

# ICICTE 2022



## Proceedings

Editors  
**Evangeline (Litsa) Marlos Varonis**  
and  
**Anastasia (Nancy) Pyrini**



# Communication Technologies in Education

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Proceedings of ICICTE 2022

Editors  
Evangeline (Litsa) Marlos Varonis  
and  
Anastasia (Nancy) Pyrini

Greece 2023

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## Preface to the ICICTE 2022 Proceedings: IN THE LIGHT OF DAY

Evangeline (Litsa) Marlos Varonis  
Co-editor, ICICTE 2022 Proceedings

This preface takes its title from an art exhibit currently on display in Zanesville, Ohio featuring the works of first-time ICICTE contributor [Diane Belfiglio](#). Her paper “Shellshocked by the Pandemic: A Personal Account of Redesigning Studio Art Classes for Online Delivery” was not only a first for her at ICICTE but also her first academic presentation and publication anywhere, to demonstrate “scholarship” in a higher education world that expects even fine arts faculty to check specific boxes on their CVs. And as I write, shellshocked by her death just days ago, I am compelled to weave together Diane’s reluctant journey into information communication technologies and the administrative practices and policies that motivated her reluctance to use this powerful and effective tool.

Diane did not have a passcode on her cellphone. On one hand, she thought it a bother, but consider the implications – she had nothing to hide. This was entirely in keeping with her art. Although on occasion it has been mistakenly described as “symbolic,” she protested this designation, as she considered herself a representational artist for the best reasons - she had nothing to hide. Use of symbols presupposes an audience with “insider” knowledge that can interpret those symbols, the viewer as a member of an elite group. Diane wanted her art, which in her own words explored her “passion for light, drama, and compositional organization,” to be accessible to all.

The use of information communication technologies (ICT) in art instruction, however, posed a dilemma to her philosophy of inclusion. And this is because as a part-time faculty member with a terminal MFA degree in her field, she had clawed her way into a full-time non-tenured position through excellent teaching and exemplary service—including university-requested community art projects—but she remained vulnerable. We had many conversations over the years as I tried to convince her that utilizing a Learning Management System (LMS) to share content would help her teach more efficiently and convenience learners, and her response was always the same – not until she was secure. She feared the appropriation of her creative, intellectual work if it were made available online and then she lost her position.

Technically, an LMS administrator has the ability to share content created by others with anyone, and also to give others administrative access to a course site or run analytics on course activities. But that doesn’t mean it should happen, or that there are policies in place to prevent it from happening. In my role as an online learning

manager at an institution of higher education, I could not protest allowing administrative access to a department chair or dean or other high-level administrator, but I did refuse to “copy” course sites for use by others without the permission of the creator. At a different institution, the proposed adoption of a publisher’s new, underdeveloped LMS was thankfully derailed when a publisher’s rep noted analytics could determine the impact of faculty response time to assignments on subsequent student performance - the faculty union protested that vigorously, and successfully.

And now Diane is gone, but the unlisted videos she began creating during the pandemic remain on YouTube and are linked in her LMS course sites. They are a profound testament to her passion and talent both as an artist and as an educator, and to her willingness to pivot to ICT when the pandemic called for extreme measures. But who do they belong to?

Again and again, ICT innovations precede the existence of policies to manage their use. These innovations bring light – to both students and educators. But they can also darken the views of brilliant but vulnerable content creators who fear losing control of their own intellectual work. As faculty who embrace ICT and ICT professionals, we must use our voices to encourage educational institutions to implement enlightened policies that protect the vulnerable and thus encourage more widespread use of technologies in innovative, productive, and democratic ways.



# RESEARCH TRENDS OF ONLINE LEARNING IN POST-SECONDARY EDUCATION DURING THE COVID-19 PANDEMIC: A BIBLIOMETRIC ANALYSIS

Aleksander Aristovnik, Dejan Ravšelj, and Lan Umek

*University of Ljubljana*

SLOVENIA

Konstantinos Karampelas

*University of the Aegean*

GREECE

## Abstract

The Covid-19 pandemic has significantly disrupted post-secondary education with the transition to online learning, which was a mandatory teaching process during lockdowns. Despite the epidemiological situation improving, online learning is becoming increasingly popular as it provides new learning opportunities. Therefore, the paper aims to provide new insights into the trends in online learning in post-secondary education during the Covid-19 pandemic. The bibliometric analysis of 9921 documents published between January 2020 and March 2022, besides descriptive overview and scientific production, reveals the interplay between ICT tools and fields of study.

## Introduction

This paper aims to examine the trends regarding online learning, as they were influenced by the strict measures taken during the Covid-19 pandemic. The approach used for this scope is the bibliometric analysis, and it focuses on the level of post-compulsory education.

According to Donthu et al. (2021), the field of bibliometrics has been gaining popularity over the last decades for various reasons. It addresses gathering data from resources such as books and journal articles and analyzing them. Thanks to the access to such resources, there is a possibility to gather a wealth of information, findings and literature around a certain area, as well as the development of appropriate methods and practices, to manage this wealth whenever required. Bibliometrics assist in observing and viewing research progress and pointing out trends in a field, such as education or, even more specifically, online teaching. Bearing in mind that in bibliometrics, researchers can analyze a large number of articles, such as hundreds or even thousands, it is justifiable that bibliographical research is highly accurate. Indeed, researchers can this way get a cumulative

approach around a field, find out gaps in knowledge, develop ideas, and finally contribute appropriately to progress and development.

There are different ways in which bibliometric research is carried out. Any group of theorists or researchers can adopt or plan the one that fits best their project. In other words, it has not been possible so far to state the existence of an authoritative, universally accepted pattern of carrying out bibliometric research and methodology. This is largely because only recently has bibliometric analysis attracted growing interest. However, ideas about planning, such as studying in a field, can well derive from similar papers (Salini, 2016; Donthu et al., 2021).

Within this context, this research was designed. The basic goal is reached after a thorough study of the literature around bibliometrics to investigate research trends, online learning, and its research. The paper is structured as follows. After the introduction section, the next section presents a short literature review. The following section explains the materials used and the methods applied. The next section presents the main results of the bibliometric analysis. The paper ends with a conclusion in which the main findings are summarized.

## Literature Review

Bibliometrics is defined by Pritchard (1969) as “the application of mathematical and statistical methods to books and other media of communication”. Media of communication in this context include books, journal articles, monographs, theses, periodicals and, more recently, e-journals or e-books. The basic bibliometrics unit has recently become the article published in a refereed journal. Depending on the actual aim of a project on bibliometrics, it might be classified in one of the following three categories known by Glanzel (2003) as the three areas of contemporary bibliometrics.

The first is bibliometrics for bibliometricians. This field is perhaps the fundamental or perhaps the basic domain of bibliometric analysis. This area puts significant emphasis on methodology. For example, it can give important information on the methodology authors prefer and select in certain areas of study and specific topics.

The second is bibliometrics for scientific disciplines. This is important to researchers who want to investigate the massive as well as the diverse amount of communication media. This type of research can lead to the extension of information and scientific knowledge. It is influenced strongly by the orientation and interest of researchers who carry it out.

Finally, the third one is bibliometrics for management and policy. This can be referring to research, maybe of comparative nature, that addresses the national,

international or institutional level and aims to form a science-based policy. This is considered by certain bibliometricians as the ultimate type of research, emphasizing evaluation.

As concluded above, the rationale for bibliometrics lies in the necessity to evaluate the progress and the contribution of research, as well as its development. This evaluation can be based on identifying which means of research dissemination seem to be more popular or are considered to be more trustworthy. In order to do this, a measurement scale or approach will have to be designed and used. This is the basic reason why quantitative data and quantification are applied in bibliometrics. There are plenty of such scales for bibliometricians and researchers interested in bibliometrics. These have already been established and can be adopted by others when desired. However, there is also the possibility of designing and using a new one based on the specific goals or characteristics of individual projects. Parallel to the classification already described, there are others that can be used while planning studies or any kind of decision-making processes or institutions (Pacheco-Mendoza et al., 2020). Such a classification is one that distinguishes the axis of the classification or quantification, introduced by Mering (2017). This classification distinguishes between author-level metrics, article-level metrics and journal-level metrics. The first one focuses on the achievements of an individual author and the impact and response towards this person's papers and research. The second focuses on specific articles. Finally, the third one focuses on journals. In this approach, concepts such as the impact factor of the journal gain significance and have application. Each of these approaches can be achieved with the recent online measurements on websites.

During the last decades, a topic that has gained interest for researchers and bibliometricians is the implementation of online learning. The initial trigger for that phenomenon was the development of Information and Communication Technologies (ICT). This was further triggered by the outbreak of the Covid-19 pandemic, which led to the closure of education units and online and distance learning solutions. Bibliometric analysis has shown that there has been a surge in the research and articles published around e-learning over the last years. This has accompanied the significant rise of online learning courses, institutions, and opportunities. This surge has been observed globally, but it was more frequent in the developed countries of the western world. Apart from that, these studies have shown that e-learning has been approached from different perspectives. These can be the opportunities for new teaching approaches, education output, teaching material, digital skills, assessment, educational impact, challenges, and problem solving, as well as the potential to lead to further technological progress. Several suggestions have been expressed by the researchers regarding the orientation of e-learning studies. These focus on the need for an updated model combining both theoretical points and application strategies (Gao et al., 2022).

Such studies have aimed to be classified in all three areas of bibliometrics. That is because they aim to extend bibliometric research and enhance its existing models. At the same time, they aim to contribute to scientific disciplines such as Education Studies and online learning. Lastly, they aim to influence decision-making (Glanzel, 2003; Gao et al., 2022).

In that context, Zhang et al. (2022) have drawn certain conclusions regarding the impact of Covid-19 in higher education teaching research and its literature, as examined through the prism of bibliometrics. Firstly, the surge in journal articles examined has been observed in journals whose impact factor is not the highest. This is attributed to several reasons. For example, in high impact factor journals, the time needed for publication might be up to two years. Moreover, these journals do not publish many issues. In relation to that, the researchers have noticed an increase in publications which have open access or have a rapid response rate. This might be attributed to the need or the call for quick contribution to research by theorists and practitioners of online teaching in higher education.

Research projects such as the above have focused on identifying and dealing with challenges. These challenges are those that arose when online teaching was forced as a solution to the pandemic crisis. Examples can be student level and preparation, digital skills, health issues, motivation, or assessment. There is still room for further research regarding other aspects of online teaching and its implementation. These aspects might refer to preferable approaches, including approaches to assist learners with disabilities or special needs. Aside from that, there is limited research on technological progress that can lead to new, profound teaching paradigms, not only restricted to teaching activities and practices. In other words, instead of using ICT to make lessons more effective or enjoyable to students, it is useful to see if it can promote other completely new ways and ideas regarding how knowledge is constructed from its foundation (Glanzel, 2003; Zhang et al., 2022; Gao et al., 2022).

## Materials and Methods

The comprehensive bibliometric information on online learning and Covid-19 research was retrieved on 1 March 2022 from Scopus, a world-leading bibliographic database of peer-reviewed literature. The Scopus was preferred because it is considered a larger database than other competitive databases such as Web of Science (Falagas et al., 2008). This was further confirmed with the initial search using the same search query in both databases, revealing that Scopus provided more relevant documents than Web of Science. Moreover, compared to Scopus, Web of Science has been found as a database that significantly underrepresents scientific disciplines of the Social Sciences and Arts and Humanities (Mongeon & Paul-Hus, 2016). Accordingly, Scopus appears to be a

more relevant bibliographic database meeting the specifics of the online learning and Covid-19 research.

The search query covered keywords related to online learning and Covid-19 research. The search was additionally limited to the period 2020-2022 to capture the documents published between January 2020 and March 2022. Accordingly, 9921 documents were identified as eligible for further bibliometric examination on online learning and Covid-19 research.

The bibliometric analysis utilized several bibliometric approaches and software tools. The descriptive overview was conducted using the Python Data Analysis Library Pandas (McKinney, 2012) and visualized using Python Visualization Library Matplotlib (Hunter, J. D., 2007). These Python libraries were also applied to examine scientific production across countries, sources, and authors. Finally, the Jaccard index was used to examine the relationship between ICT tools and fields of study.

## Results

The descriptive overview presented in Table 1 shows the main characteristics of online learning and Covid-19 research. This research area covers a total of 9921 documents written by 33716 distinct authors listing 15228 keywords and published in 2751 sources in the period 2020-2022. Slightly less than half (46%) of these documents have at least one citation, while a relatively small number of documents (14%) were written by a single author. Moreover, the number of authors per document (3.80) in this research area is higher than in the general scientific area of Educational Research (2.70). Moreover, the average number of references per document in this research area is 32.20, which is below the general scientific area of Educational Research (44.00) (Patience et al., 2017), suggesting that online learning and Covid-19 research is grounded on a smaller number of the existing studies compared to general research. Finally, for this research area, 3.54 citations per document can be observed.

**Table 1***Descriptive overview of online learning and Covid-19 research (2020-2022)*

<b>Bibliometric items</b>	<b>Findings</b>
Timespan	2001-2022
Documents	9921
Cited documents	4593
Single-authored documents	1397
Distinct authors	33716
Sources (Journals, Books, etc.)	2751
Author's keywords	15228
Authors per document	3.80
References per document	32.20
Citations per document	3.54

The most relevant (top 10) highly-cited documents in the online learning and Covid-19 research are presented in Table 2. The most discussed topics in these documents are ICT (Chick et al., 2020; Adedoyin et al. 2020; Dedeilia et al., 2020) Pedagogy; (Rapanta et al., 2020; Murphy, 2020; García-Peñalvo et al., 2020), Health (Rundle et al., 2020; Blake et al., 2020); and Life and work (Aristovnik et al., 2020; Dwivedi et al., 2020).

As seen from the titles of articles in Table 2, the most relevant documents focus on certain topics or dimensions of online learning. A common topic that comes up in the titles is the challenges such as student level and preparation, digital skills, health issues, motivation, or assessment. Apart from that, there is a focus on the orientation and the social impact of online learning during the Covid-19 pandemic. It is also noted that the articles might examine different contexts and samples of students. Simultaneously it is also concluded that these relevant documents come mostly from developed countries. These findings can enhance the similar ones drawn from previous research projects (Glanzel, 2003; Zhang et al., 2022; Gao et al., 2022).

**Table 2**

*Most relevant documents in online learning and Covid-19 research (2020–2022)*

<b>Author</b>	<b>Year</b>	<b>Document Title</b>	<b>Source Title</b>	<b>Cited By</b>
Chick R.C. et al.	2020	Using Technology to Maintain the Education of Residents During the COVID-19 Pandemic	<i>Journal of Surgical Education</i>	359
Rapanta C. et al.	2020	Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity	<i>Postdigital Science and Education</i>	339
Rundle A.G. et al.	2020	COVID-19–Related School Closings and Risk of Weight Gain Among Children	<i>Obesity</i>	307
Aristovnik A. et al.	2020	Impacts of the COVID-19 pandemic on life of higher education students: A global perspective	<i>Sustainability (Switzerland)</i>	280
Adedoyin O.B. et al.	2020	Covid-19 pandemic and online learning: the challenges and opportunities	<i>Interactive Learning Environments</i>	256
Murphy M.P.A.	2020	COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy	<i>Contemporary Security Policy</i>	216
Blake H. et al.	2020	Mitigating the psychological impact of covid-19 on healthcare workers: A digital learning package	<i>International Journal of Environmental Research and Public Health</i>	194
García-Peñalvo F.J. et al.	2020	Online assessment in higher education in the time of COVID-19 [La evaluación online en la educación superior en tiempos de la COVID-19]	<i>Education in the Knowledge Society</i>	194
Dwivedi Y.K. et al.	2020	Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life	<i>International Journal of Information Management</i>	192
Dedeilia A. et al.	2020	Medical and surgical education challenges and innovations in the COVID-19 era: A systematic review	<i>In Vivo</i>	173

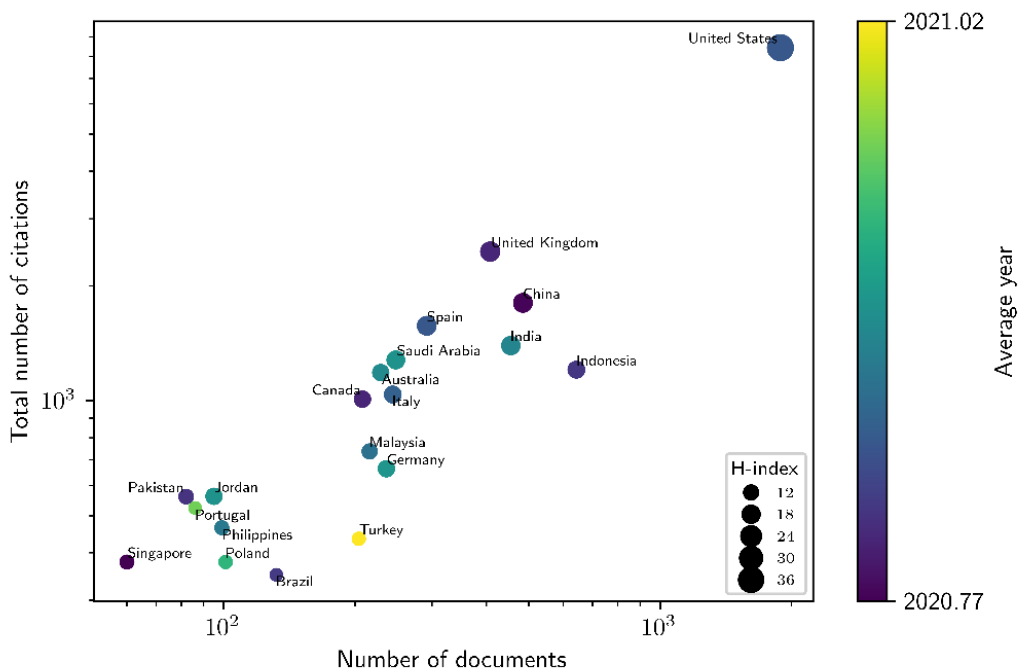
The scientific production across countries and sources is presented in terms of the number of documents and citations, whereby additional information is provided by the size of a circle, revealing the h-index as a measure of the scientific impact (Harzing & Van Der Wal, 2009) and by the colour of a circle, presenting the time dimension in scientific production.

The most relevant (top 10) highly-cited countries in online learning and Covid-19 research are presented in Figure 1. While the United States stands out among all

countries, the United Kingdom, China, India, and Indonesia also have a relatively big number of documents and citations.

**Figure 1**

*Most relevant countries in online learning and Covid-19 research (2020–2022)*

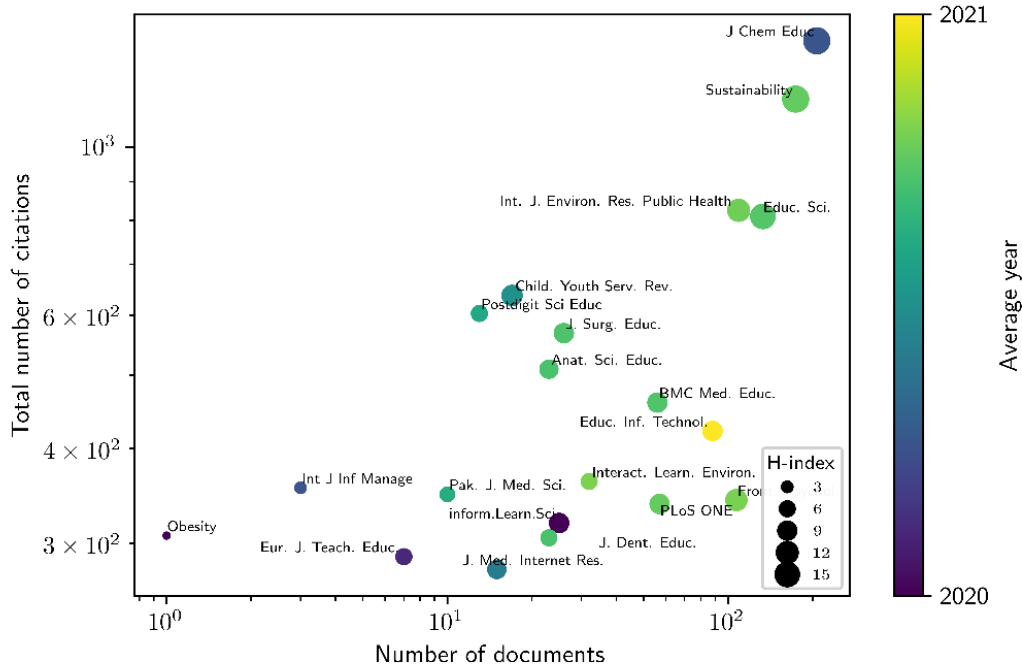


Moreover, the most relevant sources in online learning and Covid-19 research are presented in Figure 2. The most prominent sources are *Journal of Chemical Education*, having the biggest number of documents and citations, followed by *Sustainability* (Switzerland), *International Journal of Environmental Research*, and *Public Health and Education Sciences*.



**Figure 2**

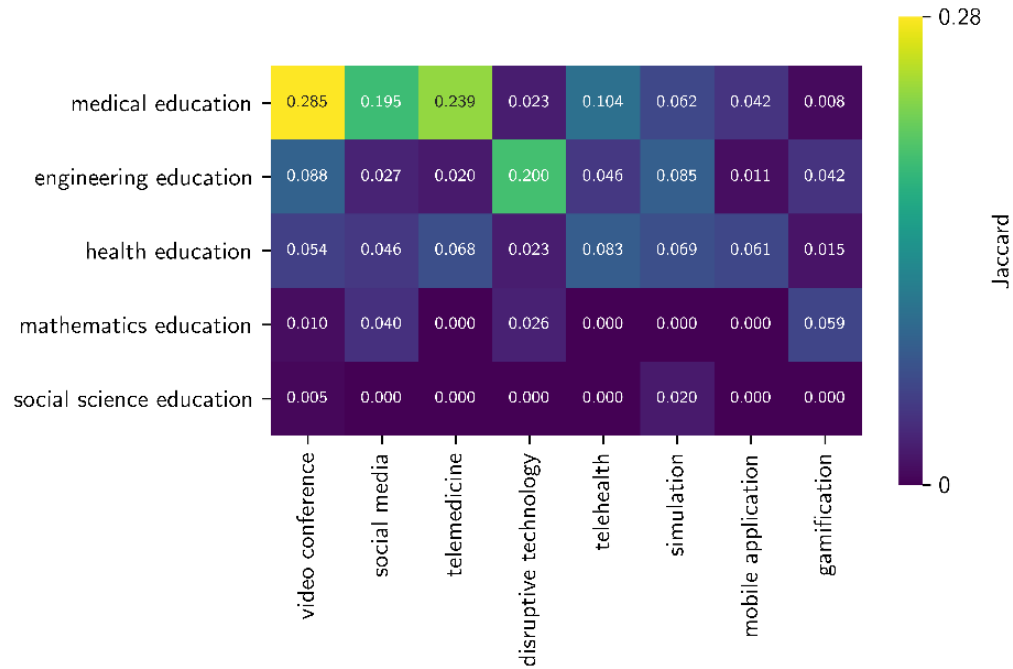
*Most relevant sources in online learning and Covid-19 research (2020–2022)*



The relationship between ICT tools and fields of study addressed in online learning and Covid-19 research is presented in Figure 3. The results of the Jaccard index based on the keywords reveal that medical education during the Covid-19 pandemic was provided predominantly through video conferences, telemedicine, and social media, while engineering education was provided predominantly through disruptive technology. Moreover, health education was provided through telehealth, followed by simulation and telemedicine, while mathematics education was provided through gamification. The ICT tools were the least exploited in social science education, as only simulation appears to be relevant in this field of study.

**Figure 3**

*The relationship between ICT tools and fields of study (2020–2022)*



## Discussion and Conclusion

This paper aims to examine the impact of the Covid-19 pandemic in the field of online learning at the level of higher or post-compulsory education. This was done through a bibliometric approach. Bibliometrics can provide significant information about the trends in a research field (Glanzel, 2003). At the same time, implementation of online learning has been increasing over the last decade, and this has accompanied a surge in research in that field, including bibliometricians. Previous studies have concluded that researchers might be focusing on certain aspects and mostly challenge the implementation of online learning (Zhang et al., 2022; Gao et al., 2022).

For the scope of the research, a total of 9921 articles were collected. These were published between January 2020 and March 2022. The contribution of this study relies on the fact that it examines up-to-date articles on the topic. Analysis was carried out with descriptive statistics and accepted tools of bibliometric studies (McKinney, 2012; Hunter, J. D., 2007).

Overall, the findings justify the trends identified in previous research studies. Covid-19 has stimulated the interest of authors in educational research in many regions around the world, although most of them seem to be from the western developed countries. The fact that the pace of references does not catch up to the average pace of papers in education research can be attributed to several factors.

An example can be the tendency of the researchers to publish in journals of high impact factor, which, as mentioned, take time to publish and do not publish many issues per year. Moreover, the fact that these even limited references have already been cited reveals that these studies are considered influential and can set the grounds that might even lead to new education paradigms in future (Glanzel, 2003; Zhang et al., 2022; Gao et al., 2022).

In short, the major trend reflected in the study is that Covid-19 certainly keeps grabbing the interest of researchers in online learning in post-secondary education. This tendency is likely to continue as probably more articles on this topic are being published (Gao et al., 2022).

Before generalizing these conclusions, it is important to point out the limitations of the study. As mentioned, it is still rather early to evaluate the impact of Covid-19 in the field of education. Nevertheless, this research probably belongs to one of the first bibliometric studies, as the methodology, as well as the conclusions, address the limitations of the existing bibliometric attempts. Future research should target a greater sample of journal articles that can aim to further and deeper goals such as policy recommendations. However, the present research can serve as a first step toward following this path (Glanzel, 2003).

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## Author Details

Aleksander Aristovnik  
University of Ljubljana, Faculty of Public Administration  
Slovenia  
[aleksander.aristovnik@fu.uni-lj.si](mailto:aleksander.aristovnik@fu.uni-lj.si)

Dejan Ravšelj  
University of Ljubljana, Faculty of Public Administration  
Slovenia  
[dejan.ravselj@fu.uni-lj.si](mailto:dejan.ravselj@fu.uni-lj.si)

Lan Umek  
University of Ljubljana, Faculty of Public Administration  
Slovenia  
[lan.umek@fu.uni-lj.si](mailto:lan.umek@fu.uni-lj.si)

Konstantinos Karampelas  
University of the Aegean, Department of Primary Level Education  
Greece  
[kkarampelas@aegean.gr](mailto:kkarampelas@aegean.gr)

# COVID-19 AS A DISRUPTIVE DRIVER OF ORGANIZATIONAL CHANGE: A CASE-STUDY ON LEARNING ANALYTICS ADOPTION

Christine Armatas, Ada Tse, and Chun Sang Chan  
*The Hong Kong Polytechnic University*  
HONG KONG SAR CHINA

## Abstract

A case-study is presented on how COVID-19 both accelerated and expanded learning analytics (LA) implementation at a Hong Kong university. Two change management models, one specific to LA, informed the actions taken to address the urgent need for data about students' learning behaviour and outcomes during the period of fully online learning enforced by the pandemic. This case-study illustrates how it is possible to be adaptable and agile in using disruptive forces to drive organizational change in a way that would otherwise be difficult, while still delivering outcomes consistent with organizational goals.

## COVID-19 as a Disruptive Driver of Organizational Change: A Case-study on Learning Analytics Adoption

COVID-19 severely disrupted education globally, and even with a high degree of institutional readiness, many had concerns about the quality of the online learning experience for students and the impact on learning outcomes during the pandemic. The case-study presented here highlights opportunities that disruptive events such as COVID-19 present and how these can shape future plans. At the university in question, the sudden shift to fully online and mainly synchronous learning accelerated and shaped the use of learning analytics (LA) because of the need for visibility and accountability of outcomes from online learning. This case-study examines the challenges and opportunities COVID-19 presented at a large public university in Hong Kong in the context of Kotter's (2014) change leadership model and the model for LA adoption developed for the SHEILA project (Tsai et al., 2018). In doing so it articulates some important lessons learned and describes how the vision, strategy and roadmap for institutional adoption of LA at the university changed as a result.

## Learning Analytics

Learning analytics (LA) is "the measurement, collection, analysis, and reporting of data about learners and their contexts, for purposes of understanding and optimising

learning and the environments in which it occurs” (Siemens, 2013, p. 1382). It has been used to predict behaviours and outcomes for students as well as performance metrics for management and strategic development purposes. The usefulness of LA has been enhanced by the proliferation of online learning environments which produce large volumes of data that can be used to study learning behaviour and learning outcomes (Greller & Drachsler, 2012).

As LA has expanded in higher education (HE), most of the work in the field has involved interrogating large datasets for purposes such as predicting attrition and academic performance from pre-entry data (de Frietas et al., 2015; Seidel & Kutieleh, 2017) and analysing learning management system (LMS) datasets as proxies for student engagement (Arnold & Pistilli, 2012; Buckingham et al., 2012; Atherton et al., 2017). LA has also been used at subject and programme levels to investigate discrete aspects of a curriculum or student learning. For example, Casey and Azcona (2017) used student activity patterns to develop a highly accurate (85%) classification system for early detection of poor performers, while Ellis et al. (2017) used a range of analytic techniques to investigate student learning behaviours in an undergraduate engineering programme. Armatas and Spratt (2019) showed how LA can inform curriculum review by analysing data such as students’ grades and subject satisfaction scores to identify areas for enhancement and improvement in a programme.

### Learning Analytics Adoption

While the body of research related to LA is growing, examples of successful systematic and large-scale implementation of LA in HE are limited. The SHEILA project (Tsai et al., 2018) was launched in response to a lack of a defined strategy or monitoring framework to help HE institutions to implement LA effectively. The SHEILA policy framework consists of a comprehensive list of adoption actions, relevant challenges and policy prompts that are framed in six elements of the Rapid Outcome Mapping Approach (ROMA) model.

Step 1 in the ROMA model (Tsai et al., 2018) is mapping to the political context which helps to establish the purpose for adoption which in turn drives action. Identification of stakeholders (Step 2) acknowledges the environment into which LA is to be implemented and the role others play in this environment. Step 3 involves identifying the desired behaviour change which is needed to be able to establish objectives and measurable outcomes. Developing an approach that can avoid identified or known issues and challenges is part of defining an engagement strategy (Step 4), which also includes planning how and when to communicate with stakeholders. Understanding what resources are needed, which are already available, and how resources will be obtained and utilised is part of the analysis of internal capacity to effect change, which is the fifth step. Lastly, establishing a



framework for monitoring implementation and impact and a plan for how to build on, respond to, and learn from outcomes is key to successful implementation.

According to Tsai et al. (2018), these steps should be done iteratively as part of a continuous quality cycle in order to successfully develop and implement an LA framework for the organization. However, this requires planning and preparation, and as the COVID-19 pandemic has shown, there are situations in which action is needed urgently, or plans become unworkable given the circumstances. The question then arises as to how to respond where urgent action is needed and planning and preparation time is limited.

### Disruption as a Driver of Change

There have been many pressures that have transformed the HE sector, although paradoxically, the sector is resistant to change and when change does occur, it usually happens slowly (Vlachopoulos, 2021). LA has taken a typical path in its adoption, with research on how best to implement learning analytics emphasizing the need for organizational and culture change in order for it to be successfully implemented and gain mainstream adoption. LA adoption can be viewed as similar to introducing a new product or service and trying to shift users from traditional products or services to a new entrant to the market. This process is called disruptive innovation, which is a market concept that describes a process whereby a new product or service enters the marketplace, undergoes continuous improvement, and then becomes mainstream (Petzold et al., 2019).

Petzold and colleagues (2019) propose a process view of disruptive innovation with three phases – initiation, niche, and mainstream. The factors that influence the dynamics of each phase include the perception and expectations of the opportunity and the entrant's innovation, the strategy and the use of enabling technologies. While acknowledging that the process is dynamic, Petzold et al. argue that there are alternate pathways that an innovation can take, of which many could inhibit the innovation depending on the timing of entry and adaptability of the strategic actions. The interaction between what the entrant does and the environmental factors shape what needs to be done to stay on the disruptive path. As they note, continually sensing the environment, and seizing and adapting the offering, are critical to staying on the desired path. As such, the process of disruptive innovation is conceptualized as being shaped by an interplay of what the entrant does, how incumbents react, and events in the external environment.

Applying the ROMA model (Tsai, et al., 2018) while also conceptualising LA as a disruptive innovation (Petzold et al., 2019) provides additional insight into strategies and actions for adoption. It highlights the importance of the six steps being completed iteratively as part of a quality cycle as the situation will change as

adoption progresses from initiation to niche to mainstream. It also shows the importance of monitoring and responding to environmental changes and ensuring the engagement strategy is aligned with stakeholder needs. Although this is useful, a third element is needed to successfully manage the situation COVID-19 created, which is how to manage change in a new and unpredictable environment.

## Leading Change

Disruptive change is not always bad and it can be argued that it can motivate looking for new ways to do things and opportunities to radically change the status quo or to do things that would not normally be done (e.g., Woodward, 2019). But the challenge with disruption in a dynamic and fast-changing environment is that most organizations are not accustomed to responding in this way, preferring to take things at a slower pace based on planning and preparation. As a guide to action, Kotter's (2014) change management model is well suited to situations where time is of the essence, actions need to be taken in a relatively short time frame, and the status quo is not suitable or sustainable (Hall, 2021). The model (Kotter, 2014) has eight actions necessary for managing change in dynamic situations. These actions relate to establishing a sense of urgency; organizing people to guide and support change; developing, communicating and empowering action related to the vision; planning for and achieving short term wins; consolidating improvements and maintaining change; then institutionalizing changes in the organizational culture.

## About the Current Study

In 2019 our university, like others globally, found itself in a situation where immediate actions needed to be taken given the sudden shift from predominantly face-to-face learning to fully online classes for all students. While the university was reasonably well prepared for the move to online learning, what was lacking was a well embedded system for monitoring outcomes from online learning. Consequently, the need for systematic, institution-wide LA became critically acute and the previously defined strategy and roadmap that was developed to introduce and mainstream LA over a period of years, was considered not suitable for responding to this new and dynamic situation. Therefore, the strategy and roadmap needed to be revised based on the demands of the pandemic situation.

Our university was faced with the challenge of how to effectively continue to implement LA to meet immediate needs related to the shift to online learning, while adapting the strategy and roadmap to take into account changes arising from the situation created by the pandemic. In doing this, we viewed COVID-19 as a disruptive change driver and LA as a disruptive innovation and drew on Kotter's (2014) model for leading change to guide actions and re-shape the implementation of LA at our university. The next section describes the LA strategy before the

pandemic and the changes and adaptations made in response to online learning during the pandemic. It also details actions taken and how these influenced the strategy for mainstream adoption of LA in support of online learning. This in turn provides the basis for lessons learned that can assist others HE institutions with managing change and driving adoption of LA.

## Adoption of Learning Analytics at the University

Before COVID-19, our university had already begun to introduce LA, but in a controlled and limited way. The adoption was initiated by senior managers in the areas of teaching and learning, information technology services, and the University's Educational Development Centre (EDC). The slow and cautious approach was considered necessary to provide time for the required infrastructure, processes, and systems to be put into place, to raise awareness of the use of LA and to provide training on its effective use. However, the aim was for LA to be available for all subjects taught at the university by the end of the 2021-22 academic year.

### Use of Learning Analytics Pre-pandemic

With increased interest in LA, our university recognised the potential for LA to inform teaching and learning, especially, in respect to the relationship between learners' activities and their academic performance (Gašević et al., 2015). As a result, the Subject e-Engagement Report (SeER) was initiated in 2017 to provide teachers with a customized learning analytics report on students' usage of the LMS for their courses. The SeER started off as a simple interactive report in Excel providing graphs and tables of weekly usage figures for commonly used LMS tools (e.g., content pages, announcements, grade centre, discussion forums). It also included a list of students with low LMS usage in the class, and identified students who had not logged into the course. The aim of the SeER was to help teachers gain a better understanding of students' behaviour when using the LMS for their subject and help them identify students who may require follow-up action based on usage patterns such as number of log-ins, discussion forum participation, and quiz results. The SeER was generated every four weeks during a semester and teachers could retrieve and read the report themselves via the LMS.

The SeER was piloted with 20 subjects in the 2017-18 academic year, with progressively more subjects being added each semester. Although the pace was slow, this gave the implementation team time to work on the systems and processes underpinning the report as well as on the format and content for the report. It also allowed for activities such as workshops and training to occur to assist subject teachers to use the SeER effectively, particularly if this report was new to them. By the start of the 2019-20 academic year, around 250 LMS courses received the SeER each semester, representing around 13% of all LMS courses. Initial feedback was

positive and there was confidence that as the SeER was rolled out to more subjects, academics' awareness and willingness to use LA to enhance teaching and learning would also increase. The roadmap for full implementation of LA only included the SeER, with all subjects expected to be receiving the SeER four times a semester after the 2021-22 academic year.

## Responses to COVID-19 and Suspension of Face-to-face Teaching

The suspension of face-to-face classes in Semester 2, 2019-20 as part of the public health response to the pandemic resulted in moving almost all teaching and learning online, with large volumes of data generated and logged from multiple systems and platforms. The only LA available to teachers at the start of the pandemic were the SeER which reported LMS usage, and analytics built into specific platforms, such as Panopto, which users had to generate themselves. This level of LA was not considered sufficient or efficient – most of the online teaching during the pandemic was conducted via synchronous conferencing platforms for which no reports were available, and for platforms where reports were available, those reports had to be generated by users and the results were not integrated with other LA data.

Building on experience with the SeER, in the first few weeks of the shift to fully online learning, the LA team in the University's EDC designed a bespoke LA reporting system for the university which reported analysis of data from the University's LMS (Blackboard), online conferencing tools (Blackboard Collaborate Ultra, Microsoft Teams, Zoom) and video platform (Panopto). Activity logs for both teachers and students were captured, extracted, and analysed. Weekly reports were provided to senior management at the university and Deans and Heads of Departments which summarized online teaching and student learning activities by subject, department, faculty, and the university as a whole. These weekly reports were critical for providing information about online teaching and whether students were engaged in the online learning activities. Teachers also received a weekly LA report on their subjects which combined results from all of the teaching and learning systems and platforms into one report.

In terms of managing this disruptive change, the initial responses to the rapid shift to online learning mapped to Kotter's (2014) change management model in several ways. First, a sense of urgency was created by senior management through communications with staff and this was reinforced by the frequency of the reports and how they were used. The vision became clear and simple – it was imperative that the University could show stakeholders, both internal and external, that the quality of teaching and students' learning outcomes were not negatively impacted by the shift to fully online teaching. This vision was communicated at all levels, starting from senior management down to subject leaders. It was also supported by the formation of a guiding coalition (Kotter, 2014) in the form of a cross-functional

team whose responsibility was to collect, collate, analyse, report, and disseminate relevant LA. The level of co-ordination, co-operation, and collaboration in such a short time period to achieve the weekly LA reports for stakeholders was unprecedented – what was previously impossible became a reality, solutions to long standing problems were found and implemented, and accountability and responsibility were high given the stakes. This empowering of those given the responsibility for delivering LA reports for all subjects taught at the university was a critical factor in the successful implementation.

The sixth action in Kotter's (2014) model is to plan and achieve short-term wins – for the LA team, this was being able to analyse and report on data from all of the major learning-related systems and platforms used at the university. Previously only LMS data were available for analysis and reporting as there were various impediments (technical, political, and resources related) which prevented access to any data other than LMS data which was used to produce the SeER. In addition, it was a significant win to be able to obtain data much more frequently than was possible previously, which in turn meant that the reporting frequency increased to weekly (the SeER was generated every four weeks during the semester). The scope and quality of the available data allowed us to produce a report that provided high level results which were useful indicators of what was working well and where improvements were needed. A second short-term win was the development of a novel tool for teachers to analyse chatroom messages captured by online conferencing platforms, to provide insight in student online learning engagement. This tool was initially developed in response to feedback from teachers and was well received because analysis of this data was not possible previously, but was considered to be important for teachers in understanding students' behaviour and learning in the online environment.

#### Feedback and Evaluation of the LA Implementation during COVID-19

In Semester 2, 2019-20 when online learning was implemented, of the 2511 subjects for which a weekly LA report was provided, at least one report was viewed for 508 (20%) of these courses. The highest number of views was in the first week of the semester, with views declining across the semester. Of the 73 teachers who responded to a survey on the LA reports provided to them about their subject, 75% indicated that they read statistics or analytics reports about online teaching or students' online learning. Over half of the participants reported that they made use of these statistics and analytics reports to do things such as review participation and progress in the subject and take action where necessary.

At university level, bringing diverse data sources together helped to demonstrate student engagement in online learning and to show the impact of the sudden change to learning and teaching. For teachers, the statistics and analytics could be used to

understand students' learning progress and their engagement with online learning activities and to evaluate students' performance. However, feedback from teachers via surveys, workshops and training sessions indicated a need for more data and analysis results, together with a more convenient way of retrieving the information. Data security remained an issue, together with concerns whether the level of analysis provided could fully explain the quality of learning effectiveness. Teachers also wanted to better understand how to use data to enhance their teaching and make them really useful for maintaining student engagement and motivation.

### Changes to the Vision, Strategy, and Road-map for LA

After initial intense activity to put in place the necessary LA reporting mechanism to respond to the pandemic, once the system was in place and functioning there was space to review what had been achieved and plan for what to do next. The last two actions recommended by Kotter (2014) are to consolidate improvements and maintain change, and to institutionalize changes in the organizational culture. To best understand how to do this, we returned to our initial vision, strategy, and roadmap to which we applied the ROMA model to revise the vision, strategy, and roadmap for LA at the university based on the changes already implemented and the current situation.

By the end of the 2019-20 academic year, it was clear that face-to-face teaching would not resume as normal for quite some time. As such, the use of LA as part of monitoring teaching and learning was well established and broadly accepted. At this point, the roadmap for LA had changed significantly, as had the vision. The original roadmap was to have all subjects receiving the SeER four times during the semester by the end of the 2021-22 academic year. However, by the end of the 2019-20 academic year, all subjects – over 2500 in total – were receiving a weekly LA report which included data from the LMS and other teaching and learning platforms and systems used at the University. The increased scope and frequency of the reporting created a significant workload for the LA team, while at the same time users wanted more customized analyses and easier access. As a result, the vision for LA shifted from a single report, with limited customization only available at specific times and for prescribed periods, to a self-service model giving users flexibility in the reports they could generate, both in terms of data sources and the period the data covered.

As a result of the successful implementation of LA in response to the pandemic, the University funded the LA self-service portal project which is designed to meet the demand for just-in-time and customizable LA for stakeholders. The activities for this project are aligned with the last two actions in Kotter's (2014) model – the self-service portal will consolidate improvements and maintain change, while also institutionalizing the changes. The project is also an opportunity to revisit the vision

and update the strategy and roadmap for LA given our progress. One exciting area we are looking at is providing students with LA that can help them be academically and personally successful. Providing students with access to LA relevant to them was not part of the original vision, but is now acknowledged as being an important means of empowering students who are key stakeholders not previously represented in the plan for LA at the University.

## Lessons Learned, Implications and Conclusions

When the University first began to adopt LA, staff were unfamiliar with LA and adoption was slow. However, when teaching shifted to fully online, there were technical and educational support staff with experience and expertise related to LA which could be leveraged to address the pressing need to have data on how students were learning online and what impact this had on their learning outcomes and learning experience. Initially it was stressful and time consuming to put in place everything needed to generate and refine the LA report and expand its scope as opportunities, such as access to new data sources, presented themselves. What was achieved in a very short period of time was well beyond expectations and forced a re-think of the vision for LA and the strategy and roadmap to achieve it.

While disruptive forces such as a pandemic thankfully don't occur often, this case-study shows that disruption can be a driver of positive change if approached properly. Having a model specifically designed for LA adoption in conjunction with Kotter's (2014) change management model helped to guide and inform our actions. While there is still more work to be done to implement the vision for LA at our University, the pandemic condensed the timeframe for completing the work originally planned, while at the same time expanding the scope of the vision. It also helped to mainstream the use of LA rapidly and to reinforce its importance to stakeholders at all levels for providing evidence related to teaching and learning quality and outcomes. As such, it showed how quickly things can change and the importance of being adaptable and agile to take advantage of a dynamic situation.

Our experience shows the importance of strong leadership and empowering those given the responsibility to take on a challenge so that they can complete the required task. This was a critical factor in the success of the LA team and the response to the pandemic. Given the seriousness of the situation, the levels of co-operation and collaboration made it possible to achieve great results, under difficult circumstances and in a very short period of time. Unfortunately, the levels of stress and effort required to do what was done in response to the pandemic are not sustainable, which makes it all the more important to make the most of opportunities when they arise. Fortunately, stakeholder interest in LA has not diminished and there is demand from the University and teachers for more sophisticated LA which is currently being addressed. As this case-study shows,

while disruptions such as COVID-19 are not welcome, when they happen there can be unexpected consequences which ultimately are beneficial if the disruptive change can be harnessed to bring about positive change in an organization.

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## Author Details

Christine Armatas  
The Hong Kong Polytechnic University  
Hong Kong SAR China  
[christine.armatas@acu.edu.au](mailto:christine.armatas@acu.edu.au)

Ada Tse  
The Hong Kong Polytechnic University  
Hong Kong SAR China  
[ada.sk.tse@polyu.edu.hk](mailto:ada.sk.tse@polyu.edu.hk)

Chun Sang Chan  
The Hong Kong Polytechnic University  
Hong Kong SAR China  
[chun.sang.chan@polyu.edu.hk](mailto:chun.sang.chan@polyu.edu.hk)

# INTERCULTURAL COMMUNICATION IN A GLOBAL SOFTWARE ENGINEERING COURSE DURING THE PANDEMIC

Patricia Brockmann

*Nuremberg Institute of Technology Georg Simon Ohm*  
GERMANY

## Abstract

The importance of intercultural communication skills required for global software engineering has become increasingly more important due to the current pandemic. Cooperative, digital classes conducted simultaneously in two different countries can help students learn the intercultural communication skills necessary to work effectively with team members from different cultures.

## Introduction

The advent of the Covid-19 pandemic has interrupted lives world-wide. Students, educators and universities are no exception. Students, who had made plans to spend a semester abroad to gain international experience, have had to cancel their plans due to travel restrictions. Educators, who have been teaching classes in-person for years, have had to adapt to teaching online almost overnight. Universities, as meeting places for discussion and sharing of knowledge, were suddenly emptied due to contact restrictions. Teaching and learning as inherently social processes needed to be adapted to the remote communication dictated by pandemic mitigation measures.

IT professionals may have an initial advantage in adapting to remote communication, namely technical affinity. Use of computers in everyday work can make the changeover to remote communication easier than for those who work in non-technical subject areas. Previous experience in exchanging software modules over online collaboration platforms and discussing ideas via chat forums can be leveraged to keep the channels of communication open, even during lockdown measures.

However, technical capabilities alone are not sufficient for effective communication. Nuances of context, pauses, and facial cues are sometimes more important than the actual words spoken. Written text can often be misunderstood when these cues are missing. Such misunderstandings can be further amplified when communication partners speak different native languages and come from

different cultural backgrounds. Students of information technology need to master both the technical as well as the intercultural skills necessary to communicate effectively with stakeholders in different countries. The acquisition of these skills has been made much more difficult by the travel and contact restrictions to minimize the spread of infection.

IT students from traditionally underrepresented groups may have suffered from above average disadvantages during the pandemic. Women, student parents, students from non-academic families and those from a migration background were already underrepresented in Science, Technology, Engineering and Mathematics (STEM) subjects before the pandemic (Wang, 2017). A lack of financial resources or the need to care for family members made spending a semester abroad more difficult than for traditional students.

One possibility to help students get international exposure without leaving their home countries is to participate in distributed, collaborative courses which take place simultaneously in two countries. The goal of this experiment was to see whether it is possible to conduct a cooperative course in two countries over video conferencing systems during a global pandemic. A special focus was placed on trying to determine whether students from underrepresented groups faced additional difficulties, which traditional students did not. They may need specially focused support to cope with the effects of the pandemic.

This work describes a hybrid, master's level course in global software engineering which was conducted entirely in English by the Ritsumeikan University in Japan and the Nuremberg Institute of Technology in Germany, during the winter semester of 2021 – 2022. First, related work done by other researchers is surveyed. Next, the organization and pedagogic methods employed in the course are described. Then, experiences reported by students and instructors are evaluated. Finally, conclusions and plans for future research are presented.

## Related Work

This section provides an overview of current literature relevant to this work. The first subsection covers literature on the effect that the pandemic has had on students and instructors at universities. The second section discusses cultural aspects of international communication.

### The Effect of the Pandemic on Universities

A number of authors have discussed the effects of the pandemic on educators and students in STEM subjects during the pandemic. The lightning speed of transition from traditional (in-person instruction) to online learning in engineering education

was investigated by Park et al. (2020). They found out that emotional experiences of students can have an effect on the efficacy and efficiency of remote learning. As a result, the entire educational community should recognize that they have a responsibility to address the intellectual and emotional needs of students, especially when designing remote instruction.

Experiences in converting a software engineering course to an online format during the pandemic were described by Barr et al. (2020). The authors first began by streaming their in-person lectures as online ones by using video conferencing software. Due to the length of the traditional lectures, many students complained of difficulty concentrating for such a long period of time, so-called Zoom fatigue. Instructors achieved better results by breaking longer lectures into smaller “chunks”, which mixed live lectures with recorded videos. Another aspect highlighted by the authors was the increased prevalence of uncertainty and anxiety reported by students during the pandemic due to social isolation. Thus, Barr et al. (2020) also emphasized the importance of supporting students’ psychological well-being.

Manea et al. (2021) conducted an analysis of the experiences reported by students in Romania. Positive advantages associated with online instruction were reported in both educational and personal areas. The highest rated educational benefit rated by students was the possibility to record, stop, and rewind lectures at any time and from any place. The highest rated personal benefits were savings in time, money and an increase in comfort due to not having to travel to and from the university daily.

Some educators reported difficulties in adapting to remote instruction. Without adequate time or resources to adapt to remote teaching, many educators reported feeling overwhelmed (Johnson et al., 2021). Changes in productivity levels, as defined by the number of scientific articles authored, among university faculty in STEM subjects was investigated by Krukowski et al. (2021). This study found that women and faculty members with young children reported a significant decrease in the number of scientific articles they authored during the pandemic.

Finally, the pandemic has also forced IT professionals in industry to adjust to remote work. Ralph et al. (2020) investigated the effects of the Covid-19 pandemic on the sense of well-being and general productivity of software engineers in 53 countries. They found out that the pandemic has definitely had a negative effect on the sense of well-being and on the productivity rates of software engineers, mainly women, parents with small children and people with disabilities. Especially for these disadvantaged groups, employers need to find ways to provide additional support to compensate for their specific disadvantages.

## The Effect of Culture on Intercultural Communication

The role of differing cultural perspectives in intercultural communication has been well-documented by Hofstede, et al. (2010). The authors identified six cultural dimensions, which can considerably differ among people from different countries:

1. Power distance: Attitude to inequalities among individuals in a society
2. Collectivism vs. individualism: Importance of group vs. the individual
3. Assertiveness and achievement vs. cooperation for group harmony<sup>1</sup>
4. Uncertainty avoidance: Fear of the unknown or ambivalence
5. Long-term vs. short-term orientation
6. Indulgence vs. restraint: Enjoyment of life vs. self-discipline

Hall (1990) observed differences between high context and low context cultures. In high context cultures, personal relationships and differing levels of status between conversational partners often play an important role in non-verbal communication. Facial expressions, gestures and pauses can often convey more meaning than the actual words spoken. In contrast, in low-context cultures, written and spoken words directly convey meaning. Because all of the necessary information is explicitly exchanged, communication tends to be verbose and often blunt. Collectivist societies such as Asian countries tend to show characteristics of high context cultures, while western countries, such as Germany, tend to be more individualistic and lower context cultures.

## Pedagogic Methods

The course in “Global Software Engineering” described in this paper was taught according to the principles of project-based learning. Krajcik and Blumenfeld (2006) define project-based learning as a situated learning method which allows students to learn by doing. By working on real-world projects, they gain a deeper understanding of concepts by actively investigating questions, posing their own hypotheses and then constructing their own solutions. Kokotsaki (2016) points out that this context-specific, inquiry-based method helps students to achieve their learning goals through social interaction and knowledge sharing. Sharma et al. (2020) found that students who took part in a project-based learning courses during the first and second years of their engineering degrees did better in the third year of their degrees than those who only took part in traditional, instructor-centered lectures. Fioravanti et al. (2018) applied project-based learning to the field of software engineering and experienced that it helped students practice the interpersonal skills necessary to communicate with project managers and real-world stakeholders. Han et al. (2014) found that project-based learning was especially effective in improving performance among students who had previously been identified as low-achieving, which also correlated with student’s ethnicity and socio-economic status. Chen et al. (2015) also found that collaborative project-

based learning led to a greater increase in self-efficacy, especially among students from minority groups, who had initially scored lowest on self-efficacy before the course.

Clark et al. (2012) have expressed criticism of minimal guidance pedagogical methods, which include project-based learning. They warn of the dangers of cognitive overload among inexperienced students who lack the basic knowledge necessary to identify and analyze problems on their own. Ertmer and Glazewski (2019) recommend a scaffolding approach to avoid this problem. Scaffolding refers to providing students with additional guidance at the beginning of a project to help them learn to deal with the complexity of structuring a project and to focus on the most relevant aspects of the project. Macleod et al. (2020) showed the importance of scaffolding to minimize potential cognitive overload.

## Course Organization During the Pandemic

Two universities which have a long history of cooperation, the Ritsumeikan University in Japan and the Nuremberg Institute of Technology in Germany, took part in the *Global Software Engineering* course which was taught entirely in English. During the winter semester of 2020 – 2021, this cooperation also fell victim to the pandemic<sup>2</sup>. As the pandemic situation improved during the summer of 2021, a new attempt was made to revive the cooperation. During the winter semester of 2021 – 2022, a hybrid version of the course was offered. Eleven students (all male) from the Ritsumeikan University and 16 students from the Nuremberg Institute of Technology (3 female, 13 male) took part. Four students who were physically present in Japan participated in person, while those who were still in their home countries waiting on their visas participated online.

The Nuremberg Institute of Technology returned to face-to-face classes in October of 2021. As the semester progressed however, infection rates worsened. In November, classes in Germany returned to a hybrid format. Students who felt comfortable took part in the face-to-face classes, while others who had health concerns took part online. By December, the infection rates had further increased, so that classes were held exclusively in the online format.

Because this course was taught at the master's degree level, participating students already had basic knowledge of software engineering from their bachelor's degree programs. To support students who lacked experience in intercultural communication, a scaffolding approach was implemented. At the beginning of the semester, each group of students met separately with their instructors in Japan or in Germany. This initial scaffolding session was designed to prepare the students for the coming international cooperation. First, students were first given a short introductory lecture about methods of distributed software engineering, cultural

dimensions, and international communication. Next, students were divided into sub-groups to work on independent case studies. Each group had to conduct independent research into the cultural dimensions of one country, for example Germany, Japan, or Vietnam. At the end of this scaffolding session, each group presented their findings and discussed the implications of cultural dimensions for international projects.

During the second week of class, students from both universities met online for one real-time 90-minute video conference. First, students and instructors briefly introduced themselves. Next, the course organization was presented. Three cross-site groups with students from the two universities were formed, each composed of roughly half the students from the Japanese university and the other half from the German university.

The project assignment for each mixed, cross-site team was to generate a creative idea for a software solution to a common problem: use machine learning to detect anti-social behavior. In this context, anti-social behavior was defined as actions unsuitable to a particular cultural context. Some of the ideas generated by the students were to develop a system to detect hate speech online, to identify litter in public parks, and to advise which type of clothing would be appropriate for certain occasions in specific countries. Each team had to conduct the requirements engineering and system design and develop a functioning software prototype demonstrating their idea. Teams met online for 90 minutes of real-time contact every week. All other communication had to be conducted via online cloud-collaboration software. Students applied the theoretical knowledge on intercultural communication they had learned during the scaffolding session while working on real-world software projects with team members in different countries. They experienced cultural misunderstandings firsthand and had to try out different methods to overcome conflicts and build trust within their teams.

Grading regulations differed between the two cooperating universities. At the middle of the semester, the students from the Ritsumeikan University were required to hold a mid-term presentation to demonstrate the current state of their projects, which counted for one-third of their final grade. The study regulations for Nuremberg Institute of Technology do not allow for mid-term grades. Students from both universities were required to hold a final team presentation at the end of the semester. The final presentation counted for two-thirds of the grade for the students at the Ritsumeikan University but only for one-third of the final grade at the Nuremberg Institute of Technology. German students were required to submit a written project report, which counted as two-thirds of their final grade.

## Data Collection Methods

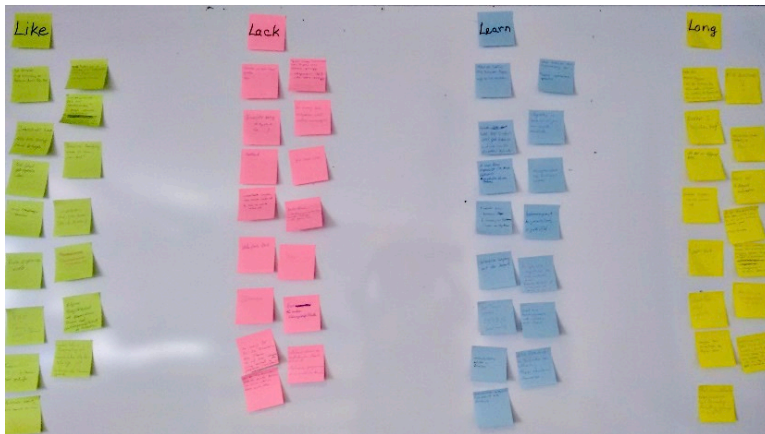
Two qualitative data collection methods were implemented: observation and a project retrospective. During the semester, a student research assistant was responsible for observing and taking notes about the interactions between students and instructors during the common 90-minute-classes.

At the end of the semester, a project retrospective was held. The 4L's method developed by Gottesdiener (2010) is a retrospective method designed for use in agile software engineering projects. The method was originally meant to be used by a small team, with everyone sitting together in the same room. First, each team member is given four sticky notes, one in each color:

- **Like** (green): What did you like about this project?
- **Lack** (red): What did you miss / What went wrong?
- **Learn** (blue): What did you learn during this project?
- **Long for** (yellow): What would you do differently next time?

**Figure 1**

*Project retrospective conducted with 4Ls method*



Team members are given a few minutes to fill out their notes in private, so that they are not influenced by peers. Afterwards, each member places their notes on a large board and explains their experiences in each category. This structure should inspire honest, open discussion of both positive and negative aspects of the project, helping each team member learn from the perspectives of the other members and thus improving efficacy and team cohesion for future projects.

By the end of the project in January, contact restrictions made it impossible to conduct project retrospectives in person in both countries. A collaborative, digital



method was required to allow for online participation in the project retrospective. The software program EasyRetro was selected, because it enables the group to conduct a close approximation of the 4Ls retrospective process which can be done online.

## Results

In this section, qualitative results of the project observations are presented. First the experiences observed at the Ritsumeikan University and then those observed at the Nuremberg Institute of Technology are described. Finally, results of the online project retrospective are presented.

### Experiences at the Ritsumeikan University

Students participating from the Ritsumeikan University faced a major disadvantage during this course. Only four of the students were in Japan and thus, could take part in face-to-face classes. The majority of the students were still in their home countries (China, Korea, or Vietnam), waiting to obtain their student visas to enter Japan. This meant that they could only take part in online classes via Zoom.

Students who were physically present in Japan for the face-to-face classes had the advantage of using a special classroom set up with high quality technology for video conferences. Multiple video cameras, microphones, and split screen technology greatly increased the quality of hybrid instruction in Japan.

The Chinese, Korean, or Vietnamese students were observed to appear quite hesitant in participating in class discussions. This may have been partly due to a lack of self-confidence in their English skills. Furthermore, their undergraduate courses featured traditional lectures, where the instructor conveys knowledge while students take notes to receive this knowledge. Asking questions during class would be considered disrespectful. None of the students from East Asian countries had prior experience with project-based learning. This corresponds to the high power distance between those in authority (instructors) and those with less authority (students) observed by Hofstede (Hofstede, 2010).

### Experiences at the Nuremberg Institute of Technology

Students from the Nuremberg Institute of Technology had the advantage that their semester began with face-to-face classes. They had the opportunity to meet the other students and their instructor in real life. Informal communication during class and outside of class, such as in the cafeteria over lunch, greatly increased the sense of camaraderie and helped to build trust between team members. German students suffered a major technological disadvantage in comparison to their counterparts in Japan. As a traditional face-to-face university, the Nuremberg Institute of

Technology did not have the adequate technical infrastructure in place before the pandemic. Pedagogic methods specifically suited to online learning had not yet been developed. As a result, sub-optimal solutions had to be improvised with whatever hardware and software could be acquired.

From the beginning, German students participated vigorously in class discussions, often interrupting their instructors to ask questions. They sent Ritsumeikan University students long, text-filled e-mail inquiries and requests for additional video conferences. The German students became confused when the answers they received were very brief and vague. They reported frustration and doubts about whether their colleagues at the other institution were actually doing any work. They tried to increase the number and length of their e-mails and requested more frequent video calls, hoping that more information would solve the problem. This corresponds to Hall's (1990) observations that people from a low-context culture like Germany tend to miss important, non-verbal cues sent by team members from high-context cultures in East Asia. Facial expressions of the Ritsumeikan students and long pauses during video conferences were often ignored by the German students. The lack of personal contact exacerbated these misunderstandings.

After about half of the semester, some German students noticed that they received the best responses through short chat messages. Chats removed the pressure of having to respond immediately, as in video conferences. Students on the Japanese side could take the time they needed to formulate brief answers.

### Retrospective with the 4Ls Method

At the end of the semester, a project retrospective with the 4Ls method (Gottesdiener, 2010) was conducted to reflect on positive and negative aspects of student experiences. Because face-to-face meetings were no longer allowed in January, the online retrospective tool EasyRetro was used. Some of the most common observations are summarized in Table 1.

**Table 1**

*Most common observations from the project retrospective*

<b>Like</b>	<b>Lack</b>	<b>Learn</b>	<b>Long for</b>
Working in an international team	Off-site members very shy/quiet	Hard to work with time difference	Asynchronous work across time zones
Creativity of own project ideas	Communication with off-site team	Address team members by name	Inform myself about culture of members
Develop our own project solution	Concrete specifications	Prepare an agenda before meetings	Support informal communication
Freedom to self-organize	Fast internet, better audio quality	Assign tasks to team members	Team-building to generate trust

## Conclusions and Further Work

This experiment has demonstrated that it is possible to conduct a hybrid, distributed, collaborative course in global software engineering even during a pandemic. Adequate technical infrastructure to conduct video conferences with high quality audio is a must. Use of cloud-based collaboration software and e-learning platforms need to be adapted to pedagogic methods.

In spite of the increased difficulties caused by travel and contact restrictions, this type of cooperation between universities in different countries can help students gain intercultural experience without leaving their home countries. Further work will explore whether geographically distributed, hybrid courses can benefit students from underrepresented groups, such as from non-academic families, women in STEM subjects, student parents and students who come from a migration background.

## Notes

1. Hofstede et al. (2010) defined this dimension as “masculine vs. feminine”, which might be considered offensive by some today.
2. The Ritsumeikan University is an international university, with students from many East Asian countries, such as China, Korea, Thailand, and Vietnam. Due to travel restrictions, none of the foreign students were able to obtain visas to travel to Japan. As a result, many courses were canceled.

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## Author Details

Patricia Brockmann  
Nuremberg Institute of Technology Georg Simon Ohm  
Germany  
[Patricia.brockmann@th-nuernberg.de](mailto:Patricia.brockmann@th-nuernberg.de)

# COLLABORATION WITH ADDED VALUE FOR ALL: INCLUSIVE ARTS EDUCATION THROUGH COOPERATION BETWEEN SCHOOLS AND MUSEUMS (INARTdis PROJECT)

Monika Gigerl and Elisabeth Herunter  
*University College of Teacher Education Styria*  
AUSTRIA

## Abstract

The aim of *INARTdis* is to promote social inclusion through art and arts education. This paper presents the Austrian results of the first survey phase with focus groups, interviews, and questionnaire surveys of teachers and museum staff as well as the results of the guided museum visits, guided interviews, and video stories. Both surveys focused on desires, experienced barriers, and perceived conditions for success for inclusive access to museums and art education. From the results of both phases of the survey, conducive and inhibiting factors as well as adaptation possibilities for the design of inclusive museums are pointed out.

## Introduction

The Universal Declaration of Human Rights ensures the right of access to culture for all people as well as the right for all to be active artists themselves (United Nations, 1948). The UN Convention on the Rights of Persons with Disabilities (CRPD) additionally contains the key provisions for the political, social, and cultural participation of persons with disabilities (CRPD, 2007).

Since people with migration or disability backgrounds are partially excluded from formal political activities, the need to use non-formal participation opportunities in the context of the integration process is high (Bekaj & Antara, 2018). In the process of participation, schools and other organizations can provide learning experiences for developing practical skills of democratic participation based on collaborative learning (Lee et al., 2021). This will also be critical to the future of our democracy. Inclusive societies grant participation opportunities to potentially excluded groups, including in key areas such as education, culture, language acquisition, or employment (Huddleston, 2009). Huddleston also comments that the earlier the process of participation and inclusion begins, the greater the likelihood that people will engage constructively in the community over the long term. Engaging with culture and the arts as aspects of society can make a significant contribution as it speaks to both affect and knowledge.

## Cultural Participation for All

If culture is understood not only as passive consumption, but as active participation, then the two concepts of participation and culture must also be seen as interdependent ideas. According to Hinz (2002), for successful participation of all people in the context of art and cultural institutions, both external and internal aspects must be considered. Thus, overcoming barriers to create general accessibility (physical and communicative) is considered one of the three essential conditions for success. In addition to spatial design features, this means that issues of information transfer and its accessibility are also up for review (Auer, 2007). The second area involves overcoming internal barriers by opening a wide variety of perceptual possibilities. The writing of information in easy language, the possibility of reception of the offers via different perceptual channels, and the possibility of active engagement with the exhibition objects are to be mentioned as essential elements in this area. The third aspect concerns the creation of a sense of belonging through a broad representation of the diversity of society. To show this heterogeneity in an appreciative way and to reflect it within the museum is the task and thus a condition for success of inclusive methodology (Hinz, 2002). While individual needs should be considered in the creation of inclusive cultural spaces, categorization and assignment to a specific group of people should be avoided (Folta-Schoofs, 2017). The added value of such an expanded accessibility of art and culture can be felt and experienced by all museum visitors, who also benefit from the possibility of this larger field of experience (Maaß, 2007).

## Participation Barriers and Requirements (Passive Cultural Participation)

The frequencies of visits to museums, exhibitions or sights were studied by the European Union (Eurostat Culture, 2019). According to this study, cultural participation is significantly higher among younger people (16 to 29 years) than among older people. The use of cultural offerings is also higher among people with higher education as well as the urban population than among other groups. Reasons for non-participation in cultural offerings are lack of interest, followed by financial reasons or poor accessibility (Eurostat Culture, 2019). Due to a lack of meaningful statistics on the cultural participation of people with disabilities, no statement can be made for this group. The data suggests that people with migration background (differentiated by place of birth) are less likely to take advantage of cultural offerings (Eurostat Culture, 2019). Special offers such as guided tours or workshops for "migrants, refugees or people with disabilities" are only available in a few museums.

For people with disabilities, access barriers or discrimination mainly concern the use of the physical environment, buildings, transport, and communication, but also

access to information, education and culture. According to the UNESCO Universal Declaration on Cultural Diversity, culture should be increasingly understood as a common heritage of humanity or a fundamental principle thereof (UNESCO General Conference, 2001).

To counter prevailing labels and to meet the demands of the CRPD, those measures of inclusion that benefit everyone are particularly relevant. The teaching of creativity and artistic forms of expression, which sometimes overcome language barriers, contain great potential regarding social integration processes (Ziese & Gritschke, 2016). A prerequisite for improved inclusion – both regarding people with disabilities and people with a migration background – is that representatives of the respective group are involved in the design of inclusive measures (Rahn, 2016). This shows that accessibility and participation are also mutually dependent. Participation is both the consequence of accessibility and the prerequisite for its effective planning.

### Cooperation between Museums and Schools

European museums are making various efforts to overcome structural barriers and address the diversity of society in general, focusing on older people or people with disabilities, migrants, or refugees in particular (Sergi, 2021). Inclusion of all people in cultural life benefits all people in diverse communities (Brown et al., 2020). The presence of all groups in images and other products of modern art is also relevant: visitors are thus encouraged to rethink preconceptions and initiate conversations about marginalized groups. When the diversity of our society is visible in collections and artworks, museums fulfil their responsibility not to create further mechanisms of exclusion (Sergi, 2021).

Participatory justice is achieved when museums and other cultural offerings are designed to enable participation in a fundamental and self-determined way. The degree of active participation can be determined by the individuals themselves but activating suggestions and encouragement can increase the incentive to participate (cf. Merkt, 2017).

### Cultural Education and Personality Development (Active Cultural Participation)

In school contexts, inclusion means responding to the heterogeneity of students through specifically adapted learning opportunities, at best in interdisciplinary teams that have factual, didactic, and diagnostic competencies. A multi-perspective approach that includes music and dance as well as visual arts not only promises new spatial or self-experiences, but also enables learning that builds on physical experiences. The inclusion to be realized in the arts classroom should be viewed as



preparation for cultural participation and engagement. In any case, Loffredo (2016) highlights the great responsibility that schools have with this in a social and cultural context. For schools, collaboration with museums can provide access to the community for all and open new social spaces for marginalized groups (Sanders-Bustle, 2020). Additionally, exposure to art can be a way for young learners to express experiences of exclusion or injustice (Lee et al., 2021).

Artistic activities (i.e., visual arts, music, dance, theatre) are therefore fundamental components of the curriculum from early on. Furthermore, they are often independent of language proficiency or oral language skills and are therefore ideally suited for lived inclusion (Barton, 2015). In this context, artistic creation can be understood as a tool for the general development of the person. The development of competencies in aesthetic development, socio-emotional development, socio-cultural development, and cognitive development is promoted through creative education. Creative arts education as means to teach the whole curriculum is suitable to achieve pedagogical and professional goals (Loffredo, 2016).

Arts education contributes to general education and promotes a democratic, just, inclusive, free, and critical society. Dealing with diversity, creating democratic awareness, and developing imagination or freedom of action and thought is advanced (Barton, 2015). The goal is to make creativity as inventive, original thinking, constructive imagination, or divergent thinking accessible to all. In addition, arts education can be used to promote social cohesion and intercultural dialogue.

## Results from the Survey Phases to Date

In the *INARTdis* research project, educational institutions from Austria, Germany, Northern Macedonia, Portugal, and Spain are investigating the accessibility of museums and cultural institutions (Sanahuja Gavaldà, 2019). The first phase focused on needs, opportunities, and barriers in access to art and culture from the perspective of teachers and museum staff. Central to this phase was the following research question: *What is comprehensive inclusive arts education from the perspective of teachers and stakeholders? What conditions for success in participation for all can be identified?* In this context, both the accessibility of museums for people with disabilities and the inclusive design of art education programs are addressed.

### Data analysis 1: Questionnaire, Interviews and Focus Groups

The analysis on creating inclusive access to arts and culture used a mixed methods design with quantitative and qualitative survey (Kuckartz, 2014). The instruments

used were questionnaires, interviews, and focus group discussions. The questionnaire (62 items) was composed of closed as well as open-ended questions with qualitative answers. The guide for conducting the interviews took the qualitative results of the questionnaire survey into account. The surveys were conducted in online formats: in Austria, the survey achieved a response rate of 113 respondents. In the qualitative survey, 17 interviews and three focus group discussions (21 participants) were conducted in Austria. In deductive-inductive category formation, the evaluation of all interviews was carried out according to qualitative content analysis according to Mayring (2016) using MAXQDA software.

#### Cultural Participation: Perceived Barriers

The most frequent responses from participants refer to spatial barriers (e.g., architectural barriers, accessibility) and lack of infrastructure as inhibiting factors for inclusive arts projects. Prejudices or uncertainty in the context of inclusion are mentioned as internal barriers. Here it is mainly ignorance and lack of awareness, fear, and lack of information that can have a negative impact. Lack of human resources, especially of specialized staff, limited financial resources, and time capacities are also mentioned as constraints for accessibility. Museums, even if they make efforts to remove barriers, are still perceived as exclusive places in Austria. This elitist touch needs to be minimized or eliminated by reducing financial barriers and raising awareness regarding equal participation.

Spatial adaptations such as increased seating, continuous guidance systems, barrier-free display case design, available audio guides in various linguistic differentiations and considerations for barrier-free text design (linguistic differentiation, font size, lighting, and contrast) represent conducive conditions.

#### Cultural Participation: Conditions for Success in Inclusive Creative Projects

The interviewees believe that an inclusive art project should be designed in such a way that all participants can contribute their abilities and that the project can thereby strengthen identity and self-confidence. Self-determination, openness to results, acceptance and appreciation of all participants, as well as the renunciation of performance comparisons are relevant internal factors for successful implementation. Structural conditions, such as the size of the visitor groups, the time flexibility of the offers, the possibility of active participation of all participants in the project, as well as the possibility of free experimentation and the stimulation of creative processes, are seen as essential conditions for success. Structurally, the availability of materials and infrastructure, and financial and human resources are also mentioned. Methodological-didactic considerations for the continuous

inclusion of several channels of perception represent success factors in the mediation of artistic topics.

Referring to creative processes, the participants in the discussion emphasize that everyone can learn and express themselves creatively. Art creates a space to experience oneself as self-effective, provided that not everyone has to do the same. Art makes it possible to shape and change one's own environment, which is a basic human need. In the run-up to this, there is the consideration of how the goal can be achieved, which different sensory channels need to be addressed and which technical aids need to be used. Accordingly, part of any creative process is also to be allowed to make mistakes and to reject things again. Especially collaborative products have an inclusive effect if everyone can contribute with their abilities. The motivation for participation is particularly high in artistic projects. According to the respondents, artistic activities promote identity and self-confidence.

It is central to shape the process in a self-determined way right from the start, to make the sketch oneself, to choose the material and the tools and to determine the time needed for it. A climate of trust and confidence is needed, as well as the attitude of respecting everyone as they are. It is important to have a prepared and stimulating environment where there is an abundance of materials and where the artist can choose which materials to use. The financial resources for materials also play a role in art projects, so these should be ensured on the part of the educational institution, for example, for children with a migration background. Only then does artistic education become accessible to all who want to participate.

According to the interviewees, it is desirable that learners are given more confidence. The time factor represents a barrier in several respects, and there is potential for improvement here: due to the different speed at which tasks are processed, both the timetable sequence according to the subjects and the schedules of the nursing and support staff need to be revised. The individual implementation of artistic processing should also provide for sufficient break times to address differences in the ability to concentrate.

## Data Analysis 2: Interview Tours and Video Stories in the Museum

Various qualitative techniques were used to collect data at the museum. In particular, open-ended interview loops were designed for visitors (students of two inclusion classes of secondary and primary school). The goal of the interview tour was to explore what could be improved in cultural institutions and what already contributes to a positive accessible experience in the museum. The interview guide questions addressed the dimensions of "arrival and accessibility of museums", "physical accessibility", "accessibility of information", "content of the museum tour and museum", and "educational activities and interactions with professionals". The

results of these surveys were subsequently edited using video stories and presented to museum professionals within heterogeneous focus groups.

#### Class Composition/Type of Exhibition and Museum

The data described below refer to the accompanied museum visits of a secondary school class and a fourth-grade primary school class with students with and without disabilities.

The secondary school class visited the exhibition "From the future to the futures—what will be" at the Kunsthaus Graz (hereinafter referred to as Museum 1). The exhibition does not show a distant utopia or a possible draft of an ideal society, but outlines "What will be". This group consisted of 22 students (ten girls, one transgender boy, eleven boys; three students with first languages other than German, four students with special educational needs); the average age was 12 years.

The inclusive class of the primary level visited the exhibition "Ladies and Gentlemen" of the Neue Galerie Graz (Museum 2). "Ladies and Gentlemen" provides insights into essential social discourses from the past to the present—those of feminism, gender studies, and queer theory. The fourth grade with 18 students (ten boys, eight girls, about 10 years old, eight students with a first language other than German, and three students with special educational needs).

## Results from the Museum Visits

Feedback from the open-ended guided interviews conducted with all children and teachers during and after the visit is described below. The results are analysed in terms of and mapped to Hinz's (2002) three levels model.

### Level 1: General Accessibility

The dimensions of "arrival and accessibility" and "physical accessibility" correspond to the parameter of general accessibility according to Hinz (2002).

#### Best Practices that are Experienced as Positive

Proven and positively experienced methods, which are currently already implemented in the houses, were mentioned:

- Accessibility is provided in both museums by public transportation and on foot.
- All museums have barrier-free access, which is clearly signposted in Museum 1.

- The seating areas in front of the museums can be used to rest and to regroup as a group.
- Next to the entrance area is a restaurant that offers refreshments and light snacks.
- The routes to the restrooms are well signposted, and the houses have a barrier-free restroom for wheelchair users.
- In the exhibition in Museum 1, there were small folding chairs under the exhibits that visitors could take out themselves and rest. The exhibition in Museum 2, on the other hand, lacked seating in the exhibition rooms. There was enough space in the elevators of both museums for one person in a wheelchair and another accompanying person. Also in the exhibition rooms, both houses offered sufficient space for wheelchair users with good freedom of movement for self-determined movement.

#### Possibilities for Improvement

Visitors found the following areas of their visit critical and in need of improvement:

- The surfaces of the floors to reach Museum 2 make wheelchair access difficult.
- The checkrooms and the entrance to the museum (Where does the exhibition begin? What is the route through the exhibition? What is the direction of order?) were not independently locatable and usable by the students.
- In the entryway, signs or arrows to the different sections of the museum complex could help with orientation.
- Sofas or benches to sit on in the exhibit were requested
- A rest area, playground, or rooting corner for young children was requested.
- Stairs with very high steps, doors that are difficult to open with or without a knob, and doors that close very quickly, are problematic for wheelchair users to use.
- Guide systems for the blind are not consistently available for exhibits and all areas of the buildings, and in some cases stop within the building.

#### Level 2: Internal Barriers

Questions about "accessibility of information," the "content of museum tours and the museum," and "educational activities and interactions with professionals" correspond to the internal barriers category (Hinz, 2002).

#### Best Practices that are Experienced as Positive

- The website provides information about ongoing exhibitions, and the content can also be accessed via the website with the help of audio files. Short videos of the curators on the website convey the content and

- background of the exhibition. For the museums and exhibitions, sign language videos and children's audio tours of the museum are also available.
- Information texts on rooms and objects can be used by many visitors and make the exhibition more accessible.
  - Videos as part of a room installation were experienced as particularly appealing and easily accessible. Very often the positive feedback was that there were objects to touch and feel in this room installation and that one could move in the middle of the artwork.
  - Feedback on the quality of interaction with museum staff was exclusively positive: questions to the facilitator were encouraged and subsequently answered in a child-friendly manner.
  - Museum 1 also used an iPad and various tactile models to support educational outreach. During the tour, these objects were made available for the group to touch and feel.
  - It was positively emphasized that there was initially only brief information about the room installation and then the opportunity to grasp it for themselves and ask questions.
  - In Museum 1, during the visit, there was an opportunity to visit the carpeted room (Space 03) with numerous sloping levels, which allows movement, romping, and sliding. This room offers visitors cushions for lounging on the floor, among other things.
  - The creative activities and interactions with the content of the exhibition offered in this room at the same time were not used by the group of visitors. Thus, it might make sense to separate the movement space from the active, artistic processing and interaction.
  - In Museum 2, there was an opportunity to use a studio as a creative space during the tour. This creative work (designing body contours) was very well received by the elementary school visitors.

#### Possibilities for Improvement

- Informational texts about the artworks and rooms were informatively written, but too long in scope. In some cases, they could not be found because the descriptions were outside the respective room.
- Some of the texts about the artworks were printed too small and placed too high.
- According to the children, the written information about the exhibition and the individual works did not add value to their understanding.
- An improvement in comprehensibility could be achieved by simpler texts, by signs, or, for example, by audio information directly at the work (The audio guide was not yet available at the time of our visit but was subsequently implemented).

- It was negatively noted that some artworks only worked in English; these works had an exclusionary effect on many and should be translated into different languages (i.e., German, Arabic, Spanish) according to the visitors.
- A wish was expressed by the students for more objects to touch and for a library with more information and books to linger on. One student said that one should be able to "touch more works to understand them better". Being able to perceive the works through multiple senses (appealing to at least two senses) would increase the absorption of the content and the concentration span.
- People with cognitive impairments are unable to grasp the content independently due to their lack of reading ability. Thus, the experience is often reduced to looking at pictures. According to the accompanying persons, realistic images are easier to grasp than abstract ones, and music and moving images are also appealing.
- In some cases, objects could only be understood and viewed from a top-down perspective, which made viewing impossible for (smaller) children and people in wheelchairs. Here, tilting elements, mirrors, stairs, or possibly height-adjustable display cases would be useful.
- Adequate time for exercise and breaks was frequently requested.
- Young visitors wanted more time to be creative on their own, as well as opportunities to work with larger formats and with paints and brushes instead of pencils.

### Level 3: Creating Belonging

Creating belonging was not explicitly asked about in the interviews but was elicited through photo logs and feedback on content of museum tours and interactions with professionals.

Best practices that are Experienced as Positive

- Connection possibilities from their own world of experience with objects increased the children's interest in the exhibition: for example, a hot dog (Conchita Wurst) or the installation with stiletto heels were of great interest to the students. Works with comics and newspaper articles showing a man posing like a naked woman were also more accessible to the children.
- The objects were linked by examples from the children's everyday lives and thus explained in a way that was true to life.

### Possibilities for Improvement

- The objects in the exhibition in Museum 1 showed only young, beautiful bodies, predominantly with white skin colour, hardly any diversity and no representation of people with disabilities. In Museum 2, the depiction of naked bodies triggered strong emotion in the elementary school students, which was well received and dealt with by the museum educators. The depictions, some of which addressed self-destruction or unclear gender assignments, were judged as "funny" but also "disgusting, perverse, cruel, creepy, ugly, not normal, ultra-ugly".
- The older students made specific content suggestions that are important to them and their lives as potential for improvement: an exhibit on environmental protection is desired by several students.

### Suggestions for Adaptation

- Creation of spaces for movement and quiet zones
- Addressing several senses, multimodal spaces of experience
- Labelling and explanation of artworks via audio guide, stations to touch

## Summary

Museums strive to meet the needs and interests of older people, people with disabilities, and migrants or refugees, as well as actively work with people from these groups in the context of art (Sergi, 2021). There are, however, still effective barriers for these groups, ranging from unsuitable infrastructure in cultural institutions, to prejudices in cultural institutions, to the lack of financial and/or human resources. The findings from the present data collection are comparable to data from the literature (Folta-Schoofs et al., 2017). Participants also cited barriers to inclusive arts education, ranging from inadequate infrastructure and prejudice in cultural institutions to lack of financial and/or human resources. These findings are also consistent with other studies (Folta-Schoofs et al., 2017).

The evaluation of the museum visits shows that for young museum visitors, other factors, such as sufficient spaces for movement, multisensory mediation of the topics and interactive, and joint elaboration of the content, are to be considered when aiming to make their visit interesting and motivating. The results show that close collaboration between museums and educational institutions is necessary: preparing visits and anticipating the needs of participants and knowledge of activities is useful for preparing students in schools to facilitate the group's access to culture. The experience of belonging correlates with the possibility of connecting to one's own life reality and addressing those issues that are relevant to children and young people. There is potential for improvement here through even stronger cooperation between schools and museums.



Published reports and further information on the project can be found at <https://inartdis.eu>.

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## Author Details

Monika Gigerl  
University college of teacher education Styria  
Austria  
[monika.gigerl@phst.at](mailto:monika.gigerl@phst.at)

Elisabeth Herunter  
University College of Teacher Education Styria  
Austria  
[elisabeth.herunter@phst.at](mailto:elisabeth.herunter@phst.at)

# HRM STUDENTS' PERCEPTIONS OF AN ASSESSMENT FOR LEARNING IN A FULLY ONLINE UNIVERSITY COURSE IN SWEDEN AT THE DEPARTMENT OF EDUCATION IN UMEÅ

Monica Liljeström and Hanna Paulin  
*Umeå University*  
SWEDEN

## Abstract

### Introduction

The purpose of this paper is to contribute to the growing design-based research in fully online education in strictly text-based settings, by sharing the design of an Assessment for Learning (AFL), and the first analysis on the results of the implementation of this task. The AFL was created and implemented in spring 2021, in a fully online 50% pace Human Resource Management-course (HRM) on the undergraduate level, at the Department of Education, Umeå, Sweden. The analysis is based on the students' perceptions of their experiences in step 2 in the AFL design, in which peer reviews were carried out in asynchronous online discussions (AOD).

The course introduces students to the profession, theories, and research on gender and organisations and theoretical tools for work development, and provides vocational training in planning for change in organisations. About 100-150 students from all over Sweden enroll every year, and about 75-85 finish the course. Some of them have practically no previous experience from HRM work, while others have worked for years in this field. The majority are women and full or part-time workers, juggling their studies with many other commitments.

The overall course design is largely based on a 'standard design', used in most fully online courses at the department, which means a task-driven structure in which students' learning is guided by, often long, detailed, and wordy, written instructions about how to solve this or that task, written feedback on assignments, and answers to the students' questions in the *Questions about the module* forum. Usually at least two examination tasks are carried out in forms of AOD in smaller study groups. An important reason for this is the aim to enhance the students' possibilities to participate without compromising other commitments, as it allows students to self-pace their participation and work with the task anytime and anywhere. AOD can

also contribute to the sense of belonging to a dynamic community, thereby preventing online students from feeling isolated, and enhance critical thinking and high-order skills (Arend, 2009; Szabo & Schwartz, 2011; Brierton et al., 2016). Since all utterances in text are saved, they can be re-evaluated and reflected on many times, which can stimulate students to spend more time for preparation and to apply more factual arguments than they would have done in face-to-face discussions (Liljeström, 2010). It can be assumed that participating in AOD can enable students who are shy, introverted, or having language or learning difficulties to voice their thoughts better than in face-to-face discussions, as they have more time to formulate their input in a discussion. However, this ‘best case-scenario’ doesn’t emerge by simply adding AOD to a course. The task itself must be carefully designed to orchestrate meaningful and rich interaction, and to be perceived as relevant so that students engage wholehearted in the discussions rather than making a ‘duty post’ without much depth.

Although elements to stimulate interaction with peers were already included in the HRM-course, the staff had noticed that some students would not engage more than necessary in the AOD, and that the tasks were not sufficient to enhance the students’ abilities to *apply* theory in practical HRM-work. This led to the design and implementation of the AFL, which was guided by sociocultural theory, with an aim to stimulate higher engagement and to enhance the students’ learning of vocational skills, in which peer review, in forms of AOD, was found interesting to incorporate in hope that such activity would strengthen the students’ engagement and enhance learning.

The focus in this study is the students’ perception on the impact that the peer review element incorporated in the AFL in form of AOD had on their engagement, interaction with each other, and the development of vocational skills.

- What did the students’ experience during their interaction with peers in the AOD?
- What impact did the peer review format have on the students’ engagement in the AFL?
- Did the students perceive that they gained support for their development of vocational skills from the interaction with peers in the AOD?

## Background

As pointed out by Barab and Squire (2004), “One challenging component of doing educational research on design-based interventions is to characterize the complexity, fragility, messiness, and eventual solidity of the design and doing so in a way that will be valuable to others” (p. 4). Therefore, according to Barab and Squire (2004), it is important when reporting results from design-based research to

not simply share a design, but also to problematize it and share information that give others insight into the local dynamics, the context, theories guiding the design process and design features of the intervention, and what possible impact these features may have on learning. In the light of this, the context in which the design for learning was implemented is described below, to better mediate the rationale underpinning the design.

## The Overall Learning Design in the HRM Course

The HRM course is divided into two modules, each examined separately but summarised as a final course result after module 2 has been completed.

### Module 1: Theories, Concepts, and HRM Work in Practice

Module one begins with a voluntary task in which the students introduce themselves to their peers. The first examination is an unsupervised individual written assessment with a focus on the HRM-profession and its origin, theories, and practices in this work field. This task is usually solved by the students without many interactions with peers or teachers. The second examination is a little more complex. The content is processed through individual preparation of a seminar paper, in which students must describe a relevant scenario in an organisation and apply ethical and gender-theoretical lenses, inspired by cases in a course book or their own experiences. The paper is processed in a seminar, through feedback, questions, and suggestions from peers, and is aimed to enhance the students' ability to identify signs of gender discrimination in an organisation, its consequences, and what role they could play to identify, prevent, and solve gender-related problems in their future profession. The number of replies to peers, and application of theory in their feedback, is strongly formalised to make sure that everyone has understood the processed content well enough to apply it in an analysis of life-like issues.

### Module 2: Working with Organisational Change from an HRM-Perspective

In this module the focus shifts from the introduction to the profession, to a more specific focus on organisational change and learning, vocational training in applying theory, and research results to formulate a plan for change work in an organisation. The module starts with a voluntary seminar, offering the opportunity to collaborate with peers to find appropriate scientific journals and articles to use when working with the AFL. The first examination is an unsupervised individual written assessment targeting theories, models, and research on organisational change.

In the next section, the second examination, the AFL, and the theoretical outlook underpinning is described more in detail.

## The AFL

The Assessment for Learning (AFL) was formulated to fit into the existing overall course design and underpinned by the teachers' interpretation of sociocultural theory associated theoretical tools. In short, "Seven Principles for Good Practice in Undergraduate Education" (Chickering and Gamson, 1987) became a hub to which other theoretical tools were applied.; specific principles are described below.

The core of the *first principle* is about encouraging contact by establishing an early connection between students and staff (p. 4). Elements like mentorship or Zoom-seminars were ruled out as strategies to use to accomplish this, due to the large group of students and their need for flexible participation. However, the staff made themselves visible by timely answering students' questions and through pre-recorded videos in which they shared personal thoughts and their own experiences from change work.

The *second principle* (p. 4) highlights the need to develop "reciprocity and cooperation among students". This is previously addressed at the beginning of the course through an introduction task and by dividing students into smaller study groups. The AOD's, and especially the peer review AOD in the AFL, is meant to enhance student- to- student interaction.

The AFL and the AOD are also designed to promote the *third principle* (p. 5) which refers to Using Active Learning Techniques, which required students to put theories into practise and give feedback on each other's drafts (see step 1 to 3 below). The use of AOD is also inspired by the community of practice framework (COI) (Garrison et. al., 1999) in which students and teachers are seen as the core participants in an educational situation, as teaching-, cognitive-, and social presence are important elements overlapping and interacting thus creating a space for learning.

It is a bit tricky to address the *fourth principle* (p. 5) which relates to Giving Prompt Feedback, as the teachers engage in other responsibilities in parallel to the HRM-course. However, the intent is to answer students' questions the same day they posted them, and to provide individual or group feedback on tasks as timely as possible.

The effort to address the *fifth principle* (p. 5), Emphasizing Time on Task, has resulted in two fact-oriented and rather easily-solved tasks, to allow more time for the students to spend on applying these facts when conducting the AFL.

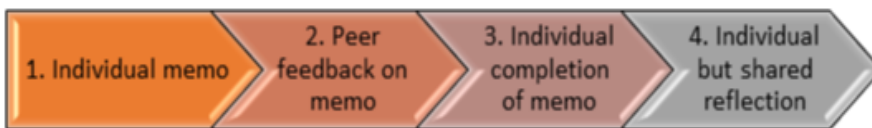
The strategy used to address the *sixth principle* (p. 5), to Communicate High expectations, is to reinforce the need to anchor the plans for change work in theory, and that the peer feedback should reflect that it is put forward by professionals.

The *seventh principle* (p. 6), Respect Diverse Talents and Ways of Learning, is hard to address due to the policy that the type of examination (written, oral) provided in the curricula must be applied, no matter what needs individual students have. However, the students can construct their own cases which makes some room for individual approaches.

As illustrated in Figure 1 below, the AFL was designed to be conducted in four obligatory steps: 1) Individual memo; 2) Peer feedback on memo; 3) Individual completion of memo; and 4) Individual but shared reflection.

**Figure 1**

*The four steps in the AFL*



### Step 1: Individual Memo

The first element in the AFL means that students must build on the knowledge of signs of gender-related problems in an organisation based on what they have seen in the course and put it into practise by creating their own case either derived from the course literature or their own experiences. Based on observations made in their fictive cases, each student is to take on the role of a professional HRM and formulate a memo addressed to a manager. In the first part of the memo, they are supposed to put forward observations of gender-related origin within the organisation featured in their cases, laws, and research on the field, in an argumentative text that would focus on why they find it important that the organisation invest resources in change.

The second part of the memo is devoted to suggesting a plan of action for change at work and defend its design. In this part the students are instructed to apply common models, theory, and research on change at work in general and activities that specifically can help change gender patterns in organisations.

This is a complex task which communicates rather high expectations on students' ability to put theory in practice. It's hoped that encouraging the students to apply theory to an almost authentic case could stimulate them to spend more time solving the task and enhance their engagement in AOD.



## Step 2: Peer Feedback on Memo

The second element in the AFL is the AOD in forms of peer review, which is in focus in this study. The individual memos are shared in the smaller study group, and the students are instructed to take on the role of a helpful co-worker, offering friendly but critical feedback on the quality of the memo and providing suggestions on formulations that can strengthen the impression of a proposal to a manager. They need to show that they have consulted theory and research to enhance their feedback and suggestions for changes. This obligatory task is guided by instructions on what to focus on in the feedback, and formulated to communicate expected standards on the memo, since helping students understand what's expected of them is vital according to research on feedback and can encourage students to actively engage with feedback (see for example Rust et al., 2005). The AFL was also hoped to enhance the students' engagement in interactions with peers.

The peer review element in the AOD was intended to stimulate the three important elements, the *Social-*, *Cognitive-* and *Teaching presence* that, according to the COI-framework (Garrison et al., 1999), are necessary elements in the development of a COI. It was believed that interaction with peers in these forms could prevent the feelings of being left alone, struggling with a challenging task. It was also thought that working in groups and having the opportunity to negotiate different understandings of theory and how to apply it in practice, and strategies to communicate their proposal for change work to a manager, could stimulate deeper cognitive processes. Also, as some students usually have very little experiences from previous academic studies and/or HRM work, students with more experiences in these areas could reinforce the perception of teaching presence in the course.

## Step 3: Individual Completion of Memo

The peer feedback is used to finish the memo before it is posted for examination. When doing so, the students need to carefully evaluate the received peer feedback and reflect on which of the various suggestions for improvements are worth considering when completing the memo. This activity is hoped to strengthen their cognitive engagement in the task and give them the chance to apply skills and knowledge gained from participating in AOD.

## Step 4: Individual but Shared Reflection

Reflection was a voluntary task used the year before the AFL was designed. It was originally formulated by a member of staff who had some ideas that reflection can enhance learning. Reflection can stimulate high order cognitive processes and can, therefore, be a useful tool to draw knowledge from experiences (see for example

Chang, 2019; Heyler, 2015). Thus, the reflection task was modified to better stimulate reflections on experiences made during the course in relation to learning outcomes and incorporated as the last obligatory step in the design. The students are to reflect on their learning experience from different perspectives and formulate their thoughts in writing. They are to ponder on what interaction with peers and teachers meant for their learning. The paper is posted in an AOD forum to enable peers to read and reflect on them if they want.

## Method

The study focuses on whether students perceived that AOD supports their engagement and development of vocational skills to aid changes at work; therefore, their reflections conducted in step 4 in the AFL were identified to provide relevant data. After obtaining permission from the seventy-five students who posted reflections at the first examination, their reflections were collected, read through, and negotiated several times by the researchers before being categorized. The analyses were guided by Garrison's (2007) descriptions of manifestations of social-, teaching- and cognitive presence in in AOD.

## Results

The first readthrough of the students' reflections revealed that all 75 expressed satisfaction with their learning experiences in the course. This made it interesting to understand if, and if so how, the AOD contributed to this result. Some students did not explicitly mention the AOD in their reflections on interactions with peers. However, the peer interaction (and with teachers) was most intense during the AFL, which means that reflections during step four provided valuable insight into how the students perceived their interaction with peers in the AOD. Also, as the AFL has such explicit emphasis on vocational skills, the content in the reflections could provide valid information about whether the students perceived that the AFL contributed to such learning.

Two students point out:

- “The last theme has in my opinion been the most important part of the course and broadened my perspective on what it takes to make successful change work. It has become clear to me how important it is to anchor change work in the whole organisation to be successful.”
- “Although I know that you learn afterwards and not directly, I saw it myself in case part 2. Without that step, I would never have been able to write what I wrote in step 3.”

Few students explicitly mentioned the social aspect of interactions with peers. Those mentioning it wrote about the feeling of being supported by their peers and/or

feeling safe with them. One of the students reflected on how their study group formed a Facebook group which initially seemed a good idea, but which became unimportant over time as the discussions on the course platform were so rich and meaningful. Others put forward that they thought seminar discussions via Zoom could have added to the interactions, but one student wrote about how the AOD added to a feeling of closeness. He wrote that he believed this would not have happened if they had used Zoom, as the positive dynamic could have changed through the awkwardness in talking to strangers. Students also put forward the great engagement in their study group, which inspired their own engagement; as one student expressed it: “With the help of fellow students, I find a lot of joy and creativity that inspired new ways of thinking and perspectives.”

The students’ reflections show signs that AOD stimulated rich cognitive processes. One student described it like this: “I have had to think and reflect on others' cases, which has given me a chance to develop my analytical ability. At the same time, I have gained an incredible amount of inspiration and insights from reading other people's work and comments.”

Another student reflected on how the written format initially felt clumsy and insufficient for discussion, but that this changed during the course when realising how such forms of communication demand more thoughtfulness and time spent on reflection than face-to-face communication. Many put forward how feedback from peers stimulated deeper reflections about their own strategies to solve the AFL, and how the exchange of experiences with peers made them aware of how narrow their own thoughts were.

Signs were found that teaching processes appeared in the AOD. Almost all described how they learned a lot from the many ways to understand the course content in the group, as well as the importance to apply theory in practical HRM-work and peer feedback. Many believed that this was possible because of the obligatory demand to anchor memos and feedback in the course literature. The students also expressed that they had learned a lot from the opportunity to observe different examples for how theories and research can be put into practice. As one student described it: “We have valued each other’s positions by using scientific concepts and literature, rather than on what we think, feel, and believe based on our own experiences.”

Often, reflections over peer feedback contained words like “enormously”, “valuable”, and “essential to learning”. One student wrote about how others shared valuable tools derived from other contexts than the HRM course: “In the conversation with other students, we do not only bring with us the knowledge provided via the course literature, but knowledge acquired through previous formal education, experience, and so on. Knowledge, we bring with us to our fellow

students during the seminars. I have gained access to a lot of new analysis tools with the help of my fellow students' accumulated knowledge.”

The majority reflected on learning from peer review discussions through the observations on how the course content could be used in many ways, or when details and strategies not noticed or interpreted differently than themselves were mentioned by peers. Most students did not explicitly reflect on what specific vocational skills they achieved. However, all of them wrote about learning outcomes such as insights on how change work in organisations can be planned and organised to enhance the possibility to reach the goals, the importance of putting theory and research into practice in HRM-work, and the importance of ethical reflections. Some indirectly showed their skills through analyses of previous experiences from change at work in organisations, completed with a discussion about how it could have been done in a better way.

One student wrote about how vocational tools were provided indirectly through the learning design in the course: “What we will take with us from the course to use in a future workplace is not only what we have learned but also *how* we have learned. The learning process itself has given us an insight in how a learning organisation can work ...”

Students with no previous experience from HRM work seems to have gained a clearer picture of how this is carried out in practise as one student pointed out: “Since I do not yet have any major experience of HRM work, it has been very rewarding to gain insight into what reality can look like via other students with a little more experience.”

## Discussion

Processing memos in the AOD seem to have sparked students’ creativity, cooperation, and sense of reciprocity, and stimulated deep cognitive processes, which was what was hoped to enhance with the AFL-design. It may be too early to conclude that the students’ vocational skills were strengthened by the processes in the AOD.

Further studies, for example analyses of what refinements the students made on their memos after the AOD and the feedback they received from teachers grading their memos, can reveal more about that. But it is a good sign that the students themselves perceived that this element in the AFL-design contributed to nuanced understandings of the course content and how to put theory in practice. It can be concluded that the text-based format does not seem to have become an obstacle for the development of meaningful interaction, even if some students wished for seminars via Zoom.

Although it is not possible in this stage to draw the conclusion that a COI emerged, all the elements needed for such outcome seem to have been in place. Therefore, peer review in forms of AOD can be regarded as an activity that substantially contribute to dynamic and engaged interaction, in which processes of social-, cognitive, and teaching presence emerged. Further studies of how the students' perceived their interaction with teachers, and what they regarded that the case-based memo-design meant for their learning, are needed to fully reveal how the students' learning experience was shaped by the implementation of the AFL and what impact it had on the students' development of vocational skills. However, it can be concluded that peer-review activities, in which students share examples and provide feedback on their peers' attempts to put theory in practice, can be a successful active learning technique in a text-based educational setting. It also can be concluded that the AOD may have play a crucial role to strengthen the didactic potential of the AFL.

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## Author Details

Monica Liljeström  
Department of Education  
Umeå University  
[monica.liljestrom@umu.se](mailto:monica.liljestrom@umu.se)

Hanna Paulin  
Department of Education  
Umeå University  
[hanna.paulin@umu.se](mailto:hanna.paulin@umu.se)

# MODERATING A STUDENT-RUN WEBLOG TO HONE THE CRITICAL AND ANALYTICAL SKILLS OF POSTSECONDARY STUDENTS STUDYING A SHAKESPEARE PLAY

Neville Thomas  
*University of Malta, Junior College*  
MALTA

## Abstract

This paper explores ways of using a weblog to help Advanced Level (post-secondary) students analyse and write critical essays on Shakespeare's *Othello*, and sounds the possibility of extending/adopting a weblog with other literary texts. Examiners' post-mortem analysis of Advanced Level English examination responses, often highlight certain undesirable traits in students' work, the most common of which being that "candidates (do) not refer closely enough to the text and "many narrate the plot of the play". This project aims to address these issues by guiding students towards writing critical responses on assigned parts of a text which can be published and peer-reviewed. Previous research has shown that the ideal platform for this is a blog.

## Introduction

The University of Malta's Matriculation and Secondary Education Certificate (MATSEC) is a postsecondary qualification which students need to obtain at the end of a two-year course in order to continue their studies at tertiary level. Students choose five of six subjects; two at Advanced Level and the remaining ones at Intermediate Level. The sixth subject, Systems of Knowledge, is an interdisciplinary subject which is designed to link separate fields of knowledge.

MATSEC's Advanced Level English examination consists of three papers, the first of which is the one students tend to fear the most. For this paper, students are expected to write three 500-word responses; one on a Shakespeare play, one on set poems of a particular poet, and there is also a critical response to an "unseen" poem (i.e. one which students have not read or analysed before).

This may not be too daunting to students who studied Shakespeare and poetry prior to their entering Sixth Form; but, since only an English Language qualification is required to gain entry to post-secondary institutions, there are a number of students who choose to study English at Advanced Level with a rather superficial knowledge of literary devices and techniques. In addition to this, many students who did study

literature at school, may have had a modern dramatic text chosen by their teachers, so that their first-ever experience of Shakespearean drama is at Advanced Level.

One must also take into consideration the fact that the exams which secondary students need to pass in order to enter a postsecondary institution are offered at two levels of difficulty. “Paper A” exams are for the more academically able students whilst “Paper B” exams are set for students who find the subject in question more challenging. The difference between English Language and Literature Paper A and B examinations is significant, in particular when it comes to writing tasks which are reduced from 320-350-word essays to ones that require 180-200 words. Students who pass a Paper B exam can choose to continue studying that subject at Advanced Level, which is not tiered to suit students of different levels.

It is therefore understandable that a considerable number of students who choose to study English at Advanced Level find the prospect of studying a Renaissance play and then writing a well-structured response daunting; Early Modern English is challenging enough on its own, even without Shakespeare’s unique coinage, “boldness of imagery” and all the “figures of speech known in formal rhetoric” (Hudson, 1872, p.277). So, in addition to helping students clear these hurdles, (in approximately fifty hour-long lectures that are allocated to the subject), teachers of Shakespearean drama must also ensure that their students are taught to develop close reading and research skills, think critically, and write analytically.

In addition to this, what made the outcomes of this project more desirable than ever was the fact that the cohort of students used in this pilot-study had just returned to College after two years of online learning. Even before the pandemic, examiners had complained about the deteriorating levels of English at secondary level in Maltese schools. A 2015 University of Malta Matriculation and Secondary Education Certificate (MATSEC) Examiners’ Report lamented the fact “that 16-year old students should be leaving school on completion of their secondary education with a poor command of English is a matter of great concern” (p. 16), and this, in conjunction with the fact that some students may have suffered from a potential lockdown-related “learning loss”, meant that it was imperative to get this project up and running for this particular student cohort (although no studies were conducted in Malta, a study conducted by the Department of Education in UK (2021) found losses of up to two months in literacy in secondary-school students as a result of pandemic-related educational disruption).

Results of previous studies have shown that weblogs encourage students to act as authors as well as critical readers of texts created by their peers (Handsfield et al., 2009) and that blogs “can be incorporated seamlessly into content area classrooms to improve student literacy skills and provide an extension of thinking about classroom content” (Steller, 2015, p. 39). These findings gave rise to the idea of



setting-up a student-run weblog to help address most of the aforementioned issues that postsecondary teachers of Shakespeare face.

## The Advantages of a Student-run Blog

I had, in previous years, set-up a Facebook page to function as a repository for notes and critical essays, which I would then use to elicit student responses and move on to create discussions from said responses. This system, however, was not as successful as I hoped it would be. With few exceptions, students tended to be rather reluctant or too embarrassed to discuss, let alone question, anything I posted in such a public forum which was run by just one person, which gave the impression that their responses or feedback would be primarily with me rather than with each other. What they wanted, and expected, was for me to post study notes rather than discuss important parts of the play and substantiate their claims with evidence they found, which was the entire point of the project. In addition, Facebook was not the ideal platform to use for posts which were meant to be read in chronological order since at that time, Facebook arranged its posts in order of popularity.

## The Creation of Producers and Independent Learners

The suggestion of a student-run weblog appealed to me for a number of reasons. Unlike Facebook, a blog “is a website with dated entries, presented in reverse chronological order” (Duffy & Bruns, 2006, p. 32); but, more importantly the nature of a weblog made it possible for me to refine myself out of existence and allow the students to ‘run the show’ themselves. Churchill’s study has already shown that “through blogs, a teacher can create an ambience in which students feel themselves to be important parts of the classroom community and that their needs and opinions are recognized and addressed” (Churchill, 2009, p. 183); over and above this, a separate study by Hedberg and Brudvik (2008) shows that “the social software supported in Web 2.0 enables consumers to become producers” (p. 140). My presence being far less felt on a blog than on a Facebook page promised to make the students’ role as contributors to the resources and not just consumers far clearer and this, in turn, could help “promote [their] critical and analytical thinking” and ensure their “exposure to quality information” (Duffy & Bruns, 2006, p. 33).

## A Voice for All

Although it has already been observed that “blogging improved the writers’ sense of audience, created a sense of community and belonging that empowered and motivated the students” (Steller, 2015, p. 90) and that “there will be a natural tendency for reflection and analysis on the part of the student, given feedback systems are integral to the blogging interface” (Williams & Jacobs, 2004, p. 235), my previous endeavors with Facebook showed that a considerable number of

students felt too embarrassed to comment online and refrained from exposing themselves on Facebook posts. Studies have shown that a weblog, on the other hand, encourages communication of reticent students by giving them the opportunity to post comments and contribute to a discussion anonymously. As Steller (2015, p. 33) has observed, “while awareness of audience is important, blogging can also paradoxically protect the more reticent writer by creating a sense of anonymity, a wall of separation that allows for both reader and creator to be more objective”. This feature was more important than ever with the students involved in this pilot project since they had just emerged from two years of online learning and few had ever met before in person. In view of this, the fact that studies have shown that “blogs strengthen communication among secondary and higher education students, enhance their social skills and their engagement in meaningful dialogue” (Michailidis et al., 2022, p. 665), was an added bonus for these students.

### Improves Writing Skills

Another reason why students could be more forthcoming with feedback in a student-run blog is because “students’ motivation to write may increase when they are able to publish their work online for an authentic audience” (Steller, 2015, p.39). Handsfield et al. (2009) have also noted that students tend to ignore their teachers’ responses but, in their blogs “they asked and responded to one another’s questions, and because they were writing for a larger audience (their whole class, instead of just their teacher), they became more careful writers. Students who previously did not proofread their writing soon began adding conventional punctuation” (p. 45).

These results and observations all pointed towards the setting-up of a weblog to help students address the challenges of a Shakespeare play.

## Setting Up the Blog

### My Role as Lecturer and Moderator

It was not difficult to convince my students that the “extra” work involved in writing detailed and well-structured blog posts would reap dividends seven months down the line, when their short academic year came to an end. All members of the group agreed to commit themselves to the project as they understood that a collective effort would ultimately result in a repository of very reliable information that would require several hours of work if done alone.

Each week two students volunteered to analyse the part of the play that had been discussed in class the previous week. The division of labour was left in the students’ hands and they would agree beforehand on who would focus on certain aspects of the play such as characters, themes, imagery and so on. When they were satisfied

with the level of detail in their work, they would write it down in the form of a short academic paragraphs paying particular attention to the four criteria MATSEC examiners consider when marking essays:

- Interpretation supported by appropriate evidence from the text
- Tools of critical analysis
- Organisation and Structure
- Expression

Building on Knobel and Lankshear's thesis (2014), Stivala (2008) argues that "the role of the teacher in a blogging task... is that of a moderator who establishes parameters, since the value of blogs in education lies precisely in the fact that bloggers "recognize that quality is judged by groups rather than by appointed experts" (p.496). The fact that these "groups" are comprised of classmates serves to motivate bloggers to produce better work even if a number of students choose to merely 'consume' rather than produce the posts. With this fact in mind, Williams and Jacobs (2004) have pointed out that "active participants may well *assume* a lurking audience as part of the accepted risk of rebuttal, in creating an argument or expressing a theory in making a blog entry. This risk, in turn, develops skills among active participants in critical thinking and argument creation" (p.246).

However, since part of the blog's *raison d'être* included training students how to write focussed and well-structured paragraphs, all parties concerned agreed that the latter two criteria on the examiners' list would fall within my remit as blog-moderator to correct in private. So students would first email their finished blog contributions to me to ensure that the levels of 'expression' as well as those of 'organisation and structure' met A' Level standards. Any parts of the submitted work which were found to be lacking in these two areas were highlighted and returned to the writers for correction.

Since it has already been noted that students' work is generally better when writing for an audience, the rationale behind my not allowing students to judge their peers' submissions on all four MATSEC marking criteria needs to be explained.

There were two reasons that led to this decision. Firstly, I wanted the students to focus mainly on content and to understand that they had to learn to use specific details from the play or from the works of literary critics to support an argument or a point being made. This measure ensured that students moved away from the temptation to "provide just a paraphrase of the given extract" or merely "narrate the plot of the play rather than focus on the extract itself" which, in the words of MATSEC examiners, led to "very lengthy and long-winded answers" (University of Malta Examiners' Report, 2020, p. 6).

Secondly, one had to bear in mind that this was a mixed-ability cohort and the levels of language proficiency ranged from weak to excellent. A heavily edited post done in such a public fashion would have risked demoralizing and embarrassing some of the contributors. It is worthwhile to note that the students, being aware of their audience, did moderate and correct each other's work before submitting a final draft to me and overall the quality of their work was of noticeably better quality than their weekly tutorial essays. However, despite this, there were a few contributions that needed significant re-editing multiple times. So while it has been noted that "by observing the behaviours of participants in a computer mediated community, 'lurkers' can become familiar with the ways of participating and overcome fears" (Williams & Jacobs, 2004, p.246), I could not risk the opposite happening.

The first blog contributors discussed the layout of the blog and created a template that their peers found convenient to use in subsequent contributions. Their assigned lines of the play were analysed and organised in sections that were headed "Character Analysis", "Main Themes", and "Imagery".

As can be seen in Figure 1, the contributions were analytical and discursive and it is clear that a conscious effort was made to avoid mere "narrating" throughout the blog's various sections; this lends credence to Duffy and Bruns' assertion that blogs contribute to the acquisition of students' "creative, critical, communicative and collaborative skills". (2006, p.33).

## Figure 1

### *Excerpt from the First Blog Post*

ellojc2021.blogspot.com/2021/09/post-2-commentary-on-ii-1-66.html

Iago's last speech leaves little doubt as to what he truly is. In a manner similar to Macbeth's witches, fair is (to Iago) foul, and foul fair. "Duteous and knee-crooking" servants are referred to as "knaves" who should be whipped; whereas self-serving servants "trimm'd in forms and visages of duty, (who) Keep yet their hearts attending on themselves" "have soul" are what Iago professes to be himself.

The distortion of a biblical quote "I am that I am" (Exodus 314) into "I am not what I am" immediately makes the audience aware of Iago's **evil nature**.

In addition to this, one's attention is also drawn to **Iago's high opinion of himself**. Despite his low rank, he feels that he has what it takes to be an officer, as he says " **by the faith of man, I know my price, I am worth no worse a place**".

Iago's **self-serving** character, is made clear in his boast that

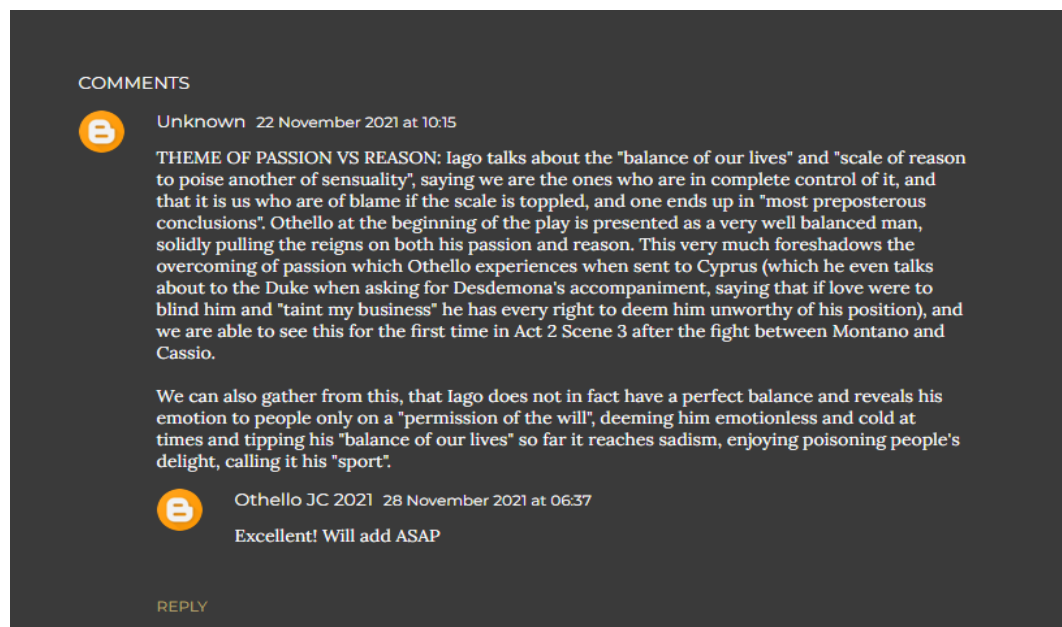
"In following him, I follow but myself;  
Heaven is my judge, not I for love and duty,  
But seeming so, for my peculiar end."

Clearly, the audience are made aware who the villain of the story is from the outset.

As aforementioned, one invaluable feature of a weblog is its “Comments Section” which allows for anonymous contributions; this encourages even the most self-conscious of students to have their say without drawing attention to themselves. All valid observations and additional information that appeared in the “Comments” section (Figure 2) were added to the main text accordingly once they were approved by the moderator. It is clear from the feedback left in the “Comments” section that the blog “increased the participants’ motivation and encourage(d) independent learning and shared knowledge building by means of peer interaction.” (Neira-Piñeiro, 2015, p. 546.)

## Figure 2

*Contributions from Other Participants Appeared in the “Comments” Section*



## Post-Exam Questionnaire

A short online questionnaire consisting of four Likert-Scale statements (to which students could “Strongly Agree”, “Agree”, “Neither Agree nor Disagree”, “Disagree”, or “Strongly Disagree”) and two open-ended format questions was sent to all forty-four participants after their final exams were over. There were thirty-six respondents, which tallies close to an 82% response rate.

The statements appeared in the following order:

- I used the blog regularly to revise *Othello*
- The students’ contributions were thorough and detailed
- The structure of the posts helped me understand how to write analytically and critically

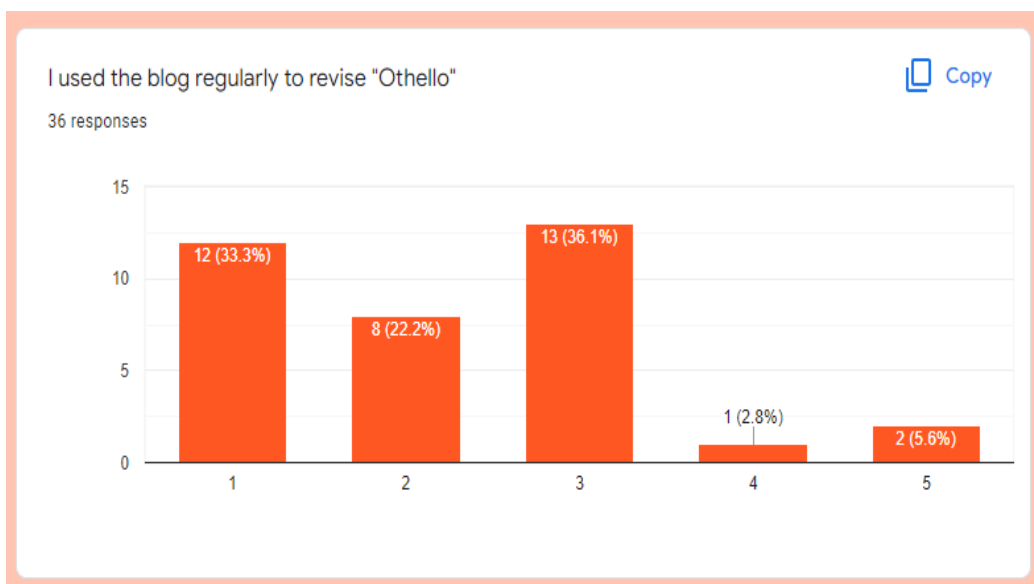
- The blog content provided all the information needed to answer the MATSEC exam question
- Are there any recommendations you can make to improve the system?
- Would you recommend the same approach (i.e. a student-run blog) for other texts?

### Analysis of Students' Responses

The results of the first question “I used the blog regularly to revise *Othello*” reveals an encouraging level of trust that students had in their own work (Figure 3). While 36% of students (13) sat halfway choosing to “Neither Agree nor Disagree”, 33% (12), thoroughly agreed that they used the blog regularly to revise the text, and a further 22% (8) of students “Agreed” to the statement. Only 5.6% (2) of the respondents chose to click on “Do Not Agree Whatsoever”.

**Figure 3**

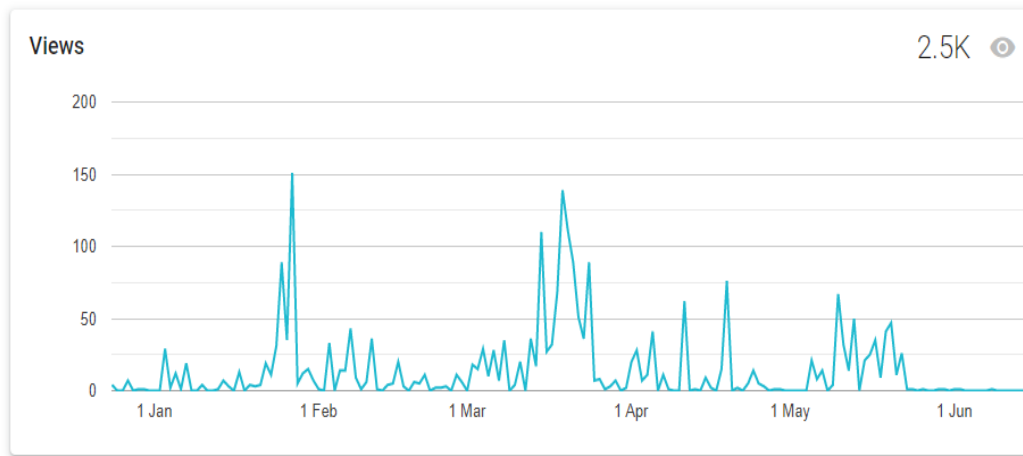
*Histogram Showing Responses to “I used the blog regularly to revise Othello”*



While the percentage of respondents who “Neither Agreed nor Disagreed” may seem rather high, it may point to the manner and study habits of Maltese students. The line graph in Figure 4 shows the days when students’ blog use peaked. Every peak in the graph coincides with the date of an assignment deadline (21<sup>st</sup> January) and a mock-test (March 14<sup>th</sup>) of the final exam. The lower peaks in May, spread over a larger number of days, reveal when most students started studying regularly for the first paper of their A Level exam (May 21<sup>st</sup>). The lower peaks in between the aforementioned dates account for the 55% of students who used the blog regularly or fairly regularly.

**Figure 4**

*Line Graph Depicting Students' Blog-use over the First Six Months of 2022*



The second statement, “The students’ contributions were thorough and detailed” received overwhelmingly positive answers. As can be seen in Figure 5, none of the students answered negatively and only four chose a neutral response. Forty seven percent of the respondents thoroughly agreed, while a further 41% agreed with the statement. These figures support the claims that the interactivity of a blog not only motivates students’ participation (Ferdig & Trammell, 2004) but it also stimulates their autonomy and responsibility (Neira-Piñero, 2015), resulting in posts that students felt were good enough to use as study material.

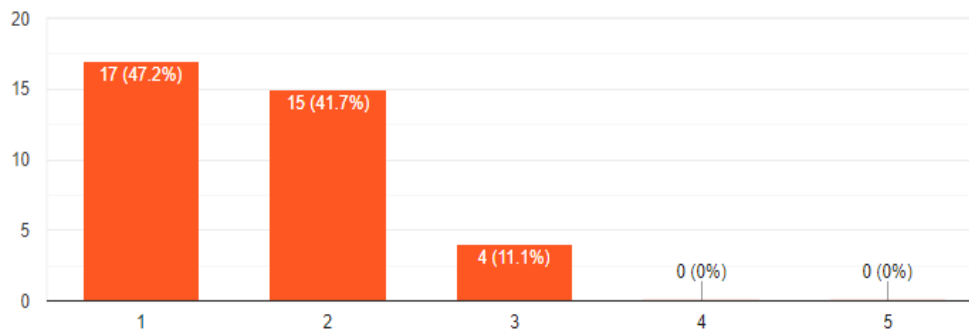
**Figure 5**

*Responses to “The students’ contributions were thorough and detailed”*

The students' contributions were thorough and detailed.



36 responses



As seen in Figure 6, responses to the statement “the structure of the posts helped me understand how to write analytically and critically” were generally positive,

with 27.8% of respondents strongly agreeing with this statement, 36.1% agreeing, and 22.2% choosing to remain neutral while 13.9% did not agree. The students' overall positive endorsement of the blog, which is further discussed in the following section of this paper, supports the results and observations of Steller (2015) who claims that "awareness of audience leads to better writing, and that blogging can provide an authentic practice for the development of writing skills" (pp. 32-33).

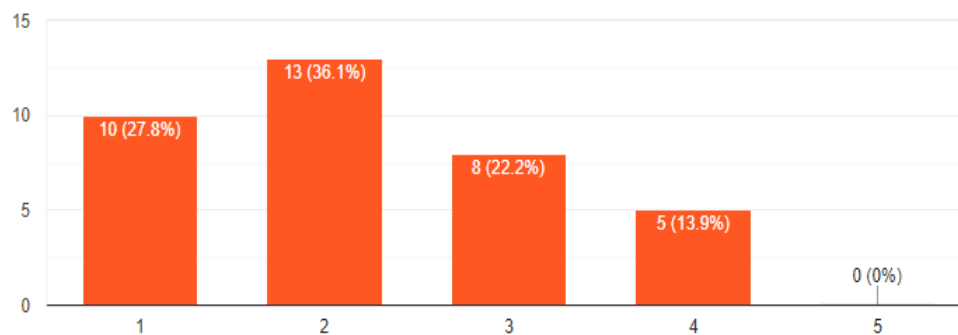
### Figure 6

*Responses to "The structure of the posts helped me understand how to write analytically and critically"*

The structure of the posts helped me understand how to write analytically and critically.



36 responses

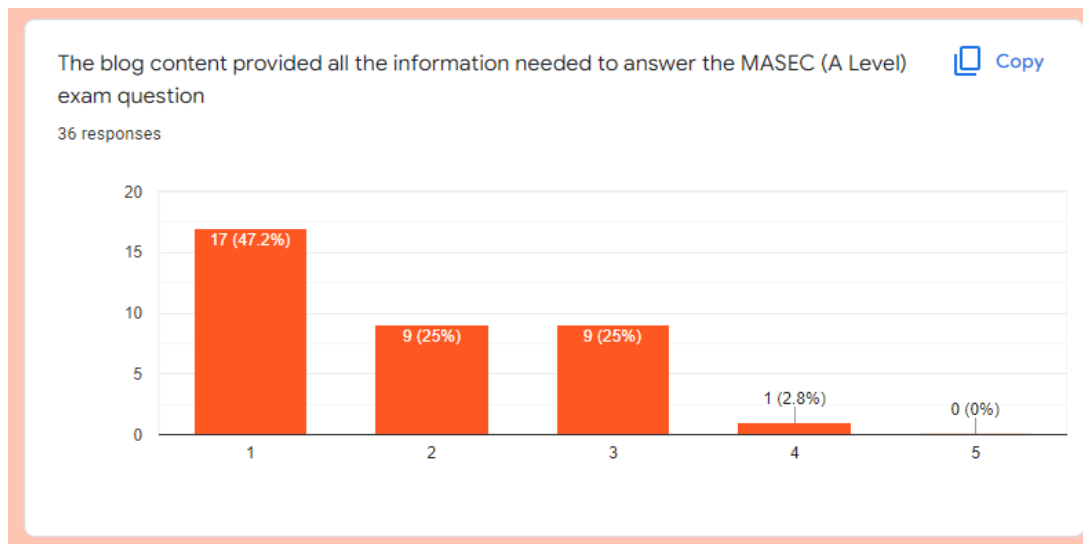


The 63.9% of respondents who felt that the blog helped them learn how to write analytically and critically, along with the 88% of the student cohort that thought the blog posts were thorough and detailed, could be taken as an endorsement for the continual use of a weblog to improve writing as well as analytical skills. The responses help verify the observations that blogging also promotes "critical and analytical thinking" and also "increased access and exposure to quality information" (Duffy & Bruns, 2006, p. 33) which is further verified when one takes into consideration the fact that 72% of the respondents felt that all the information they needed to write an exam essay was in the blog (Figure 7).



**Figure 7**

*Responses to “The blog content provided all the information needed to answer the MATSEC exam question”*



## Students' Feedback and Recommendations

Students were also asked to answer two open-ended questions, the first one being “Are there any recommendations you can make to improve the system?” Whilst the twenty-two responses to this question varied, there were some common answers which merit further attention.

A quarter of respondents suggested that more posts containing “quality sample essays” would help students understand “what being on the right track looks like”.

Other respondents (six in all) suggested that a summary of each post in point form would make it easier for all when there’s only enough time for a “quick revision”. One longer answer was more detailed in explaining why a summary of each post would be helpful (Figure 8).

## Figure 8

### *Students' Recommendations to Fine-tune Their Blog*

As a very exhaustive blog, it has fulfilled its requirements, it has really good arguments and ensures that students understand both the plot and how themes appear in each scene. However, I think students also require shorter type notes to be skimmed through in the days before the exams, so that the information is fresh in our minds. Maybe this could be added as an extra feature in which the students that are responsible for making the blog post for the week, also create some sort of table or list of the themes that appear in that scene, the characters that relate to the theme in that specific scene, as well as one or two quotes to back this up. This way, the long detailed blog can be used as a primary study resource (to be used during frequent revision throughout the year) and the short one can be used as a secondary resource (to be used throughout the days before the exam).

I think once the respective tutorial teachers assign an essay, the best ones should be chosen and posted on the blog, as the latest one on 'Othello's Self Deception' really helped!

There were twenty-eight responses (amounting to 64%) to the question "Would you recommend the same approach (i.e. a student-run blog) for other texts? (Ex: the novels, and poems?) Can you explain why?". Without exception, all responses were positive although some students thought that a blog of this nature would be better for poetry rather than for novels and vice versa (Figure 9). Overall, the feedback showed that students appreciated the value of their collective effort and felt that a student-run blog will ultimately give them the tools they need to get through what many consider to be an arduous two-year course.

## Figure 9

### *Students' Thoughts on Using Student-run Blogs for Other Texts*

Would you recommend the same approach (i.e. a student-run blog) for other texts? (Ex: the novels, and poems?) Can you explain why?  
28 responses

Definitely as the blog improves students' critical thinking and helps them study more effectively.

Yes, except for poems as I feel more comfortable with teacher's notes. But with anything else I think it would be really helpful to have all the notes together and online

Possibly for Wuthering Heights since it covers multiple themes and the characters and their relationships are rather complex.

I would recommend this for other novels and poems as at least students will have a better guide on how to tackle an exam question...since most teachers don't give out any notes.

yes - I feel like for the first year material covered (Wuthering and Heaney), I didn't feel as reassured as Othello as I was working off of my own interpretation and did not have the opportunity to review counter opinions. With Wuthering Heights, since it is a Gothic text which for some people (including myself) tends to be harder to follow, in comparison to Handmaid's which is contemporary, working with a weekly revision system of the blog could help with keeping up with the plot and characters, and actually understand the reasons of why things happen with more than just a face value opinion (why Heathcliff acts in the ways he does, how the 1st Gen affected the 2nd Gen, Symbolism etc etc)

## Conclusion

The pilot-project has further evinced that weblogs can be used as effective sources of learning. The fact that contributors' posts are open not just to the general public but, more specifically, to the scrutiny of peers, serves as an impetus to produce work of superior quality in terms of research as well as writing that meets high standards set by the students themselves. In addition to this, the very nature of this collaborative project seems to have made students take their individual assignments more seriously since they felt responsible for the overall quality of the final product that their peers intended to use to pass an exam. As Churchill (2007) points out, blogs can help students to feel that they are "important parts of a classroom community (where) their needs and opinions are recognized and addressed" (p. 183).

The students' feedback and records of use are a testament to how seriously they took each other's posts and contributions. Being an organic project, the students' suggestions on how to improve the blog can be taken aboard and implemented by the following year's cohort so that the blog is continually refined to meet their needs.

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## Author Details

Neville Thomas  
 University of Malta, Junior College  
 Malta  
[neville.thomas@um.edu.mt](mailto:neville.thomas@um.edu.mt)

# DIVERSITY IN TEACHER EDUCATION INSTITUTIONS: A HOPE OR RECONSTRUCTION OF THE SOCIAL REALITY?!

Zuhaira Najjar

*The Arab Academic College for Education in Israel-Haifa*  
ISRAEL

## Abstract

Using a quantitative approach, this study examines how students of different minority groups in teacher education institutions perceive sociocultural relationships with other groups, belonging, and being minority or majority. Findings show that most participants reported good relationships with students and faculty of different ethnicity and a deep sense of belonging to the academic institution. However, Ethiopian and Arab students tend to form social bonds with students of the same ethnicity.

Jewish students mostly define the terms “minority” and “majority” quantitatively, while Arab students relate to their social meaning and see themselves as a disadvantaged minority outside the Arab academic institution. Overall, the results suggest that colleges for education can achieve supervisory relationships that are detached from the reality in the society. However, mere attitude of nurturing and caring is not enough and there is a need for a deliberate policy to encourage interaction among the various groups and to address minority issues.

Keywords: diversity, teacher education, sense of belonging, majority, and minority

## Introduction

Higher education and in particular teacher education institutions face challenges associated with increasing student diversity, which is one of the most widely discussed topics of higher education policy and research worldwide. Researchers and theorists have consistently argued that higher education should prepare the students for a future of participating in a multicultural and democratic society (King et al., 2013).

Several studies have been conducted on the conditions, practices, and intervention programs that promote intercultural interactions and learning among culturally diverse groups (Lee, 2012; White et al., 2019; Morgan Consoli & Marin, 2016). The study of Michalski et al. (2017) concentrated on organizational aspects. However, other studies have highlighted students' experiences (e.g., King et al., 2013).

Israel's society is comprised of several diverse ethnics, religious, linguistic, and cultural communities. The unique demographic profile of Israel state, which includes a native minority on the one hand, and massive waves of immigrant groups on the other, create an enormous educational challenge for teacher education.

The theoretical framework of the study suggests that tensions between different groups in Israeli society extend to all areas of life, including education. Bourdieu (1991) has extensively studied symbolic power resources, arguing that various strategies are used in education to replicate the existing social order and perpetuate inequalities in society. Lev Ari and Ron (2012) argue that Israel's pluralistic education policy is necessary to bridge the gap between different sectors and reduce tensions between them. Yogevev and Shapira (1992) pointed out that higher education is a key tool to achieve this goal.

As a result of massive waves of migration, the number of higher education institutions in Israel-including teacher education colleges-increased dramatically in the 1990s, a development enhanced by parliamentary legislation (Israel Knesset, 1994).

Teachers' colleges encompass a diverse array of people from different ethnicities due to changes in Israel's demographics and structure of higher education (Israel Central Statistics Office, 2017). Some of these students met for the first time at the teacher colleges. However, these institutions do not promote a sense of belonging among different groups through their policies and activities (Paul-Binyamin & Haj-Yehia, 2019).

Several teacher education colleges were opened in peripheral areas to facilitate the access to higher education for local residents (Schayek, 2005). The new college is designed to meet the growing demand for higher education and to break down the barriers of traditional rigid university admissions policies (Ayalon, 2008).

At the theoretical level, there seems to be a contradiction between the perception of power relations in society, according to which the social hierarchy is replicated in the field of education, and the humanistic view adopted by some colleges of education that aims to create social solidarity (Aloni, 2013). Humanistic education aims to create a friendly living environment and cultural wealth and to cultivate human relationships based on brotherhood, mutual respect, responsibility, and caring. However, no research evidence has been found for official multicultural policy in teacher training institutions in Israel according to the specified indices, so this study suggests examining another index and that is the perceptions of students.

The purpose of this study is to examine the authentic learning experiences of students from the social periphery who study in colleges of education and will be responsible for the education of the next generation in the future. It is assumed that the learning experiences of future teachers will be passed on to the students of the schools in which they will teach, thereby influencing the multicultural encounter between different groups in society. Current research can shed light on the role of teachers' colleges in socializing and shaping the social, cultural, and citizenship identities of students from the social periphery, and how they respond to the challenges of social diversity.

## The Study

The current study looks at the topic of diversity from a student's perspective by examining student experiences and points of view. By diversity we mean the minority groups that study together at the Israel Teacher colleges. We look at how students experience interactions with other students and examine their social relationship characteristics, their sense of belonging within the college, and their perception of being a minority both inside and outside the college.

### *Questions:*

1. How do students from the social periphery studying in colleges of education perceive the socio-cultural interaction that takes place within the college and the feeling of belonging to it?
2. How do students from the social periphery who study in colleges of education perceive their belonging to minority or majority in the Israeli society? Do the perceptions of these students reflect the relationships among the different groups in society?

## Methodology

The research paradigm is naturalistic-phenomenological, and the research genre focuses on the narratives of students from colleges of education who belong to a minority group or distinct ethnic groups: Arabs, and Jews who are immigrants or descendants of Ethiopian and North African immigrants living in periphery. Interviewees interpret "chapters" of their lives through questions in a semi-structured in-depth interview. The research design is based on field-based theory, which is the product of a qualitative research approach that focuses on interpretation and aims to learn about the researched topic in its natural environment, using the meanings that people themselves attach to their experiences (Gibton, 2001).

## Sample

The sample included 48 students studying at seven colleges (five Jewish and two Arab): 12 students from Ethiopia, 12 students from Eastern communities who live in development towns and peripheral localities, 12 Arab students who study at Arab colleges, and 12 Arab students who study at Jewish colleges.

The large representation of Arab students in the sample (50%) is intended to help expose the differences between those who study in Jewish colleges and those who study in Arab colleges. The Arab students included in the sample represent the main ethnic groups and sectors in Arab society: Muslims, Christians, Bedouins, and Druze.

Using a judgmental sampling sample, a non-random sample, the choice of the final unit in the study is at the discretion of the researcher (Miller & Salkind, 2002). This was to create a combined sample that included different ethnic groups in teacher education colleges and two types of colleges, Jews and Arabs.

## Research Tool

The research tool used to collect the data was a semi-structured in-depth interview, which allows flexibility to raise new topics that may help in understanding the interviewees' perceptions (Shaked, 2003). The interview included 18 questions, for example: "To what extent do you feel you belong to the college?" Or "What can you say about your relationship with other students?" It is important to note that during the interviews the rules of ethics were observed, and the privacy of the participants was carefully maintained as is customary in the study.

## Data Analysis

Data analysis is done using the thematic analysis method, which is based on horizontal and vertical coding of the interviews and on the creation of mortality (Shaked, 2003). The interviews were conducted in Arabic and Hebrew and translated to English by the author.

## Findings and Discussion

This study focuses on the human diversity in Jewish and Arab teacher education colleges, to examine how students from the social periphery perceive the social and learning experience in them. The aim was to learn whether the educational approach adopted by some colleges was reflected in their socio-cultural interaction and sense of belonging.



The findings show that there were notable differences among the groups, especially in terms of social interaction and sense of belonging. Most Jewish and Arab students attach great value to social relationships. They describe good social relationships with their peers, relying on respect and mutual support that enhance their sense of relatedness. In this context, an Arab student from an Arab college says: "The most beautiful thing at the college is the friendships, even though there are different ethnic communities, it's so comfortable with the students and with the lecturers as well". And a Jewish student descent of North Africa adds: "There were several times I wanted to leave because of the pressure, and thanks to the friendships I stayed."

The general atmosphere in Jewish and Arab teacher education colleges is positive and they describe it as "my second home", "warm home", and "I feel happy here". Arab students attending an Arab college said: "Studying here is very pleasant"; "A social atmosphere that induces acceptance and peaceful".

However, it seems that the good relationships that students describe are mostly with friends from the same ethnic group. The social contexts described by most Arab students studying at Jewish colleges (about 90%) show that there is almost no relationship between the various groups in the college and that their close relationships are with Arab students: "I hardly know any Jewish students"; "We Arabs study separately, only in a joint course I meet Jews, but after the course everything ends"; "Relationships with Jewish students are cold, it's a different place in every way, language, speaking style, I do not belong". A similar feeling is also described by students from Ethiopia: "I have two Ethiopian friends and my tutor. I do not have non-Ethiopian friends because they do not understand us".

In contrast, Jewish students whose parents are longtime immigrants from North Africa reported a positive self-image, a sense of belonging to college and positive social interactions. The opening of colleges appears to be particularly popular with members of this group, whose young people are using higher education as a means of social mobility. In future research, it seems unnecessary to treat members of Eastern communities as socially marginalized, especially given the growth of the middle class in this social group (Cohen & Leon, 2018).

Some Jewish colleges teach a course aimed at fostering multiculturalism among students from different groups. Such courses are valued by students as an important event that fostered social bonds among the different groups. An Arab student at a Jewish college described the contribution of the course: "This course gave us the opportunity to build a relationship with Jewish girls, which was always a barrier: 'You are Arabs and we are Jews, you are alone and we are alone.' This course has broken this barrier". A Jewish student descended from North Africa said similar things: "At first I opposed, but the course showed me that it is not black and white.

It gave me the chance to meet different people. This is the only course that has affected me. Before that I did not want to interact with Arabs ... In college I realized that we are all students and we all want to progress and you can put all things aside. I contacted with Arab students and we still meet and talk".

While students participating in these courses are exposed to a multicultural encounter that has been well received by all, this is not enough to allow "others" to be treated as friends. Meetings of this type can, at best, deepen the acquaintance between the students from different groups and reduce prejudices and stereotypes (Plous, 2003).

Students at Arab colleges describe a sense of belonging associated with the culture of origin. They study mainly in their mother tongue and with people from similar cultural backgrounds, so they feel at home and more confident: "I feel like family here, I feel safe, it's the same culture, same language and same people. I feel comfortable talking to Arab students, I feel understood. Everyone here knows everyone's situation". Another student said: "I'm not racist, but the truth is, I feel better around Arabs than Jews. In university, I felt alienated, buildings and beautiful scenery...but I felt lonely. Here we are together and it feels good. Good friends and excellent teachers".

In conclusion, Ethiopian and Arab students studying at Jewish colleges describe a sense of alienation and lack of belonging to the college. In contrast, Arab students studying at Arab colleges and students of Oriental descent studying at Jewish colleges describe positive relationships with other students at their college. It seems that it is only in the course of the joint program that students have the opportunity to develop friendships between the different social groups of the college. The descriptions of the meetings indicate that the students aspire to continue in these meetings and build deeper relationship among the various groups.

The results of this study are consistent with findings of other studies that Jewish colleges have difficulties promoting solidarity and multiculturalism among groups (Davidovich et al., 2006). Hyder (1994) argues that the social space in Jewish colleges is mostly Jewish, a fact that creates a sense of alienation among Arab students. In contrast, Arab colleges, where only Arab students study, seem to have an atmosphere of multiculturalism, as reported by their students and various studies. For example, at the Arab Academic College of Education in Haifa, multiculturalism is reflected in the variety of courses dealing with multiculturalism, in lecturers who represent the cultural diversity in the country, and in the student population from different cultures (Alian, Abbas, & Zidan, 2015). That is, even though the differences between the groups in the Arab colleges are not so great, the sense of multiculturalism is still maintained.

Regarding the perceptions of majority and minority in the Israeli society, differences were found first of all in the definitions of the concepts between Jewish students and Arab students. Jewish students define minority and majority quantitatively and “minority” as a group which it is preferable not to belong to: "Just the number of people, there are more in the majority than in the minority"; "More than 50% is the majority". After giving it more thought they added: "Minority is a group that's socially disadvantaged".

All Arab students noted that in quantitative terms, the Arabs in Israel are a minority, and the Jews are a majority. At the same time, they pointed to other characteristics that define majority and minority, such as: the group's influence on the national agenda; the degree of cultural, social, political, and economic mobility of the group; the control of one group over the other; and the rights granted to the group by the state scope. The following are examples of definitions proposed by Arab students: "Majorities and minorities are measured by the group's impact on the country, not by the number of inhabitants in the group"; "Rights and opportunities are lacking in all areas of life"; "The minority is constantly controlled and doesn't get the full rights".

Defining majority and minority groups reveals issues related to discrimination and the negative image of minority groups in the eyes of the majority, as reported by Arab students who perceive themselves as disadvantaged: "Minorities are over the world. The problem with us is that we are an undesirable minority, belonging to a hostile people. That's why the state deprives us and most Jews look down on us. Arab labor means inferiority".

In addition, defining majority and minority from the perspective of Arab students reveal a dilemma about their national-cultural identity and a sense of uncertainty about their future: “At this country the Jews are the majority and it's their country. I'm not Israeli and I'm not Palestinian. I was born here and I don't belong here nor there. I don't define myself as Palestinian nor as Israeli. I don't belong to Palestine, I don't have memories there and I don't have friends there. Nazareth (a big Arabic city where she lives) is my country and my security”.

When asked which social group they belonged to, all students indicated that in at least one group they considered themselves to belong to the majority. Jewish students associated themselves with at least one majority group inside and outside the college. Some of them joined their groups of origin (Ethiopians or members of Eastern communities), others joined religions (Orthodox and traditional...), and still others defined themselves as "Israelis": "I do not belong to any minority"; "I am an Israeli. I belong to this majority". An Ethiopian student said: "In college I sometimes feel part of the Jewish majority, but most of the time I feel the same as the Arabs who had no power. It depends on where you are, among Ethiopians I feel

majority. Israelis see me as a minority even though I sometimes feel part of the majority".

In contrast, Arab students studying at Jewish and Arab colleges tend to be associated with Arab countries, their Arab colleges or places of residence. Arab students at an Arab college said: "I belong to the Arabs and I am proud of myself. The Arabs in Israel are minority, but in the college I feel majority"; "I belong to the Arabs, not the religion. In my college and the North region, I feel majority, I feel safe. In public places I feel like a minority, and then I don't feel good, I'm tired and anxious". As can be seen, questions related to cognition of group belonging are difficult, and the answers to these questions have strong perceptual and emotional connotations among both Jewish and Arab students.

The findings reveal differences between Arab students studying at Jewish and Arab colleges, especially in terms of interpersonal perception. Those who studied at Arab colleges reported a sense of belonging to the college, which stemmed from its response to cultural needs such as language, customs, and holidays, while those who studied at Jewish colleges felt alienated and did not see the college as a source of support. Some try to deal with alienation on their own, or seek support from family and friends. Based on the research literature (Totari, 2010), it turns out that Arab students in Jewish colleges are united in a sense of alienation, while in Arab colleges they are united in a sense that this is their homeland. The findings of Totari (2010), show that many Arab students in Jewish colleges do not participate in college activities because they feel rejected and unwanted. They describe a feeling of discrimination and inequality compared to the Jews and emphasize that change must be brought about.

Some education colleges promote a democratic climate and humanistic education (Aloni, 2013; Ben-Yosef, 2009) to prepare future teachers to deal with disparities and tensions in multicultural societies. They can be described as institutions that allow caring, and as explained by Noddings (1984), caring describes giving that combines responsibility and a positive attitude towards the "other" to help him perform actions that the giver can logically explain. It can be assumed that this is the picture that emerges in the eyes of the colleges of education and leads to a sense of satisfaction of Arab students in the Arab colleges and of North African students in the Jewish colleges.

The education system in general, and teacher training institutions in particular, have an important role in preventing exclusion and accepting difference. However, it appears that teacher multicultural education is not adequately emphasized in education colleges, and there is no activity in this area in the context of Israel's policy for teacher training. (Lev Ari and Ron, 2012; Yogeve, 1996).

The great educational challenge in dealing with multiculturalism has been partially addressed in some colleges for education, by creating a climate of caring and humanistic educational approach. In addition, the general social reality in Israel is reflected in the Jewish colleges, where students from different sectors study. On the other hand, in Arab colleges, issues of belonging and majority-minority relations are not addressed. These colleges provide Arab students with a space of hope where they feel secure, thereby creating a gap between the reality within and the reality outside them.

## Summary

The present study was carried out in a qualitative approach methodology in order to examine how students from the social periphery who study in colleges for education in Israel perceive their social and learning experiences. It presents and discusses Jewish and Arab students' perceptions regarding their social interaction in the college, feelings of belonging, and being a majority or a minority. The sample included 48 students studying at Jewish and Arab colleges for education.

The findings show that the general atmosphere in Jewish and Arab teacher education colleges is positive. However, good relationships are mostly formed among students from the same ethnic group. Apparently, the only practical expression of multicultural humanistic education in Jewish colleges is in courses on multiculturalism, in which students from different social groups participate. But when the course ends, the relationship formed among the students disconnects.

Arab students in Jewish colleges connect socially almost exclusively with other Arab students, maintaining connections with Jewish students mostly around academic issues. Ethiopian and Arab students studying at Jewish colleges do not participate in activities because they feel alienated.

Students at Arab colleges feel at home and more confident. They describe a sense of belonging associated with the culture of origin and response to cultural needs such as language, customs, holidays, and studying with people from similar cultural backgrounds.

Differences were found between Jewish students and Arab students in their perceptions and definitions of majority and minority in the Israeli society. While the Jewish students define minority and majority quantitatively, Arab students perceive themselves as a disadvantaged native minority and explain these concepts with reference to their subjective life reality. Their descriptions revealed issues related to discrimination, a negative image of minority groups in the eyes of the majority, lack of influence and involvement in decision-making, control

and discrimination, insecurity, and a dilemma about their national-cultural identity and a sense of uncertainty about their future.

The humanistic approach in dealing with diversity and multiculturalism has been partially addressed in some colleges for education. Apart from this, the same general social reality in Israel is reflected in the Jewish colleges, where students from different sectors study. In contrast, Arab colleges provide Arab students with a space of hope where they feel secure, thereby creating a gap between the reality within and the reality outside them.

The conclusions of this study is that colleges for education do indeed make higher education accessible to the social periphery; however, teacher multicultural education is not adequately emphasized in their policy. Mere attitudes of nurturing and caring alone are not enough, and there also needs to be a deliberate policy that encourages interaction among different groups and addresses minority concerns.

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## Author Details

Zuhaira Najjar  
 The Arab Academic College for Education in Israel-Haifa  
 St. 5008/9 Silesian Neighborhood  
 Nazareth 16000, Israel  
 Phone: +972-522-489925  
 E-mail: [zuhaira@arabcol.ac.il](mailto:zuhaira@arabcol.ac.il)



# A DIGITAL ESCAPE ROOM FOR EDUCATION— GAMIFICATION OF THE SUBJECT “KNOWLEDGE MANAGEMENT” FOR STUDENTS OF INFORMATION SYSTEMS

Heidi Schuhbauer, Sabine Döllfelder, Daniel Rupprecht, and Sebastian Würflein  
*Nuremberg Institute of Technology*  
GERMANY

## Abstract

Knowledge Management is one subject in the bachelor’s degree in information systems at the Nuremberg Institute of Technology. For this subject, a digital escape room was implemented on the platform Moodle. Two pilot groups evaluated the online game before it was used in the course. The evaluation results showed that the learning process was assisted for those people who like quizzes. On the other hand, not all topics can be mapped in online quizzes. Even though Moodle has only limited development possibilities for online games, its option to guide through the game with visibility restrictions was especially helpful for the implementation.

## Motivation

The use of educational learning games reinforces knowledge as well as problem solving, collaboration, and communication skills (Dicheva et al., 2015, p. 75). Results of a longitudinal study show that gamification has a positive effect on students’ knowledge retention (Putz et al., 2020). As López-Belmonte, Segura-Robles, Fuentes-Cabrera, and Parra-González point out, “within gamification, flipped learning and problem-based learning, escape rooms can be found as a technical aspect, which is focused on providing enigmas and tracks for the various educational content” (2020, p. 1).

*Knowledge Management* is one subject in the bachelor’s degree in information systems at the Nuremberg Institute of Technology. One objective of this course is the process of how to gain knowledge. Therefore, the idea to develop an escape room for this subject has been raised. The content of the escape room should be the topics worked on the subject *Knowledge Management*. The challenge posed by this idea was to develop an educational digital escape room for this subject on the e-learning platform Moodle, which was already available at the Nuremberg Institute of Technology. Within this project, the following questions were investigated:

- Is it possible to implement an escape room on Moodle? Which features can be used to implement different kinds of puzzles? Is Moodle a recommendable platform for it?
- Which kind of contents are suitable to design puzzles? Which contents of the subject *Knowledge Management* can be selected for it?
- Is an escape room a reasonable idea for teaching these specific topics for the selected group of students in information systems?

In the next section, this article first explains the concepts of digital escape rooms and the e-learning platform Moodle. The following section describes some examples of the solution implemented. This is followed by an evaluation of the project by test groups and a conclusion.

## Background

### Digital Escape Rooms

A traditional escape room is a game “where people are locked into a room and have to find a way to escape by finding clues [...] in it, and solving puzzles” (Cambridge Dictionary, 2021). A digital escape room is an online game in which tasks have to be solved online to reach a defined goal (Grande-de-Prado, García-Martín, Baelo, & Abella-García, 2021) by following a story line. Nowadays, there are many different kinds of escape rooms: physical escape rooms in a building, city escape games, board games, and digital escape rooms. In digital escape rooms, players follow a story line and have to solve different digital tasks to achieve a defined goal.

When playing in a traditional, real-world escape room, the users learn more and more about the initial background story over the course of the game. Usually, teams solve the puzzles together. When a team first enters the room, all participants have to analyze the inventory. With the information and clues already acquired, the area can be explored to find puzzles which open paths to subsequent areas. Once a puzzle has been found, it must be solved successfully. Digital escape games follow the same principles. They can be designed for single players as well as for teams.

Escape room developers can map the path of the game either in a linear fashion or dynamically. Nicholson (2015) identified four ways of organizing the puzzles: open structures, sequential structures, path-based structures and hybrid structures:

In an open structure, the players can solve different puzzles at the same time. All other puzzles need to be solved before the last one. The sequential structure presents the puzzles one after another; solving a puzzle unlocks the next, until the meta-puzzle can be solved. The path-based structure consists of several paths of puzzles. Combining some of the basic structures produces

a complex, hybrid structure, which may take, for example, the form of a pyramid. (Veldkamp et al., 2020, p.2)

A trend to educational escape rooms is remarked in a meta study by Fotaris and Mastoras (2019, p. 240-242). While 72.1 % of their investigated studies match the field higher education, only 14.7% of them are in the area information and communication technologies. The subject “*Knowledge Management*” belongs to this area. However, only 10.6 % of the studies describe digital escape rooms.

The meta study of Veldkamp et al. (2020) investigated the learning efforts of educational escape rooms. Their research included the extent to which the following goals were reached by educational escape rooms:

- to explore an active learning environment
- to increase students’ motivation and/or engagement
- to foster learning and
- practicing or developing teamwork and communication skills. (Veldkamp et al. 2020, p. 8).

Makri, Vlachopoulos, and Martina (2021) did a systematic literature review on digital educational escape rooms. They found that digital educational escape rooms exist in various contexts. They consider that digital escape rooms are a suitable way to improve the access to training, communication, and interaction. The largest representation of the publications belongs to European countries. They presume that in those countries, designers seem to show a preference in recommending more game-based learning activities in educational surroundings. The most commonly chosen target group of their study are higher education students, whereas a smaller representation of secondary and primary education students was noticed.

Ang et al. (2020) shift a physical escape room, due to the covid pandemic, to a digital escape room for a first year Chemistry course. They used Google Forms for the implementation of their digital escape room. Their students’ feedback indicates that both types of escape rooms reinforce and motivate learning. Their survey results also show that the students prefer the physical escape room because of the real-world environment.

Lathwesen and Belova (2021) focus their literature review on escape rooms in Science, Technology, Engineering, and Mathematics (STEM) teaching and learning. They state that there is a need for more easily adaptable escape rooms as well as for more empirical evidence on their actual effects.

This not-exhaustive list indicates that there are many implementations of educational escape rooms in different areas. One area is higher education. A number of the escape rooms are in solely digital form rather than in the real-world.

One challenge for the implementation of a digital escape room is the choice of a suitable platform. In this investigation, the aim is to develop a digital escape room using a common educational platform.

## Moodle and H5P

Moodle “is an online educational platform that provides custom learning environments for students” (TechTerms, 2022). Moodle (Modular Object-Oriented Dynamic Learning Environment) is used for configuring and conducting internet-based courses. Gamage, Ayres, and Behrend (2022) conducted a systematic review of trends in using Moodle for teaching and learning. Their review shows that Moodle is mainly used within STEM disciplines in higher education. They state that Moodle effectively improves students’ performance, satisfaction and engagement. Moodle is increasingly being used as a platform for adaptive and collaborative learning and to improve online assessments.

Elements usable for gamification are quizzes and interactive content H5P (HTML5 Package). H5P is a free open source software for creating interactive contents. There are types of content already available and these include, for example, videos, presentations with embedded quizzes and memory games.

## Implementation

Typical for escape rooms is a fictive context for the puzzles. Therefore, a storyline adapted to the target group of students was developed. The story starts with the invitation of an applicant to a job interview. A fictive company is introduced with a pamphlet about the company, a fictive company website, image videos, and a job advertisement. Some of the content provided includes hints to solve the quizzes that follow. The introduction story guides players through the interview phase. However, surprisingly, the applicant is left alone in an office and has to find a way out of the building. At this point, the escape game starts and the user has to solve different quizzes to leave the building. In the course of the game, the user walks through different virtual rooms. By solving puzzles in each room, at the end of the game, the user finally reaches the building exit.

In order to implement the course progressively, the Moodle feature *activity progress* was used. Participants are guided successively through the escape room and do not have access to all materials when they start. The Moodle course has been structured in such a way that only the introduction and the prologue can be viewed at the beginning. Each chapter of the escape room is a separate course *section*. This is a Moodle design option, in which visibility can be linked to *activity progress*. After successfully completing the tasks in the section, a query is located at the end of each section which unlocks the next part of the course if it is answered correctly.

For example, if users solve multiple puzzles in one section, they receive digits for each puzzle. These digits have to be entered into a virtual padlock on a door, as shown in Figure 1. This door lock is a Moodle activity (*quiz*) linked to activity progress. This means that after successfully entering the numbers in the correct order, the next section will be unlocked, and then be visible in the Moodle course. This structure of the sections continues until the end of the course. In case users have difficulties finishing the escape room, helpful clues are located at the end of each section. These clues are structured in three levels. Therefore, the users can decide whether and how much help they need.

**Figure 1**

*Padlock*



While examining different kinds of puzzles, it became clear that there are two sorts of them: puzzles containing text and puzzles with pictures. One task of the project was to select suitable topics of the subject *Knowledge Management* for the escape room. Some contents are visualized in the presentation charts as maps, processes, models etc. Other contents are provided in text form. The topics of the subject *Knowledge Management* were assigned to the respective type of puzzle, depending on their format.

Moodle offers different possibilities to implement puzzles. One easy alternative is to use *quizzes*. There are different setting options and question types available. Restrictions can be assigned to each quiz to specify the number of attempts allowed and the assessment method used. The *grade boundary* specifies the minimum score required to pass a test. This can be linked to *activity completion*, which unlocks further course content when a defined score is reached. One option allows test takers to run the choices multiple times. Either a fixed number or an unlimited number of attempts can be specified. The possible answers to a question can either be randomly mixed or always have the same order. Each test can be configured to

give the user feedback either after every question or at the end of the test. There are different question types, for example, *multiple choice*, *free text*, *true or false* and *fill the gaps*. It is possible to display a feedback message after answers are entered.

Moodle provides several types of resources, which administrators can add to their course. These include the *book module*, where a multi-page work material can be provided like a book, and the possibility to implement links to external websites. With *files* and *directories*, material can be added to the course. A structure can be integrated in a directory in which files can be stored. In the escape room, this is used for the navigation through a folder structure to find a puzzle. The clue to this location is hidden in another puzzle. Files are used quite often in the escape room to inform the user about the story line, mainly in the entry phase. Additionally, some puzzles include files with text passages or images, which contain relevant materials on the Knowledge Management subject.

*Drag-and-drop* is another type of quiz supported by H5P. This function can be used to create tasks that require connections and associations. This is done by dragging images or text fields to specific positions. This kind of puzzle is suitable to ask for models, overview charts, and transfer questions.

“To date, quizzes have evolved from simple multiple-choice questions, true or false, drag-and-drop, dropdown menu selections, to 3D interactive techniques” (Zulkifli et al., 2022, p. 54). In a live escape room, participants are locked in a room and have to escape by solving tasks. In the process, every detail must be examined closely and the environment must be analyzed in order to find every clue. The H5P activity virtual tour (360) makes it possible to transform images into virtual rooms. Multiple images can also be linked to give the user the impression of moving between environments or between different viewpoints within the same room. This H5P feature was mainly used in the Moodle course to break up the predominantly linear structure and capture the feeling of being in a real escape room.

A virtual tour is composed of scenes that have either a 360° image or a normal image as a background. Opening with a starting scene, which is the first thing users see when they enter the H5P activity, any number of additional scenes can be added. Each scene can be customized by adding different functions. With the function *go to scene*, users feel as though they are moving through different rooms, as the images can be linked to each other and allow the user to navigate from one image to the next. Furthermore, it is possible to add texts, images, audio tracks or videos to the 360° images. These appear as a plus symbol at a desired position in the scene. Other options for shaping the virtual space are the similar H5P functions *summary* and *single choice set*. Summary is about choosing the correct statement from a set of statements. The single choice set activity asks the user a question with several pre-defined answer choices where only one is the correct one. Figure 2 shows an

office with a large desk, three armchairs, and a neatly arranged shelf. The task is to look around the virtual room and find clues that could help users to move forward. The 360° image was filled with information in the form of images, texts and videos. Each of these elements was placed appropriately in the room. For example, the company's introduction video runs on the TV, and books with relevant titles are on the shelf. Furthermore, different scenes were implemented, which create the impression of looking at the room from different angles.

## Figure 2

*360° image of an office room*



The H5P activity *course presentation* is used to show a slide presentation in Moodle. Standard elements such as text, images, and videos can be used, but also a variety of other H5P features, such as *drag-and-drop* or *summary*.

Another H5P functionality of the escape room is the *memory game*. This can be used to create user-defined memories with images and text. There are several options to design puzzles: uncovering two identical pictures, uncovering two pictures that belong together, revealing memory cards with sounds, and uncovering of a term and its description. Furthermore, there is a possibility to send a feedback message to the players after each correct pair is matched. The background images of the cards can be designed as well as the background of the entire memory game.

The H5P function *fill-in-the-blanks* was used to implement tasks in which no answer options are given and an answer text must be entered in a blank field.

This description of the Moodle functions used is not complete. However, it shows that with different Moodle activities, especially H5P elements and the visibility restrictions, a structured digital escape room can be implemented. It has also been

stated that the handling of this escape room is not the handling of a typical gaming app because the navigation is adapted to a learning platform and not to an online game.

## Evaluation

Two small test groups, each of about five people, tested the room before the first application in the students' course. The first test group consisted of the professor and experienced students. The task of this group was to test the technical handling and the difficulty and correctness of the quizzes. The navigation in the Moodle course was an obstacle for some users. Navigation possibilities in Moodle are limited. The only solution was to describe explicitly how the course navigation should be done. The correctness and the grade of difficulty had to be judged. The quizzes and their solutions were all correct. However, the duration of the course was too long (more than two hours). Some quizzes were too difficult. Because of the navigation limits, the user interfaces of some quizzes were too awkward. After this first pilot phase, the duration of some puzzles was shortened and more clues to the solutions were inserted.

The second test group consisted of students of the course *Knowledge Management*. Use of the escape room was an additional offer for them. Surprisingly, only a small group of them joined. It is assumed that this group likes solving puzzles. The task of this test group was to evaluate the time, their learning success, and their motivation. Their feedback was consistently highly rated. However, this group may not be representative for all students. The next cohort of students, who will take part in face to face classes, will use this escape room mandatorily. Thus, representative results can be generated.

## Conclusion

This section answers the research questions of the project. The first question is “Is Moodle a recommendable platform to implement a digital escape room?” The experience of this project is that it is possible to design a digital escape room in Moodle. However, Moodle is a learning platform and not designed for gaming. Restrictions found were:

- The implementation effort was high because workarounds to implement the dependencies between the puzzles had to be done.
- The users stated that the duration of the course was too long because of the long loading times of some puzzles.
- Not all browsers support all H5P elements. Mainly the virtual tour, which is a central element in the course, caused many display problems.



- The dynamic elements in Moodle are limited. Therefore, the course content has to be presented with the provided elements there. This reduces the implementation possibilities.
- Activity tracking is basic for an escape room. Only when users successfully solve quizzes they can enter subsequent areas. The tracking possibilities in Moodle are limited, which also reduces the implementation possibilities.

The second research question is: “Which contents are suitable to design puzzles for an escape room?” Only the puzzles provided influence the contents. The interpretation of text or pictures as a solution is difficult. The interpretation of the texts and pictures provided with the possible answers specified is possible. Thus, open answers cannot yet be implemented.

The last question is “Is an escape room a reasonable idea for teaching?” The small number of voluntary students for the second test group showed that only a few students were willing to invest their time. Those students who took part in the escape room learned a lot about the subject *Knowledge Management*. They had to understand the material presented and to transfer the theory to the case study in the escape game. Therefore, for the group who took part, the escape room was a successful teaching concept. However, other students found that the time necessary to solve the puzzles was too long, especially when compared to the time required for regular learning.

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## Author Details

Heidi Schuhbauer  
 Nuremberg Institute of Technology  
 Germany  
[heidi.schuhbauer@th-nuernberg.de](mailto:heidi.schuhbauer@th-nuernberg.de)

Sabine Döllfelder  
 Daniel Rupprecht  
 Sebastian Würflein  
 Nuremberg Institute of Technology  
 Germany

# BREAK THE HABIT: USING AN ACTIVE LEARNING CLASSROOM TO PROMOTE REFLECTION IN AND ON ACTION AT THE WORKPLACE

Maria Spante  
*University West*  
SWEDEN

## Abstract

Routine and projects had dominated work models for preschool staff in a Swedish municipality, creating experiences of professional fragmentation between preschools. To break such patterns, a process approach was initiated promoting continuous competence development. Cultural Historical Activity Theory was used for designing an activity with the aim to collectively move from the abstract to the concrete, articulating experiences of lessons learnt during the process approach with a writing seminar in an active learning classroom. The study concluded that reflective practice should be materialized in concrete activities and that writing seminars, in active learning classrooms, is a suggested model for such activities triggering expansive learning.

## Introduction

Routine and projects had dominated work models for preschool staff in a Swedish municipality. When investigating effects of these ways of working with competence and organizational development among preschools in the municipality, it was shown that there were unwanted inequalities among the preschools regarding how young children were supported in processes of language development, the use of digital tools, and the type of pedagogical practices for young children. To break such patterns, a process approach was initiated promoting continuous competence development captured in the phrase 'Get to know your own device'. To become focused, yet open, there was a link to digital tools in the process initiative due to a shift in the curriculum for preschool identifying adequate digital competence in preschool settings. Organizing practices in the initiative focused on combining language development among the young children with relevant use of digital tools, developing pedagogical models for the inclusion of young children while using digital tools, and, furthermore, developing leadership models to enable the staff to integrate and maintain the process approach in everyday practice.

After two years of continuous effort, the common experience was positive, but when trying to present the experience for stakeholders outside of the organization,

such as responsible school politicians, there was a frustration linked to the lack of language for the positive experience of professional development and enhanced organizational quality. Therefore, there was a need to develop such a language to be able to present and share the experience to a wider community. This paper focuses on the writing seminar and the participants' experiences of such an activity, by asking the following research question:

*RQ: How was the writing seminar experience for its participants regarding how to communicate lessons learnt in the process driven development initiative?*

## Cultural Historical Activity Theory and Expansive Learning

From a Cultural Historical Activity theoretical point of view, it is a necessity to be able to be concrete in relation to what has been experienced and achieved to capture the potential of learning and change (Engeström, 2001). Learning is often regarded as vertical processes, i.e. moving people up the ladder of increased competence. However, most intriguing kinds of learning in work organizations violate the presupposition that people already know what should be learnt as well as how it should be learnt. People in organizations are often experiencing change, irregularities, and unpredicted events. Therefore, to address these types of difficulties, expansive learning (as a 'sideways' learning process) was suggested to capture the learning of what is "not yet there" (Engeström, 2001, p. 138).

Moving towards expansive learning is fueled by contradictions, since internal contradictions are the driving force of change and development in activity systems that have been developed over time (Engeström, 2001). When change is wanted but how it should happen is unknown, expansive learning is suggested as it is seen as a theoretical model that learning happens during the search process.

Central to expansive learning is to provide possibilities for meaning making and negotiation among the participants in the process, since expansive learning is defined as a collective process rather than an individual one (Engeström & Sannino, 2010), in which participatory analysis becomes key to supporting expansive learning (Sannino et al., 2016).

Furthermore, important for the expansive learning process is the concept formation processes. Such processes happen when the learners are engaged into the practice of formulating tensions and contradictions to use them as a trigger for creativity in relation to form models and concepts that might be helpful to create change at the workplace to address issues at hand (Engeström, 2020). The capacity to formulate models and concepts are not at all trivial since they might have the capacity to also support agency among the involved participants that, furthermore, can create

change at the workplace when dealing with challenging affairs in this process of concept formations (Engeström et al., 2020).

These processes have shown to be empowering in a range of situations such as creating change in libraries (Engeström et al., 2013) or address tensions for change in cultural settings (Botha, 2012) as well as sustainability initiatives in higher education institutions (Scahill & Bligh, 2022). Therefore, expansive learning was considered suitable in this study once collective learning and articulation of learning at the workplace of preschools was at the core.

## Active Learning Classroom: What Is Its Use?

To capture the experienced in the ‘Get to know your own device’ development process, a writing seminar in an active learning classroom (ALC) was created to collectively produce texts for concrete descriptions and specified explanations of the positive learning experience in the collective. This design of the activity was built upon previous research showing that interactive pedagogy in ALC increases students’ equal participation and reduces positional discrimination found in traditional classrooms (Park & Choi, 2014) as well as provides a supportive structure for instructors to enhance students’ engagement (Johnson et al., 2021; Mui et al., 2019). Furthermore, self-reports of student engagement have shown an increase in ALCs (Holec & Marynowski, 2020; Gordy et al., 2019; Donkin & Kynn, 2021; Farrow & Wetzel, 2021) as well as increased engagement in course content (Chacón-Díaz, 2020). Moreover, ALC has shown to support students’ creativity and innovation better than traditional rooms (Chiu & Cheng, 2017) as well as students’ satisfaction on their learning (Hyun et al., 2017).

However, suggestions regarding the role of the ALC to generate engagement and participation have also raised questions about whether it is the ACL itself that increases engagement or if engagement and learning have more to do with the interactive pedagogical practices in such rooms (Metzger & Langley, 2020; Hao et al., 2021). Despite the difficulties to clearly separate what the main explaining factor for identified increased experiences is, previous research generally emphasizes the need to create dynamic actions during the time in an ALC to benefit from the material capacities of the room. However, most of the previous research on ALC has been conducted in the context of higher education with special focus on students’ learning. Therefore, it is a need to add studies done in different contexts and other groups of learners, which the current study undertakes.

## The Active Learning Classroom in the Study

The writing seminar for the preschool professionals was conducted at the regional university in a room of approximately 90 square meters. The room contained seven

tables and seven screens attached to the wall close to each table. The round tables arranged in a circle in the room had the capacity for seven chairs. It was also possible to write on the walls due to a specific type of wallpaper. Each table could project laptop screens on the bigger screen on the walls. Furthermore, the screen could also be shared so that each table-connected screen could have the same projected content where participants were seated.

## Method

This paper draws upon an interpretative approach capturing experiences among the participants in the writing seminar in the ALC room. Video-recording of the full seminar was used as the main data material for the analysis, in combination with interviews with participants as well as a survey with open ended questions focusing on the experiences after the seminar was finished. The interpretative approach was inspired by content analysis by Braun and Clark (2006) often used in CHAT driven interpretative work (Chang, 2021; Spante et al., 2022) with a particular interest towards signs of professional development during the writing seminar such as expressions of experienced development, relevance of the writing process, and unexpected learning.

The organization of the writing seminar in the ALC room was linked to professional groups that the participants normally worked in in the municipality. There were 20 participants with different roles in five groups as follows: 1) five principals from different preschools; 2) five preschool teachers having the roles of digitalization developers; 3) three preschool teachers who belonged to the pedagogical development; 4) five preschool teachers focusing on language development; and 5) the municipal preschool manager and the process leader of the overall initiative.

The task each group had was to collectively write an abstract of 250-300 words with aim, method, and result to capture the lessons learnt from the overall competence development process conducted in the municipality. In total, five abstracts should be written during the day. The abstracts were sent to a local conference related to work integrated learning at the regional university. The participants were expected to present their abstracts at the conference.

After the writing seminar in the ALC, respondents did reflect upon descriptions of the day, its relevance for the continuation of the work process, and in what way the writing seminar created an understanding of their common idea of an equal preschool in the municipality and further reflections. Words such as ‘inspirational’, ‘developing’, and ‘educational’ were emphasized but also words like ‘challenging’, ‘nervously’, and ‘tumultuous’ in the open-ended survey.

## Result and Discussion

All participants found the writing seminar relevant for the professional development. They experienced it as beneficial for making the lessons learnt concrete and, furthermore, how they learnt more when writing together in such an interactive way with the recourses of an ALC. These experiences share similarities with previous research of self-reported increased engagement for students in higher education (Holec & Marynowski, 2020; Gordy et al., 2019; Donkin & Kynn, 2021; Farrow & Wetzel, 2021). This study shows similar experiences for professionals in preschools.

The result of the writing seminar suggests that the ALC room in combination with the interaction within and between participating groups activated what Engeström (2001) refers to as *Expansive learning*. This can be noticed when the participants *moved* from the abstract notion of success to the concrete articulation of performed activities, manifesting the experience of success at their workplace with their colleagues when writing together. Furthermore, the ALC with several large screens and walls to write on was seen as an essential tool supporting the expansive learning in the preschool context when conceptualizing learning in the “Get to know your own device” process.

During the seminar it was observed that the writing groups elaborated discussions of what they have achieved in the process and how they should articulate these achievements. They continuously expressed the experience that they had and the impressions of success, but it was hard for them to present it when discussing in groups in the ALC room. They struggled to find words and it was quite frustrating mainly at the beginning of the writing seminar. The initial task to formulate the aim of their activity in the ‘Get to know your own device’ was experienced as particularly challenging since they had a hard time to distinguish that specific aim thinking about their general professional description. During the seminar, they all said it was hard since actions tend to become interwoven into everyday practices and experienced as quite mundane. However, many of them claimed that it was not something really special that they had done. When asked why they then experienced the process initiative as successful, they all became motivated to find words to describe what they had achieved in their groups.

Despite the hardship, all groups were able to formulate a specific aim, describe what they had done to achieve the aim, and the result. All groups did write their abstract that day.

When asked about the experience of being part of the writing seminar, participants expressed a positive feeling, as we can notice in the following excerpts from the

open-ended survey. The excerpts have been translated from Swedish to English by the author:

It was good to be given time to reflect upon what and how we are working. Then it became clearer to see the actual development of our work, so it does lead to improvements [respondent 7]

It was good to get it down on paper and articulate what we have done [respondent 8]

Comments like the ones presented above lead to the interpretation that the actual practice of articulation, group discussion, and collective formulation in writing was beneficial to capture what they had done and, furthermore, what they had learnt. Such participatory analysis has previously shown to be central for expansive learning (Sannino et al., 2016).

Most of the respondents identified that not only the group work but also listening to the others during the activity and taking an active part in their collective writing effort during the writing seminar in the ALC were beneficial for their collective learning. They particularly liked the way walls were used to write on, and how shared screens were used to project the ongoing text, as both of the resources helped them to be critical and seek clarification.

It was important to get all involved and also to understand that we are a collective that develops together [respondent 6]

We are on the same path towards a more mutual mindset and a common understanding that we really felt during this day in the room [respondent 10]

The study concludes that reflective practice should be materialized in concrete activities, and writing seminars in active learning classrooms is suggested as a model for such activities. It is argued that this process clearly shows signs of expansive learning, where the collective, the interactions, and the material use helped the participants to voice their learning, to not settle with the internal sensation of relevance but also articulate it to be able to communicate their learnings to others.

Words such as ‘hopeful’, ‘pride’ and ‘empowering’ coming from the participants were also interpreted as signs of expansive learning since they initially downplayed what they had done and referred their effort to everyday practice. However, when reflecting upon it and being pushed to articulate it, they could capture their



contributions to the preschool organizations in a much clearer way and with joyful insights.

This study suggests that the ALC situations could help the participants to come together as a collective, formulating their lessons learnt. Moreover, they could also present to each other and find further collective relevance in the diverse efforts, yet linked with a common goal of improving all preschools for all children in the municipality.

An interesting effect was also linked to the experience of equal contribution despite the various hierarchical roles present in the ALC. During the day of the writing seminar, they paid little attention towards what roles were present in the different groups when presenting the progression of the texts, whether it was the group of principals or preschool teachers, or the municipal preschool manager and the process leader. The participants said they had a sensation of equal participation during the writing seminar and this note was also expressed by one of the participants:

That more professional groups participate with their interest, experience and engagement but also to become challenged further in each professional role leading towards collective learning [respondent 9].

This experience is related to the identified positional discrimination found in traditional classrooms but less so in ALC (Park & Choi, 2014); in this study this note is generalized towards the hierarchical position in organizations such as preschools. During the writing seminar, it was as if the normal roles became backgrounded and the focus on the collective articulation to grasp the content of experienced success was foregrounded. This observation requires further investigations into research and the organization of writing seminars in ALC.

In this study, the intense interaction with the task and with the group members, but also across groups when presenting text progression during the day, became a necessary dynamic for the experienced relevance of the writing seminar. It is suggested that the ALC helped reduce the role of hierarchical position, but again, if the ALC is the main explanatory factor or if it is rather the organization of the interactive sessions remains unclear, as some previous research has demonstrated (Hao et al., 2021).

However, despite this remark it is suggested that in this study the ALC did provide a material situation that supported the engagement and the interactivity among the groups to achieve the articulation of the lessons learnt after the two-year project, where they were able to identify their what and how and results. Furthermore, the sideways learning empathized in expansive learning (Engeström, 2001) was seen

as emerging and developing in this study, since the groups could connect their learning, initially identified as separated and isolated actions, and therefore, experienced it as more beneficial for the whole preschool organization in the municipality. This note also suggests that there is a need to create circumstances for professional collectives to meet and interact to promote expansive learning processes that might otherwise become forgotten or blurred due to the everyday pace and hassles. Moreover, with material support of an ALC situated in an interactive process, expansive learning is not only suitable for students but also for professionals.

The strongest experience among the participants was the notion of togetherness. During the day, it became evident that the experience of success was not only linked to the individual groups' achievements during the process initiative. They also affirmed that the experienced success became even more accentuated when they also connected the learning into a more coherent and systemic approach of what had been created and dynamically pushed forward. The linkage between groups became clarified and articulated. When writing together in the ALC and collectively putting word on their lessons learnt, such concept formation process further fueled their collective experience of empowerment by togetherness as previously discussed by Engeström (2020).

## Conclusion

The interpretation of the writing seminars during the day emphasizes the necessity for organizations to provide possibilities to create space for practices such as collective reflection, to not only move on to other tasks but to get the opportunity to capture what has been achieved. Otherwise, there is a risk that the actual learning becomes backgrounded and the contribution by factual actions ignored. This study suggests that breaking the historically developed habit to start projects and move from one project to another is something to rethink since it might create a fragmented rather than united effort of development and, therefore, increase the sensations of loss of meaningfulness as experienced in the municipality before the process initiative.

Despite the fact that a one day writing seminar might seem like a time-consuming activity, this study shows that it might be possible to have an even wider impact than initially believed when bringing different roles together into a mutual task. The most empowering part was to trigger the possibility for expansive learning by concept formation, here captured by the form of writing an abstract together in an ALC. This material practice emphasized going from the abstract notion of success to a concrete fueled collective capacity and sparked further energy in the collective. In this case, expansive learning was promoted in preschools, among the professionals in a Swedish municipality, for the benefit of all children and their

everyday experiences at their preschool when developing their language and having fun at the preschool.

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## Author Details

Maria Spante  
School of Business, Economics and IT  
University West  
Sweden  
[Maria.spante@hv.se](mailto:Maria.spante@hv.se)

# STRUCTURED FLEXIBILITY WHEN LEARNING ABOUT RESOURCE DIVERSITY ON THE GLOBE: THE DOLLAR STREET CASE

Sylvana Sofkova Hashemi and Anna Maria Hipkis  
*University of Gothenburg*  
Maria Spante  
*University West*  
SWEDEN

## Abstract

The study is situated in a school built specifically with the idea of flexible design in the learning environment providing variation of rooms and furniture combined with access to a range of digital tools to enhance students' 21st century skills. The aim of this study is to investigate how such flexible resources are used and experienced by teachers in practice. The findings demonstrate that teaching in such spatial wholeness requires including flexibility in the planning process and approaching student-driven choices in a meta-structure for students to participate and learn. Teaching *Dollar Street* required extensive collective planning to uphold the shared design throughout the spaces, activities, and resources.

## Introduction

Sweden is experiencing a school shortage and is currently in the situation of increased need to build new schools. The number of students in primary school in Sweden is estimated to increase by 16 percent due to high childbearing and extensive immigration (HUI, 2014). Therefore, the challenge is not only linked to the buildings themselves but also how to incorporate the needs of an evolving society characterized by cultural and linguistic diversity, as well as the rapid advancements in technology, to ensure that education remains relevant and future oriented (UNESCO, 2019). It has been argued that a good and flexible learning environment along with digitalization of education are at the forefront of the building plans (Building School Forum, 2021). Such ideas have been implemented in some of the recently built schools in Sweden. The study presented in this paper is situated in a school built with the idea of flexible design in the learning environment providing variation in both rooms and furniture combined with access to a range of digital tools such as surf tablets, projectors, laptops, and interactive screens to enhance students' 21-century skills.

The challenge within this particular research lies in the awareness of the pedagogical conditions of the teaching situation that require time and experimentation in authentic situations (Sofkova Hashemi & Spante, 2016). The design of the overarching project strives to meet the complexity of the learning environment and systematically test teaching designs over time. The flexibility offered by the school in physical classroom design, digitalization, and curriculum includes both opportunities and risks. Learning environments in themselves are becoming increasingly complex, which affects education and how we learn, requiring use of new materials/resources, changes in the beliefs of what represents good and adequate education, and development of new teaching methods (Nieveen & Plomp, 2018). A teacher needs to understand the relationship between digital technology and learning, and choose relevant digital technology based on the learning goals, activities, and processes on which they are designed.

The aim of this study is to investigate how such flexible resources were used in teaching practice and experienced by the teachers.

## Literature Review

Previous research has shown the essence of dealing with how digitalization affects individualization in schools and opportunities for equal participation in learning (Selwyn, 2017). Above all, the importance of a reflective practice and a critical approach to the development one wishes to achieve is emphasized, since an ill-considered digitalization in the worst case might lead to negative outcomes (Carter et al., 2017). Inclusion means striving for a learning environment spacious enough to meet students' differences and diverse needs (Swedish School Commission, 2016:163). Combined with digital and spatial conditions, schools have potentially unique opportunities for flexible and inclusive education. Furthermore, the design of a physical space has been shown to be important for how interaction evolves in pedagogic settings (Horne-Martin, 2002; Hipkiss, 2014; Moore & Lackney, 1993).

Over the years, the more student-centred approaches in curriculum have influenced school designs, motivated by notions of a relation between learning and space (Wells et al., 2017). However, this influence has not been as great as might have been expected. Many schools still have traditional school desk arrangements with students in pairs facing the teacher (Sigurðardóttir, 2017). Furthermore, on classroom level, making changes to a “set” design, like that of a strongly classified subject classroom, such as a chemistry classroom, has an impact on teachers and their views on teaching their subject (Veloso & Marques, 2017). Making changes that remove subject identity in the room or force different subject identities into one space might have effects on the teaching that will take place (Leiringer & Cardellino, 2011). Studies on open-plan designed schools have found it difficult to present a final judgment on the implications of the design on learning (Woolner et

al., 2007). As in many other cases when it comes to teaching and learning, there are few straightforward answers. However, there are studies that show a link between the affordances of classroom designs and style of teaching (Hipkiss, 2014; Horne-Martin, 2002; Moore & Lackney, 1993), suggesting it worthwhile to consider both agents (such as teachers and students) and contents when planning for new school buildings and classrooms, since there are questions of how pedagogical practices constrain, constitute, or co-produce agency (Charteris & Smardon, 2018). The current study therefore provides prospects to answer questions on a scientific basis about what opportunities a flexibly designed school offers, and how these are realized in teaching.

Learners engage in new forms of educational environments through digital technologies in schools, acknowledged as a paradigmatic change in education (Beetham & Sharpe, 2013), moving towards a creative process of *design for learning* of new practices, activities, resources, and tools rather than delivering content to students (Mor & Craft, 2012). In this, teachers design for learning tasks to facilitate students' activities as learners, not their experiences (Sun, 2017), where students have the opportunity to create their own learning paths, previously more controlled by the teacher who could provide a specific material (Boistrup & Selander, 2022). In this activity-centered forward-oriented design of emergent learning situations, teachers relate and facilitate students access to the subject content to be taught and learned based on the three components of the 'didactic triangle' linking student, teacher, and content in a concrete teaching and learning situation (Krogh et al., 2021).

What students should learn, how should they learn it, and why this content with this method for these students, need to be addressed in the teaching design in questions concerning which technology to use, interactivity in the physical and virtual spaces, and when to teach and where (Lund & Hauge, 2011; Sofkova Hashemi & Spante, 2016). The relationships between technology, student, and context that arise thus entail the teacher's responsibility of the design and layout of teaching situations and learning activities (Hudson, 2011; Boistrup & Selander, 2022).

## Design of Study

We focus on a teacher team's didactical design (Sofkova Hashemi & Spante, 2016; Boistrup & Selander, 2022) of the thematic work project *Dollar Street* where 51 students in Grade 5 at the age of 10-11 years learned about resource diversity in the world. The analysis of knowledge content, activities, spaces, and resources is based on data from workshop-driven design activities, lesson observations, and a focus group interview with the teacher team. We worked particularly close to six teachers in Grade 5 since parents had given informed consent to conduct classroom observations.



## Workshop-Driven Design Activities

Initially, the teacher team was making a so-called rapid prototyping addressing six specific categories in their design: 1) Knowledge; 2) Competence; 3) Time; 4) Space; 5) Resources; and 6) Added value (for the didactical design model see Sofkova Hashemi & Spante, 2016). During the workshop, teachers worked with identifying learning targets, how to teach, and how to organize each activity in the *Dollar Street* thematic work project.

## Lesson Observations

Lesson observations were conducted on six occasions during the thematic work project, following the activities of the Grade 5 students in *the Home Base* comprising an open space area with access to a *Base Room* that holds 50 seated students, a *Theatre* (with tiered seating), several smaller group rooms, benches, and wall cubes (a construction attached to the wall to sit in). Not every lesson was observed but the process was followed with six observations during the initiation of the *Dollar Street* in November 2021 until the final observation that took place in December 2021 when the concluding stage of *Dollar Street* was introduced – How to present your findings.

The observations started with a short interview with the teacher regarding what was planned to be achieved. Then the observation focused on what happened during the session and then, time allowing, a follow up interview with the teachers after the session to capture the direct experience of the conducted lecture with the thematic work. During the observations, field notes and photos were taken to capture the sessions following the timeline of events.

## Focus Group Interview with the Teacher Team

Six teachers involved in the thematic work project were then interviewed in a one-hour focus group interview. The focus was the experience of the thematic work project with special reference to the six categories addressed in the didactical design. The interview was transcribed for thematic analysis inspired by Braun and Clark (2006). The themes stemming from the work were labelled as: i) Structure in variation, ii) Value-creating work with assessment as a bonus, iii) Being together in open spatiality, and iv) Development in the teacher team.

## Results

In the following result section, we will present the teacher team's plan, observations, and the focus group interview with the teacher team after the thematic work project of *Dollar Street* was completed.

### Results from Teacher Team Workshop and Plan

The overarching plan for *Dollar Street* lists the curricular targets specified in the six design categories of didactical design (Knowledge, Competence, Time, Space, Resources, Added value), without specifying the school subjects involved in the project. The plan stipulates two perspectives on the curricular targets: comparing living conditions and resource diversity in different parts of the world, and understanding this on a personal level - "I have this, as a Swede, and in other parts of the world, they have that". The teacher team wanted their students to develop their abilities to reason, argue and reflect and thus build critical thinking by being able to compare and contrast information about living conditions and resource diversity. They planned for the thematic work project to take place twice a week for 60 minutes each time over a six-week period. The plan also includes which spaces to use and time spent on activities with which resources to be used; in this case, much is based on information on a website - *Världskoll* (World check). Apart from the curricular targets and abilities, the teacher team also stated team building and collegial collaboration as added value of the *Dollar Street* project along with cross-curricular activities.

### Result from Observations

The structure of the lessons was similar. The lessons started with a few minutes of quiet individual work allowing for students to settle down in the *Home Base* area and for the teachers to check attendance ("soft start"). Then the teacher would introduce the work to be carried out, projecting the plan and activities from a shared document. In the following sections we present short summaries in the format of tables where we emphasize three categories 1) teachers plan, 2) the activity in the lessons and 3) teacher experience of the lesson. The observations from the six lessons underlined observations relating to knowledge content, activities, spaces, and resources. The first observation is summarized in Table 1.

Initially, the use of the learning environment seemed to be quite challenging for teachers and students. The teachers' idea to begin the lesson in *the Theatre* seemed to cause some turmoil in the group. Additionally, teachers' idea to let students select where to sit when working was not followed during the introductory lesson.

**Table 1**

*Observation of Plan, Action, and Experience 19<sup>th</sup> November*

<b>Date: 19th Nov</b>	<b>Observation 1</b>
<b>Teacher plan Lesson</b>	Introduce the thematic work and structure of the lessons Students enter loudly into the <i>Theater</i> . Introduction to the thematic work starting with <u>climate justice, climate-smart food</u> . Teachers use <u>film clips</u> and demonstrate <u>statistics on websites</u> about countries carbon dioxide emissions. Students are engaged and impatient, want to answer all the time. The teachers hush, separate, and move students. <u>Teachers decide on groups</u> to work on <u>climate-smart food</u> using the available rooms and <u>shared documents</u> . Teachers circulate around the groups in the different rooms guiding and asking what new things the students learned, e.g. that a 6-year-old drinks coffee.
<b>Teacher experience</b>	The students learned new things and they talked a lot all the time.

The week after, they did work with the suggested plans despite the expressed shyness and nervousness to perform a play for each other in groups linked to concepts, as summarized in Table 2.

**Table 2**

*Observation of Plan, Action, and Experience 23<sup>th</sup> November*

<b>Date: 23th Nov</b>	<b>Observation 2</b>
<b>Teacher plan Lesson</b>	Understanding concepts linked to living conditions Students are positioned in the <i>Theater</i> . The teacher <u>projects</u> concepts linked to <u>living conditions</u> and encourages students to elaborate on them in their own words writing on <u>the white wall</u> . Teacher initiates discussion on the representativeness of <u>images</u> for the concepts and <u>definitions in online dictionaries</u> . Students are invited to discuss in pairs "living conditions". Then they are invited in groups to prepare <u>a sketch of the concepts</u> assigned by the teacher and spread in different rooms. Gathered back in the <i>Theater</i> , one group after another <u>performs their sketch</u> while the others guess the concept. They end by individually <u>describing in their own words the concepts</u> they have worked with in <u>shared documents</u> on their tablets.
<b>Teacher experience</b>	Need for practice performance more since many students were anxious and worried to perform in front of the class. After a while making sure all students understood what to do and how to fill in the table, work in the <i>Home Base</i> flowed and students spend much time comparing

additional concepts (Table 3). The concluding comparison using *Menti* was not given much focus as time was running out for both teacher and students.

**Table 3**

*Observation of Plan, Action, and Experience 26th November*

<b>Date: 26th Nov</b>	<b>Observation 3</b>
<b>Teacher plan Lesson</b>	To introduce the work for the lesson and get students working. The teacher began by reminding them of listening and being patient during the introduction. Students were to fill in a prepared table <u>comparing three aspects that affect living conditions</u> between three countries on three different continents. The teacher illustrated how to search the <u>website</u> where they collected their information. When working <u>individually (but allowing for cooperation)</u> students were seated in <u>different areas in the Home Base</u> . The follow-up in the <i>Theatre</i> using <i>Menti</i> collected all student's findings.
<b>Teacher experience</b>	There were differences between groups in how well they understood and were able to complete the tasks and were able to focus.

The following week, the teacher recurrently assured the students that the task for this lesson was different than the previous one. However, many of them repeated the same task initially as from the lesson before (Table 4).

**Table 4**

*Observation of Plan, Action, and Experience 30<sup>th</sup> November*

<b>Date: 30th Nov</b>	<b>Observation 4</b>
<b>Teacher plan Lesson</b>	To introduce the work for the lesson and get them going. Students were seated at the <i>Theatre</i> for introduction. The teacher began with informing on the work to come, presentation - the concluding stage of the project, and then focused on lesson at hand. The lesson included additional work <u>comparing countries</u> , but this time with new aspects to be used for their final in-depth study presentations. Some students did not realize the difference between the tasks they had already completed and the ones they were to complete that day. The <u>individual, but cooperative</u> part of the lesson, was conducted in <u>different spaces of the Home Base</u> .
<b>Teacher experience</b>	n/a

At this point of the *Dollar Street* project, all students followed the format and had grasped the content of the thematic work (Table 5). The observation also showed that students experienced the project as relevant and showed motivation to work

with the tasks. At the same time, some students experienced that the thematic project was repetitious due to its structure.

**Table 5**

*Observation of Plan, Action, and Experience 7<sup>th</sup> December*

<b>Date: 7th Dec</b>	<b>Observation 5</b>
<b>Teacher plan</b>	Finish their selected in-depth study
<b>Lesson</b>	The <i>Dollar Street</i> lesson in the <i>Theater</i> starting with individual work to <u>find and document information</u> for the selected in-depth study, using <u>surf tablets and destined sites</u> , <u>focusing on content such as ‘forest coverage’, ‘representatives in parliament, and famine</u> to mention a few, and then group work to decide on how to present the conducted work with the <i>Dollar Street</i> theme. Students decided where to sit during the in-depth study in <u>group-rooms, the Theater, benches in the Home Base area and wall cubes.</u>
<b>Teacher experience</b>	The students could concentrate on the task and could select a room that worked for them. The matrix, created by teachers to document content worked for most students but some needed extra help.

Between observations 5 and 6, students selected methods for presenting their in-depth study. They could for example choose between a film, comic strip or a podcast (Table 6).

Across the groups, the focus for this lesson was to get students going on their in-depth study presentations, and different teachers were allocated different presentation modes based on their competencies or preferences. Students in the film group progressed very differently as they all approached the task from different angles, with a few following the suggested strategy of making a plan first. Many started with creating a dialogue, building “worlds”, or selecting characters, and others with selecting a focus for their presentations as they had not yet decided.

**Table 6**

*Observation of Plan, Action, and Experience 14<sup>th</sup> December*

<b>Date: 14th Dec</b>	<b>Observation 6</b>
<b>Teacher plan</b>	Check that they all know what group they are in (T1) Introducing the film making task (T2) and see that they get going.
<b>Lesson</b>	Students were seated in the <i>Theatre</i> for introduction during which the teacher (T1) made sure they all knew which presentation <u>group they belonged to</u> and <u>which room</u> they were to go to for further information and guidance. The teacher (T2) presented the work to be carried out in the “film group”. Students were introduced to <u>a good strategy and two different film making apps</u> . The film introduction both included <u>teacher instruction and student input</u> to enhance or suggest presented alternatives. Then students were <u>planning their work in groups</u> . The lesson concluded with a follow-up and some more guidelines for the following lessons in order for the students to be able to succeed on time.
<b>Teacher experience</b>	T2 was pleased with the students’ progress after the first filming lesson.

### Teacher Team’s Experiences

Here we present the themes arriving from analysis of the focus group interview with the teacher team (six teachers of mixed subjects) on the experiences of the thematic work *Dollar Street*.

#### Structure in Variation

The teachers experienced their own development and variation of instruction, being able to repeat a lecture several times: "I thought it was good that we divided into three groups and did a lesson several times. Then we became a little more expert at it" (Teacher 1). The teaching design was organized to keep the students in the same familiar rooms and groups with the teachers circulating. This gave an opportunity to the students to encounter several of the teachers and avoided having them be distracted by circumstances or other frames: “It is a pretty good way to start somewhere in order to keep the content in focus” (Teacher 4).

#### Value-creating Work with Assessment as a Bonus

The teachers discussed the *Dollar Street* project providing images of the reality that their students could empathize and identify with, thus creating interest, curiosity, and engagement: “I just think how important it is that things and stuff that it is relevant. That there is something that they can relate to” (Teacher 3). They experienced compromising with their subject having limited space for content and

assessment, however, contemplating theme work as a valuable occasion for students to show what they have learned and to apply their skills in a context. Here is a quote about assessment during theme work: “So it is not certain that you can get all the evidence within all those activities, and is it important for you? No. I think we solved it quite well anyway. That is what I feel with my subject's math and sciences, that it will be like good bonus opportunities” (Teacher 4).

#### Being Together in Open Spatiality

The open spatiality enabled several working areas. The teachers talked about developing a classroom code with their students in a calm and safe environment: “You need to follow a certain code when you are in those environments even if it does not look like a classroom, that you need to adopt certain things that may be classroom coded. However, it is difficult to put it into practice and remember it all the time” (Teacher 4). Pointing explicitly to the open spaces and opportunities to talk among the students, the teachers reveal that both students and teachers need practice that gives the skills to use the spaces as parts in a whole - a feeling of being together and a kind of spatial wholeness/context rather than separate rooms.

#### Development in the teacher team

The findings demonstrate a student-centered approach in teaching was present in the choice of content as well as in the spatial placement. However, the overall structure regarding the design of the lesson was held rigid by the teachers during theme work, something the teachers experienced as a necessity to be able to accomplish learning in the thematic project work.

## Conclusion

The study demonstrates that being together in such an open and digital learning space requires including flexibility in the planning process. In this spatial wholeness, student-driven choices were enhanced by a meta-structure so that students could navigate and develop a sense of recognition and consequently a predictability to learn. Teaching *Dollar Street* required extensive collective planning and negotiation to uphold the shared design throughout the thematic work project and to develop a readiness to re-evaluate the teaching design throughout the spaces, activities, and resources.

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## Author Details

Sylvana Sofkova Hashemi  
University of Gothenburg  
Sweden  
[sylvana.sofkova.hashemi@gu.se](mailto:sylvana.sofkova.hashemi@gu.se)

Anna Maria Hipkiss  
University of Gothenburg  
Sweden  
[anna.maria.hipkiss@gu.se](mailto:anna.maria.hipkiss@gu.se)

Maria Spante  
University West  
Sweden  
[maria.spante@hv.se](mailto:maria.spante@hv.se)

# SCHOOL ORGANISERS' WORK WITH EXPANDING THE ACCESS TO AND APPLICATION OF DIGITAL TECHNOLOGIES IN SCHOOLS

Jussara Reis Andersson  
*Mid Sweden University*  
SWEDEN

## Abstract

Digital technologies change the conditions of people's lives worldwide, requiring new skills for citizens. Students need to be prepared for these changes, and the educational system has an important task. Expanding the access to and application of digital technologies in teaching and learning is a school organiser and school leaders' issue. School leaders are responsible for creating opportunities by supporting teachers to access and apply digital technologies in teaching. At a municipality level, school organisers are responsible for supporting school leaders in creating infrastructure for digital technologies in schools. Therefore, school organisers' leadership is crucial for digitalisation work in schools.

## Introduction

Digital technologies have been the engine for many changes in societies in the last few years. As industrialisation in the middle of the 1900's, digitalisation has brought many challenges and opportunities to people's lives. It changes the labour market, creating a need for other skills involving necessary educational changes. In 2017, the Swedish government presented a digitalisation strategy (Swedish Association of Local Authorities Regions, 2019) as a way to meet these changes and prepare students with skills for using digital technologies. However, it increases the need for organisation and leadership to govern the digitalisation work in education, which is a school organiser and school leaders' issue. School organisers need to support municipality schools in creating an understanding of the impact of digital technologies in teaching and learning.

In education, digital technologies are connected to the economy since it brings high costs for both school organisers level, and school leaders (Hylén, 2011; Håkansson Lindqvist, 2015; Salavati, 2016). Purchase of hardware and software and Wi-Fi are some of the needs that are included in the infrastructure that the municipality needs to build for the schools. There is also a need for digital competence for students, teachers, school leaders, and school organisers (Håkansson Lindqvist & Pettersson, 2019; Ilomäki et al., 2016). Digital technologies bring changes in methods, creating

a need for digital competence and understanding on how digital technologies can be used in education.

School organisers work strategically separated from the operational part of the chain of command (Elmore, 2004; Lindensjö & Lundgren, 2014), which means that they are not physically in the schools, even if they have ongoing contact with the school leaders. Their strategic plans and decisions should seep down to the schools and the classrooms, supporting teachers in teaching and learning and creating opportunities for students to increase their digital competence.

In order to understand how school organisers handle changes in the educational system, the organisation of digital technologies in education is studied in three Swedish municipalities. This paper presents some of the preliminary findings of the collected data. The disposition of this paper follows a research review of the changes that digitalisation in education brings, preliminary findings, and discussion and conclusion.

## Digital Technologies in Education

The access and application of digital technologies in society have expanded over the last few years, requiring students' preparation to meet these changes since digitalisation may not be stopped. Blossing et al. (2014) stress that education is an important competitive factor for the individual, increasing pressure within the labour market. Digital technologies bring challenges and opportunities for teachers, school leaders, and school organisers and should be used in teaching and learning as well as for administrative tasks. Examples are: recruiting qualified teachers, opportunities for competence development, and participation in collegial learning. Various reforms focusing on digitalisation in the educational system have been an important issue in many countries. The last digitalisation strategy for schools in Sweden was presented in 2017 (Swedish National Agency for Education, 2019). The decisions that school organisers and school leaders need to make between different choices, for example, platforms, systems, hardware, and software, require digital competence and understanding of digital technologies in education. According to Gallud et al. (2022), hardware and software user interfaces and their friendliness in education have been challenging since digital technologies' impact on teaching and learning is difficult to make visible.

Digitalisation work in education requires organisation knowledge (Somekh, 2008) and dialog (Ottestad, 2013) in the chain of command. Technology integration is not yet achieved systemically or systematically in most schools, according to (Lim et al., 2013). The scholars explain that “very few schools can be labelled as learning organizations with a shared commitment to technology in education” (Lim et al., 2013, p. 65). The organisation of digital technologies in schools requires leadership

(Grönlund, 2014; Hylén, 2011; Leithwood et al., 2020), which is considered crucial to a school's success and educational change (Bryk, 2010; Elmore, 2004; Fullan, 2007; Harris & Spillane, 2008; Stoll & Louis, 2007). It also requires digital competence (Håkansson Lindqvist & Pettersson, 2019). School organisers' competence to lead the digitalisation work, offering support structures for the technological and pedagogical work, calls for digital competence (Fransson et al., 2018). School organisers' digital competence is also defined as their confidence to lead the digitalisation work creatively (Ferrari, 2012). Bulman and Fairlie (2016) point out that students' outcomes may be affected by how school organisers organise and lead the expansion of digital technologies in schools.

Littlejohn et al. (2019) emphasise that school organisers need the knowledge to organise digital technologies in schools, which they may get by cooperating with each other in a network, sharing knowledge and experiences. School organisers should be able to learn from others and be open-minded (Leithwood et al., 2008, 2020) for organising and leading the expansion of the access to and application of digital technologies in schools. School organisers' digital competence may increase through a network between school organisers.

The school development work should come from the local school's needs, such as important features of the context, location, and school's trajectory for work with school improvement, according to Hallinger and Heck (2011). These scholars suggest that an important factor for change in the school's possibility to improve is solid learning-directed, collaborative leadership. Hall et al. (2017) point out that the chain of command in the educational system is characterised by a hierarchical structure. The scholars also stress that, even in a context "with one school leader and a varying number of teachers" (Hall et al., 2017, p. 327), the focus is on the leader because the leadership is not shared. However, Liljenberg (2015) argues that "leadership is considered to be significant for creating a developing and learning school organisation" (p. 152). Avidov-Ungar and Shamir-Inbal (2017) stress the role of digital technology coordinators that support schools in implementing digital technologies in education from a proactive perspective. Even school organisers' behaviour toward digital technologies in education influences digitalisation work. School organisers' attitudes (Hirsh & Segolsson, 2019; Mingaine, 2013) toward applying digital technologies in teaching and learning influence how teachers and school leaders prioritise digitalisation work.

## Method

The data were collected within the framework of the project Digitalisation in the Educational System in Municipalities, shortened to DUVKOM, a network between three municipalities in Sweden and Mid Sweden University. The municipalities are identified as A, B, and C in this paper. Participant observation is the first approach

used to collect data, meaning that the researcher participates and documents the observations (Cohen et al., 2011). The project's reference group had nine participant observations between November 2018 and February 2022. At each meeting, about 12 participants attended, and it lasted approximately three hours. During the meetings, each municipality presented the status of its digitalisation work. Six meetings were conducted via conferencing service due to the pandemic. The second approach was a survey sent to 156 school leaders from preschool to upper secondary school in the three municipalities. The questions were built on findings from the project's meetings and the research questions. The themes in the survey were access to and application of digital technologies, digital competence for school leaders and teachers, school activities digitalisation plan, and school leaders' collaboration with school organisers. About 62% of the school leaders answered the survey. The third planned data collection method was group interviews with four school leaders' for preschool, year 0-6, year 7-9, and upper secondary school. The questions were connected to findings from the project's meetings, the survey, and the research questions. In total, 669 pages have been analysed.

The data have been analysed with the practice architecture (Kemmis et al., 2014). In order to understand the school organisers' digitalisation work, which can be seen as the project in the practice architecture, the school organisers' sayings, doings, and the relation between these sayings and doings are studied. The theory makes it possible to move the focus from the individual to the how the individuals act in a specific context, considering the external and internal conditions. Three different kinds of arrangements are identified in the theory of practice architecture: the cultural-discursive arrangements that shape the sayings in the semantic space, the material-economic arrangements that shape the doings in the physical space, and the social-political arrangements that shape the relatings in the social space (Mahon et al., 2017). These arrangements enable and constrain "preconditions for the conduct of practices" (Kemmis et al., 2014, p. 31).

## Preliminary Findings

This section presents the preliminary findings according to what emerged in data analysis when school organisers organised and led digitalisation work in municipality schools. These findings are presented in this paper in the form of themes that school organisers often return to when they express how they work to expand the access to and application of digital technologies in municipality schools. The lack of enabling resources can lead to constraining the digitalisation work. For example, the lack of support from the school leader may constrain teachers' work in digitalised teaching.

## Communication

*Communication in the chain of command* is important for digitalisation work. According to the school organisers in the network, the digitalisation work needs time and endurance and must be communicated to school leaders and teachers openly and transparently, which is affected by the municipality's size. Digitalisation “does not happen from one day to the next day” [Municipality C, 22 June 2021]; (note that here and elsewhere translations from Swedish are those of the author.). They point out the importance of *daily dialogue and reflections* on the application of digital technologies in teaching and learning. Municipality A stresses that they work with trust-based governance and trust-based follow-up, which is a perspective shift towards “several follow-ups of dialogues” [7 December 2020]. School organisers and school leaders agree that teachers' *attitudes to digital technologies in teaching and learning* are important for involving students in using digital technologies in different ways. At the same time, school organisers' and school leaders' interest in expanding the access to and application of digital technologies may influence teachers' attitudes to digital technologies in education. Municipality A comments that “attitudes are essential when we talk about using digital technologies in classrooms” [20 August 2020].

*Equality in and between schools* is not only about how much teachers and school leaders get access to digital technologies, but it is also about digital competence for the application of digital technologies. According to a Municipality B, equality in the municipality “has looked incredibly different and unequal” [17 February 2021]. School organisers describe one way to create equality between teachers' digital competence: to find a minimum common denominator that raises with time and has mandatory elements for everyone. They point out that it is essential to see the schools' digitalisation as a well-integrated work into the pedagogical work. Municipality B stresses that “a leadership that does not understand the digitalisation's opportunities may lead to equality not being achieved” [17 February 2021].

*Leadership is crucial for the organisation of digital technologies in education.* Since every municipality has different conditions, the organisation of digital technologies in schools is different. In two municipalities, IT strategists work directly with teachers, school leaders, and school organisers. They become a link between the strategic and operational parts of the chain of command. However, Municipality A points out that “there is no one responsible for digital technology issues in the municipality” [7 December 2020]. It is also important to lead the *systematic quality work* on a municipality level, increasing the *holistic perspective*, creating a *gold thread* in the municipality schools' digitalisation work. According to Municipality A, the systematic quality work is intended to “function as a type of engine for the development work in the municipality” [7 December 2020].

Increasing access to digital technologies in the educational system leads to *high costs for school organisers*. Even the application of digital technologies in teaching and learning brings cost in the form of needing digital competence. It is also about conditions, opportunities, technologies, resources, and sustainabilities. Unfortunately, the access to and application of digital technologies have been unequal in and between schools. In many cases, even the application of digital technologies in teaching and learning depends on teachers' interest in digital technologies in their subjects.

In summary, the lack of dialog and trust may influence the collaboration among teachers, school leaders, and school organisers. The municipality's size may enable or constrain the dialog and trust in the chain of command. School leaders' and school organisers' attitudes to digital technologies in teaching and learning may enable a more positive digitalisation culture in teaching and learning. School organisers' attitudes also may enable or constrain access to and application of digital technologies in education. A negative attitude leads schools with school leaders who are not interested in digital technologies in education to differ from schools interested in digitalisation.

## Digital Technologies

The purchase of *hardware and software* influences how much digital technology will be used in teaching and learning. Municipality C emphasises the importance of clear instruction on how, for example, Chromebooks should be used and maintained. The risk is that with a lack of instructions many teachers avoid the implementation of Chromebooks in teaching. According to Municipality A, the municipality schools have been using a platform following students' learning development; however, the platform offers Swedish and English as languages for communication, which is problematic since many schools have parents who do not speak these languages. Implementation of systems and platforms demands leadership, "a leadership that may not understand what digitalisation brings in education, perhaps equality will be improved but does not achieve the goal" [Municipality B, 17 February 2021]. Also, using a system where interfaces are difficult to use or not adapted for schools may increase inequality in and between schools since the system may not be used as is intended. Teachers' and school leaders' understanding of the concepts used to document in these systems may also influence equality.

*Increasing teachers and school leaders' digital competence* is a prerequisite for expanding the access to and application of digital technologies in education. In schools, digital competence is a key to teachers applying digital technologies that benefit students' learning and development. The school organisers' and the school



leaders' digital competence and understanding of different systems influence the digitalisation of the educational system. Municipality A emphasises “digital competence as the form of knowledge to communicate the importance of implementing digital technologies in schools to local political representatives, not just understanding and supporting school leaders” [7 December 2020].

The school organisers have *employed IT strategists to support teachers and school leaders* with the expansion of the access to and application of digital technologies in education. These IT strategists work in both the strategic and the operative group, building a bridge between school organisers and schools from the digitalisation work perspective. These strategists are teachers and school leaders with both pedagogical and technological knowledge. They “stand for the part in relation to digital technologies” [Municipality C, 17 February 2021]. Both municipalities' and schools' economies enable or constrain access to digital technologies in schools. Without financing, the school organisers and school leaders have difficulty buying hardware and software.

## Relationships

*Collaboration between the IT department and the school department* is important. The findings show that the school organisers form the link between the IT department and schools; it is important for the pedagogical perspective to be the starting point for implementing digital technologies in schools. To enable work requires collaboration between decision-makers for both school administration and the IT department. Municipality C points out that “the school should describe what they need, not the IT department” [7 December 2020]. According to Municipality A, there has been a field of tension between the school department and the IT department since they have different interests. The school organiser stresses that “it is a challenge, what role the IT department should have around the schools' digitalisation work, for example, as a core or support activity” [Municipality A, 7 December 2020]. Municipality A also emphasises that it is a classic discussion in all municipalities.

According to Municipality C, when the municipality talks about equality from a school organiser's perspective, they relate it to the national *steering documents*, such as the national digitalisation strategy and curriculum. Municipality C emphasises that every school leader is responsible for presenting a digitalisation plan for their school, “which is a good tool for us to talk to the school leaders, but the gold thread is the curriculum” [28 April 2021]. Working between teachers, school leaders, and school organisers to fulfill the government's digitalisation strategy requires a good relationship between partners in the chain of command and with the IT department.

A shared culture between school organisers enables the digitalisation work in their municipality schools. Even the digitalisation strategy focuses on what the municipalities and schools should do, enabling expanding the access to and application of digital technologies in education.

## Discussion and Conclusion

The school organisers emphasised that communication in an organisation for expanding the access to and application of digital technologies in education should be open and transparent, which Ottestad (2013) also emphasised. Attitudes about digital technologies are important for schools' digitalisation work and may both enable and constrain the access to and application of digital technologies in education. Even school organisers' and school leaders' behaviour toward digitalisation influences the digitalisation work, which is in line with the thinking of Hirsh and Segolsson (2019) and Mingaine (2013) around school leaders' and school organisers' attitudes.

Expanding the access to and application of digital technologies in teaching and learning requires an organisation that supports the changes that digitalisation brings, which Somekh (2008) pointed out as important knowledge for the digitalisation work. However, precisely as Grönlund (2014), Hylén (2011), and Leithwood et al. (2020) pointed out, creating an organisation requires leadership. To lead the digitalisation work, school organisers and school leaders need digital competence (Håkansson Lindqvist & Pettersson, 2019) and to understand how digital technologies influence teaching affecting students' lives. Working systematically and creating a gold thread supported by a holistic perspective require leadership and understanding of the impact of digital technologies in education.

Purchase of digital technologies entails costs for both municipalities and municipalities' schools, which Hylén (2011), Håkansson Lindqvist (2015), and Salavati (2016) stated. The economy enables the purchase of digital technologies from schools' needs and conditions, increasing equality in and among schools. However, it is important that school leaders and school organisers agree on which purchases should be made on the municipality's level and on the school's level. In addition, the school forms may have different needs and conditions, influencing equality between schools in a municipality. For example, preschools may have needs different from those of other schools.

Concerning the school organisers' doings and the material-economic arrangements in the physical space, hardware and software are important since how easily they can be used may enable or constrain the application of digital technologies in teaching and learning. The interfaces of software may influence whether digital technologies will be used in teaching and learning and how they will be used,

influencing equality in municipality schools. When purchasing hardware and software, school leaders and school organisers must ensure that the interfaces suit the purpose and that teachers have the digital competence they need to use the new digital technologies. It is not an easy issue, which even Gallud et al. (2022) emphasised. School organisers talked about increasing students, teachers, and school leaders' digital competence. However, even the school organisers' digital competence is important for a successful digitalisation in the educational system from an economic, pedagogic, and technological perspective.

The cooperation between the education and the IT departments is important, and it is connected to relationships and social-political arrangements. These departments should be able to work together and not be two downpipes. There is a need to understand each other's departments by learning from each other, which Leithwood et al. (2020) pointed out is vital for organisation and leadership. The scholars raised networks as a way to share knowledge, which was also highlighted in this study. The network allows school organisers to increase knowledge about expanding digital technologies in education. Furthermore, by sharing challenges and opportunities in their own digitalisation work, they may create a holistic perspective, understanding what enables and constrains the application of digital technologies in teaching and learning, affecting equality in and between schools.

Conclusions can be drawn that digitalisation work in municipality schools depends a lot on the school organisers and school leaders' leadership and digital competence influencing equality in and between schools and students' possibilities to achieve good results. Teachers and school leaders need digital competence and knowledge of how digital technologies can be applied to support and facilitate daily work. However, school organisers' digital competence is about understanding how digital systems influence people and why digitalisation in education is important from society's perspective. Even financing is needed for digital technologies to be available and for successful digitalisation work. The findings from this study imply some directions for future research, for example, the importance of school organisers' networks for a shared culture of knowledge and experiences. There is also a need to research school organisers' digital competence, specifically the school managers' digital competence.

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## Author Details

Jussara Reis Andersson  
Mid Sweden University  
Sweden  
[jussara.reis-andersson@miun.se](mailto:jussara.reis-andersson@miun.se)

# THE EVALUATION OF A HIGHER EDUCATION DISTANCE EDUCATION COURSE

Maria Eugenia Witzler D'Esposito  
*Applied Linguist and Education Consultant*  
BRAZIL

## Abstract

The aim of this paper is to present the evaluation process Higher Education Institutions go through in Brazil when offering distance education courses at graduate and post-graduate levels. The paper highlights the main aspects of the legislation, discusses what the accreditation processes entail, presents a graduate course (a teaching qualification), the evaluation instrument, and the feedback received, and concludes with some final considerations on the process experienced.

## Distance Education Legislation in Brazil: An Overview

Distance education has been defined, for courses at all levels, as any educational mode in which the didactic-pedagogical mediation in the teaching and learning processes happens via the use of information communication technologies (ICT), that would allow students and teachers to do educational activities at different locations and time<sup>1</sup> (Brazilian Federal Decree n° 5622/2005)<sup>2</sup>. Two subsequent documents, the Brazilian Federal Decree n° 9057/2017 and the Brazilian Regulatory Ordinance n° 11/2017 established the norms for the accreditation of Higher Education Institutions (HEI) as distance education centers, and the authorization to offer courses at graduate and post-graduate levels.

The Regulation and Supervision Higher Education Office (Secretaria de Regulação e Supervisão da Educação Superior – SERES) is responsible for politics to regulate and supervise HEI. It was created by Brazilian Federal Decree n° 7.480/2011, and the office is responsible for authorizing, accrediting and renewing accreditations to HEI and courses (face-to-face and distance graduate and post-graduate courses), to guarantee that the legislation is followed, and courses are up to standard. Upon the request of HEI, SERES designates evaluation committees to visit them.

HEI should have the institution and the courses accredited by SERES and revalidate accreditations on a regular basis. The accreditation, validation, or revalidation processes comprise a few steps: a formal request to the Ministry of Education, the presentation of documents, an official visit, the publication of a report, the validation of this report by SERES supervisors, a statement with a final decision, and an official publication of the Diário Oficial da União<sup>3</sup> [Federal Official

Journal]. The documents requested are related to the infra-structure (physical and technological), financial, and pedagogical aspects of the HEI and courses.

Three are the main institutional documents<sup>4</sup> that guide the HEI work and organization:

- Institutional Development Plan (IDP): describes the goals, development and management plans of the HEI considering its identity, philosophy, mission, pedagogical guidelines, organizational structure, and academic activities. Every five years the plan is revised considering the main performance indicators that result from the institutional evaluations.
- Institutional Pedagogic Project (IPP): a political, philosophical, and theoretical-methodological document that describes the institution policies (regarding teaching, research, extension courses, social inclusion, attending students with specific needs, affirmative actions, and distance education) and academic practices described at the IDP.
- Course Political-pedagogic Project (CPP): recalls the institutional development plan and pedagogic project main aspects, and presents the course views, curriculum, design, structure, evaluation system, policies, student's profile, teachers' profile and allocation, and teaching programs.

The visit/evaluation is paid by the committee members to inspect the documents provided, and hold meetings with the HEI community (principal, coordinators, teachers, tutors, students, technical personnel, librarian, human resources department, IT, e-learning and multidisciplinary teams, financial department, legal department, maintenance, members of the community) to gather evidence for the report.

## The Context, Course Objective and Students' Profile

The HEI is part of a 85-year-old nonprofit organization which aims at the teaching-learning of English in Brazil. It has offered courses since 2014 and it aims at the education of English language professionals (teachers and translators). It has two face-to-face graduate courses and specialization courses, and a series of extension courses in the face-to-face, hybrid, remote, and online formats.

The Teaching Qualification in Languages – English is a distance education graduate course, aligned with the 21<sup>st</sup> century skills and learning agenda as well as the pillars of education proposed by UNESCO (Delors, 1996), and aims at educating professionals able to: (a) theoretically and critically reflect about the language structure and use (aware of the linguistic and cultural variations, considering the psychological, educational, social, historical, cultural, political, and ideological



aspects); (b) know about methods and teaching techniques, and how to critically apply them; (c) use information communication technologies (ICT) for education; and (d) understand their own education as a nonstop process.

## Curriculum Organization, Learning-teaching Methodologies, and Support Groups

The methodology seeks to integrate theory and practice, digital inclusion, and continuous formative assessment, allowing the future teacher to critically reflect upon his/her contextualized teaching practices using ICT. The relationship among teacher, student, and tutor is of great importance once it leads to the development of skills. Innovative practices are also a high priority once they stimulate investigation, creativity, and critical spirit, relying on contextualized real-life experiences that will help the future teacher to develop strategies to search for, analyze and interpret information, by thinking of and experimenting with possible solutions in an autonomous way.

The curriculum is organized around 2,160 hours of subjects (general, specific, pedagogical, and specific pedagogical contents), 200 hours of extra-activities (academic-scientific-cultural), 400 hours of supervised internship, 432 hours of pedagogical practices, a final paper, and 288 hours of tutoring sessions to maximize students' education, allowing flexibility and exposure to practical experiences—thus integrating theory, practice, and research in an interdisciplinary view.

The extra-activities aim at expanding the students' academic, scientific, and cultural repertoire so that students build knowledge and attitudes in order to be critical, reflexive professionals. The norms and regulations are established by the HEI, but it is up to the students to decide on the sort of activities that they are going to attend.

The internship program at years 3 and 4 allows students to go back to school and understand the learning-teaching process based on the theory they have been exposed to. Students observe and analyze classes from theoretical and methodological perspectives, teach (produce and discuss lesson plans considering methods and techniques to achieve objectives for various groups), get feedback on the teaching practices, and take part in other school routines. The number of hours follows the Brazilian legislation. To experience academic writing, at year 4, students have to write a final paper under supervision and submit it to peer review.

Tutoring are weekly sessions that focus on students' academic, personal, and professional development. In years 1 and 2 the objective is to help them develop academic and professional skills by working on aspects such as learning strategies,

critical reading, oral and written academic genres, plagiarism, ethics, neutral discourse, multiliteracies, digital literacy. In years 3 and 4, the sessions focus on helping students to reflect upon their internship experiences to think about possible professional paths to take, according to their needs, wishes, and profile.

Throughout the course students rely on a Support and Guidance Group that aims at avoiding dropouts by providing: (a) general information on the HEI: development plan, curriculum, organizational structure, library regulations, infrastructure, and legal procedures; (b) psycho-pedagogical support to those struggling to adapt into academic life; (c) pedagogical support (individual or group extra studies and classes) with a monitor; (d) free online courses to those struggling at reading and writing; (e) extra classes and guidance to those considering stopping the course due to academic difficulties; (f) workshops on ICT, systems or tools used in the HEI, how to organize the academic routine, and (g) induction sessions on the VLE: access, organization and tools.

## The Instructional Design

As Wood (2019) points out, instructional design “is a systematic approach to creating a learning intervention and/or environment that facilitates learner achievement of knowledge, skills and abilities” (p. 2), encompassing “the analysis of learning problems and the management of instructional and non-instructional processes and resources intended to improve learning and performance in a variety of settings” (p. 2). The systematic design enables active and engaging participation and learning regardless of the type of content. The systematic approach “is not intended to replace valid educational practices but to enhance and improve the entire teaching and learning experience” (Wood, 2019, p. 3).

According to Branch (2018), instructional design has six characteristics: (1) it is learner-centered focusing on what learners need in terms of materials, resources, activities, and interactions; (2) it is goal-oriented so what learners are expected to achieve is clearly articulated at course level and at specific tasks; (3) it focuses on meaningful performance, that is, the relevance of materials, strategies, and active learning methods that lead students to apply knowledge and skills when simulating or performing in authentic situations; (4) it allows outcomes to be measured in a reliable and valid way, with authentic assessment using various methods to assure that learning is significant, meaningful, and relevant, with learners demonstrating that they can go beyond the accumulation and reporting of factual and conceptual knowledge; (5) it is empirical, iterative and self-correcting, with continuous data collection (from the initial analysis stage up to the implementation); and (6) it is a team effort that counts with the collaborative effort of an educator’s content and an instructional designer’s expertise to ensure that the course content is learner-centered, meaningful and measurable.

When thinking of the distance education course instructional design, the Teacher's Nucleus (TN) considered the aspects mentioned and aimed at knowledge construction and learning occurring by experimentation and gain of abilities, by learners joining the virtual learning environment (VLE) to do collaborative work, aware of the responsibilities, roles, rules, norms, and patterns of interaction (Palloff & Pratt, 1999). Based on their experience with the face-to-face course as well as other teacher education courses taught in the face-to-face, hybrid, remote and online courses, the teachers were aware of the students' needs. Driscoll (1998), Berge et al., (2000), Abbey (2000), Fullmer-Umari (2000) and Horton (2000) refer to this as a key element for a successful design, once it helps to define the implicit learning theories, methods, the different phases the learner will go through and the tools to be used.

Clarity, quality, and quantity of the materials, defined objectives and deadlines, adequate amount of time to the activities, rules, roles, and procedures, students' attitude towards the course (commitment, responsibility, participation), and feedback were also considered. The type of program was taken into account considering the VLE and the expected number of students with a combination of *web/computer-based training* (individual learning with drills and practice, simulations, reading, questioning, and answering); *web/electronic performance support system* (just-in-time training with problem-solving activities, scientific, experiential or project methods); *web/virtual asynchronous classroom* (non-real-time group learning through experiential tasks, discussions, and team projects); and *web/virtual synchronous classroom* (real-time collaborative group learning through discussions, problem solving, and reflection) (Driscoll, 1998, p.26).

The traditional ADDIE model of instructional design (introduced by Branson et al., 1975) was considered once it involves (1) analysis - identification of needs, technological infrastructure and media; objectives definition, and students' profile delineation; (2) design – establishment of curricula, team and schedule; selection of pedagogical and technological strategies; (3) development - pedagogical and technological definitions; production and adaptation of material, and teachers and tutors formation; (4) implementation - application of the proposal; (5) evaluation - analysis of the course, system, technological and pedagogical structures.

## The Virtual Learning Environment

Moodle is the VLE chosen by the institution as its tools align with the course methodology, making it possible to have opportunities of practice and meaningful feedback - following progress and performance. It allows the integration of multiple medias and resources (such as manuals, welcome video, a tutorial on the VLE), the display of content and information in an organized

and safe way, and the interaction among participants and learning objects. The VLE is free, constantly updated, easy to operate, and a friendly and safe environment. It has got a reliable control system, and it integrates with other systems (library and office, for example), accessibility and communication tools, and programs used by the HEI.

## The Subjects' Organization and Delivery

Considering the context, the course objective, the students' profile, the curriculum organization, learning-teaching methodologies, the instructional design, and the VLE, each subject at Moodle will be organized in six different interconnected blocks:

- study and reading materials: every two weeks students will have access to texts from virtual libraries, online journals, open educational resources (OERs), or written material specially created for them<sup>5</sup>.
- pre-recorded lessons: every week students will have access to lessons which have been previously recorded by the teachers, that will explore the content of the study and reading materials as well as expand on the topics. The aim is to provide elements that could generate rich discussions and critical reflection. For each study and reading material, there will be two pre-recorded lessons.
- closed activities: every week, students will have specific content comprehension activities, focusing on the study and reading materials and the pre-recorded lessons. These are compulsory self-contained and individual activities with automated feedback (providing the rationale behind and the necessary explanations). This block will also display two compulsory evaluation tasks at weeks 5 and 11 that will correspond to 20% of the students' final grade (the final evaluation will be face-to-face to meet the Brazilian distance education legislation and will correspond to 60% of the final grade).
- expansion activities: open asynchronous activities offered every two weeks in which students will apply concepts, in interactive and dialogical discussion forums, to expand reflection, under the guidance of the teacher or tutors to mediate discussions.
- synchronous activities: interactive classes or sessions to expand on topics or to help students via zoom, at pre-determined dates and hours (morning, afternoon, and evening to attend various needs).
- extra-curricular activities: every week links to OERs, webpages, or cultural programs aiming at increasing students' exposure to language and cultural activities to enrich their education will be available.

Promotion is linked to students' performance in the evaluations and participation in the course activities. A minimal final grade of 7 (out of 10) and 75% of participation in the activities in the VLE is required.

Teachers are responsible for the subjects' content and program, the study and reading materials, the pre-recorded lessons, the activities (closed, expansion and synchronous), the evaluation, and the organization of it all at the VLE. Tutors are responsible for checking the organization and for the delivery: releasing materials and activities, following students' progress, checking evaluations, contacting students, and establishing a connection among students, tutors, and teachers.

## The Evaluation Instrument

The evaluation committees are composed by two members trained by SERES and their aim is to guarantee that the HEI follow the legislation and pre-requisites for quality education. At the end of the visit, the committee members fill in an instrument, which will generate a report, based on the evidence gathered via documents (IDP, IPP, CPP, among others) and meetings. It has 30 overall questions for a preliminary analysis, followed by indicators in four dimensions. A grade<sup>6</sup> is awarded to each indicator at dimensions 1, 2 and 3, and evidence has to be provided to justify the grade. Three is the minimum required to offer courses, and once the report is available, the HEI may accept it or ask for a revision before the report is sent to SERES supervisors for validation.

*Dimension 1* analyses the didactic-pedagogical organization via 24 indicators: (1) institutional policies; (2) course objectives; (3) student's professional profile; (4) curriculum structure; (5) curriculum components; (6) methodology; (7 to 9) supervised internship, its relation to basic education, theory and practice; (10) extra-activities; (11) final paper; (12) support to students; (13) internal and external evaluation processes and course management; (14) tutoring activities; (15) knowledge, abilities, and attitudes to do tutoring activities; (16) ICT in the teaching-learning process; (17) the VLE; (18) didactic material; (19) follow up and evaluation of the teaching-learning processes; (20) number of applicants; (21) integration with the public educational system; (22) integration with the public health system; (23) practical activities for courses on the health field; and (24) practical activities for courses on the teaching qualification field.

*Dimension 2* focuses on teachers and tutoring, and there are 15 indicators: (1) TN; (2) multidisciplinary team; (3) coordinator's role; (4) coordinator's working hours and contract; (5) teachers' education and academic title; (6) teachers' working hours and contract; (7) teachers' professional experience (non-applicable for teaching qualification courses); (8) teachers' experience at basic education (applicable only for teaching qualification courses); (9) teachers' experience at

higher education; (10) teachers' experience at teaching at distance education; (11) teachers' tutoring experience at distance education, (12) teachers' participation at SB, Collegium, and TN; (13) tutors' education and academic title; (14) tutors' experience at distance education; (15) interaction among teachers, tutors and coordinator.

*Dimension 3* has 16 indicators to analyze the infrastructure: (1 to 3) teachers and coordinator working spaces; (4) classrooms; (5) IT equipment; (6 and 7) library; (8 to 13, 15, 16) labs; (14) didactic material production and distribution.

*Dimension 4* focuses on final considerations with items addressing the committee members, the HEI and course general information, the documents used, and a short qualitative analysis on each dimension.

## The Evaluation

HEI are informed about the inspection visits and the committee members a month in advance. The inspection visit lasts two days and at the moment they are virtual due to the pandemic, via Teams meetings. Day 1 is for meetings and a guided video tour to show the HEI premises, while Day 2 is for the committee members' work. The coordinator and principal should be available at all times. Access to a drive containing the documents requested, the library and the VLE should be given the committee members a week before the visit. The report is uploaded at the Ministry of Education platform at about five days after the visit is over.

At the beginning of June, The Teaching Qualification in Languages – English graduate course got 4.39 as a final grade: 4.50 at dimension 1 (didactic-pedagogical organization); 4.71 at dimension 2 (teachers and tutoring); and 4.13 at dimension 3 (infrastructure).

Table 1 shows the grades for the indicators.

**Table 1**

*Dimensions, Indicators, and Corresponding Grades*

Dimension 1: didactic-pedagogical organization	4.5
Indicator	Grade
institutional policies	4
course objectives	5
student's professional profile	5
curriculum structure	4
curriculum components	4
methodology	5

Dimension 1: didactic-pedagogical organization	4.5
Indicator	Grade
supervised internship	4
extra-activities	5
final paper	5
support to students	4
evaluation processes & course management	5
tutoring activities	5
knowledge, abilities, and attitudes to do tutoring	5
ICT in the teaching-learning process	4
the VLE	5
didactic material	4
follow up and evaluation of the teaching-learning processes	5
number of applicants	4
integration with the public educational system, public health system, practical activities for courses on the health field	non-applicable
practical activities for courses on the teaching qualification field	5
Dimension 2: teachers and tutoring	4.71
Indicator	Grade
TN	5
multidisciplinary team	4
coordinator's role	5
coordinator's working hours and contract	
teachers: working hours and contract, professional experience, experience at basic education, experience at higher education, experience at teaching at distance education, tutoring experience at distance education, participation at SB, Collegium, and TN	5
tutors' education and academic title	5
tutors' experience at distance education	4
interaction among teachers, tutors and coordinator	5
Dimension 3: infrastructure	4.13
Indicator	Grade
working spaces	3
classroom	4
IT equipment	4
library	5
labs	non-applicable
didactic material production and distribution	4

Now, the report is at SERES for validation.

## Final Considerations

HEI are used for the accreditation, validation, revalidation processes. We believe the processes are important for the Ministry of Education to know about the courses being offered and the HEI structures and beliefs. However, we believe a few aspects deserve some attention and perhaps should be reconsidered. One of the aspects regards the documents and the drive the evaluators have access to. Hundreds of documents are provided, and hundreds of files are created and shared. For this visit the principal created/organized and uploaded more than nine hundred files (videos, PowerPoint presentations, manuals, infographics, Excel files, and pdf files –some of these files had more than 200 pages each). Just a few of them are mentioned in the report as evidence of the indicators.

The evaluators, via the report, do not provide HEI insights, feedback, or suggestions on how to improve the course instructional design, the curriculum, the course implementation and the material, for example. A grade from 1 (non-existent) to 5 (excellent) is attributed, but comments or suggestions on how to present excellence in the future are not given.

The descriptors are up to a certain point open and vague as they often include words such as ‘innovative’ and ‘successful’, leading to interpretations that may vary according to the evaluator. Therefore, as descriptors are subjective, grades may also be subjective, depending on the evaluator interpretation. An innovative and successful practice in a certain region of Brazil, for example, may not be considered as such in other areas, as it is a huge country and full of contrasts.

As mentioned, the HEI must have the institution and the courses accredited by SERES. In April, 2021 we requested for the accreditation of the HEI but it is still on hold. We are about to have the permission to implement the online graduate course, but we do not know when the institution will be accredited to offer distance education. We cannot predict how long the accreditation, validation or revalidation processes take, but they usually last 2 to 3 years.

## Notes

1. Here and elsewhere, translations from Portuguese are those of the author.
2. Brazilian Federal Decree nº 5622/2005 regulates article 80 of Law 9.394/96 (Brasil, 1996).
3. *Diário Oficial da União* is a document published online by the federal government on a daily basis to make public information regarding three sectors: (1) regulatory acts; (2) personal acts (nominations, for example),



and (3) contracts, commissions, notices.  
<https://www.gov.br/imprensa nacional/pt-br>

4. The IDP and IPP are devised by the HEI Principal following National Guidelines and the organization businesses plans. The Teachers' Nucleus (TN), which is composed by teachers and principal, is responsible for the CPP. The IDP and IPP are approved by the Senior Board (SB), Collegium, and TN. The SB focuses on the didactic and scientific aspects and has the principal, the coordinator, teachers, students, a representative of the technical team, and the community as members. The Collegium focuses on the courses and has the principal, the coordinator, teachers, and students as members. The CPP is approved by the SB and Collegium.
5. At first, the aim is to work with study and reading material such as papers, book chapters, books, OERs, images, figures, videos, texts from webpages etc. If along the implementation the need for specially designed didactic material is felt, it will be elaborated by experts in the field, under teachers' supervision, following the course programs. They will follow an instructional project aligned to the HEI methodology and will be supervised and validated by the multidisciplinary team. Accessibility for the impaired will be secured in both cases.
6. Grades are awarded to each indicator and criteria provided: 1 (non-existent), 2 (insufficient), 3 (sufficient), 4 (very good), 5 (excellent). Below is an example.

Indicator 1.3	Grade	Criteria descriptors
Students' Professional Profile	1	The professional profile does not mention the students' competencies.
	2	The professional profile mentions insufficiently the students' competencies.
	3	The professional profile mentions sufficiently the students' competencies.
	4	The professional profile mentions very well the students' competencies.
	5	The professional profile mentions in an excellent way the students' competencies.

Evidence:

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## Author Details

Maria Eugenia Witzler D'Esposito

Brazil

[eugeniadesposito@gmail.com](mailto:eugeniadesposito@gmail.com)

# AN ASSESSMENT OF LITERATURE ON THE DIGITAL LITERACY OF LECTURERS IN TURKEY

Şeyma Esin Erben  
*İstanbul Gelişim University*  
Hazal Koray Alay  
*İstanbul Esenyurt University*  
TURKEY

## Abstract

The aim of this study is to present the Turkish studies in a holistic way, in which the digital literacy of the instructors is evaluated. The study adopted systematic analysis, using a secondary source of data through Google Scholar, DergiPark, and National Thesis Center databases and 17 studies from Turkish studies on digital literacy, educational institutions, lecturers and digital transformation were included in the analysis. The research contributes to the literature as it provides a holistic source with findings on the development of digital literacy of lecturers and increasing their academic productivity and performance.

Keywords: digital literacy, digital transformation, education, efficiency

## Introduction

Although it seems sufficient for the end-user to have basic digital skills to use ICT, the development of digital literacy has become mandatory for institutions due to the integration of these technologies with daily and professional life. Digital transformation is gaining momentum in areas such as remote working, distance education and e-commerce, especially in core countries, and these countries have pioneer roles in digitalization (Kim et al., 2018; Simonazzi, 2019). Although Fitzgerald et al. (2013, p. 2) stated the lack of sense of urgency as one of the obstacles to digital transformation, with the COVID-19 pandemic, digital transformation became inevitable by creating a need for institutions. While digital transformation refers to a process of change in which organizations use digital technologies to become efficient (Gaur, 2020), digital literacy is one of the main components of this procedure. Thus, digital literacy, which includes digital competence and security (Khitskov et al., 2017, p. 859), embraces different skills from accessing ICT to understanding and critically evaluating digital media contents (Ala-Mutka et al., 2008).

In universities, which are a driving force in digital transformation, the digital competencies of lecturers are of great importance for institutions, students,

scientific studies, and society. Therefore, it is a necessity to develop programs to improve the digital literacy of the instructors, if needed. This research, besides providing an up-to-date contribution to the literature, enables the discussion of the findings of the academic staff on digital literacy in the context of digital transformation.

## Literature Review

Digital transformation, which offers solutions in the effective and efficient use of time and resources, interacts with almost all the practices of business and private life of those who have access to the relevant technology. Especially, with the post-COVID period, it is inevitable for laggards to accelerate digital transformation. As Odaro (2022, p. 96) points out, the epidemic has triggered the transformation of location-centric culture into virtual interaction in many countries. Digital literacy is a basic need for the full execution of the digital transformation process.

Martin (2005, pp. 135-136) defines digital literacy as the awareness and ability of individuals to use ICT in the most appropriate way for purposes such as identifying, evaluating, synthesising, analysing digital resources, and communicating with others. Buckingham (2015, p. 24) states that digital literacy discussions are intensely carried out around *information*, focus on technical skills that are easily obtained and will expire in a short time, and that the cultural uses of the internet tend to be neglected. Utsi and Lowyck (2018, p. 876) draw attention to the importance of the critical approach to information and digital literacy education in revealing unclear messages and content in digital literacy. Therefore, creating technically appropriate content and making it accessible to other users through digital channels is not enough to comprehend digital literacy.

Technological developments and the necessity of meeting the needs of digital natives also accelerate the development of digital transformation in the field of education. The digital literacy of the instructors has an important place in comprehending and conveying this rapid transformation. OECD (2021) defines literacy as constructing and validating knowledge in the 21st century. In the countries that switched to distance education between 2020-2022 due to the COVID-19 epidemic, whereas the discussions on education processes due to the digital divide continue, the interest in digital literacy is increasing. The interest in digital literacy is not limited to some inequalities and inadequacies that are revealed by distance education. In recent years, many academic studies have been carried out to determine roadmaps for digital transformation in educational institutions. For example, in the database of the Turkish Council of Higher Education (CoHE, 2022), it is seen that a total of 18 postgraduate theses, including one doctoral thesis and 17 master's theses, have directly been related to digital literacy and education since 2021.

While the digital literacy of individuals plays a prominent role in the digital transformation processes of the institutions they are affiliated with, the digital transformation approaches of the institutions are in close connection with the digital competencies of the individuals. Limiting digital literacy to only knowing how to use software and hardware tools in this non-unidirectional process ignores many skills such as evaluating digital tools and using them for different purposes. Yıldız (2020, p. 477) draws attention to the necessity of institutional support in order to increase the digital literacy skills of academicians. Similarly, according to Çam and Kıyıcı (2017, pp. 41-42), the processes of increasing digital competence in teaching and learning environments should be carried out effectively. In this direction, there is a need to prepare programs to improve the digital literacy of the instructors, if needed, as a result of an updated evaluation. Institutions need to consider all these different aspects in order to comprehensively evaluate the digital competencies of lecturers together with their technology, communication, information, critical and security skills (Rodríguez-de-Dios & Igartua, 2016, p. 60) and to develop digital literacy. Bingöl (2022, p. 78) stated in his research that the digital literacy of the lecturers is effective on professional motivation, and that the support provided by the institution managers to this process is effective on productivity and academic performance. Similarly, according to Sönmez and Gül (2014, p. 28), there is a significant correlation between digital literacy level and lifelong learning tendency, and the role of corporate managers in supporting technology use is an important parameter that affects employee performance.

## Methodology

The scope of the research consists of 17 Turkish studies published in Google Scholar, DergiPark, and CoHE Thesis Center. The main purpose of this study is to examine the digital literacy issue, which has increasing importance in educational institutions, and to present the research in a holistic way. The following steps were followed to achieve the purpose of the research: a) Developing the research methodology; b) Scanning the relevant electronic database; and c) Synthesis of studies by the academic staff on digital literacy.

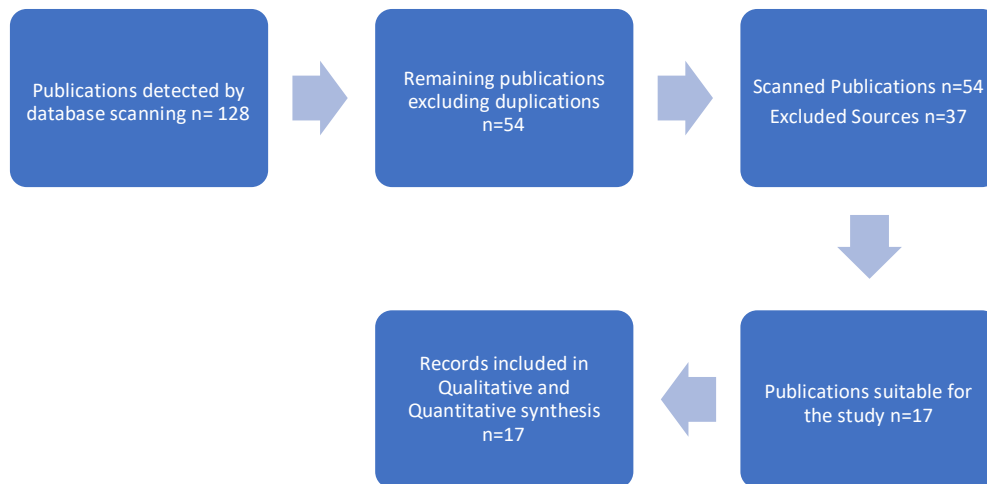
So as to be objective in the selection of the studies in the examined articles and theses, only the published studies were examined. In the research, systematic analysis was made according to the secondary source scanning strategies, which is one of the qualitative research methods. Systematic analyses are secondary research studies in which randomised controlled studies are collected and synthesised. In order for a study seeking an answer to a research question to be called a systematic analysis, the process of identifying the studies to be used, choosing them meticulously, and synthesising the outputs must be done in a systematic,

transparent, and reproducible manner. Correctly done systematic analyses create reliable evidence in research (Ata & Urman, 2008).

According to the PRISMA method shown in Figure 1, the total number of studies obtained by database scanning is 128. The sample was reached by using Google scholar, DergiPark, and National Thesis Center databases. The keywords of digital literacy, digital literacy in educational institutions, and digital literacy of instructors were scanned in these databases.

**Figure 1**

*Flowchart of Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA)*



*Note.* Source: Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group\*, T. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine*, 151(4), 264-269.

After eliminating the repetitions, articles dealing with the digital literacy of the instructors were filtered out of the remaining 54 articles. Table 1 presents information on the electronic database search result.

**Table 1***Electronic Database Search Result*

<i>Database</i>	<i>Keyword</i>	<i>Limitation</i>	<i># of papers</i>
Google Scholar	digital literacy	Title, Publication + Turkish	35
DergiPark	digital literacy	Title, Article + Turkish + Social Sciences	49
National Thesis Center	digital literacy	Title, PhD/Master's Thesis + Turkish	44

## Findings

In the systematic analysis made for this research, Turkish studies on the digital literacy of teaching staff were divided into categories. All collected studies were generalised and conceptualised. Some adjustments were made in line with the data obtained. These data also enabled the identification of the theme. In the light of the specified data, the systematic data analysis of the research is presented in Table 2.

**Table 2***Systematic Analysis*

<b>Source</b>	<b>Database</b>	<b>Outcomes</b>
Günay and Özden (2022)	DergiPark	Findings on the academics' perception of digital literacy as close to each other with distance education and feeling inadequate in functional skills
Ogelman, H.G., Demirci, F. & Güngör, H. (2022).	DergiPark	The digital literacy levels of teachers differ according to age: the digital literacy level of young teachers is higher
Sever, S., & Çati, K. (2021)	DergiPark	It has been determined that the digital literacy level of the academicians affects the satisfaction of the students participating in distance education.
Keskin, H. & Küçük, G. (2021)	DergiPark	It is determined that the digital literacy levels of the teachers differ significantly according to gender and the type of high school they graduated from.
Erdem, E.G., Başar, F.B., Toktay, G., Yayğaz, İ.H., & Küçüksüleymanoğlu, R. (2021)	DergiPark	It has been stated that teachers should work in accordance with the eTwinning criteria and use digital tools to improve their digital literacy skills.



Source	Database	Outcomes
Bingöl, H. (2022)	COHE	Findings show that the teachers have a high level of digital literacy in the distance education process and have a high level of professional motivation; there was no significant difference between the demographic characteristics of secondary school teachers and their professional motivation.
Doğan, D. (2022)	COHE	It has been observed that the digital literacy skills of academics and students are at a sufficient level, but these competencies differ according to gender.
Bozkurt, L. (2021)	COHE	It has been stated that there is a positive relationship between the lifelong learning tendencies of the teachers and their digital literacy levels.
Demirdağ, M. (2021)	COHE	It has been revealed that there is a linear relationship between teachers' digital literacy and research literacy skills.
Özer, M. (2021)	COHE	Teachers' perceptions of 21st century skills were found to be high in the sub-dimensions of learning and renewal, life and career, knowledge, media and technology.
Genç, O. (2021)	COHE	It has been determined that the digital literacy level of academics differs in terms of the demographic variables, and the administration of the universities should take new measures to support academics.
Arslan S. (2019)	COHE	A significant difference was found in the digital literacy levels of teachers in terms of demographic characteristics and access to technology.
Sezgin, A. A. & Karabacak, Z.İ. (2020)	Google Scholars	On behalf of the Digital Transformation and Digital Literacy Project in Turkey, it was stated that the project should be implemented more comprehensively to achieve the desired efficiency.
Yankın F. B. (2019)	Google Scholars	The studies of academics on the digital transformation process were interpreted and attention was drawn to the convergence of digitalization in progress and social life areas.
Aksoy, N. C., Karabay, E., & Aksoy, E. (2021)	Google Scholars	Teachers have a high level of digital literacy; it has been determined that various demographic characteristics make a significant difference regarding this level.

Source	Database	Outcomes
Korkmaz, M. (2020)	Google Scholars	Significant differences were obtained between the digital literacy levels of primary school teachers, their demographic characteristics, and the technological education they received.
Sönmez, E. E. & Gül, H. Ü. (2014)	Google Scholars	Emphasising the role of administrators in the use of technology in schools, it was stated that they could not benefit enough from technology in education.

## Discussion and Conclusion

In this study, the studies in the international literature were not evaluated, and this was intentional to draw attention to the low number of Turkish studies on digital literacy of teaching staff. In addition, it has been revealed through this study how little is studied and needs to be studied in the national literature on the digital literacy of instructors.

When the findings of the systematic analysis were examined, it was determined that most of the lecturers from whom the data were collected through the interview technique accept digital literacy as an activity of reading and writing from the Internet or a digital environment. On the other hand, lecturers, who are aware that digital literacy is not limited to these, also stated that they did not receive the necessary support for this equipment (Günay & Özden, 2022; Erdem, et al., 2021). This finding reveals the fact that the educational institutions in Turkey need to do more work on digital transformation and technological efficiency. Similar findings were obtained in other studies that examined the perceptions of academics and university students towards digital literacy. This situation reveals most of the academics positively evaluate their self-efficacy in digital literacy, but they feel inadequate in the adaptation process related to the transition from printed publications to digital tools (Günay & Özden, 2022; Doğan, 2022). This is probably due to the fact that the concept of digital literacy is newly recognised in Turkey and its framework is still unclear.

In a study in which digital literacy was associated with technology knowledge and integration into digital transformation, it was emphasised that lecturers should be made aware of how the technology used can be integrated into the course at higher levels (Keskin & Küçük, 2021). According to this finding, although teachers think that their digital competencies are good, they cannot integrate their competencies into their lessons. In many studies examining the digital literacy of instructors, it has been tried to put forward that literacy as a roof concept should be taught as a compulsory course by CoHE and that the 21st century literacy types should be diversified as a course at undergraduate and graduate levels (Korkmaz, 2020; Yankın, 2019; Özer, 2021; Günay & Ozden, 2022).

Demirdağ (2021), in his study in which the digital literacy levels of teachers were evaluated, revealed that mathematics and classroom pre-service teachers had better digital literacy levels than all other branch pre-service teachers. According to Demirdağ, this is because most of the courses taken in mathematics and classroom teaching programs are carried out in the computer environment. This finding reveals the importance of the branch factor. A similar finding is also valid for academics (Sezgin & Karabacak, 2020).

Sönmez and Gül (2014) emphasise that individuals need to have digital literacy skills to solve the digital problems they face in digital transformation. Similarly, Çubukçu and Bayzan (2013) state that digital literacy has become more important than traditional literacy. These studies indicate that the development of the competencies of the instructors, who will gain digital literacy skills in education, should be prioritised. Scanning and classifying studies on the digital literacy of instructors, which is the focus of this research, provides a holistic framework to the literature.

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## Author Details

Şeyma Esin Erben  
İstanbul Gelişim University  
Turkey  
[esin.erben@gmail.com](mailto:esin.erben@gmail.com)

Hazal Koray Alay  
İstanbul Esenyurt University  
Turkey  
[hazalkorayalay@esenyurt.edu.tr](mailto:hazalkorayalay@esenyurt.edu.tr)

# SHELLSHOCKED BY THE PANDEMIC: A PERSONAL ACCOUNT OF REDESIGNING STUDIO ART CLASSES FOR ONLINE DELIVERY

Diane Belfiglio  
*Walsh University*  
U.S.A.

## Abstract

In March of 2020, face-to-face university classes were abruptly changed to online delivery due to the world-wide Covid-19 pandemic. Although this was challenging for all classes, it was particularly challenging for studio art classes, which by their very nature, are a completely hands-on form of learning. This paper will explore the instructional changes, the curriculum changes, and the institutional changes which I worked through in order to deliver art instruction online for introductory classes designed for non-majors: Drawing I and Visual Order (2-D design). It will further explore the benefits and drawbacks of online delivery in art, and how the hybrid versions of my courses have actually reaped the benefits of adding technology to my newly-revised curricula.

## Introduction

Walsh University is a small Catholic university of distinction with total enrollment of 2,400 students from 46 states and 35 countries. The undergraduate total is about 1600 students. Although many classes are still taught face-to-face, many have gone online, with many more online transitions in the works. Like all universities, Walsh sees the future with a heavy emphasis on online instruction, but without losing the personal touch of face-to-face classes.

Currently, I am the only art instructor on campus. There is no art major at Walsh University, but there is an art minor. Every year, I work with 5 to 10 art minors. Last year, we began a Visual and Performing Arts major where enrolled students are educated in all art disciplines, and then choose a particular art form as their focus area. This will most probably produce even more art minors on campus.

In my role as Professional Assistant Professor of Art and Studio Coordinator, I teach a variety of studio art classes: Drawing I & II, Visual Order (Intro to 2D-Design), Composition and Color Concepts, Painting I, Watercolors, and the occasional independent study. In addition to studio classes, I also teach the Exhibition Design course every spring for our Museum Studies department. Among

other learning experiences, this class requires students to jury, mat, and install the Annual Student Art Exhibition in our campus gallery.

However, the two classes I teach the most are introductory classes designed for non-majors which count as a general education courses for the students' art requirement: Drawing I and Visual Order. Both of these courses cover fundamental skills, and students come to these courses with a wide variety of skill levels. Students must meet basic requirements, but are graded on their individual improvement, and thus do not compete with each other. This provides a nurturing environment where students can grow at their own pace. I expect more from students with advanced skills than I do from students who have never taken art before. After critiques, students are permitted take suggestions and work back into their pieces for a higher grade. This promotes learning and prevents grades from being punitive. Writing composition theory has long promoted the benefits of revision (cf. Faigley & Witte, 1981), but it clearly exists for art classes too. For example, Seton (2021) identifies two big general advantages: 1) They can help rebuild authentic learning conversations with students; and 2) They help ensure that all students can internalize critical content (paras. 5-6).

When the pandemic abruptly forced classes to go online in March of 2020, I was teaching two sections of Drawing I, one section of Visual Order, and one section of Exhibition Design. Faculty had four days to adapt to online delivery of our course materials. All faculty got a crash course in how to use Zoom, and those of us who had never used Sakai, our learning management system, got a crash course in that as well.

I was among those who had never used Sakai. As an artist whose work is completely hands on, I am, in technological terms, a laggard (Rogers, 2003). I use technology if and only if I need to. Leading up to the pandemic, I had been teaching studio art classes for over 40 years, but had never integrated the use of a Learning Management System (LMS) into my design or delivery at any institution. This was for two major reasons. First, I had started teaching these or similar courses before the existence of an LMS, and I was satisfied with the way they had evolved based upon learner outcomes. Second, educational policies with respect to the use of online intellectual property remain somewhat ambiguous and vary from institution to institution; as an artist, I wanted to protect my intellectual property by not posting it in a public way where it might be appropriated or misused by others.

And up until March 2020, there was no need for me to engage in online classes. Students come to a studio art class to work with their hands, not a computer. That privilege is reserved for graphic design, and someone else teaches that at Walsh University. (However, my Visual Order course is the prerequisite for Graphic Design I). In any case, I was in for a very rude awakening.



## Pandemic Blues: The Covid Shutdown Spring 2020

As it happened, we were a little over halfway through the 16-week semester when in February 2020, all classes at Walsh University were forced to abruptly pivot to online learning. In four days, I had to figure out what to do with my four classes. I realized that I would need to substitute instructional materials for my real-time teaching presence and demonstrations, and devise a new way for students to submit their work for feedback and grading.

My Exhibition Design students already had a very busy semester. They had installed an art exhibition at a gallery off campus, and had installed another exhibition in the Hoover Historical Center on campus. At the point when face-to-face classes shut down, they had just juried and matted the work for the Annual Student Art Exhibition. But now we couldn't hang it. It was evident by that time, however, that my students had truly completed almost all the requirements for the course. So with the permission of my division chair—and to the great relief of my students—I asked them to write their final reflection papers, and I averaged all their grades. The semester was over for them.

Studio art was a very different story. The first half of the semester, students in both Drawing I and Visual Order were working with black and white mediums. By midterm, they needed to learn basic color theory and how to use color mediums. The only silver lining in this transition was that since we were halfway through the semester, my students had already mastered some basic skills and vocabulary. This worked to our mutual advantage when communicating in writing with my students.

Email directions flew out 2-3 times a week. Students worked on their projects at home. They photographed their work on their cellphones and emailed their projects to me for feedback during the creation process, and also later for grading. Zoom was not an option. I could not watch my students working on their projects via Zoom because it would have been impossible for them to set up cameras in the right spot and for me to monitor the individual progress of 49 students in tiny windows on my screen.

In both courses, there was a constant barrage of emails to answer. It seemed I was on call 24/7. Indeed for the first three weeks of adjustment, I was putting in 16-hour days, seven days a week. I felt that because of the sudden change, my students needed extra support. But with 49 students, this quickly became all-consuming. Because I am not the best typist, typing was a particularly frustrating chore for me.

Not only was emailing constant, but also it was hard to describe in words what a stroke of the hand could say in seconds. It couldn't replace my watching them draw or paint and seeing first-hand where they were having trouble. I could only surmise

what they were doing based on what their pieces looked like. And even then, I was looking at photographs, which were most often not very good. I did come up with some very colorful descriptive sayings that semester, such as “Spread your oil pastels like peanut butter,” and “Don’t beat your shading stumps to death.”

But emails were only the start. In order to finish out the semester online I needed to create demonstration videos and lectures in order to introduce projects. Over the span of four weeks, I created in total eight demonstration videos and voiced over four PowerPoint lectures. For my Drawing I classes, I created a voiced-over color lecture video, and created two oil pastel demonstration videos on camera. For my Visual Order class, I created a voiced-over color lecture video, two voiced-over project introduction videos, and six project demonstration videos on camera.

I recorded my lectures on Zoom and uploaded them to Sakai. The videos were all created in my home studio, using my cell phone attached to a small tripod which was propped up on some stacked canvases in order to get the camera at the proper height. I tried my best to make them informative and just a little fun. Since I had never made videos before, I was fortunate that my friend and colleague, Litsa Varonis, could talk me through the process of creating my own YouTube Library, uploading the videos to it, and creating links to Sakai so that my students could see them. It was quite the learning experience—a sort of baptism by fire.

## Lessons Learned

Even though it required making more demonstration videos, Visual Order was easier to finish online than Drawing I was. This is because each project was graded individually, and the course did not require a final portfolio presentation at the end of the semester. In Drawing I, final portfolio reviews were fraught with peril. Even though I repeatedly sent instructions to students on how to photograph, compile, and upload their portfolios to Sakai, students continued to struggle with it, and results were not optimal. Part of the problem was the photographic file sizes varied greatly, and many students didn’t have comparable devices. The other part of the problem was that students just didn’t follow directions. Most students had to email me the images in their final portfolios, because they would not upload to Sakai.

Perhaps what astonished me most about online learning was plagiarism. It is very easy and tempting for students to plagiarize because images are so easily available online. When classes went online, I had two incidents of plagiarism. The first one was easy to resolve after the student told me she took her image directly from an online source. Once I explained to her why this was wrong—even though the image was free from copyright—I allowed her to redo her assignment. The other plagiarism case with an international student was much more difficult to navigate because he claimed that work he submitted—which I had found online—was his

own. His skill level had also somehow exponentially improved once he returned to his home country. In order to better safeguard against plagiarism and copyright infringement, which can be a problem for students (Varonis et al., 2015) I have added greater detail to the explanation in my syllabus about what constitutes plagiarism in art, and I go over it multiple times throughout the term.

I found that my better students--who stayed proactive and regularly submitted their work for feedback--did well finishing the semester online. Most of the problems arose when students didn't turn in their projects until the last minute and didn't ask questions before turning it in. Another source of aggravation was when students were given sufficient feedback, and still they continued to turn in projects with no changes.

One of the main reasons that we were able to successfully complete these studio courses online was because we were over half way through the semester, and students had already built up a certain level of skill and understood basic art vocabulary. Starting studio art courses online would be MUCH more difficult. I was very grateful that Walsh University was able to return to face-to-face classes in Fall 2020.

## Preparing for Fall 2020 Classes: Accommodating Institutional and Technological Changes

By the summer of 2020, no one really knew the future of the pandemic, and thus, what fall classes would look like. Would it be safe to return to face-to-face classes or would we need to continue online? To this end, Walsh University instituted the policy that all faculty needed to be ready to start fall classes completely online. In addition, the university switched to an 8-week format for classes. This format had been talked about prior to the pandemic. But it was implemented so that if we had to close down classes again, we might be able to complete some before doing so. Instead of teaching four classes for 16 weeks, we would now be teaching at least two 8-week classes for Fall I, and two 8-week classes for Fall II. Class times would be longer for more intensive learning. Moreover, because of the great financial strain caused by the pandemic, faculty were required to teach 30 hours of classes for the 2020-21 academic year instead of the usual 24 hours. Scholarship expectations were reduced to compensate. However, as a professional artist passionate about creating and exhibiting my work, my scholarship continued on almost as usual.

Since I already had done the work to end the semester in Drawing I and Visual Order, my task now was to create the beginnings. Additionally, I had to change my syllabi from a 16-week term to an 8-week term, a schedule many institutions in the

area were adopting prior to the pandemic (Miller & Varonis, 2017). This was quite a transformation that took almost all of my summer to complete. I created 12 new demonstration videos and voiced over five PowerPoint lectures during the summer months of 2020. I also created four new syllabi for my fall courses. Everything was uploaded to Sakai and ready to go by the first day of class Fall 2020.

## Face-to-face Classes, Social Distancing, and Quarantines

Fortunately, by fall 2020 we returned to face-to-face classes at Walsh University. The university instituted social-distancing protocols. Faculty, staff, and students were required to wear masks. University-wide, the plan was to have a blend of face-to-face and synchronous learning in all classes. Half the class would attend on A days while the other half Zoomed in, reversing the groups on B days. Over the summer, chairs were removed from classrooms to maintain proper social-distancing. Tables were spaced so that students sat six feet apart from each other.

Before classes began, I walked into the Lattavo Art Studio to find that there were only 12 student chairs and tables in the room. My classes cap at 15, and there was no way I could pivot to synchronous remote delivery. Zoom did not work for my studio art classes for the following reasons: 1) There is no camera in the studio; it is attached to the computer in the back room. 2) Even if there were a camera, I don't lecture from a stationary point; I walk around the room giving students individualized instruction. 3) Students work on projects at different paces. 4) I can't see what students are doing on Zoom; and 5) Drawing students can't see still-life on Zoom.

My solution was found with a tape measure. I plotted out three spaces where tables and chairs could be put back into the studio and would still ensure a six-foot distance between students. Once I got the approval from the provost, three tables and chairs were returned to my studio so all students could attend, and classes could proceed almost normally.

I say "almost normally" because students could no longer gather around my desk to see demonstrations. It became obvious that having lecture and demonstration content on Sakai for my art courses was essential in order to introduce projects in a socially distanced manner.

Another upside to having online content on Sakai was that if a student missed class for any reason, they had a better opportunity to catch up, at least on content, if not practice. When Drawing I students missed class because they had to quarantine, I sent them photos of the class still life so that they could work at home. I now have digital files of photos to send students in the event of any absence. Most importantly, when students watched the demo videos before class, it left us more

time in class to work on projects and to develop skills, an approach also known as the flipped classroom (see Bishop & Verlager, 2013, for a survey of early research in this area).

The downside to online content was that when students were told to watch videos for class, often over half of them didn't, and wondered why they couldn't understand what was going on in class. I eventually caught them all up, but it took away time I could have spent helping my better students who did the work in advance, as they were supposed to. I continue to develop ways to make students more accountable for this.

Another benefit from all the changes we made at Walsh University in 2020 is that I have found the 8-week class format more efficacious for teaching Exhibition Design and studio art classes than the 16-week format. We have more time in class together to work on projects more intensely. Students maintain better concentration and momentum in their work, and student work has improved as a result. The only downside that I see to 8-week terms is that drop/add, calculating midterm grades, and calculating final grades happens twice a semester instead of once.

## Beyond 2020: Post-Pandemic Course Structures

All my courses have changed in some way as a result of my mandatory jump into online learning as a result of the pandemic.

*Exhibition Design* has changed mostly because of the switch to 8-week terms. Aside from posting the syllabus on Sakai, it remains a hands-on course. The main focus of the course is still presenting the Annual Student Art Exhibition at Walsh University. This means that we have only three additional weeks available for other projects. This has worked well, as I have made many off-campus connections with museums, galleries, and non-profits who need help installing exhibitions.

*The Visual Order curriculum* has remained virtually unchanged since the shutdown. The only real difference is that watching demonstration videos before classes is now required, and the videos for each project are hosted on Sakai, listed on the syllabus, and announced in class.

*Drawing I* has undergone the most transformation since the pandemic. I have eliminated the portfolio review and replaced it with projects that can be graded individually. Videos to watch before class have also been posted on the syllabus and announced in class. Because of the 8-week term, I needed to adjust course content while maintaining my institutionally-approved learning objectives. The concept of perspective takes about two weeks' time for students to learn properly and is difficult to fit into an 8-week format. I now touch on perspective in Drawing

I, but do not go into it in great detail. Since most of my students are non-majors, this has not been a problem.

*For Watercolors*, I created a brand-new PowerPoint Terminology Introduction. In watercolor, there are multitudes of demonstration videos made by various artists in the public domain. I watched over 50 of them, selected the 23 videos best suited for my class, and posted them on Sakai for my Watercolor students. This gives them a broad variety of approaches to the medium.

Since we have returned to face-to-face classes, I have added some online content to my other courses such as syllabi, vocabulary lectures, and color lectures, project rubrics for grading, and other handouts. I can now return to in-class demonstrations, which most students understand better because they can see it up close. Should we ever go online again, I will know just what to do.

## Conclusions

Although it was a tremendous amount of work, creating online content has been transformative for my classes. While nothing can take the place of hands-on learning in studio art and Exhibition Design classes, online content has been a welcome addition. Online content has helped my students study for quizzes and come better prepared for class. It has guided my students when they work outside of class. It has helped students catch up when they miss class. Most importantly, when online content is used as project introduction, it enables students to spend more time working on their projects in class with better concentration.

The changes I have made to my Drawing I class as a result of having to teach it online have been positive. Grading individual projects instead of having midterm and final portfolio reviews has simplified grading for me, and simplified preparation for my students without sacrificing the quality of their work. Switching to 8-week terms has given all my classes more concentrated studio time, resulting in better project outcomes.

The Covid-19 pandemic has revolutionized the way schools and universities deliver instruction to their students. As teachers, we have learned new skills. As communicators, we have found new ways to connect. As people, we have learned to be open to change and to do our best to stay flexible. The pandemic forced me to confront one of my worst fears—teaching visual art online. Nothing should shake me too hard going forward.

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## Author Details

Diane Belfiglio  
Professional Assistant Professor of Art and Studio Coordinator  
Walsh University  
North Canton, OH, U.S.A.  
[dbelfiglio@walsh.edu](mailto:dbelfiglio@walsh.edu)

# CULTIVATING ENTREPRENEURIAL MINDSETS AND DIGITAL SKILLS IN PRIMARY EDUCATION: THE DIGITALIS PROJECT

Kalliopi-Evangelia Stavroulia and Kalia Demetriadou

*Kalys Solutions*

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## Abstract

The DIGITALIS project has the vision to promote the cultivation of digital skills and entrepreneurial mindsets from a young age, focusing on primary education students. The project responds to the need for shaping the future generations of people who can think outside the box, which is the key to the innovative solution to many global problems and challenges. Targeting the cultivation of entrepreneurial mindsets and digital skills, the DIGITALIS project adopts innovative teaching and learning methodologies and technology-based training approaches. The proposed methodology will be a three-fold model combining classroom teaching and learning strategies, an educational game, and outside-of-the-classroom business experiences. The project addresses equally the two main target groups of every educational system, namely, students and teachers. Through the projects' methodological framework, primary education students will enhance key competences including creativity, innovation, teamwork, collaboration, problem-solving, and critical thinking. Additionally, DIGITALIS aims to actively involve teachers during the project's activities, aiming to empower their digital skills and equip them with modern and alternative technology-based tools that can support them in providing students with more engaging and motivating learning experiences, while achieving specific learning outcomes.

## Introduction

The coronavirus pandemic situation (COVID-19) impacted education and affected all students regardless of the level of education, nationality, income, or gender. COVID-19 overcame national borders and highlighted the lack of digital skills and the urgent need for the digital transformation and modernization of educational systems globally. Global educational institutions' lockdowns affected the regular delivery of education, leading to online education and virtual schooling that posed new challenges to educators and students while highlighting the lack of digital skills. This crisis resulted in tremendous learning losses for all levels of education that could extend beyond this generation, which could result in high percentages of dropout rates in coming years. The current COVID-19 crisis and its impact on education are far from over and the possibility of future unknown crises makes the need for reflection on the way educational systems work more imperative than ever.



There is an urgent need for a quick response supporting the modernization and digital transformation of education.

Equally important is that this situation revealed that innovation, smart ideas, adaptability, and responsiveness are skills that are necessary to survive at personal and workplace levels. In a constantly changing global society and workplace, the skills needed for a sustainable and prosperous future go beyond numeracy and literacy. Creativity, innovation, teamwork, collaboration, problem-solving, and critical thinking are key competences of the 21st century that can foster employability and socio-educational, personal, and professional development (Binkley et al., 2012; Van Laar et al., 2017; Voogt & Roblin, 2012). Moreover, these skills have been identified as strategic for the smart economic and social development of every nation-state. Additionally, due to the rapid technological advancements that are becoming more and more embedded in our everyday lives, there is a need to cultivate digital skills and thinking outside the box for young people. Both of the above-mentioned set of skills (digital and entrepreneurial) should be addressed from an early age, and primary education should go a step further and incorporate innovative teaching and learning practices.

In this context, the DIGITALIS project aims to address these sets of skills by using technology-based approaches and pedagogies that address the needs of primary education. Specifically, a novel educational game will be developed aiming to empower key skills for young students, who will become the next generation of innovators in tomorrow's digital era. The aim and challenge of the project are not just to adapt the training provided to the digital era and connect it with new technologies, but to build a holistic approach to promote gradual professional development as learners progress in the educational system starting from the primary level. It is highly important to enhance digitally young people and future workers, through training that meets the needs of the labour market and at the same time encourages the development of the sense of initiative and innovation that could be the key to unemployment solutions in the future. The proposed educational game will be a novel tool for unique, motivating, and engaging teaching, learning, and training experiences for primary education students that will act as a driver for change towards the integration of technology-based approaches from primary educators to enhance life-skills, digital skills, and entrepreneurial mindsets. Additionally, the DIGITALIS project aims to empower teachers' digital skills and equip them with innovative digital tools for implementing novel practices in today's digital classrooms. Teachers lack confidence in using technology in the classroom, although they acknowledge that technology can provide highly motivating and engaging experiences for the students (Finger et al., 2010; Organisation for Economic Co-operation and Development [OECD], 2019; Winter et al., 2021). Hence, primary education teachers constitute a critical target group for the DIGITALIS project. They will actively be involved, co-designing with the

Partnership the digital tools to be used and transfer the knowledge gained to primary education students.

## The Significance of Cultivating Entrepreneurial Mindsets at a Young Age

Lately, the cultivation of entrepreneurial mindsets has become a significant objective within the European Agenda. The Commission of the European Communities highlighted the importance of entrepreneurship education in its “Green Paper: Entrepreneurship in Europe” (2003), while the sense of initiative and entrepreneurship are considered to be among the most important competences for future generations. According to the European Education and Culture Executive Agency Eurydice report (2017), entrepreneurial education and culture is the key to shape future generations of innovators, by providing young people the necessary skills and knowledge that will lead to business innovation. People are not born entrepreneurs, but they become successful entrepreneurs by empowering their knowledge, skills, and entrepreneurial culture. Despite the significant value of entrepreneurial education, the Eurydice report states low levels of practical entrepreneurial learning at school. The DIGITALIS project aims to close this gap and proposes a novel pedagogical framework that aims to connect primary education and the business world. The project's activities aim to bridge the gap and disconnection between primary education and the business sector, providing teachers with the necessary guidelines.

The project will provide to the students core practical activities that will promote the establishment of strong communication channels between primary education settings and businesses, inspiring the students to think innovatively and outside the box. Equally important is that this activity has the objective to familiarize primary students with the terms of entrepreneurship and green businesses and jobs while enhancing skills like critical thinking, innovation, and out-of-the-box thinking. This will be achieved through experiential entrepreneurship learning, based on bringing primary education students in touch with successful entrepreneurs, who could act as role models, inspiring the students and improving their attitudes towards entrepreneurship. The novelty of the proposed activities lies in the active involvement of entrepreneurs. They will visit online classrooms, providing the students the opportunity to experience several success stories, pose questions, and discuss their ideas. In addition, they will also help students look at the world from a different perspective, explore new ideas and possibilities, look beyond the obvious, and think out-of-the-box. Through this highly interactive activity, the students will encounter real-life conditions and experiences, helping them actively conquer knowledge, understand the role of business, and connect the business sector with sustainable development goals.

## Digital Education in Cyprus

COVID-19 created an unprecedented situation and forced countries to declare a state of emergency, resulting in schools closing globally. Teachers and students came face to face with new challenges as the delivery of education became digital. This situation revealed several problems and deficiencies in digital skills and equipment in Cyprus. The proportion of Cypriot schools with a high provision of digital equipment (laptops, desktop computers, cameras, whiteboards) per number of students and a high broadband speed is lower than the EU average at both primary and secondary levels (European Commission, 2019). The Cypriot Primary Education emphasizes utilizing modern technological achievements and integration of ICT in the curricula of Primary schools. The modernization and digital transformation of primary education focus on three main pillars:

- The development of modern and ICT-based material and technical infrastructure in all classrooms of schools;
- The continuous training of teachers in the use of ICT-based teaching and learning approaches;
- The modernization of the curricula.

Efforts are made towards all three pillars, yet digital education is among the greatest challenges that the Cypriot educational system faces in primary and secondary education (European Commission, 2019). Even though Cyprus invests in technological equipment and teachers feel confident and well prepared to deliver technology-based teaching (Kyriakidou et al., 1999), there is a gap in digital skills. Several initiatives have been supported by the Ministry of Education regarding the introduction of ICT in Cypriot education, including the introduction of ICT lessons and robotics in selected schools and the donation of 250 tablets to primary and secondary education students. The course Design and Technology - Digital Technologies is recommended to be taught at the last two classes of primary education and the purpose of the course is to enable the involvement of students in a creative and innovative process through which they will acquire the necessary knowledge, skills, and attitudes to meet different needs and to solve various problems of the human environment. The course also provides students with opportunities to develop skills and attitudes that are necessary for the modern society of the 21st century. Furthermore, to boost the integration of ICT in primary education, some educational software and tools have been purchased, including Kidspiration, Kar2ouche-Creative Writing, Gennadios Encyclopedia, Journey to Culture, About Cyprus, Virtual Labs Electricity, Virtual Labs Light, Focus on Climate Change, Sibelius, and Arc View.

The implementation of ICT-based teaching and learning is a major challenge in Cyprus and future actions should be planned to fill in the gap in digital education. Supporting teachers and enhancing their digital skills and competences and their

confidence in using technology-based tools in the classroom could be the first step towards this approach. Moreover, it is essential to implement ICT lessons in all primary education schools, starting from a young age to familiarize the students with the fundamentals of computing. In this context, the DIGITALIS project aims to promote the development of key competences via a digitally based framework and through game-based learning approaches, supporting teachers in the integration of technology-based approaches in today's dynamic and digital classrooms.

## The DIGITALIS Project

The DIGITALIS project has the vision to promote the cultivation of digital skills and entrepreneurial mindsets from a young age, focusing on primary education students. By providing a novel pedagogical and methodological framework empowered with new and innovative technology-based approaches and particularly educational gaming, the project will address the cultivation of key 21st-century competences including creativity, innovation, teamwork, collaboration, problem-solving, and critical thinking for young students. DIGITALIS project aims, via using a combination of in-class assignments and a game-based learning tool, to provide young students, aged 8-12 years old, a unique learning experience that will form the basis for outside-of-the-box thinking that can result in future innovative initiatives. Addressing the cultivation of entrepreneurial mindsets from a young age is also considered to be critical to economic growth. Now more than ever there is a need for creative people that can boost the global economy with creative ideas and initiatives. After all, the global pandemic situation constrains the business world to shift to digital to ensure its survival.

Equally important for the DIGITALIS project is the empowerment of teachers' digital skills. Teachers are the key actors of every educational system, shaping the future generations of citizens. School closure due to COVID-19 forced them to go online, posing a great challenge for those with low digital skills that must support hundreds of students. Moreover, the possibility of a future pandemic outbreak that could lead once more to possible lockdown measures highlights the significance of addressing the lack of digital skills of teachers. In this context, the project aims to enhance teacher's digital skills and also equip them with new innovative and digital teaching methods and tools to support digital native students and dynamic, diverse, and digital classrooms.

The DIGITALIS project is dedicated to primary education starting from the preparation of young students for the world of work, where digital literacy is essential. The innovation of the project stems from the learning methodology that will combine in-class assignments with game-based learning techniques aiming to foster the development of a range of digital competences and also the cultivation of entrepreneurial mindsets. Combining theoretical and practical training will allow

the students to connect theory and practice and conquer knowledge. The methodological framework of the project will offer both teachers and students high-quality training and will be implemented in five different European countries: Greece, Cyprus, France, Romania, and Spain.

## The Aims of the Project

Primary education is the first step on an educational journey towards the acquisition of knowledge and skills that can guarantee a sustainable future for today's students. According to The European Commission's European Digital Progress Report of 2017, 90% of all today's jobs require at least some level of digital skills, while in its *White Paper on the Future of Europe* (2017), the European Commission highlighted that today's primary school students will more likely end up working in new job types that do not yet exist. In addition, the European Education and Culture Executive Agency, Eurydice's report "Digital Education at School in Europe" (2019) indicates that digital competences are not explicitly addressed in the national curriculum by the Member States, particularly for primary education. Moreover, in several Member States, digital competences are addressed as a separate subject and not as a cross-curricular theme.

In the face of an increasingly uncertain, complex, and changing world that is facing challenges without precedent, there is a need for people not only to be equipped with digital skills but also to raise children who can think out-of-the-box, innovate, turn ideas into action, and be able to adapt easily to changes. Consequently, it is vital to start cultivating a sense of initiative and entrepreneurial mindset, from a young age, as children are born imaginative, energetic, and willing to take risks. Moreover, it is essential to cultivate an entrepreneurial mindset as it can promote competitiveness, innovation, and creativity. Early cultivating of such a mindset is considered to be critical to economic growth and prosperity as not only it will contribute to new innovative business ideas but at the same time, it will contribute to a generation of people that will be competitive, solve challenging problems, think critically, turn ideas into action, and adapt to any change. However, despite the benefits of cultivating entrepreneurial skills, over half of the EU member states are only in the initial stages of embedding it into their national educational systems and have few or no guidelines of entrepreneurial learning, while there is no instruction for the teaching staff for this thematic area.

In light of the above challenges, the DIGITALIS project has as a main objective to empower the acquisition of digital skills and the cultivation of thinking-out-of-the-box mindset to the target group of primary education students aged 8-12. At the same time, the project aims to equip teachers with innovative technology-based tools and knowledge that can be taught in the classroom and support the acquisition of key competences, including digital skills and entrepreneurial mindsets between

the students. DIGITALIS project has the vision to develop from scratch and implement a novel educational game as part of the training methodology, to give the students-players real agency over the challenges and learning objective they are trying to master. The game will present real-life challenges that need to be solved through understanding and experimentation within a safe environment. These challenges will be novel to the students, offering access to experiences that would otherwise be impossible to accomplish in the classroom. The educational game will provide primary education students with a unique and highly motivating and engaging training experience that will boost the cultivation of core competences. The scenarios of the educational game will reflect real-life problems and challenges, promoting the development of a range of competences, including innovation, creativity, critical thinking, problem-solving, teamwork, and digital skills.

The impact of the DIGITALIS project is of paramount importance for both students and teachers. For the students, the vision of the project is to promote the personal and professional development of core life competences and skills along with the cultivation of entrepreneurial mindsets. For the teachers, the importance of the project lies in equipping them with new teaching and learning methodological framework enhanced with an innovative game designed to further support their efforts to equip young students with key competences.

## The Target Audience

The DIGITALIS project targets two main groups:

- *Students aged 8 to 12 years old.* Through the dedicated project activities, this target group will acquire core digital competences and skills through the use of innovative teaching and learning methods and game-based training tools. These skills are the starting point for a successful professional career and the best protection against unemployment and poverty. The students involved in the project are expected to acquire key life skills, including creativity, innovation, teamwork, collaboration, problem-solving, critical thinking, decision making. Additionally, the students are expected to cultivate entrepreneurial mindsets, a sense of initiative, and out-of-the-box creating thinking that could lead to future innovative business and professional attitudes.
- *Primary education teachers.* Teachers are the key wheel for achieving the digital transformation and modernization of education. Additionally, they need digital skills empowerment to respond to the needs of digital native students. Through the projects' activities, primary education teachers will be equipped with modern and innovative tools and good practices to be integrated into the curriculum. The teachers that will be trained through the project's activities will act as ambassadors and will implement the

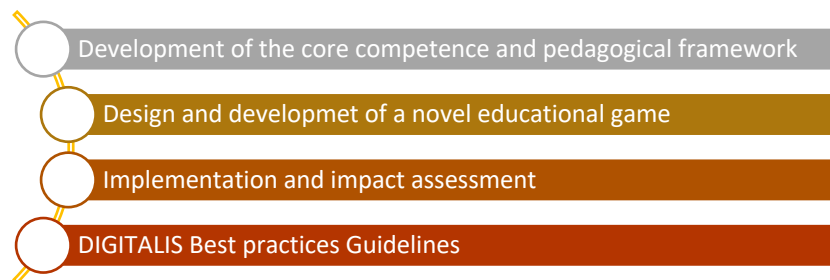
methodology and tools of the project in their classroom. In the long run, their active participation aims to foster future initiatives using the methodological framework and tools of the project ensuring also its sustainability.

## The Methodological Framework

The main activities of the DIGITALIS project are presented in Figure 1.

### Figure 1

*Main activities of the DIGITALIS project*



The project activities begin with the development of the core competence and pedagogical framework dedicated to primary education students aged 8-12. An analysis of the existing competence models and collaboration with teachers will lead to the identification of the key competence and basic skills model that will be in line with the age of primary education students. The identification of the competence model will contribute to the development of the pedagogical framework and the training methodology to be used that combines in-class activities, enriched with experiential learning strategies (educational gaming) and online visits from entrepreneurs. The identification of the competence and pedagogical framework will lead to the development of a dedicated educational game promoting game-based learning experiences to primary education students. The in-class activities along with the educational game to be implemented will be assessed and evaluated, providing significant feedback about the impact of projects' activities on students and teachers. The final activity of the project deals with the development of the best practices guidelines of the DIGITALIS Project, which will summarize the experience gained throughout the project, the methodology and guidelines, along with the training resources and tools developed and implemented.

## Conclusions

The main aim of the DIGITALIS project is to promote the cultivation of entrepreneurial mindsets and empower digital skills for primary education students.

Equally important is that the project targets also teachers, aiming to provide them with novel technology-based tools that can be used in teaching and learning. The DIGITALIS project addresses today's urgent need for the digital transformation and modernization of education and has the vision to provide innovative digital tools for both the students and the teachers that can foster the cultivation of life skills that are essential for achieving excellence in the workplace. The proposed methodology will be a three-fold model, combining classroom teaching and learning strategies, an educational game that will be developed, and outside-of-the-classroom business experiences. The classroom activities, which will be designed with the active participation of teachers, will empower students' core competences and entrepreneurial mindsets through real-life challenges. The classroom activities will be enhanced with the novel educational game providing students the opportunity to work towards goals, choose actions, and experience the consequences of those actions along the way. Moreover, the cultivation of entrepreneurial mindsets will be promoted through the establishment of strong collaboration channels with the business sector, through actions such as online visits to schools by entrepreneurs who are willing to share their experiences to help students cultivate innovative and out-of-the-box thinking. The DIGITALIS project proposes a novel key competency training framework incorporated with game-based approaches that will be implemented in five different countries (Greece, Cyprus, France, Spain, Romania).

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## Author Details

Kalliopi-Evangelia Stavroulia  
Kalys Solutions  
Cyprus  
[p.stavroulia@kalys-solutions.com](mailto:p.stavroulia@kalys-solutions.com)

Kalia Demetriadou  
Kalys Solutions  
Cyprus  
[k.demetriadou@kalys-solutions.com](mailto:k.demetriadou@kalys-solutions.com)

# IS THERE AN “A” IN STEAM? THE ART PROJECT

Mariano Sanz Prieto and Gema de Pablo González

*Fundación Siglo22*

SPAIN

## Abstract

STEAM projects are in vogue, with a large number of countries promoting the development of STEAM projects, but mainly related to science, technology and mathematics. We are moving, therefore, in the STEM world. The ART project also aims to work with technology, through the use of Virtual Reality, but using it to make Art and Culture more inclusive and accessible. Through the use of Virtual Reality glasses, young school children can access museums, churches, and buildings of different cultures existing in different countries of the European Union. This technology can help develop digital skills and introduce schoolchildren to a rapidly changing target world, and also encourage cultural diversity, acceptance of differences, and knowledge of Europe's cultural richness, thus developing European citizenship through art and virtual reality.

## Introduction

We are in the midst of a changing environment, where Information and Communication Technologies (ICT) have set the pace for transforming our world. Education has also been affected by this scenario. The ubiquity of learning is a fact from the moment we can access a large amount of information from mobile devices.

On the other hand, ICTs have allowed us to start thinking about more participative and collaborative learning models thanks to tools that are becoming more and more horizontal, eliminating communication barriers.

The Information Society is, in reality, the Learning Society, where the essential value is in the process of how we learn. Considering that industry is heading towards a fourth revolution with disruptive effects that affect employment, consumption, government activity and, of course, our lives, innovation is essential to face the challenges that are opening up before our eyes (Amor, 2018).

When we talk about innovation, we are referring to a change that allows us to improve, and from this point of view, experts in the field consider that this is directly related to Science, Technology, Engineering and Mathematics, with the acronym STEM. This has conditioned the idea that in order to have qualified jobs, training should be in these subjects.

However, in recent times, the importance of also including the Arts as an essential discipline for the needs of our world has begun to be debated. Thus, the latest references to the most innovative skills for the 21st century make it necessary to add the "A" to the acronym STEM, turning it into STEAM.

It is important to insist that the STEAM approach is not only about teaching content, but also about competences and types of thinking. It is about developing students' creativity, in such a way that it enhances innovation and logical thinking, in order to associate logical thinking and creativity, thus increasing interest in science (Soriano, 2021).

However, the subjects included in STEM still do not solve the problems derived from the jobs offered in these areas, such as the fact that there are still few professionals for the needs detected (especially of the female gender). Furthermore, and furthermore, qualification deficits exist. But if we focus on the field of visual arts and design, according to Amor (2018), the problem is even more pronounced in terms of content, skills, and student training.

Some authors point out that, in general, the study of science subjects among young people in Europe has declined (Robles et al., 2015). There is difficulty in generating scientific literacy among citizens and, from this perspective, Rocard et al. (2007) warn that this is due to the way science is being taught in schools. In this sense, authors such as Solbes (2011), Solbes et al. (2007), and Lozano Lucia (2012) have investigated the factors that are influencing dropout, as well as what innovative proposals could be addressed to tackle these attitudes. They conclude that the solution lies in compulsory education, which may be a key moment to motivate students towards science or improve their attitude, since they have to study it compulsorily.

Our current study includes a questionnaire to assess the expectations and beliefs that teachers in compulsory secondary education and vocational training in Spain may have about gender and science. When asked about which disciplines or areas of study their students would choose or had chosen, it was found that the arts were in last place for both genders. However, when asked about competences, separated by gender, teachers indicated that girls excelled in artistic skills (De Pablo & Sanz-Prieto, 2022). One might wonder why girls, despite possessing artistic skills, in the choice of disciplines do not favor the art disciplines, but rather the opposite is true.

Following Amor (2018), both the scientific and artistic profiles have common characteristics in terms of certain competences, such as problem solving, understanding failure as part of the process, and the effort in a continuous learning process based on trial and error.

In this sense, Amor continues with the reflection that it would be good for schools to stop projecting traditional perceptions of associating good students with mathematics, or that the arts do not provide job opportunities (a belief that is also widespread in families). Both groups, those who are good at mathematics and those who are good in the arts, must acquire digital, humanistic, and social skills in order to provide a complete response to the information and knowledge society (Amor, 2018). In other words, they must adapt to the Learning Society.

This Society is also a global society in which goods, people, and ideas increasingly cross borders. It is the global citizenship that has to cope with global challenges such as climate change, availability of food, water, etc. This requires us to be increasingly empathetic to the interests and realities of other cultures as well as the effect of our existence on other parts of the world. And for this to happen, we must train our students to be innovators in solving these global problems. All this movement of people is leading to different work scenarios as well, as organisations have to work more and more internationally, thus also having more and more foreign employees (Directorate-General for Communication et al., 2010). Also, government agencies have to deal more and more with people from other countries. In conclusion, our world is becoming smaller and more connected.

Many authors point out that in order to be a citizen of the world, it is necessary to be individuals with global social responsibility, and this task arises from the process of internationalisation. This internationalisation must be linked to higher education and is a very relevant issue for today's societies, which are immersed in a changing world that requires responsible and collaborative actions (Santamaría-Cárdaba & Lourenço, 2021). It is not in vain that this is a United Nations (2015) Sustainable Development Goal, which insists on being able to address the development of a global citizenship that profoundly transforms our society. There is a strong need to form autonomous and critical citizens who promote an ethical and ideological assessment of the world, as well as the projection of what it would be desirable for it to be (Celorio & López de Munain, 2007; Boni, 2014).

It is therefore essential to promote STEAM teaching in the education and training system, taking advantage of the fact that the rise of intelligent technologies, such as virtual reality, can contribute to making the learning of any of these disciplines much closer and more inclusive. In short, we need to talk about bringing all knowledge closer together without categorising first- or second-order disciplines.

## The ART Project

ART (Art and culture Recorded for e-Ternity, n.d.) is a project co-funded by the European Union's Erasmus+ programme; it has a duration of 27 months having started on 1 March 2021. Its main objective is to make different museums and other

cultural institutions more accessible to students aged 8-16 through the use of virtual reality, but also trying to reach other target groups such as teachers and education students who will become teachers in the near future.

The partners and countries involved in the project are the following:

- Stichting Kenniscentrum Pro Work (Netherlands) – Coordinator
- Sinergia Società Cooperativa Sociale (Italy)
- Artevelde Hogeschool (Belgium)
- Euroface Consulting s.r.o. (Czech Republic)
- Fundación Siglo22 (Spain)

The main objectives of the project are to:

- Teach students the ability to **think critically** and to **form an opinion**
- Promote European (and Global) **Citizenship**
- Develop empathy to the interests of other (**different**) people

The project will generate different results, from a research study with expert staff in the field of educational innovation, to a basic and progress questionnaire related to the concepts of European citizenship. But probably the most outstanding development is an online platform with virtual reality material from museums and religious centres of all faiths, including, in the immersive experience of virtual reality, educational materials to be used during the virtual visit. And of course, the project includes a phase for use of the developments by the target audience.

In this way, the project aims to enable students to acquire cultural, artistic, and historical knowledge. They will also learn to develop critical thinking skills and foster respect and tolerance in the classroom.

## Results of the Citizenship Questionnaire

Analysing the results of the questionnaire includes comparing results before using the Virtual Reality (VR) resources and afterwards, to see if there are differences and how the concept of digital citizenship varies. This paper will focus on only some of the survey questions, mainly because of their importance to how the VR resources developed in the project may affect the concept of Digital Citizenship, specifically European citizenship.

The survey was answered by 670 students, 441 of secondary school and 229 of primary school (Table 1).

**Table 1***Students' Answers to ART Project Citizenship Questionnaire*

	TOTAL	Female	Male
Primary	229	103	126
Secondary	441	168	273
TOTAL	670	271	399

One revealing question is Question 13, which asks students to choose the answer that suits them best with respect to how they identify:

- I primarily identify myself as an inhabitant of my village/town
- I identify myself as a citizen of my country
- I identify myself as European
- I identify myself as a world-citizen

The option with the lowest acceptance is “I Identify myself as European” (Table 2); in both study levels and in all the countries in the project except for the Czech Republic, where it is the highest with 46.79%.

**Table 2***How Do I Identify Myself?*

	I primarily identify myself as an inhabitant of my village/town	I identify myself as a citizen of my country	I Identify myself as European	I identify myself as a world-citizen
Belgium	19.50%	<b>43.50%</b>	<i>15.50%</i>	21.50%
Czech Rep.	11.93%	31.19%	<b>46.79%</b>	<i>10.09%</i>
Spain	22.22%	<b>39.68%</b>	<i>0.00%</i>	38.10%
Italy	18.90%	26.77%	<i>11.02%</i>	<b>43.31%</b>
Netherlands	<b>50.00%</b>	29.55%	<i>6.82%</i>	13.64%
<b>AVERAGE ALL COUNTRIES</b>	20.30%	<b>33.88%</b>	<i>16.87%</i>	28.96%
Primary	18.34%	27.07%	<i>13.97%</i>	<b>40.61%</b>
Secondary	21.32%	<b>37.41%</b>	<i>18.37%</i>	22.90%

*Note.* For each row, the highest percentage is bold-faced in green, and the lowest percentage is italicized in red.

It is interesting how low identification as a European is, especially in Spain (0%), but also in The Netherlands (6.82%) and in Italy (11.02%). In contrast, in Belgium, it is also the lowest (15.5%) but is close to the average for all the countries (16.87%).

The highest option for each country differs widely. In Italy this is “I identify myself as a world-citizen” (41.31%; in contrast, this is the lowest in the Czech Republic with 10.09%). In The Netherlands the highest option is “I identify myself as an inhabitant of my village/town” with 50.0%. And for Belgium (43.50%) and Spain (39.68%), the highest option is “I identify myself as a citizen of my country (though for Spain this figure is very similar to how they identify themselves as a world-citizen, which is 38.10%).

These results suggest that there is certainly great room for improvement when it comes to the personal perception of students as Europeans, and that is something that all Erasmus+ projects should somehow strive for.

Questions 14 to 18 also worth examining close. The questions were:

14. I want to learn more about how people live in other countries/cultures.
15. I want to learn more about other religions.
16. I’m interested in how people from other countries look at the world.
17. I’m interested in the history of other countries.
18. I’m interested in art (paintings, architecture, sculptures ...) that was made in other countries.

For all these questions, the scaled options were:

- This doesn’t interest me at all
- I find this kind of interesting
- I find this quite interesting
- I find this very interesting

The results for this set of questions are summarized in Table 3.

It is clear that religion is the subject they are least interested in, with 18.51% indicating it doesn’t interest them at all and only 15.07% indicating they are very interested in learning more about other religions.



**Table 3**

*Summary of Responses to “I Want to Learn More about...” and “I am Interested in...”*

	This doesn't interest me at all	I find this kind of interesting	I find this quite interesting	I find this very interesting
I want to learn more about how people live in other countries/cultures.	<i>4.03%</i>	27.31%	<b>38.36%</b>	30.30%
I want to learn more about other religions.	18.51%	<b>38.96%</b>	27.46%	<i>15.07%</i>
I'm interested in how people from other countries look at the world.	<i>10.90%</i>	25.97%	<b>37.01%</b>	26.12%
I'm interested in the history of other countries.	<i>11.49%</i>	25.07%	<b>35.82%</b>	27.61%
I'm interested in art (paintings, architecture, sculptures ...) that was made in other countries.	<i>17.76%</i>	<b>31.19%</b>	27.46%	23.58%

*Note.* For each row, the highest percentage is bold-faced in green, and the lowest percentage is italicized in red.

When we analyse the survey results by countries, we see that Spain is the country most interested in all the options, followed by Italy and Belgium. The Netherlands and especially the Czech Republic have lower interest in knowing about the different proposed topics.

**Table 4**

*Breakdown by Country of Responses to “I Want to Learn More about...” and “I am Interested in...”*

	Belgium	Czech Republic	Spain	Italy	Netherlands	ALL
I want to learn more about how people live in other countries/cultures.	70.50%	<i>49.54%</i>	<b>80.95%</b>	72.05%	70.45%	68.66%
I want to learn more about other religions.	39.50%	33.03%	<b>63.49%</b>	46.06%	<i>29.55%</i>	42.54%
I'm interested in how people from other countries look at the world.	71.00%	50.46%	<b>85.71%</b>	61.02%	<i>38.64%</i>	63.13%
I'm interested in the history of other countries.	65.50%	<i>43.12%</i>	<b>74.60%</b>	68.50%	59.09%	63.43%
I'm interested in art (paintings, architecture, sculptures ...) that was made in other countries.	52.50%	<i>22.94%</i>	<b>66.67%</b>	59.84%	40.91%	51.04%

*Note.* For each row, the highest percentage is bold-faced in green, and the lowest percentage is italicized in red.

It is interesting to note that the country where students feel the least European, Spain, is also the country where students demonstrate the biggest interest in knowing about other cultures, history, art, and even other religions.

In the ART project, we are going to be working on the issues getting the lowest ratings in the questionnaires, namely European Citizenship, using materials about art and also about religious buildings.

We will first discuss how we have created the 360° VR materials to be used by the primary and secondary students.

## Virtual Reality Resources in the ART Project

The ART partners are creating virtual tours, which consist not only in beautiful pictures but also in various assignments and explanations which are taught about each partner's own active contribution to global citizenship.

The first step was to distribute the different religions among the project partners:

- ProWork (Netherlands) – Buddhism
- Sinergia (Italy) – Catholicism
- Artevelde (Belgium) – Protestantism
- Euroface (Czech Republic) – Judaism
- Siglo22 (Spain) – Islam

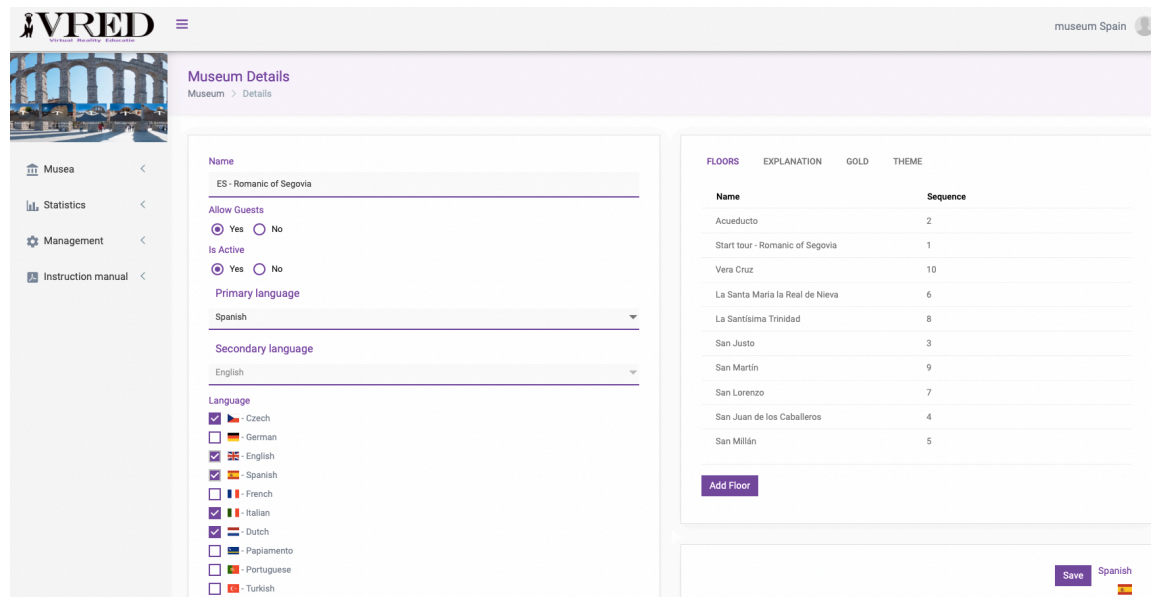
The creation of the virtual tours, including the educational content, was carried out using the Content Management System (CMS) called Virtual Reality Educative (VRED), which is shown in Figure 1. It allows educators of educational organizations to create, manage and administer educational content in their own 'VR tour' and changes in the CMS are immediately online.

The didactic approach of the VR materials has the following goals in mind for the students:

- Teach students the ability to think critically and form an opinion at an early age.
- Teach students the ability to collaborate and resolve conflicts.
- Teach students an international attitude including value orientation.
- Give students a positive self-image and teach respect for others.
- Teach students' social involvement and a sense of responsibility.

**Figure 1**

*VRED CMS for creating the VR tours*



With these objectives, the ART Project hopes to be able to contribute to the citizenship and responsibility of pupils in primary and secondary schools. To ensure maximum development, these goals should be linked to artworks or objects from a selection of religious or art institutions. This can be achieved by varying formats and exercises to maximize engagement.

Concerning didactics, they are the systematic and intentional aid provided by teachers to their pupils in schools, by means of cultural tools. In ART, in order to teach in a didactically responsible manner, we have taken into account the following didactic principles.

- *Visualisation:* this means teaching your pupils by providing lesson materials in a visual manner. This is mainly applied by providing images and videos, and visualising the steps students must go through when learning to do something new.
- *Motivation:* this means to be sure that the displayed facts and images appeal to your target audience (the pupils). Information should not be too hard or too easy.
- *Activation:* the lesson material should make students enthusiastic about the subject so they can manage to actively work in the lesson. Linking questions and activities (open questions, multiple choice, sorting exercises) to the VR-materials is essential.

- *Gradualness*: Challenge students by starting with easy questions and work gradually to more difficult and complex questions. There should be a logical order in the questions, so that students are challenged to improve.
- *Differentiation*: Consider the individual needs of your pupils. Pupils with learning disorders (e.g., dyslexia) and/or concentration disorders might have difficulties with reading long texts and complex sentences. Other students might need more challenges. All this should be taken in consideration to provide different formats and levels of difficulties.

The VRED-software is a basic tool which is used to develop VR-materials with the PICO Virtual reality headset. With respect to the educational items that may be included in the tours, this software is able to manage five different media types: 1) a fact/text; 2) an image (JPEG PNG RAW ...); 3) a video-file (MP4 Youtube-link); 4) an audio-file (MP3 FLAC AAC); and 5) a question (multiple-choice and open questions).

The user may navigate the different museums and floors in them using the menus, as depicted in Figure 2, which also shows how the content cubes look inside the system.

**Figure 2**

*Navigation Tools in the System*



The 360° images were created using a Ricoh Theta Z1 camera and managed using the camera's own stitching software together with Adobe Photoshop. The VR glasses used to navigate the VR tours are PICO G2 4K.

The system has to be accessed with a user id and password, and each student has their own. Once inside, they get access to the general hall, where they are able to choose between the different museums and art buildings prepared, as can be seen in Figure 3.

**Figure 3**

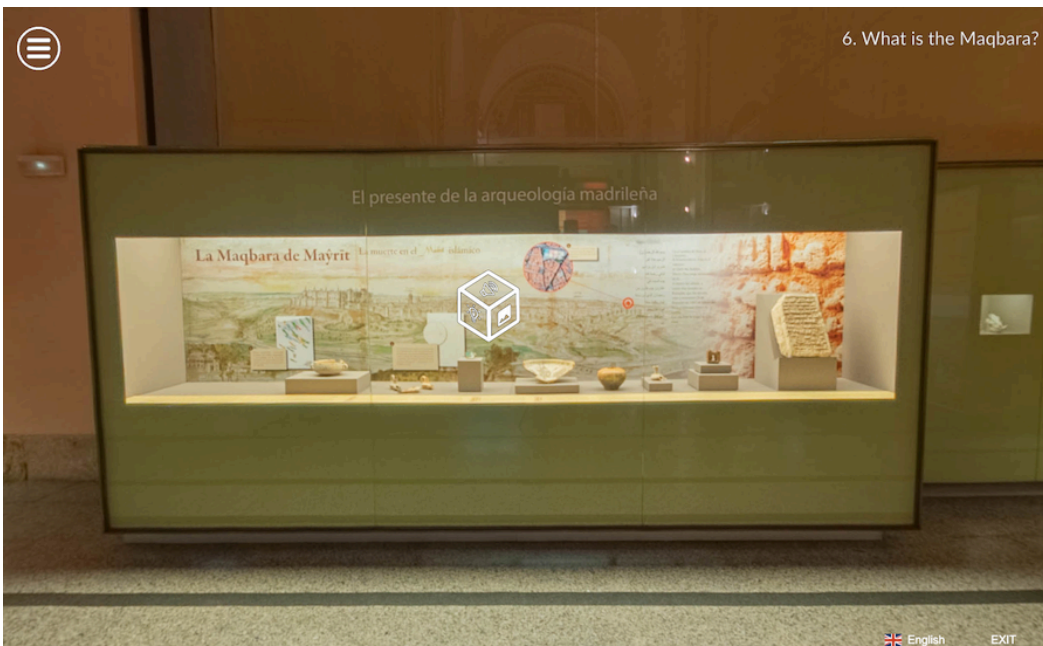
*Entrance to VR System*



The VR-Software allows adding an interactive cube, with the aspect seen in Figure 2, to every virtual environment with the items mentioned above. By interacting with the cube, the pupils get access to questions and information. This can be seen in the example of the Museum of Alcalá de Henares (Madrid) shown in Figure 4.

**Figure 4**

*Alcala's Museum Virtual Tour*



Another useful application to be used where possible in the project is Storytelling, also known as Docufiction. It has been proven that a combination of historical fact with narrative fiction leads to an increase in both learning potential and engagement among the pupils (Vanoverschelde, 2019). The focus of Storytelling is therefore to increase the pupil's immersion (and equally their empathy). This is achieved by linking the lesson materials and VR-environment to a (non-)fictional narrative. While the story may be fiction, it is important that both the setting and facts remain grounded in what is reality and what is factual.

The project will proceed during 2023 with pilots in Primary and Secondary schools in all the project countries, and after that we will have a better idea if the ART project together with VR is able to increase interest in other cultures, religions, and art in our young citizens in Europe.

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## Author Details

Mariano Sanz Prieto  
Fundación Siglo22  
Spain  
[msanz@siglo22.net](mailto:msanz@siglo22.net)

Gema de Pablo González  
Fundación Siglo22  
Spain  
[gdepablo@siglo22.net](mailto:gdepablo@siglo22.net)







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