participated in the illegal distribution of someone else's property.

In our life we learn from an early age that stealing is bad, we do not take that which is not ours, we do not steal from stores and shops and we should not give away that which we do not own. It is strange then, that we do not have the same focus on explaining how the same rules should apply in the digital world. It is harder to evaluate when something is actually stealing, copyright infringing or fully acceptable, especially for young children. As adults we will have more insight into our actions and be more knowledgeable about what we are obtaining.
When it comes to OERs, we have already discussed the use of CC licensing to provide some leeway in the use while still protecting the original author in a way.
We have already discussed how several different OER sites and open books have been initiated and started as a way of combating the restrictive nature of those that claim ownership of intellectual properties, such as publishing houses. They serve as a means to produce quality books that will help reduce student's costs while also providing insightful and academically relevant materials. For a long time, the debate around prices of book has been a topic in the academic circle amongst students, and how libraries does not necessarily order in books that's are used, or in some cases only order in a few copies.
I have myself been in such a situation, where a book is used for a course, but only one or two chapters are a part of the course curriculum, which means I paid full price for a book where I

only ever needed 50 pages or so. What happened in this case, was that the library had 2 books available, both lent out even before the semester started, but a thrifty student discovered a way to make some money on the side.

He copied the two chapters up and sold them to his fellow students for a fraction of the price that the book cost, and he sold quite a few items as well. Lets face it, if you as a student know that you only need two chapters from a book that costs over 60$, and a fellow student can sell you those two exact chapters for 5$, it is not a particularly hard choice.

Is it morally questionable, yes. Was it illegal, yes. Did it prevent us from doing it, no. Most of the student in this course, bought the copied chapter, not only to save a huge amount of money, but also because of the utter inconvenience of buying a book where 2/3ds of it would never be read of used. Had the publisher of this book found out what happened at this time, they would most certainly have pursued legal actions and more than likely withdrawn the book from the university library. Now what we did was a small-scale incursion into someone else`s intellectual property and the possible distribution would at best be the 20 or so students that took that course that semester. It is possible for a teacher to make copies from excerpts of books and distribute them to their students under the "Fair Use" agreement, but what the student in my class did, and the example Ess provides most certainly did not.

> "On the other hand, in Thailand I received a now highly cherished gift from some graduate students: a nicely photocopied version of an important book in philosophy of technology, complete with a carefully crafted cover, on which the students had inscribed their names. In US circumstances, this would only be seen as a crass violation of copyright law, but in Thai context, this copying was seen to be a mark of respect, both for the (famous and well-known) author of the text and for me as the recipient of the gift." (Ess. 2014. 104)

Our examples, Ess and mine are but a minor blip on the radar compared to the massive undertaking of Aaron Swartz and his campaign to share knowledge and information that he felt had no right in being owned by companies or publishers. His approach to the matter did not sit well with the affected parties involved, and in the end, Swartz was hung out and made a public example of. His case is one were Confucian and deontological beliefs crash and as a result ends in a tragic outcome.

For clarity, Confucian tradition has a focus on the well-being of a community as a whole and in a regard removing the focus on the individual, in such a way that the good of the many outweighs the good of the one.
Deontological ethics has a strong narrative to protect the rights of other, no matter the cost or consequence, laws and rules are to be followed and obeyed.
However, as Ess argues, deontological beliefs are critically dependent on the fact that the established laws and rules are fair and just. (Ess. 2014. 112)

Aaron Swartz was an early age interested in computers and the possibilities they brought, participating in several online forums at the time and later on being one of the co-creators of the website Reddit.com, the Rich Site Summary (RSS feed) and he was partly engaged in the creation of Creative Commons.
Swartz was considered a hacktivist that sought out to bring information to the masses, one such example was the time he downloaded 2,7 million court documents, that were supposedly open to the public. In 2008, he downloaded them from a database called PACER (Public Access to Court Electronic Records) that was charging 8cents per page on documents that should be publicly accessible and free. In the end, after a FBI investigation towards his actions, all charges were dropped and no sentence was issued. It did however put Swartz in the attention of the authorities and his actions did not go unnoticed.
From 2008 and out, Swartz became more active in his pursuit to share knowledge, this is the time when he published what was labeled as the "Guerilla Open Access Manifesto", which served as a call to arms of sorts. The goal was shine a light on the unjust pay walling and locking down of articles, academic paper and knowledge that he felt should be open for public access.

> "We need to take information, wherever it is stored, make our copies and share them with the world. We need to take stuff that's out of copyright and add it to the archive. We need to buy secret databases and put them on the Web. We need to download scientific journals and upload them to file sharing networks. We need to fight for Guerilla Open Access.
>
> With enough of us, around the world, we`ll not just send a strong message opposing the privatization of knowledge – we`ll make it a thing of the past. Will you join us?" (Swartz, 2008.)

Later on, in 2012, Swartz was a key player in voicing distrust for the Stop Online Piracy Act (SOPA) bill. The bill itself was criticized for giving the US government to much control over what could be posted on websites and having to much power when it came to shutting down websites that were accused of copyright violations. The bill was defeated in the end, marking a victory for the Open Access community.

Swartz spent much of his time both personal and online to engage in discussions around the need for a more open and cost reduced or free way of accessing knowledge that he felt should be a public good.

Especially concerning works that were produced at a university or by university students and government funded projects and publications. Items such as these were more often than not being privatized or in some instances copyrighted by for-profit organizations. Most of these works were later sold back to the university libraries so that the students could access them, one such repository was the JSTOR (Journal Storage) that repackaged academic works and sold subscription based access to institutions and universities around the world. Swartz campaign against such repositories had much to do with the fact that they money made from these repositories never went to the authors or creator of the content, but rather to the for-profit organizations or private publishers, meaning that none of the profit went back into the community that created them in the first place.

Late 2010 and into 2011, Aaron Swartz accessed the JSTOR via his research fellow status at Harvard University, this gave him a JSTOR account that he could benefit from while on campus. What Swartz did though was to set up a laptop and program it do download in bulk massive amounts of content from the JSTOR repository, this was discovered and the IP of the computer was blocked, but Swartz soon set up another one, resulting in a new massive bulk download and an investigation into who was behind this.

The laptop, which was place in a open closet on campus, was found by the authorities, who proceeded to set up a camera in order to possibly film the culprit when they came to collect the laptop. Aaron Swartz was identified not much later.

In June 2011, a settlement was reached and a civil lawsuit against Swartz was dropped in exchange for him giving up all the downloaded data, which he at the time had not proceeded to spread on P2P (Peer to peer) networks, which was part of what he was accused for.

A month later, the federal authorities charged Swartz for wire fraud, computer fraud, illegal information gathering and recklessly damaging a protected computer, this was all after he had reached a settlement with JSTOR. More than a year later, the US Attorney's office increased the charges on Swartz, from the four mentioned to a staggering 13 cases, resulting in a penalty that could possibly reach 35years in prison and more than $1 million in compensation and fines for his actions.

At the time there was public outcry to stop this trial or to have the sentence and charges greatly reduced, as a settlement was already reached, and both Harvard and JSTOR had not taken out charges against Swartz. It was clear to those following the case that Aaron Swartz was made an example off, a scapegoat that served as a worst case scenario to those that thought of committing the same type of crime that Swartz was accused for. It was argued time and again that his crime was a victimless one, and that he had, albeit misguided, acted on a wish to help the public.

During his trials Swartz developed depression and was mentally struggling to cope with all that was going on, tragically, this ended with Aaron Swartz committing suicide before his trial was over. January 2013 saw an end to Swartz`s life and in the following days, the prosecution dropped all charges against him. The example of Aaron Swartz is a tragic one indeed and serves as a reminder that even with the best of intentions, if done wrong or in an illegal way it will have ramifications. Our society is in a way a deontological one, where we, at least from a western cultural position, attempt to work within the laws and regulations, norms and social acceptable conduct that our society has set down. Stealing is stealing, even if it is as stated, a victimless crime, and as most of us know, stealing is a punishable crime.

What can be argued on here is as we have already mentioned, that in deontological thinking we are morally obliged to disobey laws that are unjust toward.

> "And so, Mahatma Gandhi and Dr. Martin Luther King, JR. (and for that matter, the signers of the US Declaration of Independence), famously argued that, while we are morally obliged to follow just laws, we are allowed, even morally obliged, to disobey unjust laws. The trick, of course, is demonstrating that a given law is indeed unjust." (Ess. 2014. 112)

Aaron Swartz spent a great deal of time and effort in campaigning against what he thought was unjust laws and the injustice of locking away knowledge and information that was produced with

the help of students or taxpayers money. He did, as he writes in his Guerilla manifesto and as previously described, fight these unjust actions by breaking the law. Swartz felt that his actions were justified by the fact that the oppressive and heavily regulated business model of these repositories like JSTOR were intentionally walling off knowledge. It was not an act of spite, or a venture to seek out profit that led Swartz to download items from the JSTOR repository, it was rather an act of justice meant to liberate the knowledge from its unjust captivity.

His actions are more in the teachings of Confucianism, where parts of the ideology is that one should seek out that which benefits the community and not the individual. The community here being the public, while the individual would be the for-profit and private publishers that saw monetary gain from this knowledge. By looking at the mentioned examples, from my simple copying of a chapter to the case of Swartz and the illegal downloading of massive amounts of information, we see that knowledge has value. Value to the proprietary owners and to any community that might have use of it.

This is why OERs are so valuable, not in a monetary way, but as a means of creating, sharing and demonetize knowledge, for the benefit of all who seek it out.

OERs are more than just a collection of resources one can use as one see fit, or within the parameters of a given license, they are in most cases, an opposition to those that seek to monetize knowledge by accruing it and locking it down behind paywalls or subscriptions.

Our society will greatly benefit from having access to materials without charge, and the Open movement, OER creation and portals, as well as the black sheep of the family, the Copyleft movement, are making strides in giving access to all. There are of course benefits and negative sides of having open access and licenses that allow for reuse of redistribution. Not everyone has the same mindset or willingness to share the research they achieve using open access material.

One such example, is the boy hailed as a genius Jack Andraka, the boy who at age 15, claimed to have discovered a test for pancreatic cancer, which would rapidly reduce both the test time and the time it takes to get the results back, in a way revolutionizing the testing. (Tucker, 2012) Andraka comes from a entrepreneurial family with a very scientific background, his father working carbon nanotubes and his mother being a hospital anesthetist. After experiencing a close friend of the family dying from pancreatic cancer, Jack started reading up on that type of cancer and why it was so hard to diagnose. He accessed several open access scientific journals and consulted with his father on the properties and potential usage of carbon nanotubes. After a

while, Jack thought he had enough information to present a hypothesis, which he proceeded to mail out to scientists and researchers. It was only one researcher that replied to Andraka, and in turn invited him over to his lab to discuss the hypothesis. This was Dr. Anirban Maitra, a former professor of Oncology at John Hopkins University. (Studyinternational, 2016) The end result was that after 7months of working in that lab, Jack Andraka and Dr. Maitra produced the first sample tests that showed positive results in clinical trial using mice that had within them human pancreatic tumors. The ironic situation and criticism that surrounds Jack Andraka is that even though he claims to be a fan and defender of open access and free scientific publications, - just like the ones he himself used when he was reading up on how pancreatic cancer is treated – he has not published any of his findings in a peer reviewed paper. What`s more is that Andraka has seemed to focus on exploiting his fame and findings for monetary gains, he has received over $100.000 in prize money and has been working closely with large companies such as Intel to develop other tests based on his initial research.

With the assistance of his parent, he also created his own company and as Kent Anderson explains in his more in-depth and critical coverage of this case that "[…]the fact remains that mere months after making his claims about a cancer screening test, Andraka established a company to commercially exploit what he thought he'd found."(scholarlykitchen.sspnet.org. 2014)

This goes to show that it is fully possible to exploit and take advantage of open access or OERs in order to gain wealth for one self, as is the case with Jack Andraka.

It is always a possibility of someone else gaining attention, money or acclaim for others work when faced with open access like this. In no way does this mean that we have to stop producing open access, or create OERs that are for public benefit, on the contrary, the more knowledge that is produced, the greater the chance that someone will use the available information for situations just like or similar to Jack Andraka. The creation of a new medicine, cure, test or otherwise something that is hugely beneficial for the public, we can only hope though, that in such a case, the produced results will also become available through peer reviewed journals, or open access publications.

One last thing that needs to be addressed within this chapter on copyrights and licensing is that of the policy makers, more specifically the new media policy makers.

It is easy to forget that behind the behemoths in the industry are everyday people who stand for

the creation of the different technologies, articles, journals and the likes. More often than not, the IPs that are created have been either licensed of copyrighted by those that own the publishing rights. As a result of this, the revenue stream of these productions rarely end up with the authors or creators, but rather the companies that own the rights of distribution.

What is worrying is that these juggernauts that own the various IPs and distribute licenses and trade in copyrights have vastly more funding than minor publishers or those that seek to publish for themselves. They use this funding to lobby and influence policy makers to the extent that they in practice dominate the market, and copyright laws, bills and act are heavily pursued by these actors. (Klein et al. 2015) All of this ties back to what we have previously discussed concerning deontological practices and the obligation to fight unjust laws and policies. Its serves as a reminder of how important it is for the open community to be on the forefront of sharing and creating content for widespread distribution and open access. We as a community need to be vocal about our wishes for a more fair and open copyright situation, one in which both the creators and users see increased benefits, in the way of better profit margins for the content producers and less restrictive licensing and copyright laws for the public. A passage in the last chapter of Klein's book describes this situation very accurately.

> "Teaching people about copyright to that they can adjust their behavior to be on the side of the law is very different from teaching people about copyright so that they can contribute to deliberative processes underpinning policy decisions. In terms of setting, media policy literacy cannot be limited to formal media education programmes delivered through schools: ongoing engagement with the policymaking process through various sites and over time is needed to produce active citizens who are able to challenge taken-for-granted aspects of media policy and policymaking." (Klein et al. 2015. 128)

In summary, there are several legal issues regarding the use and implementation of OERs in HE. Copyright infringements and licensing deals with publishing houses can in a variety of ways help or impede learners in their use of OERs. The use of CC licenses or other open access licenses have mitigated the legal issues surrounding the use of OERs and may prove to be instrumental in the continued use of OERs in HE.

Open Educational Resources and where to find them

> "OER has emerged as a concept with great potential to support educational transformation. While its educational value lies in the idea of using resources as an integral method of communication of curriculum in educational courses (i.e. resource-based learning), its transformative power lies in the ease with which such resources, when digitized, can be shared via the Internet. Importantly, there is only one key differentiator between an OER and any other educational resource: its licence. Thus, an OER is simply an educational resource that incorporates a licence that facilitates reuse, and potentially adaptation, without first requesting permission from the copyright holder." (Butcher, 2015. 5)

When I say I work with Open Educational Resources, most people I have met simply ask, "What`s that? Is it like free books?" After explaining the basics of it and giving some examples of what an OER can be, they usually respond with "I didn't know you could use it like that, it's pretty clever really". The most common examples I use are educational networks on Twitter, academic discussion forums on Reddit and open Libraries like PLOS.org. This is due to them being easily recognizable to the public.

Really, there are no lack of resources, though, even if open, it does not imply that they are publicly visible, it is all about knowing where to look and how to look. It is also important to reiterate, that open does not always equate too free, as previously described in the introduction in this thesis. Thanks to the internet, there exists now, a global spanning accessibility to OERs that previously would be harder to come by. Shareability has seen a massive boon with the possibility to uploaded material to various websites and platforms online, illegal or not, as we will explore more deeply in the chapter on Copyright and Licensing. This chapter will focus on exploring the early days of OERs and the sharing culture that has emerged, as well as attempting to give the reader a broader insight into how OERs work, and the different ways that they can influence and affect not students, but the educational system as a whole, and even educational policies laid down by governments.

Three examples of projects that employ and make use of OERs will be outlined in detail towards the end of the chapter, to provide insight and context in different areas OERs can make an

impact. What is an Open Educational Resource? The term OERs is a broad one, and it is one that can be applied a number of different ways, this chapter will focus on highlighting different ways that OERs are approached in HE and in an educational environment.

> "An old tradition and a new technology have converged to make possible an unprecedented public good. The old tradition is the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment, for the sake of inquiry and knowledge. The new technology is the internet." (BOAI)

This citation, from the Budapest Open Access Initiative (BOAI) serves as a reminder that the internet was once a new technology, and that with it came several ideas and initiatives that in a non-digitized situation would not be as impactful as they could be using digital technologies. The start of OERs came about in the beginning of the 1990s, MERLOT, created by California State University was one of the first such initiatives. Its goal, free or affordable, accessible, online curriculums for higher education. MERLOT is short for Multimedia Educational Resource for Teaching and Online Learning, and it's a collection of peer reviewed OERs, or Digital Learning Objects (DLO) as they sometimes also are called, this thesis will only refer to them as OERs though.

Open Access initiatives saw the light of day not long after, PLOS (2001) and The Budapest Open Access Initiative (2002) are amongst some of the earlier ones. PLOS stands for the Public Library of Science and is an initiative started to combat the increasingly harsh constraints on scientific publications, like those issues brought up in the chapter on IP, licensing and copyright. PLOS is now a major contributor to the Open movement and an avid supporter of open access, boasting over 215.000 peer reviewed items that are free to access and that can be used and redistributed. "At PLOS, we are constantly looking for innovative ways to open up scientific communication—to make it faster, more efficient, more connected and more useful than ever before." (PLOS.org) The Budapest Open Access Initiative was the result of a meeting in Budapest hosted by The Open Society Foundation, December 1-2, 2001. The goal, is that of a global Open Access portal where educators, publishers, scientists and the likes can freely and openly share their works. The BOAI also claims to be the first to define Open Access, and that their definition is now canonical and in use all over the world.

> “By "open access" to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself.” (BOAI)

Other OER initiatives have also been created and have been widely successful in providing students and faculty with open access course materials to be used in their curriculum. OpenStax, previously known as Connexions and MITs Open Courseware focused highly on sharing and creating educational resources with other universities and students around the world. The way these examples differentiate from one another is that they all serve different purposes. PLOS focuses on articles and journals that can be freely and openly used, cited and remediated. BOAI provides strong guidelines, legal assistance, and the tools for self-publication, so that scholars can add to the Open movement. While OpenStax provides clear educational resources in the form of textbooks and course material. MITs open courseware provides access to the different courses that are taught at MIT with additional access to resources and information connected to the different courses available online. OERs, as will later be described, comes in many forms, these examples provide some context in how they might function.

OpenStax is a website that provides free access to educational books used for both schools and universities, if a login profile is created, also free of charge. OpenStax is advertising itself with the slogan “Access. The future of education.” The goal of OpenStax is simple; provide free knowledge to the betterment of education and of value to students. Creating an account is quick, easy and free, once a account is made, it is only a matter of choosing from the available subjects, and from there download or read the books online.

When this thesis was written, there were 50 books available spread over six subjects, out of those 50 books, 47of them were in English and three of them in Polish. Back in 2017, OpenStax offered around 20 books, today, in 2019, it offers 50. Thirty new books have been added in two years, which is a strong indication that there are more to come. (Jhangiani and Biswas-Diener, 2017) There is an apparent language barrier on OpenStax material as there are only two languages present, English and Polish. The three Polish books are all in the same subject, as for

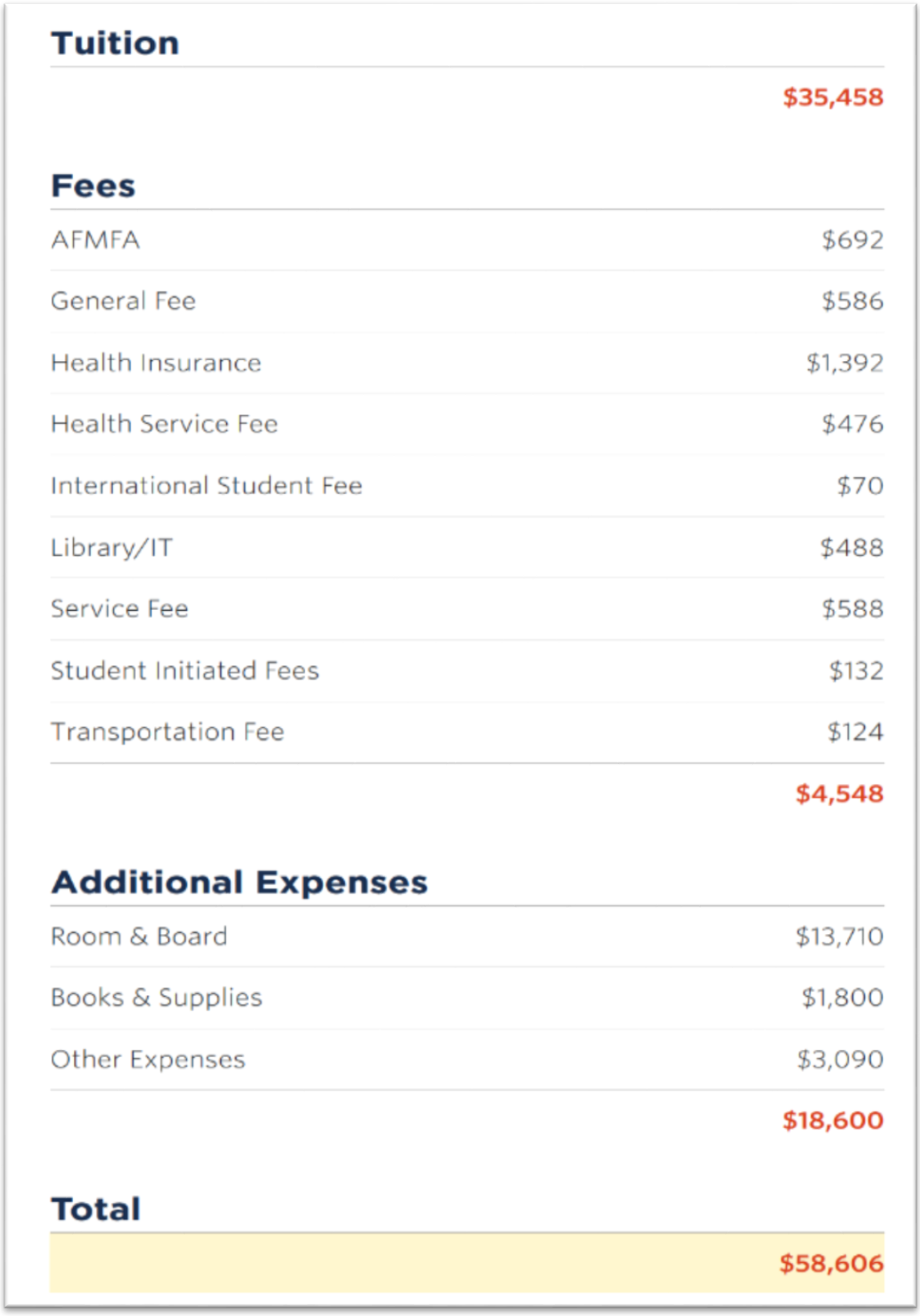
the rest, one must be proficient in English. The books are made specifically for OpenStax and all of the books are peer reviewed in order to testify to their educational quality and value.

MITs open courseware program is a website that MIT uses as a platform to share, as described on the website, “virtually all MIT course content”. The website boasts an impressive collection of material from over 2400 courses and a visitor number surpassing 300million. The material can range from several years old up to previous semesters. (owc.mit.edu)
By looking at the statistics that is offered on the use of MIT OCW it becomes evident that students and self-learners consist of over 80% of the users of the different material that is offered, while only 9% are educators. These statistics might be seen as surprising with the current trendiness and popularity of open access and OERs, it is not a farfetched thought to think that MIT OCW would have a larger percentage of users that are educators, using this resource for their own benefits and educational materials.
The website offers access to courses and course material from both old and new courses, what these courses does not provide or offer though, are student credits. There are no credits offered for completing any of the online courses, and as such, it is not possible to use the courses to get an education, rather, they are openly available knowledge and information that can be used to enhance knowledge and learning outcomes, or they might be included in another course at a university. In order to get a degree at MIT it is needed to be a student and pay the annual tuition fee, just doing the free online courses will not provide a legitimate degree.

Next to the ideology of free and open education are the MOOCs, Massive Open Online Course. The goal of MOOCs have been to lower the cost of education for students, while retaining the quality of the teaching that the host university can known for. Participation in a MOOC is a digital affair, there is seldom a physical space where attendance is needed, nor is there physical seminars, or lectures to attend. Instead, full access is given to all course material, facilitating student autonomy, encouraging students to freely explore and work with the material presented. A forum dedicated to the course may be available for all students, to give them room to communicate with each other and the educators in charge of the course. There may also be an allotted time for video conferences with the teachers every so often, in order to interact with them directly and have the possibility to ask direct questions or have a discussion with them. The fact that MOOCs are markedly cheaper in cost than what the tuition cost of attending a university

may cost, is a strong incentive for students to choose this path instead. Students that are proficient in English may now have a chance at a prestigious education or degree for less than a third of the cost that they would otherwise have to pay. As a comparison, Coursera.org, one of the top rated and most prestigious MOOC providers (Reviews.com) offers a Master's degree in computer science from the University of Illinois, at a total cost of 21.000$USD. If you were to attend the University itself, as a foreign student, the tuition cost calculator, for a 12credit hour (full time study) Master's degree in computer science would cost a total of 35.458$USD per year in tuition alone, and a total of 58.606$USD a year including all fees, insurances, housing and supplies. Coursera offers the same degree not only at a fairer price, but with the option to complete it from home without the need to uproot oneself and possibly become heavily indebted.

Illustration 3. Total course costs, Coursera.org.



Tuition

$35,458

Fees

AFMFA	$692
General Fee	$586
Health Insurance	$1,392
Health Service Fee	$476
International Student Fee	$70
Library/IT	$488
Service Fee	$588
Student Initiated Fees	$132
Transportation Fee	$124

$4,548

Additional Expenses

Room & Board	$13,710
Books & Supplies	$1,800
Other Expenses	$3,090

$18,600

Total

$58,606

Illustration 4. Tuition calculator, University of Illinois.

Some MOOCs are free while others offer a Freemium package, which is a free course, where it is possible to pay to get additional resources and time with teachers, and some offer full degrees at a cost. A MOOC is not an OER in itself, instead, they can employ OERs as a part of the teaching material. MOOCs have helped to highlight the need to reduce student costs and the high price of getting an education around the world.

> "But even though most MOOCs are not OER, their rise has generated interest in valuable content that has hitherto been impossible for almost all of the world's population to access. In this regard, the MOOCs arguably have contributed positively to the open movement […]" (Jhangiani and Biswas-Diener. 2017. 16)

The examples presented so far are all of scientific, scholarly or of academic origin, are there other useful sources of information that does not have such laurels?
A plethora of different websites, blogs, vlogs and streaming sites can be found, that provides learning tools, knowledge and guides.
Looking at the ELMCIP, or Electronic Literature as a Model of Creativity and Innovation in Practice, as it stands for. ELMCIP is a knowledge database, a curation of works of Electronic literature with a focus on critical writing, digital art and new media works. The goal of the ELMCIP database was to be an investigation of creative communities in a global perspective as well as to further electronic literature research and practice in Europe. (Elmcip.net). One of the lead figures on this Project, Scott Rettberg works at the University of Bergen and have for a long time been vested in creating and sharing works and knowledge surrounding electronic literature. The Project is a joint one, a collaboration amongst several educational instances and funded by HERA - Humanities in the European Research Area.
The knowledge database contains a plethora of different works that are under a CC BY SA license or have a separate license, though not many works feature their own license. CC BY SA means that the work is free to share, copy and redistribute, as well as adapt, remix, transform or build upon. Not all works presented in the ELMCIP database provides a CC license.

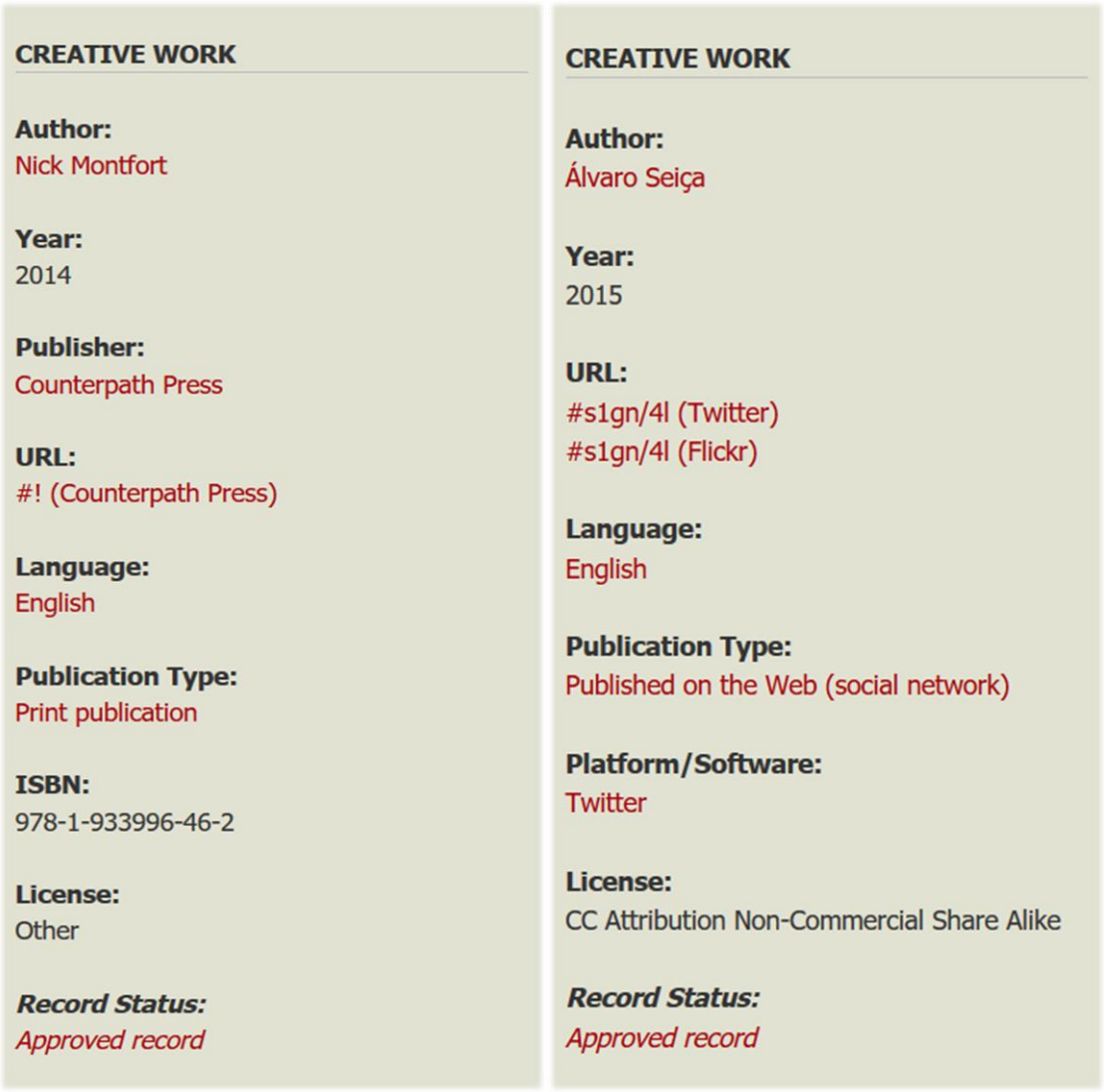


Illustration 5. Two different kinds of ELMCIP publications, with different licenses. (Elmcip.com)

In the three year period the project was running, 179 peer reviewed works where created from the ELMCIP database, including three video documentaries, all are accessible from the ELMCIP website. The website is currently up and running, and new works are being published still, even if the project has ended, the work and effort is still ongoing. There is a wealth of knowledge accumulated on the website, offering a structured ordering of works of digital literature, which can in most cases may be used and fitted to work in different curriculums.

For Humanities students, this website and its content, can prove a very valuable asset, and has the potential to also help shape parts of a course at HE.

A source of creative material, that most of us are familiar with, is YouTube, the massive video streaming and sharing site that hosts tens of millions of videos and millions of channels to view and follow. Some of these channels are dedicated to teaching and passing on knowledge that can be used in private, at an educational level, or for some, at work.

On YouTube, there are thousands upon thousands of hours of informative, educational and learner materials which one is free to stream as of now. What makes YouTube unique is that everyone are free to upload and create content, anything from a makeup guide by 13-year-old girls, to a professional makeup artist, to programming and code courses that will teach how to create games for smartphones or how to write code in Python. At its core, YouTube has the possibility to provide resources and knowledge for any kind of education, be it engineering, medical or within fashion.

One such example is Weld, a channel dedicated to teaching different ways of welding and what materials to weld with and how to properly use them.

The channel Weld.com on YouTube offers instructional videos and information on how to start welding, while also passing on their own skills and knowledge on how to best use the different tool for a welding scenario.

A student getting an engineering or automation degree may have an educational value of viewing this type of instructional videos, a step by step guide that can be paused, rewound and started over as many times as one would like.

Another channel that offers content made for educational insights is CrashCourse, and as the name implies, it offers quick and easily explained informational videos about a wide range of topic that may be relevant at most levels of education.

The last example is one that helps to show the potential of sharing accumulated knowledge in a specific field, in this case, Whiskey. The whiskey Tribe is a channel dedicated to sharing information about Whiskeys, how to taste, how to store, how to create new flavors and much more. For those few that actually attend a whisky sommelier education, such a channel can provide easy and quick knowledge and information. But as we will see later on, this will be at one’s own peril.

There are other platforms that also offer educational content, such as one of the world`s biggest online forums. Reddit.com, being one of the most visited websites in the world according to Alexa.com

Reddit is one of the largest online forums available, it is free to use and it is immensely popular worldwide. "In March 2019 almost 1.6 billion visits were measured to the online forum, making it one of the most-visited websites online." (Statista.com).

On Reddit, there exists something called sub-Reddits instead of channels, as one might find on YouTube, there are many educational sub-Reddits, used as means of either communication or that of sharing resources. Some of the more popular sub-Reddits are;

Ask Academia, Scholar and Scientific. On these sub-Reddits, it is possible to ask questions, search up information or otherwise engage with the community.

What Reddit offers, besides the large amount of sub-Reddits, is active engagement with the communities of choice, participatory culture and creative collaboration. The different sub-forums lets one actively engage within them, ask questions or contact individuals, making it an easy task to ask for or search for information. In addition, by being such a massive site, Reddit offers exposure, if choosing to share something, or ask for something, one will not be tied down to just one demographic, but rather, possibly reach around the globe. However, if needing to reach a certain demographic, based on location, there are sub-Reddits dedicated to certain regions, cities or other geographical areas.

Reddit also features an app for smartphones and laptops, transforming the function of Reddit into a pervasive educational tool. Sub-Reddits can be accessed anywhere as long as there is a connection to either Wi-Fi or a mobile network. Reddit does not seek to be an educational tool, but with the app and its educational sub-Reddits, it certainly facilitates pervasive learning and can be viewed as a pervasive educational tool in some capacity.

Credibility is paramount in education, when citing works or when making the foundation for argumentation. How much does using OERs such as those found on Reddit and YouTube affect the credibility of a students work, and if so, how can students increase credibility and how might Higher Education as a whole work with the fact that uncredited educational material flourishes online.

What sites like YouTube and Reddit lack, is easily accessible sources. What are the credential of those who answered your questions on Reddit? How did the creator of the instructional video come by the knowledge they are presenting?

Textbooks provided as a part of a curriculum, provides a sense of safety. Safety after the fact that those books have a clear reference list to where all the knowledge comes from, from author to

the sources the author has used. The publishing house attached to the publication of a textbook also instills a certain degree of credibility, as published books goes through an internal vetting process before being published to the public. Such books can in most cases be safely cited and referenced with little risk.

This may not the case when using OERs found on open websites like YouTube or Reddit.

It is rare for a content creator – the term used for those that create and upload original content to YouTube or other similar sites – to reference where they obtained the knowledge they pass on. Likewise, on Reddit, you can create fake credentials to log on, and as such, it is possible to claim to be a science professor at a high-ranking university or a surgeon at a well reputable hospital, imagination is the limit. An example of this exists in one of the examples we have previously seen, The Whisky Tribe channel on YouTube.

Though it does provide useful information and decent basic advices for those who want to get to know whisky and learn about it, the credential of those who create this content has come into question.

In a long article by Josh Peters, on behalf of the website TheWhiskeyJug.com, Peters explains what a whisky sommelier is. In the article, Peters reveals that one of the hosts of The Whiskey tribe, Daniel Whittington, claims to be a level 3 certificated Whisky sommelier without providing references to where this certification was achieved.

While in reality, Whittington is a musician with a love for whisky, who alongside a couple of others have created the Wizard Academy, also known as the Whisk(e)y Marketing School (WMS). This school offers whisky sommelier coursing and certification, the same kind of certification that Whittington has given himself.

The course and certification offered by the WMS is not actually endorsed or accepted as a whisky sommelier education by any of the established licensers. WMS and their team explains this by stating, “The US Government and Wizard Academy are the accrediting bodies behind Whisky Marketing School. […] We didn’t look to the existing industry for support or credibility because we wanted to build something they weren’t currently doing.” (Whittington, 2019)

In the article Peters describe in detail why and how he thinks WMS seems more like a cash grab and a poor ploy to sell certifications as sommeliers, he does this by highlighting the differences between the staff of WMS and an established whisky sommelier certificator, the Edinburgh Whisky Academy (EWA).

As a source of learning and teaching of skills, the WMS surely offers some insight and training, that is not disputed, what is the basis for Peters article and ire, is the sommelier certificate that WMS gives to those that complete any of the five levels of certification they provide. Given that this certification is not a valid if one seeks to become an official whisky sommelier.
Imagine applying for a job, only to be rejected due to the certification used in the application being invalid and not accepted. This worst-case scenario might happen if individuals do not do their due diligence and uncritically assumes that any such certification is valid as long as it requires payment and the provider seems legit.
How can students safely use information gathered from sites such as YouTube or Reddit? How does one attest to the validity of the material or background of those that share the material? This brings us back to the competences that has been previously mentioned in the chapter on DP and NML. The knowledge and skills needed to validate information, source checks and quality assurance.

> "This task of assuring quality has been complicated by the explosion of available content (both open and proprietary). This is both a blessing, as it reduces the likelihood of needing to develop new content, and a curse, as it demands higher level skills in information searching, selection, adaptation, and evaluation." (Butcher. 2015. 12.)

Neil Butcher argues on who is responsible, in the end, for the quality and validity of OERs and that towards that, that the responsibility rests on the institutions using them. From this line of reasoning, it is evident that Butcher is referring to OERs that are used and shared by the institution, not those that students might find on their own volition.
It is true that if a University course uses OERs as a part of the curriculum, it is the faculty and the people in charge of the courses role to also be accountable for the quality of those resources. However, if a student chooses to use other resources, and use them as a reference, it is solely the student's responsibility to ensure that those OERs are valid. Educators however, are responsible for making sure that those students have the necessary skills to find such valid resources.

So far, we have been examining digital OERs that are natively digital, forums, streaming sites and websites, what about OERs that are not digital, but still open, cultural OERs for instance. When speaking of Cultural OERs, it is hinting at the culture of a country, region, nationality, creed or nativity. As a Norwegian and as a person born and raised in Bergen, the cultural history

and the local history of Bergen is my heritage, as well the cultural history of Norway itself, e.g. Viking history.

A Museum of History can be a cultural OER, as it provide not only a short introduction and lesson in history, but also curate and preserve it. Just like the ELMCIP gathers and curates works on Electronic literature, a museum gathers and curates history.
A museum can be open to anyone that pays the admission fee, in that regard, it is open, and there are plaques with different languages or even digital devises with the information transcribed into even more languages, reducing the language barrier for guests.
A museum turns a OER into a commodity that is to be sold and displayed, the curation and gathering of historical artefacts are made not only for the sake of storing history, but to be able to sell of the knowledge at a later point. Looking at archeology, an education and profession dedicated to uncovering and learning more about history, the heritage of a people or race, and safely store them, in museums. One can compare field archeologists to miners, digging up history and selling it off as a miner would gold. What is payed for when entering a museum is not the cultural history itself, it is the curation and effort gone into making the exhibitions that dictate the costs.
This is of course not unlike digital OERs we have seen, that require payment for access, but the major issue that differentiates previous examples to this is the fact that they have been someone's intellectual property or have been owned by a publisher that offers a limited license unless payed for. Culture and heritage cannot be intellectual property in that regard. As Norwegian, I have never had to purchase knowledge about my culture, neither have I had to pay to learn of my heritage. Although this is certainly possible, with for instance books on the history of Bergen or Vikings. Other cultural OERs can be historical festivals or reenactments is in one way or another presenting culture and history. Participants can reenact a time in history and portray parts of the culture at the time, or reenact historical events. An example of such an event for Norwegian Viking history and culture is the Viking days at Avaldsnes, the high seat of the Viking kings, centuries ago. (avaldsnes.info)
The festival is free to attend and it is possible to walk around in a small Viking village, made to resemble that of the ruins that were found on the premises, while participants from all over the world travel there to dress up, sell products and engage with the community. The festival is deeply rooted in Viking history and tries it best to portray this to the visiting audience. Vendors

sell handcrafted items made from old techniques or prepare food with ingredients most commonly used back then. The festival lets you engage with a dedicated community for free, giving you a plentiful resource to explore as one walks about the perimeter. Avaldsnes also houses a Viking Museum, where it is possible to pay to enter and look at exhibits and learn their story, some of the exhibited items were actually found at Avaldsnes during archeological digs in the area.

Access

Student gain access to a great deal of open knowledge, that otherwise would be closed off, different faculty libraries will provide ample access to a wealth of different knowledge in the form or books, articles, newspapers and so on. In addition to this, a university might have deals in place with publishers or other universities, granting access, limited or not, to their resources as well. Being a student opens many doors, having the knowledge on how to use and access all of this is a different matter. Some universities for instance have advanced online libraries that will commence searches in outside libraries as well as local. ORIA.no, which is UiBs online library system works in such a fashion, similarly, using google scholar while using a UiB connection will grant access to many online resources that UiB or the faculty library has agreements with. As this process is automated, it is hard for a student to know where the access comes from, if it's locally owned or if it's via shared library resources with another university, or a deal brokered directly with the publisher.
Such deals can also be temporarily or permanently removed, such as is the case for UiB and its negotiations with several publishers after the new regulations implemented by the Norwegian government. (UiB.no).

Facing the possibility of losing access to a great deal of earlier open scientific works can be very detrimental for students. Consider this; a student has used a number of journals published by Elsevier and Taylor & Francis in a bachelor or master thesis. The thesis is to be turned in after the deadline of renegotiating the deal with these publishers, and no deal has yet been made. What will happen to the references and citations made in the thesis? A censor will no longer be able to access the works that have been cited. Will the student have to purchase each individual work that is being used, will it be enough that they were available at the time or writing, will the references and citations need to be replaced with similar works that have open access? This also

ties heavily into the chapter on Licensing, Intellectual property and Copyright. Educators will also play a role in this, being knowledgeable and be able to inform their students on what kind of access they have, and how to utilize this access to their benefit.

An important factor to mention when we are dealing with OERs is the student base itself and its vocalization on the increased costs of being a student. As a whole, the student body across the world can also be seen a driving force behind the adaptation, accumulation and creation or OERs and OER portals. Looking at the example of the student strike in Mexico, at the National Autonomous University of Mexico (UNAM) (Altbach et al. 2010), it is evident how this served as a wakeup call to those that followed the situation. The strike lasted nine months in total and was a response to the increased tuition fee at the university. The strike started when the fee for each semester was to be increased from $0.02, two cents approximately, to the equivalent of $150USD. Francisco Barnes de Castro, the president of the school, and the individual in charge of the change in pricing, defended his decision on the fact that the increased funds that the university would receive would greatly benefit both the quality of the teaching and research, it would also lead to newer and better equipment for the students to utilize. (Preston, 1999) Increasing the tuition cost also cut access by a great deal for students that came from poverty, who could no longer afford to pay for tuition.
The outrage was massive, and the protests began not long after the announcement. Parts of the student body at UNAM decided to go on strike and effectively blockade the university, eventually leading to it shutting down for a period of time. Violent encounters with guards, staff and police occurred several times, and the public awareness of the situation only grew as stories of severe injuries, looting and demonstrations reached outside of the Mexican borders. In the end, a force of over 2000 federal police officers gathered at UNAM to end the blockade, resulting in over 600 arrests and tragically, some fatal injuries. A survey conducted at the time of the blockade did a comparison to a similar survey done, which gaged the publics opinion on increasing tuition costs, before the strike started, it was at 83% of the population wanting to increase costs, the number fell to 55% during the time the strikes proceeded. (Preston, 1999)

The cost of education in some parts of the world can be a real concern, especially when considering the developing regions, where base income might not prove sufficient to get someone into a university. It is therefore important to take into account, when dealing with

OERs, the importance of the cost reducing effects and the drive of students to find cheaper alternatives to education. Having access to OERs is such a way, that can have a tremendous effect on the education of students in the developing regions, as well as helping to unburden the load of student debt that can be accumulate in parts of the western world. As the example of the pricing of the Coursera MOOC vs attending the university, brought up.

> "In most parts of the world, students will increasingly need to finance their studies from personal resources. This may negatively affect the time to degree for many students, but it may also encourage new and different kinds of leaning as students combine formal education with work and other activities" (Altbach et al. 2010. 102)

Altbach`s statement underscores the point that in education, today and in the future, costs will always play a crucial role and any means that can help alleviate the financial burden on those trying to get a university degree, or their families, are well worth looking into.
OERs are one such highly important avenue.

Interviews on projects relating to OERs in Higher Education

During the summer month of June 2019, I had the privilege to travel to Dresden and Hannover, Germany, in order to conduct semi-structured interviews with key personnel on three projects being developed towards higher education that make use of and utilize OERs, and one project concerning the future of higher education in Germany and what role OERs might have there. The projects vary in size and scope, ranging from a four-week MOOC, to a digital student assistant using deep learning to become increasingly efficient.

DISCLAIMER * All information pertaining the documentation presented in this section of the thesis, have been presented to the different teams I visited, in order for them to validate and confirm that which I present here, and to correct any errors that might have occurred. As such, I present this documentation with the acceptance of both the Dresden and Hannover teams that I met with. The reason why names of the individuals involved with the projects and the interviews are used, is because information about the projects are public and that they originate in full or partly from public institutions.
Note that some of the projects are not yet finished and are subject to changes that might occur after my initial interviews and communications with those involved have ended. *****

The goal of these interviews are to present a more in depth look at different tools and projects being developed for higher education, with a focus on not only OERs and sharing culture, but also that of digital pedagogy, student safety and different ways of establishing usage and longevity. By presenting these four different ideas on how OERs can be utilized, it is the aim of this thesis to make clear just how diverse the use of OERs can be. It is not just about the classic indexed retrieval if information from a database, it can also, as to be exemplified, a variety of items. The documentation that is provided here will highlight different aspects of OERs and the possible learning and pedagogical outcomes from them.
Following is a description and a short introduction of each project and what they set out to achieve.

For the Moving MOOC an interview was conducted on June 11th, 2019, with the help and assistance of Thomas Köhler and Sabine Barthold at Medienzentrum, Dresden, Germany.

- The Moving MOOC – A TU Dresden Project to create a MOOC designed for HE and beyond, with the purpose of having participants engage with the project and later on use all the available resources presented in The Moving MOOC to create their own learner communities.

Regarding SIDDATA, Lower Saxony OER portal and AHEAD, interviews were conducted, June 13th and 14th, 2019, with the help and assistance of Klaus Wannemacher, Maren Lübcke and Funda Seyfeli, from the HIS-Institut für Hochschulentwicklung, Hannover, Germany.

- SIDDATA – Individualization of Studies through Digital, Data-Driven Assistants.
  A project designed around creating an autonomous assistant for students with the help of data gathering and continuous inputs from students at all levels of higher education. Deep learning paired with tracking of participants biometrics are key to the development of this assistant.
- Lower Saxony OER portal – A collaborative project designed to create a OER portal for faculty members at several universities, where they can share resources with each other in order to spread knowledge, course materials and familiarize with OERs and Open science.

- AHEAD – Examining the future of digital academic in Germany and how it might look in 2030, with a focus on the learner and learner technologies. Empirical data and trend analysis of existing and developing projects serve as a foundation for the project. (This project will be explored in the chapter on the Future of Higher Education.)

The Moving MOOC

What is the Moving MOOC? For starters, it is a course developed and catered specifically towards students in the later stages of HE and beyond, with a focus on increasing academic knowledge surrounding Web.2.0, open science and OERs. The Moving MOOC has so far had two completed iterations, while the third is ongoing at the time this segment was written.

What makes The Moving MOOC stand out is that almost all of the course material offered are gathered from other open sources and have been remediated and remixed to suit the needs of the project. By utilizing open source materials that have licenses that allow for reuse and remix, the project creators does not need to create everything from scratch, they have, as in this case, found peer reviewed items that are similar or identical to the needs they have and have incorporated them in the MOOC curriculum. This again ties back to Remediation, which has been mentioned several times already.

During the interview, it was brought up that one of the ideas behind the Moving MOOC was to prove that not everything had to be made from scratch, taking advantage of and utilizing some of the wealth of open access material that is readily available. Of course, the work that needs to be done shifts from creating to remediating and from designing specifically for the course, to find sources that fit the needs and can be remixed and molded into the MOOC. Doing the research to find peer reviewed open source artefacts, that also has a license that allows for reuse and remix was not as hard a work as it would seem. According to the researchers for the Moving MOOC, the hardest part was actually deciding what sources to use when designing the curriculum, while also ensuring that they in fact were legally allowed to do so, with the correct use of licensing.

The Moving MOOC is a MOOC project developed with the goal to help advance the knowledge of Open access and Open science, as well as create a tool for which participants can learn more about Web.2.0 and what that entails.

By visiting the website belonging to the project, where one can also enroll in the course, you will see that the Moving MOOC describes some of the outcome for participants with this paragraph.

> "The MOOC will show young academics how to utilize the Web 2.0 technologies to search, access and use information, to organize knowledge, develop new ideas, build networks with other scholars, public institutions and society. Learners will understand the principles of open science and how they can contribute to a culture of openness in their everyday research life." (https://moving.mz.tu-dresden.de/mooc, 2019)

In the interview, I asked about who the project was developed and suited for, the answer was that in the initial iteration of the project most participants were PhD students, with some exceptions. Surprisingly, the other group of enrolled participants seemed to be other professors with a keen interest in the field and some librarians, which was described as open science enthusiasts.
A detailed discussion on the effect of having a decent amount of competences in both digital pedagogy and new media literacies for the participants of the MOOC resulted in an explanation on why these facets were not heavily present in the MOOC.
By focusing on delivering an experience suited for learners who are in the final stages of higher education, it was possible to forgo the need for a tutorial or introduction into how to properly cite, source check and what kind of information the participants could share on the forum that is a part of the MOOC. By catering to students or learners who already should possess knowledge on DP and NML, the course itself did not need a module specifically meant to introduce topics related to these aspects, it could rather go straight to the point of delivering its content.

From a pedagogical perspective, the Moving MOOC team did research how to make their participants complete the course, the initial assumptions among the team members was that since the course is free and does not follow a university course or degree, that the drop off rate would reflect this. What the Moving MOOC research team did in preparation for launching the first iteration of the course, was to look at feedback material from other MOOC projects and the findings from tests done in the Moving MOOC. The result was findings that made it clear that offering a variety of ways of presenting material to the participant kept them engaged with the course more so than if such an variety was not present. The Moving MOOC features not only text based documents and materials but also include videos and webinar modules hosted by experts in the field, as well as downloadable podcasts that can be listened to while taking public

transport to or from work or while cleaning the house. This adds a pervasive learning environment to the MOOC as well, adding engagement with the course material outside of online environment. Feedback from participants noted that this way of breaking up the way the material was delivered and portioned, was very refreshing and contributed to keep the course and learning at a nice pace with new elements introduced as the course progressed. The Webinars got a particularly positive feedback and was seen as the "highlight" of the course for many of the participants. A discussion forum was also made available for the participants, where they were enticed to share their research, findings and otherwise communicate with the others or with the course admins.

Gamification also played a role in the development of the Moving MOOC, such as an upvote function on the forums, similar to the one found on Reddit, letting the participants themselves vote up the posts they found particularly good, and a "top contributor" notification was added. The course itself also features badges that you earn at different stages of the course, examples would be a badge having the most upvoted post on the forum on a weekly basis. These badges are labeled Open Badges, meaning participants can actually export them and place them on their resume, where they function as certification of completion.

> "Open Badges are visual tokens of achievement, affiliation, authorization, or other trust relationship sharable across the web. Open Badges represent a more detailed picture than a CV or résumé as they can be presented in ever-changing combinations, creating a constantly evolving picture of a person's lifelong learning." (https://openbadges.org/, 2019)

After the first iteration of the course was completed, feedback from participants that completed the course was that they would like to have physical evidence of completing the course, in addition to the open badges they received. A Certificate of Participation was sent out as a PDF file to the participants. When asked how the team advertised for the MOOC and how they found their participants it was explained which tactics they had used and which of them actually proved to be of use in relation to enrollment.

For the first iteration of the course, they used mostly online marketing, with the exception of posters being used at the TU Dresden campus. The project was at the time concentrating on graduate students, which turned out not all too successful, due in part to the fact that the course

topic was not yet completely relevant. The topics at hand was directed towards research, publishing, open data management and open access, topics that the graduate students had not yet fully embraced. The majority of marketing was done on social media sites like Facebook and Twitter, but the results proved to be underwhelming. A handful of around 150 participants was all that signed up to the first iteration, while only a fraction , around 20 engaging in the MOOC, fewer still were the six actually completed the course in its entirety and received their certificate. Feedback showed that the advertisement on social media was for the most part partly successful in getting participants to sign up, but in the end, most of these did not engage with and participate beyond signing up. Those that did were the ones that were notified of the MOOC from email lists in their field.

On the second iteration, the Moving MOOC decided to use mailing lists as well as the social media marketing and the result was an increase in the amount of signups, the second time around there was over 300 participants, 45 that actively engaged with the material and 27 that finished the course itself. This result proved much better and gave much more positive results in both enrollment and completion. This iteration also focused more on junior researchers such as PhD candidates or post-doctoral researchers. The move to use different approaches to marketing proved successful in both enrolment and stimulating the various activities surrounding the MOOC and its forum.

When asked if the Moving MOOC was built to scale with participants, equally manageable with 300 as 30,000 participants the answer was that that was not something the project team had considered. If, by chance, the MOOC suddenly got widespread attention and achieved massive enrollment of participants, the team members agreed that they had no way of knowing if that could even work. The ideal number of participants that the project team could comfortably work with was said to be a number between 300 to 500 participants. Currently, the number of administrators on the Moving MOOC are only two, with a third being available if need be, if something unexpected should happen and the participant levels go above the expected numbers, additional staff would be required in order to manage the increased needs that might arise.

As OERs are one of the main topics of this thesis, the role OERs play in the Moving MOOC and what affordance they provide, not only the creators but also the participants and possibly the open movement as a whole requires some attention.

It has already been mentioned that the OERs present in the Moving MOOC are for the most part gathered from open and openly licensed sources, offering therefore a good example of how OERs can be used now and in the future of HE. The more traction such examples gain, the more widespread they will become. Understanding and disseminating the approaches chosen in the Moving MOOC project, with regards to the collection, design and adaption of its course material offer opportunities to export the methodology, with adjustments, to be adopted by institutions of HE. It is worth noting that in the Moving MOOC database, material from Videolectures.net, amongst other sources, which contains a wealth of academic video content in the form of lectures, talks, debates and tutorials, are integrated in the project. The CORE database material is also available, containing several million open access articles, books and other valuable material to be used, all of which are searchable within the Moving MOOC. (core.ac.uk)
The Moving MOOC not only takes advantage of open access content, but also actively engages with OERs and deliver efficient and timely access to its participants. All of these open resources can be used to create new learning communities or courses on the platform, and can be embedded directly into new teaching materials or personal learning resources, if so chosen.

A key factor that was discussed during the interview was that the Moving MOOCs second objective, additional to its primary objective. The second objective was to have participant engage with the course material and use it as a foundation for the creation their own learning or knowledge communities. The Moving MOOC platform facilitate this, much in the same way as Reddit does with its sub-Reddits. Participants of the Moving MOOC can build communities using all of the open access materials that are available on the platform. The communities can function as a hub, gathering people with similar interests in one common space, where they can engage with each other. The project was created with this goal in mind and it is clear in its intention to have participants use the platform for their own needs once they complete the course. What this could mean for the open movement and OERs are that for each iteration of the course, new communities, or even several, might be created for a different purpose, fitting into a curriculum or course designed for another purpose than what the Moving MOOC offers. A snowball effect is plausible as a result, creating a subset of academic communities on the platform.
Some of the pitfalls and hazards of using open resources will need to be addressed in situations such as these, what is fortunate here is that the Moving MOOC focuses on the individuals that

are in the final stages of their education or those who have already completed it and are now working with education.
This means that all of their critical skills, such as those mentioned in the digital pedagogy chapter are already in place. Source checks, correct citation and use of licensing, source critique and the ability to discern how to best apply this knowledge.
By avoiding strain such as having to introduce the different aspects of New Media Literacies and Digital Pedagogy, the Moving MOOC can focus more specifically on the task at hand, which is to present its course material to the participants and have them engage with it. The downside by having a more narrow target group, or focus of participants, is that the participation levels will reflect this, it is no secret that there are many more bachelor students than there are masters or beyond. In a sense, the Moving MOOC is focusing more on quality over quantity, with the potential that this quality influence will spread as more participants complete the different iterations of the course

The Moving MOOC project attempts to utilize the abundance of OER material that is available and create specific courses and learner outcome with them. With the project also is heavily affected by participatory culture, as the second goal of the project would not be effective without this present throughout its iterations. This can also be said to be one of the issues with the Moving MOOC, that is it is actually dependent on participatory culture to have its second goal be successful. Without participation from participants in creating the communities the project offers, the project would fall short of achieving its second goal. As mentioned, DP and NML are in the case of this project not brought up in detail as the target audience are supposed to be in a place where this is already knowledge that they possess and know how to engage with. This leaves room for the project to focus on delivering its content and facilitate participatory culture in its community building capabilities.

SIDDATA

SIDDATA, an acronym for the full German title, “Studienindividualisierung durch Digitale, Datengestützte Assistenten” as it is formally known as, is a project designed to develop an artificial agent that will function as a student advisor and guide throughout the course of a HE degree. The agent will function as a personal assistant of sorts, aiding with questions and

inquiries regarding your studies or academic processes.
The project team, at the time of writing, consists of 22 members with a varied field of expertise and backgrounds from different educational instances. The team behind the SIDDATA project will be working on designing all the functionalities and will also be determining the precedence on how the gathered data should be used. An external tech company will be tasked with the actual programing and maintenance of the AI, which will be referred to as, assistant.
The involved institutions are:

- Osnabrück University
  - Center for Digital Teaching, Campus Management and Higher Education Didactics (virtUOS)
  - Institute of Cognitive Science
  - Institute of Information Management and Information Systems Engineering

- Leibniz University Hannover
  - Institute of Information System Research
  - Center for Quality Enhancement in Teaching and Learning (ZQS)

- University of Bremen
  - Center for Multimedia in Higher Education (ZMML)

- HIS-Institut für Hochschulentwicklung e.V. (HIS-HE)
  - Higher Education Management – Focus Area Digitalization of Higher Education Institutions

This project is funded by the German Federal Ministry of Education and Research.

"With the use of the assistant, students should be encouraged to define their own study goals and to follow them consistently. In the future, the data-driven environment will be able to give hints, reminders and recommendations appropriate to the situation, as well as regarding local and remote courses and Open Educational Resources (OER). These tips and recommendations should help students to make informed decisions for their own individual study path." (https://www.siddata.de/en/, 2019)

The SIDDATA project encompasses so many of the issues that have already discussed in previous chapters, especially those concerned with New Media literacies, digital competences and safety.

What is intriguing about this project is that it intends to use datamining (voluntarily from those that use the assistant), eye movement tracking and big data in order to help the assistant grow and learn, utilizing a deep learning algorithm. The idea is that with an abundance of data, the assistant will learn to improve itself and be better suited to assist students that use it.

The assistant will serve a twofold purpose, the first being a general advisor and aide to students, having the ability to help with finding subjects or courses, assist them in signing up for activities, asking directions to lecture halls and otherwise help with administrative duties related to student needs. The second purpose will be to function as a personal guide and assistant to each individual user, where the more the individual use it, the more personalized the assistant will become.

Using the assistant over the course of an HE degree will help transform the assistant from a general-purpose one, into a wholly personalized experience.

The more input and data the assistant receives, the more it will be able to make use of the deep learning algorithm and become increasingly personalized with increased input from each individual. Pair this with the data collected from other students at the same or similar studies or courses and with the big data assimilation, the assistant may in the end be able to advise and help at an advanced level. By utilizing the big data and deep learning algorithms, the assistant might eventually recognize the telltale signs of students who are in danger of failing courses or are liable to quit their studies and use this information to inform those responsible for that course. Such an effort will also help teachers with following up on their students more closely, even those that might not be as active, or that slip under the radar. The assistant will also be aware of the different demands in each course, prompting students that might be on the verge of not making a deadline or those that have reached close to the maximum hours of absence. Because of this, with enough input and data collected, the assistant can in some capacity help alleviate teachers and faculty staff of some of the issues they may face with on a regular basis.

In addition to the big data and deep learning, the SIDDATA project will also be having users partake in regular surveys and questionnaires to get feedback from those that are engaging with the assistant.

Additionally, the project will feature biometric scans of the eyes of participants, using a separate device with specialized cameras custom built for eye movement tracking and facial biometrics related to the area surrounding the eyes.
This is used to measure the reading habits of students, focus time and reading intervals, which in turn, with enough data will help the assistant notify students when they are getting unfocused or when it is prudent to take a break. It can also help with other prompts, such as letting a student know if the pace of reading is to fast or if there is a tendency to skip parts, only skimming the text instead of trying to cover all of it.
In the interview with the team at HIS-HE, it was explained that the purpose of the eye tracking was to measure awareness and the attention of students, for the purpose of mapping the average attention and efficacy when doing on-screen reading. The more data gathered, the more precise and correct the assistant will become in notifying the users when a break would be necessary or when to slow down and increase focus.
It is worth noting that in the interview, it was brought up that using the eye-tracking feature would be voluntary for each participant and not a requirement.

Gathering facial biometrics from participants is not without risk and several issues such as privacy, security and safety, ethical and political, all of which can have consequences if mismanaged or misused.
The information gathered by the eye tracking software will have to be stored for analysis and comparison to the multitude samples, meaning there would be a server or a storage space where the biometrics of every participant that use the eye movement tracker are stored.
If such a place would to be breached by hackers with the intent to steal biometrics, the repercussions could potentially be catastrophic. The theft of personal data and information could have dire consequences for all those involved and the risk of crimes such as identity theft could be increased if such a theft should occur.

The SIDDATA project is sponsored by the German government. Could the German government potentially ask for access to the eye-tracking database? Could they share the information with a foreign country? Perhaps it could even be implemented in the increasing German surveillance growth, adding the biometrics and personal information of participants to security databases at airports, train stations and docks. This is speculative and not representative of the intent or goal

of the SIDDATA project, it is however a possibility that should be addressed.
In an article from DW.com, author, Jefferson Chase writes that in 2017, Germany had an unprecedented spate of new surveillance and security laws. Some of which are shortly described in the article. The one that is of importance to the eye tracker and facial biometrics recording in the SIDDATA project is the Video Surveillance Improvement Law, which Chase describes as "This legislation gives the state greater latitude to use video cameras to monitor public spaces like city squares, stadiums, shopping malls and parking lots. It came into force on May 5, 2017 in the aftermath of the Berlin Christmas Market attack" (Chace, 2017).

The issue of facial recognition does not apply in the case the eye movement tracker in the SIDDATA project, there is however, another issue that can be addressed, iris scans.
Iris scans are becoming used more widely and see more applications now than ever before, it is therefore worth noting that even if full facial recognition is off the table, there are still potential risks to having ones iris biometrics stored in a database.
As far back as 2007, on a holiday to Iceland, my wife and I spent some time at a spa and gym called Laugar Spa. On entry to the spa, it was necessary to register as customers, create a membership and enter some personal information, it was also needed to complete an iris scan. Once membership was complete, all one had to do was walk up to a machine, scan both eyes, and walk in. The irises functions as the identifier needed to enter, instead of scanning a membership card.
This was 12 years ago now, imagine the advance in technology and the possibilities of using facial biometrics as identifiers.
Smart phones today has several different ways of unlocking them, from pin codes to iris scans and facial recognition. We do surround ourselves with multimedia devises that potentially uses our biometrics as a security measure, which is why it is worth taking note that this could be a potential risk when it comes to having a database full of facial biometrics.
It has already been mentioned that it is voluntary for participants to use the eye movement tracker, additionally, a student wearing some form of contacts lenses could easily disrupt an iris scan while still contributing to the eye movement tracking data, as that would not be affected. This could also potentially lead to corrupt data being entered into the database, as it is possible that the eye movement tracker could misinterpret the data coming from individuals wearing, for instance, multicolored or monochrome lenses.

A positive outcome that potentially could help in situations outside of education is assistive technologies. This is the kind of technologies that are used to help those with disabilities, who are in one way or another unable or incapable of using technology as the rest of us would. Using the eye tracking data from the SIDDATA project, it could be possible to use the information in order to develop smarter software for individuals that rely on their facial biometrics to move a mouse cursor or to navigate a computer screen.
There are also many scientific uses for data concerning eye movement and tracking, both within the field of medicine and outside, the SIDDATA project could potentially sit on a wealth of data concerning this. Would it then, be feasible to sell of this information to medical research or private entrepreneurs working on building accessible technologies? Could the Ministry of Education, as a funder of this project, ask that parts of the data collected be shared with the medical industry?
This is again speculations that to a certain extent are pushing the issues to make an example of possibilities that might occur. Making such examples known however is still important in the critical context of gathering and storing personal information in the SIDDATA project.

It has already mentioned that the agent will be able to assist students in mapping their daily chores, another function of the assistant is to help students locate OERs that can be used in their work. With enough input and use, the agent can possibly not only assist in finding such resources, but will be able to predict what resources are needed and where to find them. By gathering the data from student searches and OER usage, it is possible that the accuracy and predictability of the agent can become increasingly accurate.
Imagine writing an essay for a class, where the topics are more or less the same for each semester, the agent will be able to assist in finding the correct resources based on what the topic is and what previous students have used in regards to similar topics. This could also possibly lead to stagnation, if similar topics and resources are being used each semester. For tackling this issue, the assistant's deep learning algorithm may use the big data collected on OER usage and it will be able to provide students with a more diverse list of resources or places to find resources. The more its used and the more data it collects, the better it will become in discerning what is of use and not, and also possibly what alternatives there are to a resource. Be it a different website, author or article, the agent can direct you based on your input and preference in its search parameters in addition to its previously collected knowledge database.

The SIDDATA project has the potential function as a great tool for students of higher education, assisting them with menial tasks or other potential issues they might have, or even to answer questions they might not feel comfortable asking out aloud, such as how to contact the student psychologist. Participants will also touch upon participatory culture, as all of their pooled efforts will be used by the SIDDATA project to improve the assistant. NML are also present, as the assistant has the capability to aid participants in finding OER material for them to use. Other issues such as the knowledge gap and digital divide may play a central role in the context of participants that are in the process of re-schooling themselves, or belong to a certain age demographic. It would be worth keeping this in mind when rolling out the SIDDATA project, that there might be willing participants that wants to do their collective effort but might not have the digital competences needed to fully utilize and take advantage of the assistant. Trained staff, with knowledge on DP and NML may perhaps be needed in an effort to guide any such participants.

Lower Saxony OER Portal

The Lower Saxony OER Portal is an OER project that is made to target teachers and educators of HE. The main task the project sets out to achieve is the creation of an OER portal that can be shared, collaborated on and facilitate peer reviewing of materials produced on or added to the portal by participants from universities across Lower Saxony, Germany.

Its overarching goal is to create a space were resources that are created and used at the different universities are shared and that they can be used freely by those who have access to the portal. In addition, the interdisciplinary cooperation and creation of new OERs is also a focus, were collaboration between professors at different faculties or universities can create new cross-disciplinary works and strengthen the cooperation between the participating individuals. The project will consist of 20 participation universities from Lower Saxony with the hopes that if the portal is successful, it will expand to encompass more regions. Personnel from the participation universities will be tasked with adding and creating content for the portal.

This project already dives into the field of participatory culture and remediation, as one of the main goals of the project is to produce collaborative works, and to have them be used and reformatted to fit needs of the educator that chooses to use such works. Both Goody and Jenkins

take on NML are present here, as the portal is to be used at an institutionalized level while also taking full advantage of participatory culture.

As an OER, this portal will serve to not only share and create, but also to develop and curate such resources in an organized and structured way that will potentially greatly benefit those that use it. The platform itself will, in a limited way, also be accessible for students. The idea is that students can browse and find OERs that are available for use, but as for contributing materials, that will be limited to the educators. Students will also be able to use a form of up-vote system, similar to Reddit and The Moving MOOC, on the different resources that are available to them. Making it possible to browse or search for resources based on how many points or up-votes they have. There will also be a similar function for the educators, where they can up-vote the different resources, but with different value and index compared to the search parameters that students will use. It will be possible to search for resources based on what kind of up-vote score the resource has. As the portal will feature resources for both students and teachers, by doing basic searches, a student may come across a resource meant to be used by other educators, not to be used as a resource for students. Therefore, separating the two scoring systems makes sense, so that it is clear to see which resource is meant for either student or educator.

Over the course of the interview with the HIS-HE team, it was discussed at length how this portal could be shaped and what kind of features would be of importance in order to garner trust amongst its users and a willingness to use the portal.

Ease of use, was one of the key aspects that was discussed, how easy it will be to add new works, tag them with the correct tags, index them and make them searchable by title or keyword. Multimedia works will also be presentable, and will need their own set of metadata and tags for easy search options. Alongside the indexing, each work will feature a visible license stamp, similar to those developed at Creative Commons or by employing CC licenses. Having these present with the search results will quickly let the users discern what liberties it is possible to take with the presented resource, this is especially important seeing as how the portal is also going to be used as a collaborative platform. Having a the licenses readily available will remove the need to either search it up, or have to contact the creator(s) of a work before using it. A Critical mass of contributors in order to get the ball rolling is also needed to entice further participation amongst the contributors, both for sharing their own work and starting new collaborations. It was also debated on the possibility of migrating in other OER portals, that

would also require additional work, given the need for metadata tagging and correct indexing of all the new works.

One of the ideas that was discussed was the creation of an algorithm that would give automatic suggestions for metadata based on previous inputs found on similar resources. In addition, there are plans to have a separate staff at hand to deal with the intricacies of the administrative parts, such as checking for licenses, quality check, adding or removing metadata tags and so forth. The idea is that contributors can freely upload material and add their own set of tags and license, but it will go through a moderating process before it is accessible. We also discussed the possibility of having the works immediately accessible, but with a tag that clearly states that the work is not yet moderated, so use at one`s own discretion.
Defining the quality of said works can be an arduous task and in some cases be affected by personal opinions, which is why collaboration on such tasks is warranted, in order to get by or mitigate personal biases.

The following picture, translated from German to English provides an overview of how OERs and the collaborative process could function on the portal. It includes the facets that was deemed most notable to include in the creation and curation of OERs on the portal.

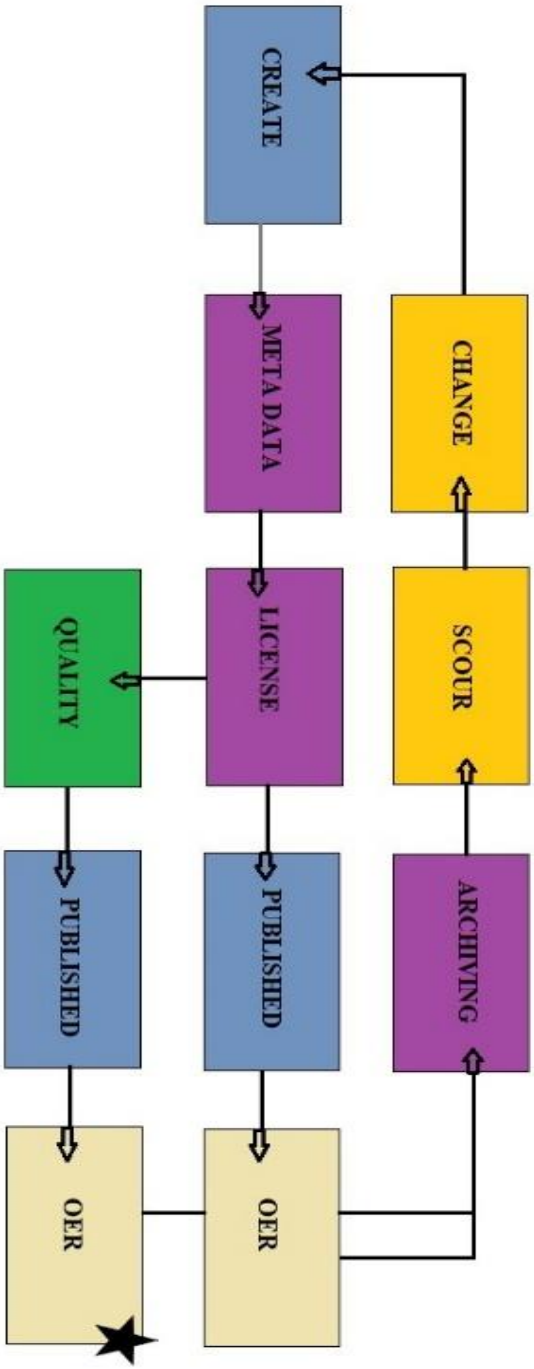


Illustration 6, OER Lifecycle in the Lower Saxony OER portal. Translated from German. Courtesy of HIS-HE.

In order to provide assistance and to clarify any outstanding issues, it was suggested to provide participants with training events along-side handouts that will help to clarify any case of uncertainty. It was made a point that each university should have OER policies in place, not only to protect to content created, but also to help set the guidelines for the creation and curation of said works, while also help deal with licensing issues.
Each resource in the portal will also feature a DOI number, as URLS can change or be removed, this is to not only to have the items easy to find, but also to provide security to any who cites a resource from the portal. A DOI number means that it will be possible to search for and find even outside of the portal, something which is a very good idea considering that some of these items will be featured in published thesis's, papers and other academic publications. The Technical Information Library (TIB), one of the partners in this project, will be in charge of creating DOI`s for the items featured in the portal.

A potential age gap in participants were another issue that came up over the course of the interview, especially the sentiment of "my work is my work" that can be attributed to the older generations of German teachers. A more hesitant approach to the portal from such individuals might be the case here, which is why not only good visibility, but quality insurance and incentives to actively use it, may play a crucial role. By offering something in return for participation, there might be enough of an incentive to participate and contribute on a larger scale, different models and ideas where discussed, but in the end, it will be up to the individual Universities to work out whether or not to have such bonuses. A few incentives that were mentioned were such as getting time off based on contribution or bonuses such as extra vacation days based on regular and quality contributions. In order to help alleviate this issue, a contact database will be present, one that will make it easier for educators at different universities to come into contact with each other. This might help the older or more reserved of the staff to come around and be more engaged with the portal. Such cooperation can also provide a more quality-ensured peer-to-peer review of new content created. Some form of accreditation was also mentioned, somewhat familiar to the credentials they might get from other publications, this is to incentivize not only the sharing of knowledge, but the creation or co-creation as well. Cross-discipline research and publications would be a welcome addition to the number and quality of OERs the portal is seeking to amass.
It was at a later stage in the interview brought up that having a few key personnel at each

university that would be featured as a form of quality controllers. This personnel would be responsible for doing peer reviews of works created at their respective faculty or university. They would also be tasked with present works with a certain badge, showing that it has been examined and quality ensured by one or more peer, ensuring the quality of the work.
As previously mentioned, some of the search functions on the portal can also be filtered to show only items with such quality stamps, or they might be automatically presented first on the search list, depending on individual preferences.
The important idea here is that there will be several different ways of ensuring the quality of items featured in the portal.

In order to facilitate for easier reuse and remix, a didactic support feature was discussed as a possibility. This didactic support would feature information about the author(s), the(ir) field of expertise and possible areas of use that the work can fit into. Having such information available will make it easier to quickly figure out areas of use and what the author(s) intended use and future use might be. Using this feature will also possible help to further incentivize the co-creation of works or possibly cross-discipline works, which is a strong selling point for the portal and for its future use as an OER platform and possible expansion. The didactical feature of the portal is showcasing a possible way on how digital didactics can be presented in a digital educational environment. Another tool that may be introduced is a partly automatic quality insurance system that will quickly go over submissions and check if it is missing key points, such as metatags, a license and possibly check for plagiarism. However, the plagiarism might be a difficult aspect, seeing how the idea is for works to be remixed and reused within the portal, so what might look like plagiarism is possibly bound to happen.

By looking at the Lower Saxony OER Portal as a whole, it is evidently a large-scale project with a thoroughly thought through progress plan. What is also exciting for the Open Movement and longevity of OERs is the possibility of this project growing in size, depending the size and popularity, which could possibly mean that other similar project can be created. It is also feasible that the Lower Saxony OER portal becomes a project that is set to cover HE in all of Germany, not just one region. If such an event should happen, it would be a great testament to the importance of NML and OER. As for now, the project is still in its infancy and at a planning stage, much might be subject to change and may be altered as the project develops and comes

into realization. What remains to be seen is how much participation this project will see on its completion, as one of the biggest pitfalls that it faces, is lack of use, which in turn will reduce its sustainability and the projected funding to keep developing it.

In summary, it is proving quite obvious that OERs are making an impact on HE, both in ways of policy making and in their use. As seen with the three examples, there are several different way of implementing OERs in a course or a study, which can have positive effects for everyone involved. Examples on how OERs can be used to effectively combat a negative financial situation for students has been shown, as well as how OERs can positively affect educational finances as well. OERs impact on HE can at this time be hard to measure, but it is of little doubt that this will change as time goes by. Something that will be extrapolated on in the next chapter.

Possibilities of Higher Education in a digitally transformed environment.

> "Understanding the changes that have taken place in higher education worldwide in the past half century is a difficult task because of the scope and complexity of those trends. One can, without risk of exaggeration, speak of an academic "revolution" -a series of transformations that have affected most aspects of postsecondary education world wide." (Altbach et al. 2010. 1)

In this part of the thesis, there will be an exploration of different views surrounding the future of HE in the light of digital technologies. By using both the research done in the AHEAD project, and by utilizing the knowledge presented by Philip G. Altbach in his book "Trends in global higher education : tracking an academic revolution", a discussion on what lays ahead for HE will be presented.
This is a speculative subject, however, there is ample evidence that will support this discussion and what potential that might reside in the future for HE.

Participatory culture and networking has been recurring themes so far in this thesis, similarly, these topics where also widely discussed at both Open Education Resource conferences I took part in, OER18 and OER19, held respectively in Bristol, England and Galway, Ireland.
During the conferences, I been both participant and guest.
In OER18, I was a part of a presentation on networked narratives and the use of networked education to connect student across borders. In OER19 I was there as a guest, listening to

lectures, talks and panels for the duration of the conference.
One of the main themes that was recurring in both conferences was the lack of communication between those that develop educational technologies, those that use the technology and those that commissioned the technology. It sounds absurd, that there is no real communication between the involved partied, but that is indeed the case, judging by experiences several participant at both OER conferences. A resounding need for better communication and participations across all levels of the development of educational tools.
What was generally brought up as an issue in the discussions and talks, was that some universities, in their quest to digitize, would commission the production of educational technologies from a tech-firm. This would be done without going to intended users of the technology. The universities would present a list of needs and a few criteria's that needed to be met, before handing the reigns over to the developers. In the end, the developers did their own thing and complete a product without the guidance, supervision or participation of those that would actually use the technology. The result usually proved to be less than optimal in its use.

Other scenarios that sounded all too familiar was also mentioned several times during both OER18 and 19, scenarios where universities purchase premade technologies. What was a concern in these situations, was that the producers of the technology developed a technology based on their own ideas and their need to sell a product, not really engaging with the potential users. In some cases, the technology was made to cater to a wide as possible audience, creating a technology that would cover multiple fields of higher education. Such technologies also hampered the possibility for individual universities, faculties or educators to make personal modifications that would better suit their needs and that of their students.
The easiest solution that was unanimously pointed out at both OER18 and 19, was the need for closer cooperation and participation between the developers and the actual users of the technology being developed.

A good example of an educational technology made to cover several areas of education is the Norwegian educational tool called, Its Learning.
It was developed in 1998 by a small team of students at Bergen University College and launched as a independent tool for the first time in 1999. It has later been adopted by the educational system in Norway and also see use in certain schools around the world. It's Learning received

mixed reception for its lack of development to suit the needs of different levels of education. HE, more specifically the branch relating to engineering studies has been very vocal on the need to implement tools that will fit the need of that field.

It`s Learning faced some serious backlash for its bug ridden and almost unusable features when it comes to delivering assignments or exams, where in some cases the entire bulk of text in an assignment were deleted at the time of delivery.

I have not used It`s Learning myself, I do however have three younger siblings that can all attest to the myriad of issues plaguing It`s learning at the time it was adopted into the educational system. My youngest brother described how he deliberately turned in blank papers and told his teachers that the paper was deleted or wiped in the process. As this was a common event at the time, no one questioned him on the subject. He could then spend a some extra time in preparing or creating the paper in question.

A survey done in 2003 revealed that most users of It`s Learning, at that time, were happy and content with the portal and felt that its functionality was suited to their needs. It's Learning has been criticized for their lack of adaptability, especially towards HE, and a professor at NTNU even went as far as calling it a catastrophe as the company behind It's Learning in the five years of existence had still not added functionalities that NTNU needed and repeatedly requested. The professor claimed that the team working on It`s Learning rather spent their time developing tools and functions for Ungdoms and Videregående schools (age 12-19), all but neglecting the needs of NTNU and HE.

In recent times, It's Learning has become synonymous with "out of date" rather than a modern educational tool, though it is still in use by most Ungdoms and Videregående schools in Norway today. Even as far back as 2014 you can find news articles (subscription based) in the newspaper Bergens Tidende calling out It's Learning for the outdated source code and their attempts to please policy makers and not the end users. A document from Ingvald Straume, provides some evidence and are presented alongside his own experiences and research on It's learning, detailing why It's Learning is failing to stay up to date. In the document, Straume details different aspects of It's Learnings business model and how the company focus more on trying to sell a product instead of trying to correct the faults in the programming. It`s Learning is available and in use in some cases of HE as well, but it is apparently catering more towards the earlier stages of

education, leading HE to be left behind when it comes to implementation new functions and the likes.

It's Learning serves as an example of an educational tool and program that was originally built to help schools transition into a digital system and have students interact on a platform intended for educational purposes, but ended up as more of a mockery of its initial idea. What now remains of It's Learning is a tool that is out of date, that does not develop the functionality that they are asked for and that is notoriously known for the myriad of small and major bugs that permeate the software.

The case of It`s Learning is used to contextualize the issue of communication and participatory culture. It can be argued that if the team behind It`s Learning had spent more time listening to the needs of HE and otherwise improved functionality, that it would see increased use and a more have a more positive reputation. A lack of communication and participation from the end users can be said to be one of the reasons why It`s Learning is in the state that it is in today.

Going back to another central discussion that was had with the participants at OER18 and OER19, was the debate on economy and new technologies.

Who is it that bears the cost of purchasing and maintaining eventual technologies that are taken into use? This was a spilt topic, as some argued that for public education, the local government or that the ministry of education should cover the costs. It was also argued that each university should front the money needed so that they could get specially crafted tools that met their demands and needs. What most agreed on, was that the trend of purchasing shelf-ware, that is, a product made to meet a generic need, not a specific one, was all in all, a bad decision. A negative effect of universities having full autonomy over such purchases could be that the market for educational technologies could become flooded with technologies that are only of use in certain places and heavy modification will be needed to suit other needs. Law school students and medical students may have vastly different needs for their educational tools. One would require access to law databases while the other would be required to implement medical journals and a form of calculus, in order to correctly measure out medicinal doses.

The tools for both these educations would need strict encryption and security, as it would be needed to access both court documents and patient files, while for the medical student, a function to upload and download pictures, such as X-rays would also be needed.

As the digital transformation of higher education continues forward it can be of interest to look at some possible eventualities that are related to how HE might look in a not so distant future. This will also serve as a way of introducing different ideas on the implementation of OERs in HE and how to deal with DP and NML and look at the impact they can have in shaping the educational landscape within HE.

This leads us to the Ahead Project, this project will serve as an in-depth look at what a possible future for HE in Germany might look like and how OERs might be included in a future system.

Ahead

"The AHEAD study was commissioned to look into the future on what the higher education landscape could look like in 2030. In doing so, it takes account of technological developments in society without seeing them as the sole driving force for future higher education. Rather, the study assumes that higher education will change by 2030 as a result of developments in the following areas:

· Knowledge and competence requirements from industry and social changes in an increasingly digitalised world.

· New developments in didactics, which are expected based on current discussions in the field of didactics and learning theory.

· Digital technologies and new uses of these technologies that make new forms and new environments of learning likely." (AHEAD. 2019.)

AHEAD is a joint effort between several institutions for the purpose of creating a detailed rapport to the German government on what higher education might look like anno 2030.
The project aims to look at the digital transformation of higher education as well as new trends in educational models. It was brought up during the interview that the project would be student centered, focusing on the learner and not the institutions, in order to better gage how education might be approached by students in 2030.
What is key in the AHEAD project is the premise that in a possible future HE setting, the learner is in focus, learners, in this case means both students and individuals that are either re-schooling or retraining themselves. Learners are affected by the demands of the labor market as well as societal influence and changes. Therefor it is very plausible that a change will occur in HE that will alter the focus presenting and instilling knowledge to be meeting the needs of the labor

market. The goal of such a shift would be to increase employment on a national level and have more students enter the labor force within the parameters and field of their education.
The downside to such a focus will be that the more niche parts of education might see a decline, and perhaps may struggle to have a sustainable learner base. That students might fare worse in the labor market is of course speculative, the work force is in constant flux, and as new technologies arise, so does the need for new specializations. In the predicted future, one might see a more diverse work force where each has a more specialized role to play, and one where a degree in Humanities may be just as sought after as those with a degree in ICT or engineering.
AHEAD presents four different learning pathways in higher education, which might serve as a future and potentially viable option for learners to utilize. These pathways depict different alternatives and possibilities compared to each other and to the formal structure of HE we know today. These four learning pathways, named after toys to make them easier to recall are:

- Tamagotchi
- Jenga
- Lego
- Transformer

This illustration is taken from the AHEAD rapport and it depicts in a simplified manner the educational path that the four pathways represents, as each of them follow a certain path and possibility for the learners that utilize them.

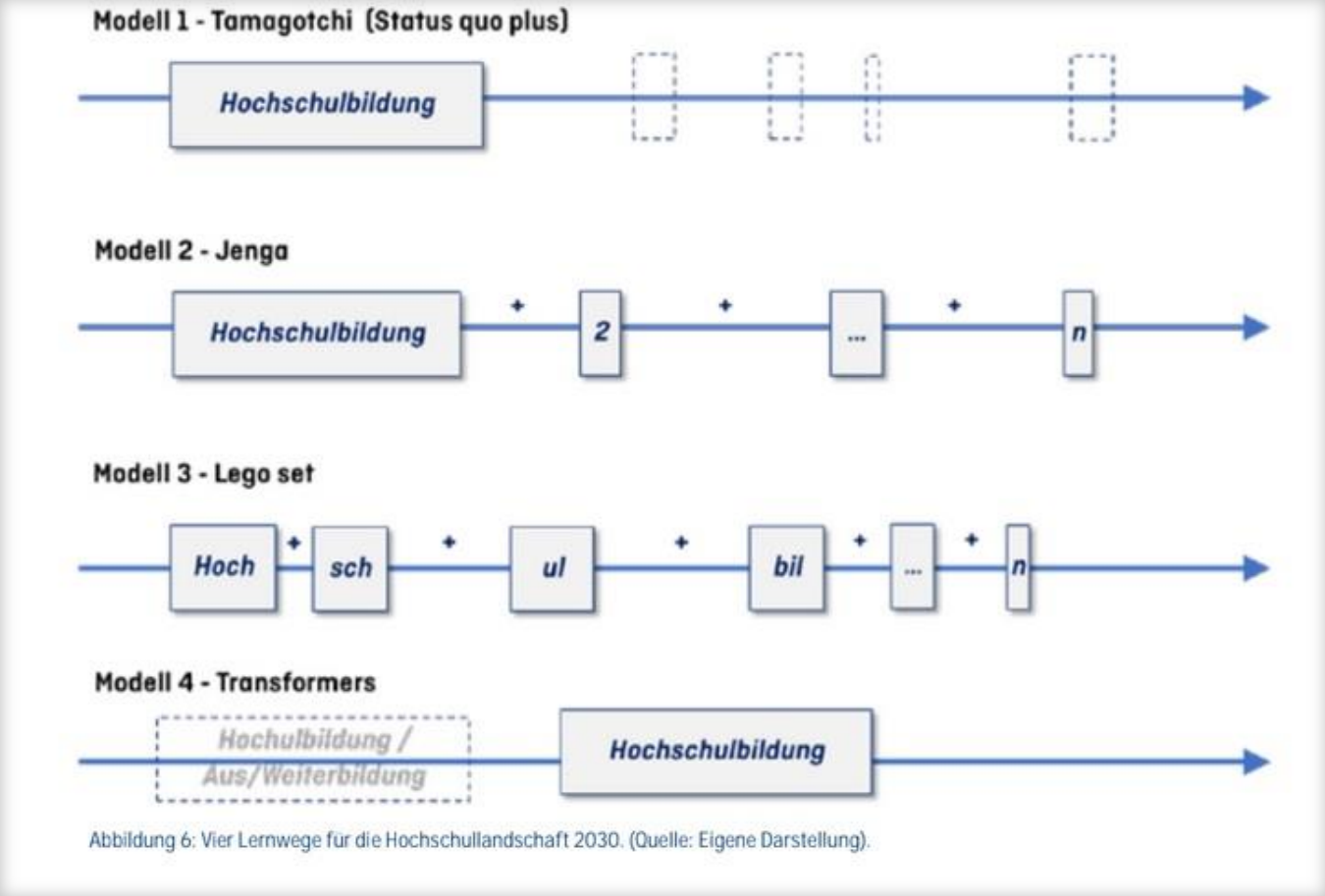


Illustration 7 – AHEAD project representation of the different learning pathways. AHEAD 2019.

Hochschulbildung – Higher Education.

Aus weiterbildung – Further Education, or re-schooling.

The Tamagotchi pathway:

This path is the one that most closely resembles the traditional structure of HE that we have today, its goal is to guide students who are (mostly) fresh out of school for towards an employment driven education. That is to say that the university functions as its own ecosystem that holds the sole responsibility of educating students and steering out a path towards future employment for their students. What sets this path apart from the traditional HE, is its focus on future employment, not the current needs of the labor market but the possible future developments in the labor market as well. Tamagotchi serves as a model that prepares the learners to shape their own environment, being more robust in the face of labor market changes, promoting learner autonomy and learner centered educational environments.

Fulfilling an education is for the most part, about being able to find employment within the field

one is educated in. It is therefore easy to see why the Tamagotchi model is a part of the AHEAD projects description of possible educational pathways. It serves as a slight evolution, or modification to the traditional systems in use today, where the focus is directed more towards being equipped for employment than to meet specific needs within the labor market.

The Jenga pathway:

Much like its namesake, the Jenga pathway consists of building your education and competences piece by piece. It functions much like the Tamagotchi model, in that it is based on attending a university and having a certain structure and curriculum to follow. Where Jenga separates from the Tamagotchi model, is that the Jenga model aims to be compromised of blocks and modules that can be taken as the student progresses in their studies. The Jenga model is based on the fact that not everyone might have the time or will needed to complete a 3 to 5 year study to complete their education. The Jenga model will in this case serve as a more expedited and straightforward way of getting educated, leaving the learner free to complete the education in a shorter time than the Tamagotchi model, or as HE works today. In the AHEAD rapport, the Jenga model is described as a "Highly application-oriented higher education" (AHEAD 2019), this means that the learners that follow the Jenga path will shorten the time spent at HE and will be ready to join the labor force at quicker pace than previously possible. Jenga offers learners to base their education on specific courses of their choice, excluding unwanted courses, leaving the learners to complete a basic education within a specific field.

What this means is that those that follow the Jenga pathway will need to, further down the line, continue to expand on their knowledge, as they have only completed the core of their education. This is describes as either "upskilling (competence improvement) or sideways skilling (acquisition of competence for a change in the technical direction)". (AHEAD 2019, translated from German)

If one chooses to follow the Jenga pathway, it is necessary for learners to be aware that they may have to expand on their competences by either going back to complete more modules, or by doing courses in their personal time, in order to further expand on their competences. What makes this a viable path for some to follow is that firstly, it provides a shorter time spent until one can get employment, which for many is the goal of education, and secondly, the knowledge and competences gained from other educational paths may not be what an employer need. As

such, having only the core competences, it will be up to the employer to provide any additional or specialized competence they might need.
This may be seen as a beneficial understanding for both learners and employers, as learners can at a quicker pace complete their education and as employers may provide the specialization needed to them.
It was further explained that the Jenga model seeks to incorporate a cooperation between HE and the labor market, so that a complete model or module can be produced for the students who follow this path. This is to say that the first phase of the study is to complete it and to get or get back into employment, were the second phase is when it is required to complete Upskilling or Sideways Skilling. It is in the second phase that the cooperation comes into play.
"The Jenga model consistently responds to the needs of students and the labor market for a study design that can better prepare and respond to new needs from the world of work without giving up the basic structure of higher education." (AHEAD 2019, translated from German)

The Lego pathway:

This path is the one that deviates the most from what is traditionally expected from learners getting an education. Lego, as we all know, are building blocks that are uniformly shaped in order to fit onto each other, possibly building complex constructions.
The Lego pathway aims to mimics this. A learner will be highly self-reliant in this model, carving out their own educational path by mixing blocks of education from a wide array of sources, be they different university courses, online or other educational providers. For a future learner, this means that they will have to be aware of what form of education they want and to be structured enough to fill the model with relevant building blocks and be able to have a clear goal in mind. This also means that the classic enrollment into a university would become obsolete, as a learner might build their education from blocks offered from several different universities. It also means that an officially sanctioned accreditation system would need to be in place in order to validate all the different blocks a learner might choose, in order to have a valid education in the end. Providing such a system ties heavily into what was mention in the section on Digital Didactics seen previously in this thesis, the need for an overarching structure that also fits the digital aspects of education and the issues brought up surrounding NML and participatory culture.

A learner that follows this model could perhaps be able to tailor-fit their education and in the process, become highly specialized within their chosen field. By combining all the best blocks that fit within ones end goal, it is possible to gain a vast amount of knowledge within that specific field. In addition, it may prove to a future employer that the learner has both the will and the ability to forge their own path, make solid judgement, and prove that they are more than capable of staying focused to achieve their goal.

The Lego pathway is aimed at students or learners that have a strong self-motivation and want to tailor their education towards their personal needs and goal, more than anything.
In order for this model to be viable, the AHEAD project advises that professional representatives at universities or other educational instances are made available for students or learners. The role of the representatives would be to help assemble the blocks needed to create a valid education. These professionals would be required to assist students or learners whether or not they are enrolled in a university program.
One aspect that is lost to those that follow the Lego model is one that has already been discussed earlier on in the thesis, that of student communities and learning environments.
If following the Lego model, it is not necessary to enroll in a university for a formal education, this means one may miss out on all the community building that happens with the other students at a campus.
This is not to say that there are no possibilities for creating communities for those that follow the Lego model. The professional advisors might be tasked with administrating colloquial study groups for students who share a field of interest or forums may be created for community building and participation.

AHEAD also provides an example on how the Lego model can help support the labor market and future employers.

> "Today DNB's more than 9,000 employees constantly have free access to a huge amount of digital educational content, and can in large part decide for themselves what content they want to learn and how much time they invest in training. Instead of investing a great deal of money in training a small number of employees, DNB uses digital technologies to reach all employees with a wide range of training opportunities." (AHEAD, 2019, translated from German.)

The Transformer pathway:

This pathway is closely related to a term that has been brought up several times already, Re-schooling. The Transformer model cater to those that have already established themselves by having either completed a study or by being a part of the labor force already. These are the group of learners that needs the transformative powers of re-schooling in order to gain new knowledge or to meet the ever-changing demands of the labor market.
The Lego model also fits here, with its modular approach and possibility to create paths based on learners own employer's needs.
By all means, this model also fits those that simply want a change in career or to do something new, adding to their already existing knowledge that is accumulated over the years.
Re-schooling is nothing new, but as it stands today, one is required to either re-enroll in a university or do multiple courses online, some of which might not be valid by customary accreditation systems. If a full university degree is wanted, it can be a 2-5 year process before it is complete. This may for some be very long time to spend in order to change career paths, especially considering that the demographic that the Transformer pathway attempts to target may already have established themselves, having had a family and a very different economic and social situation than compared to a young student that is just beginning their higher education.
If we look through the lens of the AHEAD project and base assumptions on how the educational system will look in the year 2030, this gives potential candidates a much better outlook on how to re-school themselves. Without the need to enroll in a university, and with having professional advisors that can help set up an expedited path of education, allowing for the completion of re-schooling at a quicker pace, and possibly be able to rejoin the workforce with renewed vigor.
Much like the Lego path, the Transformer path relies on the learners ability to self-regulate and work in a highly individual environment.

> "A key driver of the Transformer model is the changes in the labor market, which make it necessary to either expand one's own competence and knowledge profile or to seek new fields of activity. Ultimately, a basic, job-oriented study is offered here, which corresponds to the needs of an older target group due to its flexible mediation and its special didactics." (AHEAD, 2019, translated from German.)

Something needs to change

Change is inevitable, that much is fact, but what the changes will bring is a different question all together. The AHEAD project maps potential possibilities of change within HE and explains in detail why the different pathways have merit in a future educational setting.

What must not be forgotten when dealing with decentralized education and educational structure, as AHEAD presents in both its Lego and Transformer pathway, is that for a long time, having a university degree is synonymous with quality and quality insurance. Having a university degree means that learners have completed an education with a certain structure and established frames. This is why, even in an educational setting in the future, a university degree may still carry weight and bear the mark of quality. The issue with paths such as the Lego model would be to convey that the quality and merit of completing a degree, in such a way that becomes comparable to or equal to that of a traditional degree.

When it comes to OERs and the pathways presented by the AHEAD project it is clear that both the Lego and Transformer pathway are clearly centered on the possibility of finding and utilizing such resources. For Tamagotchi and Lego this may also be true, thought those that follow these paths will attend a university and possibly go to a campus, there might be a more structured approach towards OERs, as set forth by DP and DD.

OERs will still play a viable role in the potential future AHEAD describes, especially considering the latter two models, where building individual paths, working individually with the material and tailoring the learner experience to fully meet individual goals are paramount. Digital pedagogy will be important in this potential future, as digital trends, digital labor and digital technologies become increasingly pervasive and are becoming increasingly incorporated in every day scenarios.

Take the professional representatives that are mentioned in the Lego pathway as an example, these individuals should be up to date on most facets in the educational environment, digital or not. The representatives are required to have the skills to assess and judge online materials that the learners can use as well as be able to adapt and incorporate new material as they produced and made available. It is even feasible that becoming a professional representative might be an education in its own, where only the most highly adaptable and self-reliant of individuals can

manage to excel.
As the future of HE is explored, all the new possibilities roles and policies that might come with it, must be taken into account.
It is worth to take note that several of the pathways described and presented here takes advantage of the fact that there are several educational providers available. Some in the form of OERs, that must be validated in order to fit within the accreditation system needed to provide learners with the correct credits, and some in form of private educational providers. These can be MOOC providers, educational networks, private institutions that offer HE, or even course material that has been released to the public, such as the previously mentioned MIT OCW.

Didactical pathways

Throughout the AHEAD rapport, there are mentions of the didactical impacts of the different pathways. These didactics will be assumptions based on how the models functions and on how the transition from didactics to digital didactics may proceed. These are the same principles that have already mentioned in the section on didactics in the chapter on NML.
In the AHEAD rapport, assumptions are made that the didactic support of students will be improved with digitization, and in congruence with future pedagogics and learning methods, this form of support will help prevent student drop off and success or completion rates will be increased. It is also stated in the AHEAD rapports section on didactics, that new teaching technologies and methods will be used in collaboration with the classic seminar model we are familiar with, an emphasis on digitization of didactics.
What is considered a challenge in the rapport, is how to have governments and institutions of HE embedding these changes in their policy making, and how make them common praxis across all levels of HE.
Tamagotchi and Jenga are the pathways that utilize didactics that resemble those in use today, a structured representation on the learner experience and the presentation of knowledge. Where the Jenga path starts to deviate from the Tamagotchi path is as mentioned, in the second phase, where learners actively seeks out paths that meet their educational needs.
It is in this second phase that we see the deviations and where the HE institutions need to offer a more fragmented and flexible path of knowledge to their students. Seeing as how these pathway

are set to exist in 2030, where educational paths such as the Lego and Transformer model also exists, it is imperative that the private providers – or Non-universities, as they are referred in the AHEAD rapport – also offer didactical support that either rival or are even advantageous over the established HE didactics.

The reason for this fragmentation and need for a flexible system is arguably because of the life situation that learners might find themselves in once they reach this level of education. Family situation, part time work and financial are but some examples that may affect the need for a more flexible system.

> "Teaching and learning content needs to be prepared for the virtual space, as well as systems made available, which enable learning phases with high online parts. Webinars, interactive videos and virtual reality scenarios will be just as commonplace as the opportunity to virtually book, consume and complete these offers. Didactically, new scenarios will open up with this model and the meaning of virtual tutoring or peer support will be given a whole new perspective." (AHEAD, 2019.)

For the Lego and Transformer pathways, the didactics may need to be catered towards self-regulated learners, the individuals that structure their own educational path for their specific needs or those who are going back in order re-educate themselves. The didactical focus will therefore be centered on the "self", that is to say, the individual learner who follows a path of autonomy. Having a good and structured didactical frame will not help if a learner is unable to cope with self-regulation or self-structuring involved with the level of autonomy that the Lego and Transformer pathways require. Assumptions were made by the AHEAD project team on those individuals that follow the Lego or Transformer pathway, it was assumed that those that seek out education along one of these paths are already highly motivated and aware of autonomous nature of these two paths. With the aid of established didactics and professional representatives, completing a path such as Lego or Transformer should not prove too difficult. Considering that those that are on the Transformer pathway already have completed some form of higher education and are certainly familiar with the academic environment, completing a transformative education should prove somewhat familiar to them. These learners will already have most of the tools needed, such as the different competences related to NML, and being familiar with certain didactics, what might be new for those that undergo re-schooling may be

the transition from what was familiar to them when they first studied, compared to what they encounter at the time of coming back to education.
Having didactical frames in place will help ease this transition, as well as having the professional representatives to serve as aides in regards to any further issues that might arise.

The AHEAD project serves as a great example of how it is possible to methodically and in a structured way, take a look at the possibilities of HE in a not to far off future, where digital technologies and education mesh into a single digitally transformed entity.
It goes a long way to describe that it may not be needed to radically change or alter the educational reforms we know today, but rather have them engage with and make use of the new technologies that are available.
Additionally, the AHEAD project details that cooperation and collaboration between not only institutions of HE can be a fruitful endeavor but also that with a closer cooperation with the labor market and their needs, a more cut clear path for learners can be achieved. Learners can also find themselves in a position to more flexibly choose their own path of specialization and education. The use of OERs will also feature quite markedly in this future, as exemplified in the Lego and Transformer pathway, where one builds an education from a wide array of blocks, presented by different providers. Educational material and even whole courses might be available for consumption by learners, which, in the example of AHEAD, will count towards student credits as well. A more in depth look at what and how this accreditation system for OERs looks like is currently absent, but the AHEAD project is not yet finished, and more information on the subject may be added later on. It would be fascinating to see how the project would propose tackling this issue. There are some mentions of items such as Open Badges, which has already mention in the case of the Moving MOOC, which is a valid way of making sure that the course or resource you use are credited.
It is important to remember that in the AHEAD project, the learner is in focus, so the goals are related to that which learners may want to achieve. Had the project been focusing on institutions of HE it might have had a different approach to the different pathways and how they would engage with DP, NML and DD.

Governments implementing these four different pathways could potentially see better completion rates and lower drop off rates in HE, a more highly educated populace, a strong labor

force and a higher degree of cooperation between all instances of HE, as well as the labor market. Long-term benefits could potentially lead to a stronger economy and an increased standard of living as unemployment drop.

A negative effect that may influence paths such as Lego and Transformer would be that if there is no need to enroll in a university, those universities may also lose parts of their income and funding. Tuition fees and funding based on the number of active students will disappear, and as such, new funding policies would be have to be considered. Teachers and representatives needs salaries, research needs to be done, educational materials needs to be in place equipment needs to be maintained. A possible solution would be to have a stronger cooperation with the labor market, working out deals where funding can be provided in exchange for specified courses of parts of a curriculum. Such a deal would possibly mean that companies could make changes to the curriculum depending on their needs and the needs of their employees, if re-schooling is a driving factor, while openly funding institutions of HE that agrees to alter their curricula. Transparency in regards to who is funding and what is being funded would be of importance if such cooperation's should become a reality.

This is speculative of course yet wholly plausible and not without precedence considering how funding and donations work in today's educational environment.

Where might Higher Education be headed?

Throughout this thesis examples of cost reducing measures and innovations, different cases and scenarios depicting a potential future look for education and the AHEAD rapport, detailing a possible educational landscape in Germany anno 2030 and beyond have been explored

What steps to take in order to achieve some of that which the examples are highlighting are still uncertain.

Having achievable goals would seem the best path, having a few milestones or beacons that can serve as markers for what we want to achieve for HE. There can be a variety of goals, ranging from increased governmental funding and initiative on strengthening the educational landscape to increased cooperation between institutions of HE and the labor market. Other such goals can be free education or reduced tuitions costs, where that applies, which, as seen with the example

of the UNAM strike, can deeply affect educational policymaking. Perhaps a goal would be a fully functioning accreditation system for OERs and other sources of educational knowledge, letting both educators and learners use them to full effect without worrying about their validity or licensing issues. It may be, as suggested in the AHEAD project, a borderless system where learners do not attend a single university but rather build their own education by collecting blocks of knowledge from several different sources, combining them into a valid education.

It seems that in today's educational landscape, things are fragmented, this is especially true for the political landscape which oversees education. There do exist a great deal of international cooperation, Fulbright exchange programs for faculty members, Erasmus programs for students and distance learner programs at a multitude of international instances of HE. Yet there is still turbulence in local governance over educational policies. For some countries, there are ongoing debates over tuition fees and financial support for students, where in other countries the debates are over funding to the universities and how to improve the quality of the educational environment. Such discrepancies in how the political landscape may be structured can also affect how the educational landscape becomes structured.

OERs, as exemplified and contextualized, can prove to be a very good resource to use in order to have both learners and educators engage with NML and participatory culture. OERs can also be utilized as a means to reduce costs for students and provide universities with free educational resources that can be implemented at their behest. It can be argued that in today's educational landscape, it is the lack of implementation on a governmental and political scale that is hampering the use of OERs in HE. Meaning that a unified approach to OERs, set down by the government, should be implemented across the board in HE. A systematic approach with clear-cut policies and structure is needed not only for the sustainability of OERs but also to increase the use and production of such resources in the future to come.

> "Many efforts have been made to promote the OER movement and the use of OER, with funding and support by numerous donors and intergovernmental organizations, governments, and education institutions. There have been some remarkable achievements over the past 20 years as awareness has grown and initiatives have developed. While such developments are positive, however, this research suggests that OER appears to remain for the most part on the margins in education systems, and its impact is influenced by

> political and governmental changes, as well as lack of systematic and integrated funding to ensure sustainability of the OER initiatives that are implemented." (Butcher and Hoosen. 2019. 14)

Butcher and Hoosen makes valid points in the research they present in the UNESCO published book, "Understanding the Impact of OER: Achievements and Challenges" (2019). It is certainly the case that a governmental funding framework should be in place for OERs to be viable in any given country, as well as potentially receiving grants from donor organizations. For countries with a strong economy, such grants should not be needed, but in the cases of developing countries and regions with weaker economy, granting such funding to developing OERs might prove invaluable.

Funding is not the only requirement of course, there is also the case of production vs remixing. Producing new materials is more costly than simply remixing already existing material, though if new material are created, it can be made directly in the language of your choice, while if remixing, a translation might be needed, or copyright laws may hamper remixability.

> "For example, the Canadian respondent reported that OER efforts tend to focus on creating new materials rather than adopting or adapting existing OER. Similarly, in the UK, while there is some evidence of OER reuse at the individual level, nearly all large-scale efforts are aimed at producing new materials. The Mexican respondent noted that there is a lack of training in legal and educational issues regarding appropriate reuse, which serves to discourage such efforts". (Butcher and Hoosen. 2019. 11).

Certainly, there are issues at hand that are not easily countered, though efforts are made in that regard, such as Creative Commons and their licensing models for reuse, redistribution and remixing. As more materials are created using such licenses, it may become easier to train individuals in using these licenses to help them in their efforts to work with OERs. Such as the case of Mexico mentioned in the UNESCO publication. If they had had a focus on training a few staff members in HE on how the CC license works, it would be far easier to deal with the legal issues surrounding their use. Further, this would help with the creation of new materials on a local scale as well, as the legal framework would in part be covered by the CC licenses, leaving the creators with a lesser workload towards the legal and license side of their work.

The road ahead is in some ways clouded and in others quite clear. What is clear is that digital pedagogy, new media literacies and digital didactics have come to stay, and with them, new policies and structure needs to be worked out. It is impossible to avoid these issues in a modern educational setting as the age of digital transformation is upon us.
Clouded is the future of OERs, that they have come to stay is of little debate, but how they will used, presented and be implemented in the structure and landscape of HE is another matter entirely.

Personal thoughts and experiences from Higher Education

In this section I will voice my personal thoughts on the subjects at hand based on my experience and the research I`ve read. Therefore, it stands to reason this section will feature a less academic language, and rather utilize a more personal approach. I will attempt to explain and contextualize my personal experiences with DP, NML, DD and OERs over the course of time spent with HE. The discussion will driven forward with OERs in mind while also drawing parallels to the examples already presented in the thesis.
As this part will be mostly focusing on my thoughts and ideas on the future of OERs and the use and implementation of digital pedagogy and didactics it is fully possible that the views and ideas can seem unreasonable or unsustainable. These views are a representation of how I feel HE should engage with DP, NML, DD and OERs, and how these subjects possibly can be addressed in the future of HE.

It is my opinion that policies surrounding DP, NML and DD, should be institutionalized and that this must be a focus point as HE and educational policies attempt to adapt to the digital transformation of HE. Having such policies in place, will, in my opinion lead to a more structured and organized approach to the issues at hand. Students and learners will also benefit greatly from having specific frames in place for them to work within. With the introduction of digital media in the classrooms there most certainly must contingencies in place, concerning any possible dangerous and disruptive behavior, this might sound farfetched, but if a student should be the victim of identity theft as a result participating in a course, educators should be aware of how to deal with such eventualities. Data theft, copyright infringement, personal data being misused, tracking, anonymity and accountability are all areas in which certain precautions must

be made. It is impossible to cover all bases, but efforts must be made in order to keep the educational environment as risk free as possible. Digital didactics must also be a focus, to such extent that they may be implemented in or around the already established frames of didactics already present at the educational institution. Alternatively, as main an objective in new educational reforms. Digital resources and off-campus learning is becoming increasingly normalized and used in HE, so didactical frames that encompass this is paramount as HE continues to evolve. The role pervasive learning plays for students must not be neglected and should be taken into accounts at any time when new educational tools or technologies are implemented or commissioned for use.

Structure is important, and in my experience, this is what is lacking when working with digital pedagogy and didactics. It should be something that at the very least is predefined at a institutional level, possibly a national one, with different pedagogical and didactical frames and goals presented for each stage of education, up to and including HE.

Ideally, an international norm for digital pedagogy and didactics could be worked out, in order to ensure a global cohesion in the way these are taught and worked with. This will ensure a much greater effect on students who are partaking in DLP or exchange programs, in these cases, the structure they are used to in their country of origin will very much be the same or quite similar in the country they might travel to. Both the EU and UNESCO have previously been mentioned as contributors to the academic and educational landscape in Europe and beyond. It would be feasible that in cooperation with other major actors such as the Hewlett Foundation and national governments, that these could work out a continental or possibly even a global set of regulations that would serve as structured guidelines for proper and correct use of digital pedagogy and didactics. It is my belief that the more organized structure there is, the easier it will become to build upon this foundation, once all the basics are in place. If there was a continental or global structure for the basic application of DP, NML and DD, then it would become easier to alter that structure to fit the specific cultural or economic situation of certain countries, while still retaining the essence of the foundation. Having such common structure would also make it that much easier for developing countries to join in, as they would not need to develop their own structure from scratch, but rather implement an already tested and structured system that has been proven in use. As I see it, the potential here is an increase in educational completement across the board, meaning more people complete their studies and more that can join the labor market. A more

highly educated populace will lead to advances in both economy, cultural development and technology. This could all be debated of course, and with so many people potentially having finished their education, the possible result could be a more pronounced struggle for job positions, or potentially a lack of people willing to work menial jobs, as their education places them in a situation where this is no longer acceptable.

We are already making headway in such efforts in Europe, with the Bologna process, which is unifying parts of educational benchmarks across the board, seeing to that the different qualifications across Europe are recognized. Course credits taken in Spain will have an equivalent value if a student travels to the UK or Sweden to study.

> "The Bologna process is guiding Europe towards shared benchmarks and standards that will make it possible to compare qualifications awarded in all participating countries. The growing international mobility of students and scholars is helping to drive the need for a way to evaluate and compare qualifications earned in different parts of the world." (Altbach et.al. 2010. 159)

Having such a process already underway means that it is plausible to continue this process further to include a more standardized method in all participating countries, which will hopefully in turn lead to a snowball effect where more and more countries join in on the process. It would be detrimental for a country to opt to not include a unified system in their education process, and it could possibly lead to the exclusion of academics and students from participation in exchange programs or in discussion on policymaking.

Based on all of my own experiences during my stay in higher education and from my different travels to partake in conferences and otherwise engage with member of the academic community across Europe, I find myself hopeful that this standardized model will be obtainable. Talks of unifying quality insurance models, accreditation systems and educational processes have been spoken off loudly for some time, and with the Bologna process, things are already on the path forward. Continuing to push for the need of a unified standard from needs to come from students and educators, as well as policy makers, in the hopes that the path we are already on does not abruptly come to an end.

Pedagogy and didactics are used in all walks of education in all parts of the world, having a similar system with only small regional differences will see to it that scholars will have little

issue in changing their workplace from country to country, besides the obvious language barrier and possible culture clash, if the move is of great distance. Students will also be less troubled by having to integrate themselves into a wholly new and possibly unknown system. The basic structure they have come to know will be the same, again with only regional or cultural differences.

Throughout this thesis we have seen examples on many different forms of OERs, how they are being used and to what end. What I have found to be the common denominator for almost all OER projects, including the examples presented in this thesis is a lack of superstructure.
Simply put, most, if not all OERs today are noded off, connected or networked with only a few other works. Meaning that anyone wanting to find OERs on the same topic or on different ones for that matter will have to search and search and search. They will be lead to several different sites where one or more OERs might be presented, but the connectivity is not present.
The way it is now is that these resources are created and hosted by those that made them or by the place of work they are affiliated with. Any connections to external resources are either by chance of because of a strong cooperation with the other part(s), leading to OERs being scattered all over. The closest example of an OER that has, albeit in a limited capacity, a form of connectedness with other works is the website ScienceDirect.com. On this website, if access is granted, which it is for UiB students, it is possible to search for papers and journals using keywords. When choosing a work, ScienceDirect will automatically prompt users of similar papers or journals that cover the same or equivalent topics. This is a very local connectedness that only apply to works present on the website, but the function is a good example of how to possibly connect OERs if there had been a overarching superstructure encompassing a multitude of OERs.
This is to me is the greatest flaw and drawback of finding and using OERs. The lack of grand umbrella portal or superstructure for OERs.
As I see it, if one were to map OERs the map would look like nodes scatter around, with no to few connection between them, each node would represent the creator and host location of the resource. Simply dots upon dots upon dots, representing different OERs and OER portals, with no real connection in-between them. For instance, one node would could be UiB, with only a few connections leading to other Norwegian Universities and HE institutions which the UiB library may have agreements with. Another node would be a private university in USA, Japan or Russia,

these would have few to no connections and would simply be single entities on the map depending on their agreements, or lack thereof with other institutions.

It is to me mind-blowing that in a time where we talk so much about openness, open movement, open pedagogy, open education, open educational resources, open access, that in reality, there is hardly anything open at all when it comes to connections. It is as if all of the resources are shut down from each other and that creators of the different resources are guarding them – " Come to me if you want to use my open resource" – how can this still be a thing when there is so much lobbying and work being done on promoting an open landscape in higher education.

What I propose to combat this and to gather most of these resources under one umbrella is a superstructure similar to how Wikipedia works. Wikipedia itself is a massive open resource, which continues to grow and see more use as the stigma of using it is slowly fading.
My suggestion would be to create a single platform to gather and host a majority of OERs, one that will structure and index them, sort them by different fields and sub-categories which will make searching and finding them that much easier. Imagine having a website or a software, free of charge that would allow one to search up OER material based on certain criteria, perhaps the topic of an assignment would be on, participatory culture in the field of engineering. One could simply narrow down the search to display only OERs that include both participatory culture and engineering as parameters. Perhaps language is an issue, it would be possible to add languages to the possible search parameter.
This tool, which we for the sake of argument will call Omniscient, would consist of several layers, much like those we saw presented in the Lower Saxony OER portal. One login function for submitting works, which could be an institutionalized login for educators, a student login, which would grant them access to materials otherwise locked from the public and a non-login function for any member of the public that wants to search and browse the resources available. Omniscience would serve as the "google" of OERs so to say.
Just as one might say, "google it" to find an answer to something, "omni it" would be the equivalent when searching for resources.

Creating a tool like Omniscience would prove a massive undertaking, possibly on a global scale, requiring the cooperation of governments, private sector and educational sectors in order for it to work at all. The idea, however a utopian one, is not unachievable.

Following the path of the Bologna process for a standardized model, it would be feasible to have a similar process for the joint creation and maintenance of a tool such as Omniscience.
What would be needed as a requirement from all possible participants, would be that they share any OERs owned and created by themselves or those from public universities or public educational institutions. The governments of each participating nation would be in charge of overseeing that this process is followed through on a national level. The governments would also be in charge of ensuring that materials created for open publications such as engineering or medical journals be made available for upload on Omniscience.

The logistics of making a system that would recognize the student login from universities across the globe and remove unavailable content from their searches would discernably be a massive endeavor. It would also be a voluntary for private organizations and private universities whether or not they would like to add their materials to the database.
Financially this would be such a painstakingly high costs that unless a sustainable way of funding this could be achieved, it is wholly unthinkable that any one part alone could fund it. It is my opinion that a tool such as the example of Omniscience is one of the few possible ways of sustaining, collecting, curate and present OERs on a massive scale. It is however, a matter of financing and a willingness to share that are the major drawbacks here. The cost alone would deter most willing participants. Sharing resources that potentially could be used for monetary gains for a university or professor would also contribute to reluctance towards such a project.
Funding should however be possible if examining the amount of money donor organizations spends on establishing, maintaining or creating OERs.
The Hewlett Foundation alone has spent such a vast amount of money on educational grants that it is not hard to imagine a tool such as Omniscience getting the funding it needs.
However, the Hewlett Foundation consistently focus their spending in the US or on US centered activities. “Between 2010 and 2015, Hewlett provided grants worth more than $455,000 to the United States Department of Education “for assessment development to measure knowledge and skills against college and career-ready standards.” (influencewatch.com, 2019).

> “In 2016, Hewlett devoted $55 million to education grants with $30 million toward what it calls “Deeper Learning,” an effort “to align K-12 schools in the U.S. to deliver and measure…a set of six interrelated competencies: mastering rigorous academic content,

> learning how to think critically and solve problems, working collaboratively, communicating effectively, directing one's own learning, and developing an academic mindset. […] The foundation also granted $10 million to further the adoption of open educational resources (OER), "high-quality teaching, learning, and research materials that are free for people everywhere to use and repurpose." (influencewatch.com. 2019)

The Hewlett Foundation gave grants surpassing USD$50 Million towards educational purposes and over USD$8 Million for the creation of OERs in 2018 alone (Hewlett.org. 2019).
With such immense sums of money from one donor organization alone, it should be fully possible with the assistance and supervision of a continental or global organ like EU or UN to help produce and maintain a tool such as Omniscience. As more nations get onboard, it would also be feasible that parts of their national budget towards education could go to help fund the maintenance and sustainability of this project.

These are of course my thoughts, and there surely is a plethora of issues that I have not covered or even thought off or considered in regards to this. I would only assume that there is a wide range of both politics and policies that would make the creation of a tool such as Omniscience almost impossible. I do however think that a project such as this would solve what I consider to be one of the biggest threats to the sustainability or OERs on a global scale, and that is the lack of connectivity and cooperation on a grand scale. There is a to big focus on the individual creation of OERs and not enough focus on collection them under one roof. This, in my opinion is one of the biggest drawbacks of OERs and one of the reasons why a large scale integration of OERs in a formal educational setting have not yet happened.

Copyrights and licensing will also play a particularly difficult and pronounces role in any OER landscape, especially considering large publishing houses hoarding intellectual properties for their own redistribution and monetization. If we are to break the cycle we currently find ourselves in, we need to come up with incentives for individuals and institutions to publish their research or works with a Creative Commons license. There should not be the possibility of legal ramification when using OERs found on potential sites like Omniscience, it should also not be an issue trying to figure out what license are in use in the resources found there either.
Ownership and monetary gains are strong incentives for creator to keep their materials for themselves or to sell them off to publishing houses for royalties on sales, so a method of

counteracting this must be developed in order to have a greater influx of resources created and made available. It could be a possibility that funding could be made available to finance such creations. As we have seen with donor organizations that give out grants and funding for such resources developed, so could the Omniscience project act, using some of its funding to incentivize institutions or individuals to create OERs to be hosted on the platform. There could also be a bonus arrangement for those who generate cross-discipline or collaborative works which could fill niche parts of the OER landscape that might see a lower than average number of entries.

Potentially there are several ways to counteract the strict policies of copyright law and licensing, the issue at hand would rather be to find a way to avoid the involved parties that have the most to lose from any potential global OER platform from preventing its creation.

> "In 1980, only 20 universities in the United States housed their own office for patenting and licensing, but 112 more created them in the following two decades, with university research parks growing rapidly (Geiger, 2006). Between 1980 and 2004, the number of patents issued to US universities increased from about 350 to about 3,300 (Popp Berman, 2008). Research universities, both private and public, now have large permanent bureaucracies to commercialize intellectual property and to turn research into profit centers." (Altbach et.al. 2010, 139)

With universities owning and licensing their own produced materials, it would be easier for them to decide what to include or not in a possible OER platform, without having to deal with third party actors such as publishing houses. It would also mean that the universities already have a pretty good understanding of copyright law and licensing, leading to them having full control over the material they hand over and how it can be used further on.

The potential for a strong sustainable future for OERs may not be out of reach, simply someone needs to take the first step in an effort to create a connection between all the separate instances that exists today. If nothing is done to make this happen, I fear that OERs will forever be marginalized and put on the outskirts of educational practice, never to be fully integrated in modern education.

In summary, it's clear that connectedness and networking plays important roles in HE and for the future of OERs. The AHEAD project also provides a glimpse into what a possible landscape of

HE might look like in Germany come year 2030. It has also been made a point of educational technologies and their lack of quality, functionality and cooperation between creators, commissioners and users. Participation and participatory culture at all levels of development of such educational tools may be not only required, but also essential for educational tools to be successful. In addition, my personal thoughts are presented as a reflection on the topic of OERs and how to make them even more impactful and sustainable in the future of HE.

Journeys end

Now that we have reached the end of our journey and exploration of what digital education entails, what conclusions can we extrapolate from all of this?

Starting with DP and NML we quickly understood that there are several key factors that influence and affect how to approach these topics and how to implement them in HE. DP is as we came to understand an extension of traditional pedagogy that merely extends its reach to deal with digital obstacles as well. Practice makes perfect, which is also true for digital media. We saw how the DD* could currently provide some pitfalls in the knowledge gap between teachers and students, who according to statistics spent much more time using digital devices compared to their seniors. We also surmised that this is an issue that will fade with time, as younger generations born into the age of technology grow up to take their place in academia. It is also possible though that the knowledge gap we experience today can be evident in the future as well, given the rapid growth and production of new modern digital devices.

As we delved deeper into the thesis one theme reoccurred in almost every part, economy. Governmental funding, donor organizations, private enterprises and universities monetizing research. The issue at hand as was made evident was that governmental funding on education is not sufficient and as a result, other means of financial support are needed. New modern equipment, re-schooling of faculty members and increased demands on the universities are all taking their toll on the educational environment. OERs are being in an increased capacity being used to counteract some of these issues, while also being a great boon to the student economy, as they in some cases do not need to spend all of their money on expensive literature. MOOCs, as we have seen, provide a fine opportunity for students to get a university degree by partaking in DLP. By spending half as much money on tuition and entry fees, MOOCs offer the potential to

include a much bigger demographic than previously possible, as in some parts of the world, tuition fees can exceed 50,000$ USD/year.

In the case studies of the Moving MOOC, SIDDATA and the Lower Saxony OER Portal, we saw different approaches to OERs and how they work to provide both students and teachers a richer and more diverse way of engaging with learner materials. Scope, scale and participation levels are paramount for these projects to keep existing and for them to have a sustainable future. Creative Commons plays a central role in projects such as these for the purpose of featuring a common ground of licensing. Avoiding possible legal ramifications induced by copyright laws, infringement on IP and possible theft of private material is a major factor in having works created with a CC license. The tragic case of Aaron Swartz exemplified a worst-case scenario where trying to defy and circumvent copyright law and regulations ended in heavy-handed repercussions.

AHEAD Project gave us a glimpse of a potential future of the German educational landscape for HE in 2030, with defining new models of educational approach for their learners. In in there are some known and some radical changes to the system we know today, such as a restructuring of the entire HE landscape, as seen in the Lego pathway. In it HE no longer bases itself on universities providing specific degrees, rather a student or learner builds their education with the aid of professional representatives. The building blocks can consist of courses from several different universities as well as online courses and private institutions. Students in this model do not enroll in a specific university, they start an educational path and control both the length and content on their own, giving learners the autonomy to fully control their own path.

In the AHEAD project, just as with the other examples we have seen, funding is an issue, as students no longer enroll in specific universities, new funding policies will be needed. If universities lose upwards of 20 to 30% of their enrollment due to learners choosing to build their own education, they will have to make up for those numbers. This leads us back to government's educational policies and funding. In order for HE to continue to thrive and grow, new and more sustainable methods of funding are needed, and a stronger focus from governments on making this possible will be needed.

From the discussion part, we saw that a potential solution for making OERs not only viable, but also sustainable and a critical part of the HE landscape would be to create a superstructure for

them. With the help of funding from massive operation such as EU/UN and donor organizations such as the Hewlett Foundation, an effort to make a project like the example of Omniscient should be plausible.
What is needed, is for someone to bear the brunt of the initial cost and to make a markedly big effort in making this happen. This would mean initially a continental spanning project overseen by an independent organ, making the effort to create a common unified framework for DP and DD that could be implemented in all participation countries. It was also surmised that this would have a bigger beneficial than negative effect if made true.

To summarize and conclude we can see that the impact of OERs in HE is quite profound, especially when dealing with learners, their access to materials and their finances. Funding is key for OERs in HE, one might almost argue that the more funding OERs receive, the bigger the impact they make on education. Their sustainability, longevity and creation, all depends on them being integrated to the extent that they become an integral part of education. OERs are also quite clearly wanted by the world's student population, especially as we have seen, in developing countries with a poor economy, and in western countries where education is particularly costly. Digital Pedagogy and Digital Didactics will, if not slowly, make its way into HE for good, which is inevitable with the way technology is developing at this time, sadly, this is not the case for OERs, as they are still being marginalized, despite the evidence we have seen of how it is impacting educational policies and their popularity amongst students.

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