



EDEN Research Workshop Proceedings

Emerging Technologies, Challenges and Opportunities in Education and Research

EDEN 2024 Research Workshop

hosted by

Politehnica University Timisoara, Romania

16-18 October 2024

Edited by

Wim Van Petegem, Elena Trepulè

on behalf of EDEN Digital Learning Europe

EDEN Research Workshop Proceedings

2024 Research Workshop | Timisoara, 16-18 October 2024

ISSN: 2707-2819

Published by EDEN Digital Learning Europe

Editors:

Wim Van Petegem

Elena Trepulè

Editorial co-ordination:

Gabija Morozovienė

EDEN DLE Secretariat

Kuklane tn 16-12, 13423, Tallinn, Estonia

E-mail: secretariat@eden-europe.eu

<https://eden-europe.eu/>



Co-funded by
the European Union

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Copyright Notice 2024 EDEN Digital Learning Europe and the Authors

This publication contributes to the Open Access movement by offering free access to its articles and permitting any users to read, download, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software. The copyright is shared by authors and EDEN DLE to control over the integrity of their work and the right to be properly acknowledged and cited.

To view a copy of this license, visit <http://www.creativecommons.org/licenses/by/4.0>

Acknowledgement and thanks are given to the Research Workshop Committee

Wim E.A. Van Petegem, EDEN DLE President, Belgium; Chair

Diana Andone, Politehnica University Timisoara, Romania; Chair

Vlad Mihăescu, Politehnica University Timisoara, Romania

Denise Whitelock, EDEN DLE Vice-President for Research, UK

Sandra Kučina Softić, EDEN DLE Vice-President of Open Professional Collaboration, Croatia

Mark Brown, EDEN DLE Vice-President of Strategy and Communication, Ireland

Airina Volungevičienė, Lithuania

Alfredo Soeiro, Portugal

Antonella Poce, Italy

Elena Trepulė, Lithuania

Josep M. Duarte, Spain

Mart Laanpere, Estonia

Polona Baloh Kremavc, Slovenia

TABLE OF CONTENTS

CONCISE PAPERS

Educational Technologies

Open Collaborative Map in Distance Education: An Experience with Renewable Assignments 1

Inés Gil-Jaurena, Aitor López-González, Daniel Domínguez, Universidad Nacional de Educación a Distancia (UNED), Spain

South Asian Heritage in Rome and Digital Technologies: First Results of a Research Project 3

Luca Contardi, Sapienza University of Rome, Italy

Application of Tutor AI Using Mastery Learning for Guided Student Learning..... 5

Mark P. McCormack, John G. Keating, Maynooth University, Ireland

AI in Education

Integrating AI in Education and Training: How Much is Known About AI Algorithms?..... 7

Alfredo Soeiro, University Porto, Portugal

Teachers' Competence in Artificial Communication with Generative Artificial Intelligence Tools 9

Enrico Vignando, Università di Modena e Reggio Emilia - Università di Udine, Italy

The Impact of Artificial Intelligence (AI) on Teaching Public Relations (PR) 11

Adina Palea, Cella Buciuman, Politehnica University Timisoara, Romania

AR/VR in Education

Virtual Museums on Language Learning: A Preliminary Study with Italian High School Students..... 14

Maria Tolaini, University of Genoa, Italy

360° Virtual Tours for Participatory, Inclusive and Personalised Museum Experiences 16

Eliana Maria Torre, Sapienza University of Rome, Italy

Micro-Education and Microcredentials

Scenarios for Digital Credentials for Europe (EBSI-DC4EU) – the Romanian Input..... 18

Diana Andone, Politehnica University Timisoara; Carmen Holotescu, Ioan Slavici University of Timisoara; Andrei Ternauciu, Victor Holotescu, Radu Vasiu, Politehnica University Timisoara, Romania

Emerging Topics in Education

Institutional Support for Professors as a Critical Quality Factor in Online Higher Education 21

Antoniél Borges Gonçalves, Neuza Pedro, University of Lisbon, Portugal

The Development and Use of an English Oral Presentation Application for Higher Education Students in Taiwan 23

Gi-Zen Liu, National Cheng Kung University; Neil E. Barrett, Southern Taiwan University of Science and Technology; Po-Han Wu, Yong-Liang Tsai, National University of Tainan, Taiwan

POSTER ABSTRACTS

Educational Technologies

Does Adaptive Learning Courseware Use Improve Student Outcomes? An Exploration of Exam Question Difficulty	25
--	----

Karen Gebhardt, University of Colorado Boulder; Christopher D. Blake, Oxford College of Emory University, United States

Design and Validation of Museum E-learning Experiences to Promote Teenagers' Wellbeing	27
--	----

Rachele Del Guerra, Tor Vergata University of Rome, Italy

An EBSI-based Initiative for Promoting the Self-sovereign Identity Paradigm in the Education and Social Security Sectors	29
--	----

Andrei Ternauciuc, Radu Vasiiu, Diana Andone, Victor Holotescu, Politehnica University Timisoara; Carmen Holotescu, Ioan Slavici University of Timisoara, Romania

Politehnica University of Timisoara's Contributions to the EBSI-NE Project.....	30
---	----

Radu Vasiiu, Andrei Ternauciuc, Victor Holotescu, Politehnica University Timisoara; Carmen Holotescu, Ioan Slavici University of Timisoara; Diana Andone, Politehnica University Timisoara, Romania

AI in Education

Generative AI Adoption in Higher Education: Bridging the Gap Between Traditional Models and Emerging Challenges	32
---	----

Ana Lelescu, West University of Timisoara, Romania

Innovating Assessment Design in the Light of Large Language Models Use.....	34
---	----

Ruslan Ramanau, The Open University, United Kingdom

Micro-Education and Microcredentials

MicroCredX Project Solutions for Micro-Credential Exchange	36
--	----

Maja Dragan, Hagen H. Hochrinner, FH JOANNEUM, Austria; Raimund Hudak, Klaus Rupp, Lear Schmitt, Duale Hochschule Baden-Württemberg, Germany; Mitchell Peters, Universitat Oberta de Catalunya (UOC), Spain; Jon Altuna, Amaja Arroyo Sagasta, Jon Aldazabal Basauri, Mondragon University, Spain; Henri Pirkkalainen, Miiko Siivonen, Tampere University, Finland; Anthony Camilleri, Martina Darmanin, Knowledge Innovation Centre, Malta; Ursula Göz, Duale Hochschule Baden-Württemberg, Germany; Estela Daukšienė, EDEN DLE, Lithuania

CONCISE PAPERS

Open Collaborative Map in Distance Education: An Experience with Renewable Assignments

Inés Gil-Jaurena¹, Aitor López-González², Daniel Domínguez³

¹Faculty of Education, Universidad Nacional de Educación a Distancia (UNED), Spain; inesgj@edu.uned.es

²Faculty of Education, Universidad Nacional de Educación a Distancia (UNED), Spain; aitorlopezgonzalez@edu.uned.es

³Faculty of Education, Universidad Nacional de Educación a Distancia (UNED), Spain; ddominguez@edu.uned.es

Correspondence: Inés Gil-Jaurena: inesgj@edu.uned.es

Abstract:

Open educational practices (OEP), according to Paskevicius' (2017) conceptualization through the lens of constructive alignment, include the following aspects:

- Learning outcomes are made explicit and openly accessible to students.
- Selection, adaptation, and creation of open learning resources.
- Use of OER to inspire the design of more engaging teaching and learning activities.
- Openness in the design of assessment and evaluation: active participation and production of knowledge by students.

With these open education principles in mind, we also followed Wiley's proposal of renewable assignments, which –unlike disposable assignments– are “assignments which both support an individual student's learning and result in new or improved open educational resources that provide a lasting benefit to the broader community of learners” (Wiley & Hilton, 2018). This way, students share their work openly, they generate OER, the artifact developed has value beyond the student's own learning (Wiley, 2013).

In 2023-2024 we designed and implemented an assessment task in a distance education course that involved the creation of a collaborative online map about community development projects. Participating students contributed with one project each, thus creating a map with information about 380 projects, that was made publicly available in the online course.

This first experience has shown the interest of this task for engaging students as producers and enriching the course content. Technologies have facilitated the submission of information by the students and the production of the map itself. But the experience has also shown the need to make decisions about practical aspects, such as the degree of openness of the map or the automatization of the submission of each project vs the monitoring of the content before going public. There was an increase in the teacher workload, as well, in the design, implementation and learning assessment phases.

In 2024-25, we will continue the experience and evaluate it, considering the impact on different aspects, such as students' participation and engagement, collaborative learning, or academic performance. We will also explore further characteristics of renewable assignments, such as open licensing the collaborative map and using it in other courses.

Keywords: distance education, renewable assignment, OER, open educational practice, digital assessment

References

- Paskevicius, M. (2017). Conceptualizing Open Educational Practices through the Lens of Constructive Alignment. *Open Praxis*, 9(2), 125–140. <http://doi.org/10.5944/openpraxis.9.2.519>
- Wiley, D. (2013). *What is open pedagogy?* <https://opencontent.org/blog/archives/2975>
- Wiley, D., & Hilton III, J.L. (2018). Defining OER-enabled pedagogy. *The International Review of Research in Open and Distributed Learning*, 19(4). <https://doi.org/10.19173/irrodl.v19i4.3601>

South Asian Heritage in Rome and Digital Technologies: First Results of a Research Project

Luca Contardi¹

¹Department of Classics, Sapienza University of Rome, Italy; luca.contardi@uniroma1.it

Correspondence: Luca Contardi: luca.contardi@uniroma1.it

Abstract:

In recent years, there has been an increased global focus on cultural policies in the areas of digital technologies, digitization, and online accessibility to cultural heritage. In parallel, more attention is also being paid to marginalized communities and cultures, with new policies for inclusion and representation being established, both on international/national level and by cultural institutions themselves. These two aspects can also be intertwined: digital technologies can translate into an engagement tool for disadvantaged and marginalized communities. In addition to the manifest implications related to overcoming barriers - both physical and cognitive -, digitization, in fact, offers numerous tools to support activities and practices aimed at social inclusion: it can act as a driver for the dissemination of awareness of and knowledge about heritage, thus becoming an element of cohesion between communities - including diaspora ones - and of identity-building in today's globalized and migratory landscape, ensuring representation in decolonial terms.

South Asian communities are among the largest in Italy, with a high presence in the Lazio region in terms of number of residents; in particular, there is a significant concentration in the Metropolitan City of Rome, which is home - for instance - to the largest Bangladeshi community in the European Union (roughly 38,000 people, counting as the 25.2% of Bangladeshi citizens in Italy). Despite this, data collected thanks to the annual reports issued by the Italian Ministry of Labour and Social Policies - and mostly based on statistical figures - allegedly outline communities that still suffer from poor levels of integration. In general, despite an ongoing stabilisation process on the Italian territory and despite their large number, migrant communities from South Asia still experience a lack of integration and participation in cultural and public life.

This paper presents the initial results of a research project focused on defining a new paradigm for the enjoyment of South Asian cultural heritage in Rome through a participatory approach grounded in co-production with South Asian communities and the application of digital technologies. Specifically, the initial stages and findings of the project will be presented, with a particular emphasis on the digital technologies employed and foreseen.

Keywords: South Asian Heritage; Digital Technologies; Social Inclusion; Participatory approach

References

European Commission, Directorate-General for Communications Networks, Content and Technology, Izsak, K., Terrier, A., Kreutzer, S. et al. (2022). *Opportunities and challenges of artificial intelligence technologies for the cultural and creative sectors*, Publications Office of the European Union. <https://data.europa.eu/doi/10.2759/144212>

- Howes, D. (2023). <https://howesstudio.com/2023/06/27/museums-and-artificial-intelligence/>, last accessed 2024/08/19
- Manzuch, Z. (2017). Ethical issues in digitization of cultural heritage. *Journal of Contemporary Archival Studies*, 4(2), 4.
- Ministero del Lavoro e delle Politiche Sociali (2021), <https://www.lavoro.gov.it/priorita/Pagine/Pubblicati-i-nuovi-rapporti-Le-comunita-migranti-in-Italia.aspx>, last accessed 2024/08/19
- Müller, K. (2021). *Digital Archives and Collections: Creating Online Access to Cultural Heritage*. Vol. 11. Berghahn Books. <https://doi.org/10.2307/j.ctv29sfzfx>
- Münster, S., Maiwald, F., di Lenardo, I., Henriksson, J., Isaac, A., Graf, M.M., Beck, C., Oomen, J. (2024). Artificial Intelligence for Digital Heritage Innovation: Setting up a R&D Agenda for Europe. *Heritage* 7,794–816. <https://doi.org/10.3390/heritage702003>
- OECD (2019). *Scoping the OECD AI principles: Deliberations of the Expert Group on Artificial Intelligence at the OECD (AIGO)*, OECD Digital Economy Papers, No. 291, OECD Publishing, Paris. <https://doi.org/10.1787/d62f618a-en>.
- Panconi, S., Tiribelli, S., Paolanti, M., Di Stefano, F., Frontoni, E., Malinverni, E. S., and Giovanola, B. (2023). ARTIFICIAL INTELLIGENCE AND CULTURAL HERITAGE: DESIGN AND ASSESSMENT OF AN ETHICAL FRAMEWORK, *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, XLVIII-M-2-2023, 1149–1155, <https://doi.org/10.5194/isprs-archives-XLVIII-M-2-2023-1149-2023>, 2023.
- Rani, S., Jining, D., Shah, D., Xaba, S., Ranjan, P. (2023). Exploring the Potential of Artificial Intelligence and Computing Technologies in Art Museums. *ITM Web of Conferences*, vol. 53, pp. 01004. <https://doi.org/10.1051/itmconf/20235301004>
- The European Heritage Alliance, Cultural Heritage: A Powerful Catalyst for the Future of Europe': [https://www.europanostra.org/wp-content/uploads/2020/05/20200509 EUROPE-DAY-MANIFESTO.pdf#](https://www.europanostra.org/wp-content/uploads/2020/05/20200509_EUROPE-DAY-MANIFESTO.pdf#), last accessed 2024/08/19

Application of Tutor AI Using Mastery Learning for Guided Student Learning

Mark P. McCormack¹, John G. Keating²

¹Computer Science Department, Maynooth University, Ireland; mark.mccormack@mu.ie

²Computer Science Department, Maynooth University, Ireland; john.keating@mu.ie

Correspondence: Mark McCormack: mark.mccormack@mu.ie

Abstract:

Recent developments in the literature suggest that Large Language Model (LLM) systems, such as ChatGPT, are becoming increasingly more effective in the realm of Computer Science Education (CSE)^[1]. While most studies focus on their problem solving capabilities, new studies are emerging looking at how these and other Machine Learning (ML) models may be used in augmentation of students learning such as automated assessment^[2], discussing assignments with students^[3] and engaging in peer-programming exercises^[4].

In this study, we look at how effective Large Language Model (LLM) systems can be in tutoring students using the “Mastery Learning” technique to understand if these systems can accurately guide and assess students on their coursework. “Mastery Learning”, introduced by Bloom^[5], breaks a course down into several units, only allowing students to move to the next unit of their course if they achieve above 80%-90% in a quiz assessment. This learning method has been shown to outperform traditional lecturing strategies^[6], and with the immediate access students now have to intelligent AI systems, we look to understand if these LLMs can be leveraged to conduct effective one-to-one tutoring with students using this approach. To do this, we provide several LLMs with course materials from various stages of a Computer Science course (Web Information Processing) and prompt it with standard questions students traditionally ask during this course. We use a custom prompt engineering strategy to ensure that it responds and replies with information keeping the Mastery Learning technique in mind during the conversations. Finally, we engage with these AI tutors in a generated quiz to obtain data on how it evaluates our responses and if it accurately assesses our work.

We output several conversations with these models for further analysis to understand the quality of its answers and determine if these LLM systems can be effective tutors to students in Computer Science Education using Mastery Learning. Furthermore, we hope to understand if this suggests that the wide-access of these models to students could hint at a possible solution to Bloom’s Two Sigma Problem. Regarding future work, our study provides us preliminary results for several areas. Firstly, we can experiment with different prompting strategies incorporated with our Mastery Learning prompt to assess if personalising the responses helps students understand the concepts better. Furthermore, we can open this software to several classroom settings to aggregate students opinions on such tools and identify their key uses for it such that they can be tailored to better fit student’s needs.

Keywords: Education Technology, Large Language Models, ChatGPT, Computer Science Education, Intelligent Tutoring Systems

References

- [1] Ouh, E. L., Gan, B. K. S., Jin Shim, K., & Wlodkowski, S. (2023, June). ChatGPT, Can You Generate Solutions for my Coding Exercises? An Evaluation on its Effectiveness in an undergraduate Java Programming Course. In Proceedings of the 2023 Conference on Innovation and Technology in Computer Science Education V. 1 (pp. 54- 60).
- [2] Brun, Y., & Ernst, M. D. (2004, May). Finding latent code errors via machine learning over program executions. In Proceedings. 26th International Conference on Software Engineering (pp. 480-490). IEEE.
- [3] Segedy, J., Kinnebrew, J., & Biswas, G. (2012). Supporting student learning using conversational agents in a teachable agent environment.
- [4] Dos Santos, O. L., & Cury, D. (2023, October). Challenging the Confirmation Bias: Using ChatGPT as a Virtual Peer for Peer Instruction in Computer Programming Education. In 2023 IEEE Frontiers in Education Conference (FIE) (pp. 1-7). IEEE.
- [5] Bloom, B. S. (1968). Learning for Mastery. Instruction and Curriculum. Regional Education Laboratory for the Carolinas and Virginia, Topical Papers and Reprints, Number 1. *Evaluation comment*, 1(2), n2.
- [6] Bloom, B. S. (1984). The 2 sigma problem: The search for methods of group instruction as effective as one-to-one tutoring. *Educational researcher*, 13(6), 4-16.

Integrating AI in Education and Training: How Much is Known About AI Algorithms?

Alfredo Soeiro¹

¹DEC-FEUP, University of Porto, Portugal, soeiro.alfredo@gmail.com

Correspondence: Alfredo Soeiro: soeiro.alfredo@gmail.com

Abstract:

The interest in the development and application of Artificial Intelligence (AI) models, supported by algorithms, in Education and Training has increased in recent years. This field of development is positioned as the next major research area complementing use of digital technologies to improve learning. AI presents several types of algorithms, which process data or structured information through ontological search, optimization and/or other methods. This concise paper addresses the essence of AI algorithms and analyses and describes possible applications and developments of these tools in the teaching strategies due to the different characteristics of each family of AI algorithms. It is intended to alert educational researchers about the possibilities of the Ai tools to match the teaching needs.

AI has become a frequently used term in audiovisual media, conferences, debates, political and economic events. In fact there is no real intelligence but algorithms that mimic the human standards of practice and brain processes. For example, a thirty year old software that optimized a reinforced concrete frame design was AI?. It was a structural optimization program, but in the current context it could be classified as an AI program. It ends up defining autonomously (it is artificial?), without any user intervention, the choice of the best solution (is it intelligence?) among many possible acceptable solutions (Soeiro).

Some so-called AI programs are known for being free and easy to use. ChatGPT is an example of an application based on the architecture of linguistic models (LLM) that respond to a wide variety of simple or complex questions (Openai). ChatGPT uses a reinforcement learning algorithm called Proximal Policy Optimization (PPO) to emulate human behavior, taking into account a database composed of various texts and previous interactions with users. It is basically an optimization algorithm that minimizes error in the response. As shown in Figure 1, there are other types of algorithm models besides the LLM (Symbolists) like the Analogizers, Bayesians, Evolutionaries and Connectionists (Domingos).

Analogizers algorithms are based on the formulation of a function to be optimized and the constraints imposed on the solution and use optimization methods. Bayesians algorithms are probabilistic methods that use networks to determine the best solution considering the relationships between the different options. Evolutionaries algorithms use genetic algorithms to find the best solution. Connectionists algorithms use the maximum gradient method to find the best solution.

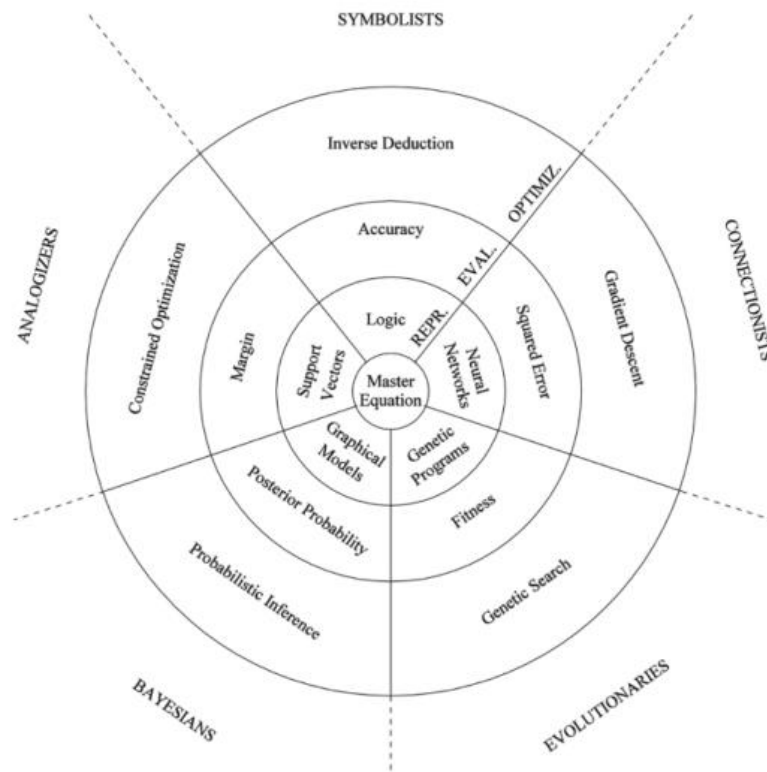


Figure 1: Different types of AI algorithms (Domingos)]

Therefore, effective and efficient uses of AI tools in teaching need to choose the right AI tools in accordance with the context of the intended learning. Teachers and learners need to consider data available, the expected learning outcomes and indicators, the evaluation methods and the learning styles of the learners. There are not many commercial AI tools developed explicitly to improve learning or teaching. More dedicated research is needed to assert the possibilities of each type of AI tool in learning. At the moment some teaching functions are being replaced by AI tools, like assessment of learning and mentoring of learners.

Keywords: AI, algorithms, learning, teaching, ChatGPT, assessment.

References

Domingos, P. (2017), *The Master Algorithm*, Penguin Books.

Open AI, introducing ChatGPT, <https://openai.com/blog/chatgpt>.

Soeiro, A. (1989), *Optimization of Reinforced Concrete Frames Using Integrated Analysis and Reliability*, Doctoral Thesis, University of Florida, USA, <https://repositorio-aberto.up.pt/bitstream/10261/104620/2/105482.pdf>.

Teachers' Competence in Artificial Communication with Generative Artificial Intelligence Tools

Enrico Vignando^{1,2}

¹Department of Languages, Literature, Communication, Education and Society, University of Udine, Italy

²University of Modena and Reggio Emilia, Italy; enrico.vignando@unimore.it

Correspondence: Enrico Vignando: enrico.vignando@unimore.it

Abstract:

In human communication, interaction is a co-construction of meaning. In contemporary society, it is common for individuals to be exposed to or carry within a multilingual repertoire that could result from a migratory background or foreign language acquisition. Consequently, such co-construction of meaning must deal with continuous intercultural and linguistic negotiation. The Internet and constant, ubiquitous media exposure through smartphones and other personal devices have accelerated the circulation of information. However, even if this results in more frequent contact with foreign languages and cultures, the nature of media consumption makes users think and reflect less on these online interactions. Very recently, Generative Artificial Intelligence (GenAI) apps and platforms have become part of this mediated online ecosystem, with promises to make multilingual and technology-mediated communication more accessible and easier to produce and consume for everybody. Teachers are among these non-AI expert users who are supposed to take advantage of GenAI by integrating this technology into their teaching routines. In complex educational contexts, such as those including adult students with migratory backgrounds, GenAI offers affordable solutions to various intercultural and communicative problems between teachers and students. Nevertheless, teachers must undergo intensive and careful training in AI and GenAI to use it correctly for responding to educational challenges and, at the same time, taking into consideration not only the multiple kinds of diversity they could encounter in their classrooms but also the necessity to provide several opportunities to exercise and improve all the literacies that students need today. With AI gaining more relevance in education, teachers' professional development must address the interaction between human users and AI-enabled chatbots or platforms. This new kind of online interaction should be considered according to the concept of artificial communication: the interaction with an artificial partner corresponds only partially to the traditional ideas and fashion of communication or online interaction between human participants. Drawing from the descriptions of communicative competence and online interaction developed by second-language acquisition studies, this concise paper aims to reflect on the characteristics of teachers' competence in artificial communication by outlining an action research plan that aims to include teachers in the effort to describe such competence. Considering that the interaction with GenAI tools will be part of students' and teachers' AI literacy, it seems necessary to reflect with teachers and understand how interaction changes when one of the participants in the communication process is an algorithm. By including competence in artificial communication in AI literacy, it will be possible to identify challenges and opportunities related to GenAI for teaching and learning in adult education and to promote teachers' good use of AI in education, enabling all human users to engage critically with AI algorithms by understanding how they generate content and to what extent this content can be included, used, or modified for educational purposes.

Keywords: Artificial Intelligence Literacy; Teachers' Professional Development; Artificial Communication; Adult Education and Learning; Superdiversity

References

- Balboni, P. E. (2015). *Le sfide di Babele: Insegnare le lingue nelle società complesse* (4. ed). UTET università.
- Balboni, P. E. (2018). *Fare educazione linguistica: Insegnare italiano, lingue straniere e lingue classiche* (1a edizione). UTET Universitaria.
- Cain, W. (2024). Prompting Change: Exploring Prompt Engineering in Large Language Model AI and Its Potential to Transform Education. *TechTrends*, 68(1), 47–57. <https://doi.org/10.1007/s11528-023-00896-0>
- Council of Europe. (2020). *Common European framework of reference for languages: Learning, teaching, assessment ; companion volume*. Council of Europe Publishing.
- Esposito, E. (2022). *Artificial communication: How algorithms produce social intelligence*. The MIT Press.
- Miao, F., & Cukurova, M. (2024). *AI competency framework for teachers*. UNESCO. <https://doi.org/10.54675/ZITE2084>
- Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research*. UNESCO. <https://doi.org/10.54675/EWZM9535>
- North, B., & Piccardo, E. (n.d.). *Developing illustrative descriptors of aspects of mediation for the CEFR*. Education Policy Division, Council of Europe.
- Pasta, S., & Rivoltella, P. C. (Eds.). (2022). *Crescere onlife: L'educazione civica digitale progettata da 74 insegnanti-autori*. Schol  .
- Pasta, S., & Zoletto, D. (2023). Postdigital Intercultures. Interculture Postdigitali. *Pasta, S., Zoletto, D. (Eds.), Postdigital Intercultures. Interculture Postdigitali, SCHOL  *, 2(LXI).
- Redecker, C., & Punie, Y. (2017). *European framework for the digital competence of educators: DigCompEdu*. Publications Office. <https://data.europa.eu/doi/10.2760/159770>
- Rivoltella, P. C. (2017). *L'agire didattico: Manuale per l'insegnante*. La Scuola Editrice.
- Tuomi, I., Cachia, R., & Villar-Onrubia, D. (2023). *On the futures of technology in education: Emerging trends and policy implications*. Publications Office of the European Union.
- Vaughan, M., & Burnaford, G. (2016). Action research in graduate teacher education: A review of the literature 2000–2015. *Educational Action Research*, 24(2), 280–299. <https://doi.org/10.1080/09650792.2015.1062408>
- Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2, The Digital Competence framework for citizens: With new examples of knowledge, skills and attitudes*. Publications Office. <https://data.europa.eu/doi/10.2760/115376>
- Zamfirescu-Pereira, J. D., Wong, R. Y., Hartmann, B., & Yang, Q. (2023). Why Johnny Can't Prompt: How Non-AI Experts Try (and Fail) to Design LLM Prompts. *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, 1–21. <https://doi.org/10.1145/3544548.3581388>

The Impact of Artificial Intelligence (AI) on Teaching Public Relations (PR)

Adina Palea¹, Cella Buciuman²

¹Politehnica University Timisoara, Romania: adina.palea@upt.ro

²Politehnica University Timisoara, Romania: cella.buciuman@upt.ro

Correspondence: Adina Palea: adina.palea@upt.ro

Artificial Intelligence (AI) is revolutionizing various industries, and the field of Public Relations (PR) is no exception. From automating routine tasks to analyzing vast amounts of data, AI is transforming how PR professionals operate. However, the impact of AI extends beyond the professional sphere—it is also reshaping how PR is taught in educational institutions. As AI becomes an essential part of the PR industry, educators must adapt their teaching methods and curricula to prepare students for an evolving job market. This article explores the significant ways AI is influencing PR education and the challenges and opportunities it presents for educators and students.

The Growing Role of AI in Public Relations

AI's integration into PR is reshaping how professionals handle tasks such as media monitoring, content creation, and data analysis. Traditionally, PR professionals relied on manual processes to track media mentions, analyze public sentiment, and generate reports. Today, AI-powered tools can automate these tasks, providing real-time insights that enable PR practitioners to make more informed decisions.

For example, AI-driven platforms like Meltwater and Cision use machine learning algorithms to monitor media coverage, track social media conversations, and analyze trends in public sentiment. These tools can help PR professionals identify potential issues before they escalate, allowing them to proactively manage a company's reputation. Additionally, AI can assist in content creation by generating press releases, social media posts, and blog articles based on predefined templates and key messages. While human oversight is still necessary, AI can significantly reduce the time spent on routine tasks, enabling PR professionals to focus on more strategic initiatives.

As AI continues to shape the PR landscape, it is essential for students to develop a strong understanding of these technologies. However, many PR programs have yet to fully integrate AI into their curricula, which raises questions about how educators can better prepare students for a future in which AI will play a central role.

Challenges in Teaching PR in an AI-Driven World

One of the primary challenges in teaching PR in the age of AI is the need to bridge the gap between traditional PR practices and the new skills required to navigate an AI-driven industry. Many educators come from a background that emphasizes human-centric communication strategies, media relations, and writing skills. While these competencies remain crucial, they must now be complemented by an understanding of AI tools, data analysis, and digital literacy.

Curriculum Development: Integrating AI into PR education requires significant adjustments to the curriculum. Educators must decide how to incorporate AI-related content, such as teaching students how to use AI-powered tools for media monitoring and sentiment analysis. Additionally, students need to develop an understanding of how AI works, including its limitations and ethical considerations. For example, AI algorithms can sometimes perpetuate biases, and students must be taught to critically assess the outputs generated by AI tools.

Balancing Technology with Human Skills: While AI can automate many tasks, it cannot replace the human elements of PR, such as relationship-building, empathy, and creativity. Educators face the challenge of teaching students how

to strike a balance between leveraging AI to improve efficiency and maintaining the interpersonal skills that are fundamental to successful PR campaigns. For example, while AI can help analyze data and predict trends, it is still up to human professionals to craft compelling stories and build meaningful relationships with stakeholders.

Keeping Pace with Rapid Technological Advancements: Another challenge is the speed at which AI technology evolves. By the time educators design and implement a curriculum, new AI tools and techniques may have already emerged, making some of the content outdated. To address this issue, PR educators must adopt a flexible and adaptive approach to teaching, ensuring that students are equipped with the foundational knowledge and critical thinking skills needed to navigate a rapidly changing industry. Continuous professional development for educators is also crucial, as they must stay informed about the latest advancements in AI and how they can be applied to PR.

Opportunities for Enhancing PR Education

While AI presents challenges for PR educators, it also offers exciting opportunities to enhance teaching and learning experiences. By incorporating AI into PR education, students can gain a competitive edge in the job market and be better prepared to succeed in a digital-first industry.

Hands-On Learning with AI Tools: One of the most effective ways to teach AI in PR is through hands-on experience. Educators can introduce students to AI-powered platforms used in the industry, such as social media listening tools, automated content generators, and data analytics software. By working with these tools, students can gain practical experience and learn how to apply AI in real-world scenarios. For instance, students could use AI to conduct media analysis for a mock PR campaign, track sentiment around a brand, or identify emerging trends in a specific industry.

Data-Driven Decision-Making: AI allows PR professionals to make more data-driven decisions, and this skill should be emphasized in PR education. Students should learn how to interpret data generated by AI tools and use it to inform their strategies. This includes understanding metrics such as engagement rates, sentiment scores, and media reach, as well as using data to measure the effectiveness of PR campaigns. By teaching students how to analyze and act on data, educators can help them develop a more strategic approach to PR.

Ethical Considerations of AI: As AI becomes more prevalent in PR, ethical considerations must also be addressed in the classroom. AI technologies can sometimes raise concerns about privacy, bias, and transparency. For example, AI algorithms may amplify existing biases if they are trained on biased data, leading to skewed results. PR students need to be aware of these potential pitfalls and learn how to use AI responsibly. Educators should emphasize the importance of transparency, accountability, and ethical decision-making when using AI in PR.

Preparing for Future Roles: As AI continues to evolve, it will create new roles and opportunities within the PR industry. For example, roles such as "AI PR Strategist" or "Data-Driven PR Analyst" may become more common as companies seek professionals who can integrate AI into their communications strategies. By incorporating AI into the curriculum, educators can help students develop the skills needed to fill these emerging roles and stay competitive in the job market.

Recommendations for PR Educators

To successfully integrate AI into PR education, educators should consider incorporating AI-related topics into existing PR courses. This could include lessons on how AI is used in media monitoring, content creation, and audience targeting. Additionally, courses on data literacy and digital analytics should be prioritized.

Partnering with PR agencies and tech companies to give students access to the latest AI tools and technologies should be considered. Guest lectures from industry professionals can also provide valuable insights into how AI is transforming the PR landscape.

Moreover, educators should invest in their own professional development by attending workshops, conferences, and training sessions focused on AI in communication. This will help them stay up-to-date on the latest trends and ensure they are equipped to teach AI effectively.

Making ethics a central part of the AI conversation in PR education and encourage students to think critically about the ethical implications of using AI and how they can ensure fairness, transparency, and accountability in their work is crucial.

Conclusion

AI is transforming the field of Public Relations, and PR education must evolve to keep pace with these changes. By integrating AI into the curriculum, providing hands-on learning opportunities, and addressing ethical considerations, educators can better prepare students for the future of the PR industry. While the integration of AI presents challenges, it also offers opportunities to enhance the learning experience and equip students with the skills they need to succeed in a rapidly changing field. As AI continues to shape PR, educators play a crucial role in ensuring that the next generation of PR professionals is ready to navigate this new landscape.

References

Amos, D. 2016. What does artificial intelligence mean for public relations? [Blog post]

Berryman, Nicholas. 2024. AI in Public Relations: the Benefits and Risks of Change, Prowly. [Blog post]

Fifi Ee En Liew, Artificial Intelligence Disruption in Public Relations: A Blessing or A Challenge? 2021, Journal of Digital Marketing and Communication.

Galloway, C and Swiatek, L. 2018. Public relations and artificial intelligence: It's not (just) about robots, Public relations review.

Panda, Geetanjali, Ashwani Kumar Upadhyay, 2019, Artificial Intelligence: A Strategic Disruption in Public Relations, Journal of Creative Communications.

Virtual Museums on Language Learning: A Preliminary Study with Italian High School Students

Maria Tolaini¹

¹ Languages and Cultures Department, University of Genova, Italy; maria.tolaini@edu.unige.it

Correspondence: Maria Tolaini: maria.tolaini@edu.unige.it

Abstract:

Virtual museums, considered as "a digital entity that draws on the characteristics of a museum, in order to complement, enhance, or augment [it]..." (ViMM, 2018), have proven over the years to enhance learning by facilitating skills development, such as factual recall (Cronin-Golomb, et al., 2024) and problem-based thinking (Hu, et al., 2023), as well as knowledge acquisition in areas like art (Tsita, et al., 2023), science (Bilen & Zor, 2024) and history (Paneva-Marino, 2020). Similarly, there has been an interest in exploring the potential of virtual museums in language learning (Ho et al., 2011; Zheng et al., 2017). This paper seeks to contribute to this field by presenting preliminary findings that describe students' perceptions of using virtual museums to reinforce language skills. The study presented here is a segment of a larger semi-experimental research project involving 131 high school students from Italy, with an average age of 17 years. The primary objective of the study was to examine the integration of museum contexts and digital learning tools in foreign language education. For this purpose, students were divided into four groups. The first group served as the control group, attending regular school classes without participating in any experimental activities. The second group attended four school workshops. These students read a digital resource in English, that included particular grammar focus, about an Italian ethno-anthropological museum. They then recreated in groups a room from the museum using a virtual web application, wrote a text in English describing their creation using the specified grammar rules, and finally presented their virtual museum to the class in English. The third group participated in four guided tours at the museum, all conducted in English and completed English grammar exercises on-site. They then participated in the same workshops as the second group, except they did not read the digital resource. The fourth group engaged in the same activities as the third group, with the added element of utilizing digital tools during their museum visit. This paper will discuss how the three groups that created virtual museums perceived the impact of these tools on their language learning. Data were collected through a questionnaire comprising multiple-choice questions and open-ended questions. Preliminary descriptive statistics indicate that all three groups perceived the use of virtual museums in language learning positively. While the overall perceptions among the three groups were similar, the fourth group demonstrated a slightly more favorable attitude toward the integration of these digital tools.

Keywords: virtual museum; language learning; semi-experimental research; museum learning; virtual reality

References

- Bilen, Ş., & Zor, E. (2024). Examination of the Effect of Virtual Reality-Based Virtual Museum Design on Student Achievement in Science Education. *Necmettin Erbakan Üniversitesi Ereğli Eğitim Fakültesi Dergisi*, 6(1), 252-264

- Cronin-Golomb, L. M., Pejic, J., Miller-Goldwater, H. E., Bauer, P. J. (2024). Factors affecting children's direct learning and productive memory processes in the context of virtual museums, *Cognitive Development*, 2024 Jul-Sep; 71 doi: 10.1016/j.cogdev.2024.101454
- Ho, C. M. L., Nelson, M. E., & Müller-Wittig, W. (2011). Design and implementation of a student-generated virtual museum in a language curriculum to enhance collaborative multimodal meaning-making. *Computers and Education*, 57(1), 1083–1097. <https://doi.org/10.1016/j.compedu.2010.12.003>
- Hu, Y., Hwang, G. J. (2023). Promoting students' higher order thinking in virtual museum contexts: A self-adapted mobile concept mapping-based problem posing approach. *Education Information Technology* 29, 2741–2765 <https://doi.org/10.1007/s10639-023-11930-2>
- Paneva-Marinova, D., Zlatkov, L., Pavlova, L. (2020). Beneficial Learning Observation of a Virtual Museum for Ancient History. *Digital Presentation and Preservation of Cultural and Scientific Heritage*, 10, 129-138
- Tsita, C.; Satratzemi, M.; Pedefoudas, A.; Georgiadis, C.; Zampeti, M.; apavergou, E.; Tsiara, S.; Sismanidou, E.; Kyriakidis, P.; Kehagias, D.; et al. (2023). A Virtual Reality Museum to Reinforce the Interpretation of Contemporary Art and Increase the Educational Value of User Experience. *Heritage* 2023, 6, 4134–4172. <https://doi.org/10.3390/heritage6050218>
- Virtual Multimodal Museum. (2018). "The ViMM Definition of a Virtual Museum." Posted by Christiana Polycarpou, January 10, 2018. <https://www.vi-mm.eu/2018/01/10/the-vimm-definition-of-a-virtual-museum/>
- Zheng, D., Schmidt, M., Hu, Y., Liu, M., & Hsu, J. (2017). Eco-dialogical learning and translanguaging in open-ended 3D virtual learning environments: Where place, time, and objects matter. *Australasian Journal of Educational Technology*, 33(5), 107–122. <https://doi.org/10.14742/ajet.2909>

360° Virtual Tours for Participatory, Inclusive and Personalised Museum Experiences

Eliana Maria Torre¹

¹Department of Classics, Sapienza University of Rome, Italy; elianamaria.torre@uniroma1.it

Correspondence: Eliana Maria Torre: elianamaria.torre@uniroma1.it

Abstract:

Virtual Reality (VR) can foster inclusive education by providing immersive and interactive learning experiences for all. Through VR technology, people can engage with virtual environments that mirror real-world experiences, offering inclusive learning opportunities (Alvarado *et al.*, 2023; Chițu *et al.*, 2023) irrespective of disabilities or location. VR can deliver personalised learning experiences (Li *et al.*, 2023) to accommodate various learning styles and individual requirements. Compared to traditional media, VR is particularly effective in promoting learners' emotional and cognitive engagement (Xin, 2022) by evoking emotional responses and enhancing cognitive engagement, resulting in improved learning outcomes and retention. Additionally, VR experiences can foster a sense of presence and immersion (Baños *et al.*, 2004; Gorini *et al.*, 2011), leading to users' heightened emotional and cognitive responses. 360° virtual tours are a VR application increasingly used to enhance archaeological heritage in museums (Barrile *et al.*, 2023) and on sites (Argyriou *et al.*, 2020).

360° virtual tours are being developed at the National Roman Museum (MNR) in Rome, Italy, as part of an ongoing PhD project that aims to enhance the cultural accessibility of museum messages. The 360° virtual tours will be enriched with Lambert's (2013) digital storytelling (DST) approach, which facilitates the sharing of experiences and knowledge and promotes embodiment, a form of knowledge intrinsic to telling stories with emotional meaning (Liguori *et al.*, 2019). Following Bonacini's classification (2020), the final DST products will be participatory, immersive, virtual, and interactive. Participants involved in the research's experimental phase will co-create stories that will be integrated into the 360° virtual tours of the museum's venues. Users will be able to navigate the virtual environment, select text-based narrative content that is available through immersive reading features, interact with 3D virtual replicas of exhibits, and control music. It is fundamental to incorporate all these elements because combining visuals and written text enhances understanding and memorisation (Schnotz, 2002). Additionally, providing users with various communication channels, including video, text, and audio, can help lower barriers to inclusion (Cabrera Blázquez *et al.*, 2023). This allows individuals, especially those with disabilities that affect their communication ability, to choose the most suitable communication channel(s) based on their specific needs.

360° images were captured using a 360 ONE X2 camera and the associated app Insta360. Polycam was used to create 3D virtual replicas of artefacts. After editing the 360° images and 3D virtual replicas, CoSpaces Edu was employed to build the 360° virtual tours. CoSpaces Edu was selected as the most suitable option for the task due to its user-friendly interface. It does not necessitate programming skills, allowing the MNR professionals, who lack a background in computer science, to edit the 360° virtual tours, generate new content or design new museum paths if needed.

This phase of the doctoral research is linked to the second expected outcome of the project, i.e., creating co-participatory, inclusive, personalised DST pathways and delivering them on the MNR's institutional channels to engage the community, including those who are unable to visit the museum in person for varied reasons.

Keywords: Virtual Reality; 360° Virtual Tour; Digital Storytelling; 3D Virtual Replicas

References

- Argyriou, L., Economou, D. & Bouki, V. (2020). Design methodology for 360° immersive video applications: the case study of a cultural heritage virtual tour. *Pers Ubiquit Comput* 24, 843–859. <https://doi.org/10.1007/s00779-020-01373-8>
- Alvarado, Y., Guerrero, R., & Serón, F. (2023). Inclusive learning through immersive virtual reality and semantic embodied conversational agent: a case study in children with autism. *Journal of Computer Science and Technology*, 23(2), e09. <https://doi.org/10.24215/16666038.23.e09>
- Baños, R. M., Botella, C., Alcañiz, M., Liaño, V., Guerrero, B., & Rey, B. (2004). Immersion and emotion: their impact on the sense of presence. *Cyberpsychology & behavior*, 7(6), 734–741. <https://doi.org/10.1089/cpb.2004.7.734>
- Barrile, V., Bernardo, E., Fotia, A., & Bilotta, G. (2022). A combined study of cultural heritage in archaeological museums: 3D survey and mixed reality. *Heritage*, 5(3), 1330-1349.
- Bonacini, E. (2020). *I musei e le forme dello storytelling digitale*. Aracne.
- Cabrera Blázquez F.J., Cappello M., Larcourt A., Munch E., Radel-Cormann J., Valais S. (2023). *Accessibility of audiovisual content for persons with disabilities*. IRIS Plus, European Audiovisual Observatory.
- Chițu, I. B., Tecău, A. S., Constantin, C. P., Tescașiu, B., Brătucu, T. O., Brătucu, G., & Purcaru, I. M. (2023). Exploring the Opportunity to Use Virtual Reality for the Education of Children with Disabilities. *Children (Basel, Switzerland)*, 10(3), 436. <https://doi.org/10.3390/children10030436>
- Gorini, A., Capideville, C. S., De Leo, G., Mantovani, F., & Riva, G. (2011). The role of immersion and narrative in mediated presence: the virtual hospital experience. *Cyberpsychology, Behavior, and Social Networking*, 14(3), 99–105. <https://doi.org/10.1089/cyber.2010.0100>
- Lambert, J. (2013). *Digital Storytelling: Capturing lives, creating communities*, 4th edition. Routledge.
- Liguori, A., & Bakewell, L. (2019). Digital storytelling in cultural and heritage education: A pilot study as part of the 'DICHE' project. In A. Poce (Ed.), *Studi avanzati di educazione museale. Lezioni* (pp. 63–78). Edizioni Scientifiche Italiane.
- Li, K. C., & Wong, B. T. M. (2023). Features and trends of personalised learning: A review of journal publications from 2001 to 2018. *Personalized Learning*, 4–17.
- Schnotz, W. (2002). Towards an Integrated View of Learning From Text and Visual Displays. *Educational Psychology Review*, 14(1), 101–120.
- Xin, Y. (2022). Influence of learning engagement on learning effect under a virtual reality (VR) environment. *International Journal of Emerging Technologies in Learning (IJET)*, 17(5), 226–237.

Scenarios for Digital Credentials for Europe (EBSI-DC4EU) – the Romanian Input

Diana Andone¹, Carmen Holotescu², Andrei Ternauciuc³, Victor Holotescu⁴, Radu Vasiiu⁵

^{1,3,4,5} Politehnica University Timisoara, Romania: diana.andone@upt.ro; andrei.ternauciuc@upt.ro; victor.holotescu@gmail.com; radu.vasiiu@upt.ro

² Ioan Slavici University of Timisoara, Romania: carmenholotescu@gmail.com

Correspondence: Diana Andone: diana.andone@upt.ro

Abstract:

This paper poster includes the requirements, scenarios, and interoperability modelling for the Romanian input in the “Digital Credentials for Europe” (EBSI-DC4EU) project’s consortium under the EU’s Digital Europe Programme. These modelling activities were part of the Educational credentials and professional qualifications, titles and licenses activities performed by Politehnica University of Timisoara, University Ioan Slavici.

Keywords: Educational credentials

Summary

The three pillars of a European digital identity and creates the basis of the foundation of the new European digital identity are part of the vision of our actions in the “Digital Credentials for Europe” (EBSI-DC4EU) project. This paper poster includes the requirements, scenarios, and interoperability modelling for the Romanian input in the “Digital Credentials for Europe” (EBSI-DC4EU) project’s consortium under the EU’s Digital Europe Programme. These modelling activities were part of the Educational credentials and professional qualifications, titles and licenses activities performed by Politehnica University of Timisoara, University Ioan Slavici. We planned scenarios for:

Strengthen the national eIDs system under eIDAS: Improve effectiveness and efficiency of mutual recognition of national eID schemes and make their notification mandatory for Member States

User Controlled Digital Identity – Personal Wallet: European secure “digital wallet” trusted app on mobile/smartphone allowing the storage and use, under the sole control of the user, of identity data based on common standards

Private sector as Provider of identity-linked services: Private providers to offer digital identity- linked services by following the (improved) rules applicable for qualified trust services (anchored in national eIDs).

The Blueprint provides a roadmap for the successful implementation of the large-scale pilots in education and professional qualifications due to the integration of digital credentials into the European education and professional qualifications landscape.

This user journey describes the process for graduates of Politehnica University of Timisoara, Romania (UPT) to request and obtain Verifiable Credentials (VCs) on EBSI for their Student ID and Bachelor’s Diploma. Initially, the student authenticates using their UPT account. Following authentication, the student is redirected to the WaltID

Micro-Education and Microcredentials

personal wallet, where he or she can request the issuance of the Student ID and Bachelor's Diploma. These credentials are then stored within the wallet.

The Verifiable Credentials can be accessed and copied from the wallet as needed. Additionally, the Europass Diploma JSON is available for verification, ensuring the credentials' authenticity and recognition across Europe.

In the scenario, there are two flows:

- Verifiable Credential flow, where a student requests issuance of a VC from a Trusted Issuer
- Verifiable presentation exchange flow, where the student presents VC to Trusted Verifiers.

A Decentralized ID (DID) and Verifiable Identity Attributes (Student ID) were issued by Politehnica University of Timisoara (acting as a Trusted Issuer) together with a Europass diploma valid on EBSI, for the Bachelor's Diploma. The Student ID and the Bachelor's Diploma are modelled as Verifiable Attestation, a W3C-compliant Verifiable Credential.

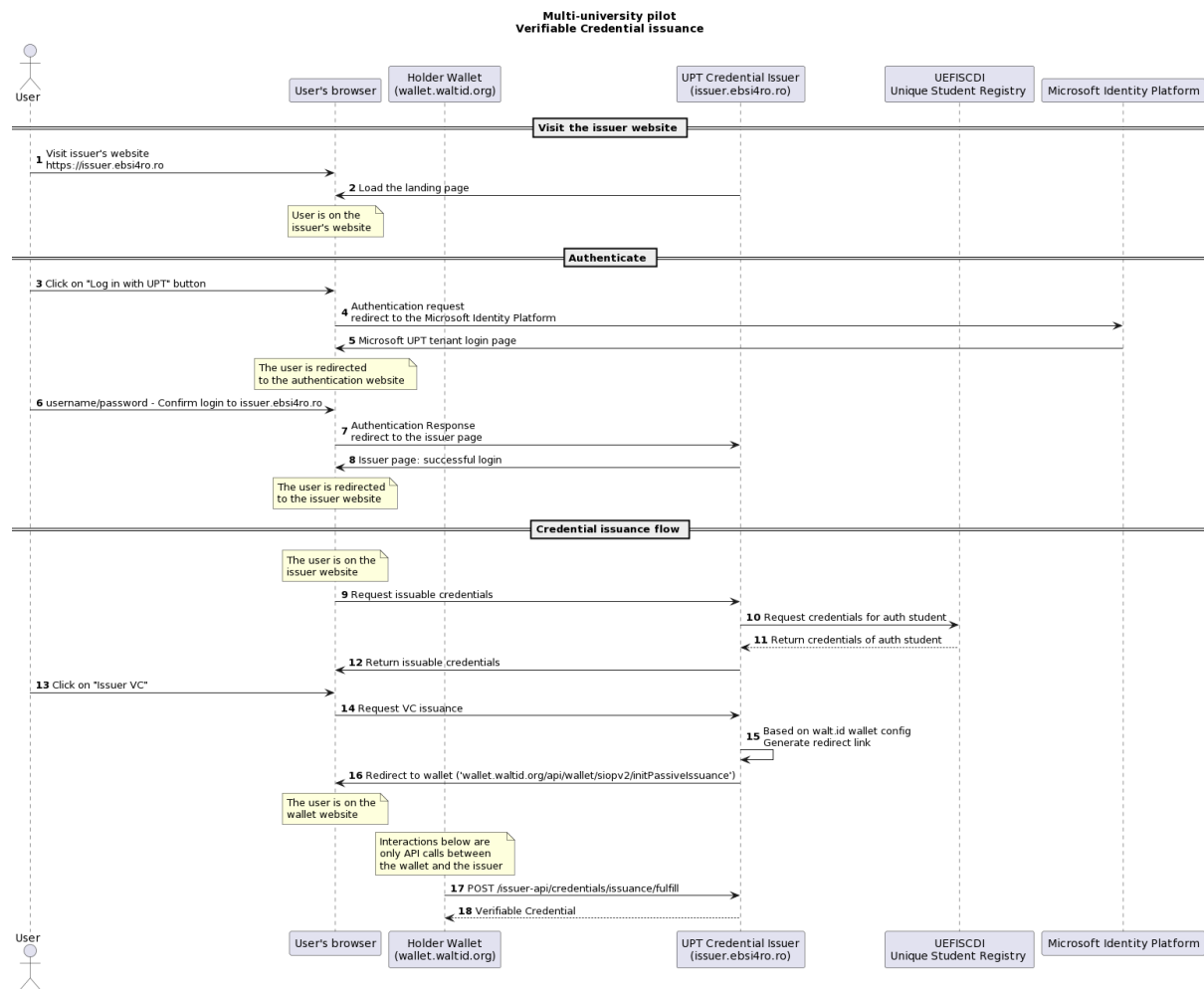
The issuance service portal for EBSI VCs is implemented at <https://issuer.ebsi4ro.ro>.

Main Key Steps

- The journey begins with the graduate authenticating through the issuance service portal using their UPT account.
- The student is redirected to the WaltID personal wallet.
- The student requests the issuance of the Student ID.
- The student requests the issuance of the Bachelor's Diploma.
- The Student ID and Bachelor's Diploma are stored in the personal wallet as VCs.
- The VCs can be presented and verified by Trusted Verifiers.

Micro-Education and Microcredentials

Flow



References

- Carmen Holotescu, Victor Holotescu, Tudor Holotescu. (July, 2018). Understanding Blockchain Technology and how to get involved. ResearchReport. <https://doi.org/10.13140/RG.2.2.25185.33126/1> .
- HOLOTESCU, V., VASIU, R., HOLOTESCU, C., Ternauciuc, A., NICOLĂESCU, M. D., & CIORANU, C. (2021). AN EVALUATION OF BLOCKCHAIN-BASED REPUTATION SYSTEMS. CASE STUDY: THE EERIS RESEARCH NETWORK. eLearning & Software for Education, 3.Bannan-Ritland, B. (2003). The role of design in research: The integrative learning design framework. *Educational Researcher*, 3 DOI 10.12753/2066-026X-21-201
- HOLOTESCU, C., GROSSECK, G., ANDONE, D., GUNESCH, L., CONSTANDACHE, L., NEDELICU, V. D., ... & DUMBRĂVEANU, R. The 16th International Scientific Conference eLearning and Software for Education Bucharest, April 23-24, 2020.

Institutional Support for Professors as a Critical Quality Factor in Online Higher Education

Antoniél Borges Gonçalves¹, Neuza Pedro²

¹Universidade of Lisbon, Portugal, antoniél.goncalves@edu.ulisboa.pt

²University of Lisbon, Portugal, nspedro@ie.ulisboa.pt

Correspondence: Antoniél Borges Gonçalves: antoniél.goncalves@edu.ulisboa.pt

Abstract

Higher education (HE) has undergone profound transformations due to the advancement of digital technologies and the increasing demand for more flexible teaching methodologies. This phenomenon is particularly evident in the global expansion of online education, including within the European Higher Education Area (EHEA), driven by technological advancements and the expansion of digital platforms. The implementation of online courses in the EHEA requires substantial modifications to traditional teaching processes, alongside the provision of diverse forms of institutional support for students as well as teaching staff. At the center of these changes are professors, who have been required to adapt their pedagogical practices, whether by acquiring new technological skills or by creating engaging learning environments. However, the existing conditions of institutional support for professors must be critically analyzed to ensure the quality and effectiveness of such courses and programmes (Kumar et al., 2022). The purpose of this article is to present the initial findings of ongoing doctoral research in education, with a specialization in Information and Communication Technologies (ICT) in Education, taking place at the University of Lisbon, Portugal. The study aims to assess the levels of institutional support provided to faculty teaching in undergraduate programmes delivered partially or fully online in HEIs within the EHEA. Specific objectives include i) identifying the dimensions of institutional support offered, ii) analyzing the impact of sociodemographic, academic, and professional variables on professors' perceptions of the received support, and iii) investigating how the organizational characteristics of HEIs influence the availability and quality of institutional support. A pre-experimental, single-case methodology is adopted, and the data collection process is built upon the online application of an adapted version of the Online Instructor Support Survey (OISS), tailored from the North American context to the European HE setting (Borsa et al., 2012; Gonçalves & Pedro, 2023). It is anticipated that this analysis of the support conditions offered to professors will reveal significant disparities between HEIs. Understanding these conditions will contribute to the academic literature by providing empirical data on the institutional support for online education professors, identifying gaps and areas for improvement, and allowing for comparisons with practices observed in other regions of the world. The results of this research are expected to bring significant results to the improvement of organizational practices related to institutional support, ensuring better quality for online education. The research is currently in the data collection phase (and its dissemination was supported by EDEN through its latest newsletter). Preliminary findings from a systematic literature review, covering scientific publications over the past 20 years (2002–2022) on the main topic, indicate that institutional support for teaching staff is a critical, and multidimensional factor for the quality of online programmes. A conceptual framework encompassing the seven key areas found will be shared.

Keywords: Online Education, Online Teaching, Higher Education, Quality Assurance in Online Education, Institutional Support

References

Borsa, J. C., Damásio, B. F., & Bandeira, D. R. (2012). Cross-cultural adaptation and validation of psychological instruments: some considerations

Paidéia, 22(53), 423-432. <https://doi.org/10.1590/S0103-863X2012000300014> Available in: <https://www.scielo.br/j/paideia/a/cbRxjMqmbZddKpwywVM8mJv/?lang=en>

Gonçalves, A. B., Pedro, N. (2023). Adaptation and content validation of the scale for the use of digital technologies in school management.

Research, Society and Development, [S. l.], v. 12, n. 4, p. e12012441043, 2023. DOI: 10.33448/rsd-v12i4.41043. Available in: <https://rsdjournal.org/index.php/rsd/article/view/41043>

Kumar, S., Ritzhaupt, A., Pedro, N. S. (2022). Development and validation of the Online Instructor Support Survey (OISS). Online Learning, 26(1), 221-244. DOI: 10.24059/olj.v26i1.2622 Available in: <https://olj.onlinelearningconsortium.org/index.php/olj/article/view/2622>

The research is supported by National Funds through the FCT - Portuguese Foundation for Science and Technology, I.P. as part of a doctoral scholarship in education. 2023.02766.BD, and UIDEF Unit for Research and Development in Education and Training, UIDB/ 04107 2020 <https://doi.org/10.54499/041072020>.

The Development and Use of an English Oral Presentation Application for Higher Education Students in Taiwan

Gi-Zen Liu¹, Neil E. Barrett², Po-Han Wu³, Yong-Liang Tsai⁴

¹National Cheng Kung University, Taiwan; gizenliu@gmail.com

²Southern Taiwan University of Science and Technology, Taiwan; baoneer@gmail.com

³National University of Tainan, Taiwan; pohanwu.academic@gmail.com

⁴National University of Tainan, Taiwan; w5555k3333@gmail.com

Correspondence: Gi-Zen Liu: gizenliu@gmail.com

Abstract:

In order to help EFL students learn and develop academic oral presentation skills, this study developed the English Oral Presentation App (EOPA3) which combined oral presentation training with generative AI. We adopted a Design-Based Research (DBR) approach to the app design and based the oral presentation content on previous iterations of the EOPA app. The aim of the app was a learning assistant for academic oral presentations and a toolbox of oral presentation skills customized for EFL learners. We trained a chat GPT plug-in to provide bilingual answers to student questions regarding the different aspects of academic oral presentations with key steps, authentic examples, metalinguistic information, and follow-up, reflective questions that probed the students' understanding. The app featured prompts that students could use, and students were guided to expand and develop the prompts through a Chat GPT interface embedded in the app.

A group of 20 undergraduate students were trained on how to use the app in face-to-face classroom sessions and asked to work in small groups to develop an oral presentation on a topic of their choice. Data was collected from classroom oral presentations, the UTAUT technology acceptance questionnaire, and focused group interviews. Results indicated that students performed well in oral proficiency, language accuracy, slide design, and content knowledge. However, most groups had a lower score for organization, conclusions, and non-verbal behavior. An analysis of presentation features found correlations between organization and conclusion features with presentation rubric scores. For example, presentations with a low number of linking phrases, and phrases to direct the audience's attention to the slide content had corresponding low rubric scores. Questionnaire results revealed that social influence, performance, and effort expectancy were moderate to strong factors influencing the acceptance of the app, but facilitating conditions had the lowest influence. The interviews revealed themes such as perceived improvements in presentation skills and language and a perceived decrease in public speaking anxiety. For example, the students noted improvements in logical organization, transitions, fluency, and more accurate and precise language use. However, technical problems, including a slow response time and interface design issues caused learning difficulties. These difficulties may have contributed to the lower mean score for the facilitating conditions factor in the questionnaire results. Students also provided suggestions on adding features to EOPA 3 to improve the learning experience.

POSTER ABSTRACTS

Does Adaptive Learning Courseware Use Improve Student Outcomes? An Exploration of Exam Question Difficulty

Karen Gebhardt¹, Christopher D. Blake²

¹University of Colorado Boulder, Economics, Boulder, CO 80309; karen.gebhardt@colorado.edu; ORCID: 0000-0001-7810-4000

²Emory University, Oxford College; 801 E Emory St., Oxford, GA 30054; christopher.blake@emory.edu; ORCID: 0000-0001-6438-1090

Correspondence: Karen Gebhardt: karen.gebhardt@colorado.edu

Abstract:

Adaptive learning assignments were implemented in a Principles of Microeconomics course at a medium-sized state university in the United States. Descriptive statistics are used to explore if completion of adaptive learning assignments increased student success on exam questions. This study draws from student data ($n = 581$), which includes adaptive learning assignment completion, detailed exam, and final grade data. Findings include evidence that adaptive courseware use benefits all students and benefits were stronger for foundational (easy) exam questions as compared to medium or difficult questions.

Keywords: technology-enhanced learning, student success, adaptive learning courseware

Summary

Adaptive learning courseware is an educational technology that requires students to master the same learning objectives but, for each student, the courseware determines the order and timing of content based on how that student interacts with the courseware, thus enabling an individualized learning path for each student. This research examines if the integration of adaptive learning courseware assignments generally improves student outcomes, while having the strongest effect on foundational course content. This research question reflects the structure of the use of the particular adaptive courseware where the adaptive assignments explicitly targeted lower-level Bloom's taxonomy questions, thus potentially more strongly positively impacting corresponding easy exam questions. This study follows and builds upon the methodology and findings of Gebhardt (2018) through an expanded data set and uses descriptive statistics to explore the research question.

Table 1: Mean Question Correctness by Adaptive Learning Assignment Completion Status and Exam Question Difficulty

Question Difficulty	Non-Completers			Completers			Gain (Completers – Non-Completers)
	n (questions answered)	Mean Correctness	SD	n (questions answered)	Mean Correctness	SD	
Easy	3,639	0.72	0.45	15,721	0.78	0.42	0.06
Moderate	3,049	0.68	0.47	13,972	0.72	0.45	0.04
Difficult	2,671	0.62	0.49	11,650	0.67	0.47	0.05

Table 1 shows the percentage correctness for exam questions between non-completers and completers of the adaptive learning assignment. Comparing between the completer and the non-completer status, the difference in the means is larger for the easy questions (6%) as compared to the moderate (4%) or difficult questions (5%). These

data show that the completers answered more exam questions correctly across all question difficulties and adaptive assignment completion was disproportionately associated with improved correctness for the easy questions. These findings provide important evidence in the context of ongoing discussions about how best integrate this educational technology into higher education courses to improve student success.

References

Gebhardt, K. (2018). Adaptive learning courseware as a tool to build foundational content mastery: Evidence from principles of microeconomics. *Current Issues in Emerging eLearning*, 5(1), 2.

Design and Validation of Museum E-learning Experiences to Promote Teenagers' Wellbeing

Rachele Del Guerra¹

¹ *Department of History, Heritage, Education and Society, University of Roma Tor Vergata, Italy*

Correspondence: Rachele Del Guerra: rachele.delguerra@unimore.it

Abstract:

This study explores the habits and motivations of adolescents in engaging with cultural heritage, focusing on digital platforms. The internet offers new opportunities for promoting mental health through online engagement with arts and culture. While evidence suggests that digital cultural experiences can alleviate negative emotional states in young people ^{3,4}, no research has evaluated their effectiveness in the Italian context with adolescents. This study fills that gap by examining the potential of e-learning pathways related to heritage enjoyment to foster adolescents' wellbeing.

A sample of 400 adolescents aged 14 to 19 will complete a digitalized self-report survey to assess their demographics, attitudes toward museum visits, emotional states, and cognitive skills. The survey evaluates factors such as frequency of museum visits, the Positive and Negative Affect Scale ⁶, the Kessler Psychological Distress Scale ², and 4C skills ¹.

Following the survey, an e-learning museum experience will be designed, the Object-Based Learning will be included to promote the enjoyment of cultural heritage and enhance psychological well-being.

A re-test will be conducted, focusing on perceived well-being in relation to web aesthetics, restoration, place attachment, and loyalty ⁵.

The expected results aim to provide a deeper understanding of adolescents' needs and behaviors related to digital cultural experiences and to offer recommendations for improving educational strategies and museum programs tailored to promote well-being.

References

- Poce, A., Re, M. R., & Valente, M. (2022, June). Community Building in Post Pandemic Era: Peer Tutoring in Digital Learning Contexts for Soft and Professional Skills Enhancement. A Post-graduate Experience. In Annual Conference of European Distance and E-Learning Network (pp. 39-52). Cham: Springer International Publishing.
- Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L., ... & Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological medicine*, 32(6), 959-976.
- Syed Sheriff, R. J., Vuorre, M., Riga, E., Przybylski, A. K., Adams, H., Harmer, C. J., & Geddes, J. R. (2023). A co-produced online cultural experience compared to a typical museum website for mental health in people aged 16–24: A proof-of-principle randomised controlled trial. *Australian & New Zealand Journal of Psychiatry*, 57(5), 745–757. <https://doi.org/10.1177/00048674221115648>
- Trupp, M. D., Bignardi, G., Chana, K., Specker, E., & Pelowski, M. (2022). Can a Brief Interaction With Online, Digital Art Improve Wellbeing? A Comparative Study of the Impact of Online Art and Culture Presentations on Mood,

State-Anxiety, Subjective Wellbeing, and Loneliness. *Frontiers in Psychology*, 13, 782033. <https://doi.org/10.3389/fpsyg.2022.782033>

Xia, Y., Deng, Y., Tao, X., Zhang, S., & Wang, C. (2024). Digital art exhibitions and psychological well-being in Chinese Generation Z: An analysis based on the S-O-R framework. *Humanities and Social Sciences Communications*, 11(1), 1–15. <https://doi.org/10.1057/s41599-024-02718-x>

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, 54(6), 1063.

An EBSI-based Initiative for Promoting the Self-sovereign Identity Paradigm in the Education and Social Security Sectors

Andrei Ternauciuc¹, Radu Vasu¹, Diana Andone¹, Victor Holotescu¹, Carmen Holotescu²

¹Politehnica University of Timisoara, Romania, andrei.ternauciuc@upt.ro, radu.vasiu@upt.ro, diana.andone@upt.ro, victor.holotescu@student.upt.ro, carmen.holotescu@upt.ro

²Ioan Slavici University of Timisoara, Romania: carmenholotescu@gmail.com

Correspondence: Andrei Ternauciuc: andrei.ternauciuc@upt.ro

Abstract:

The European Blockchain Services Infrastructure (EBSI) is an initiative launched by the European Union to harness blockchain technology for improving cross-border services within Europe. It aims to provide a secure, decentralized, and transparent platform for various public services across EU member states. EBSI is part of the European Blockchain Partnership (EBP), which brings together EU countries to work collaboratively on the development and deployment of blockchain-based solutions (Tan, 2023).

As part of this initiative, a multi-sided approach tries to probe various scenarios in a multitude of areas where blockchain technology can have the most impact, including social services, education or other areas of everyday life, while keeping in step with the EU goals of ensuring user data security and privacy (Padmasheela, 2023).

The authors of this study, as members of the EBSI-VECTOR project developed under the EBSI umbrella, present their perspective from the Politehnica University of Timisoara on introducing the self-sovereign identity paradigm into the education and social security sectors (<https://www.ebsi-vector.eu/en/>). With 52 partners from 20 countries, the EBSI-VECTOR project aims to transform the digital interactions of European students and workers, streamlining complex verification processes for organizations through decentralization. By consolidating and expanding on the existing European Blockchain Services Infrastructure (EBSI) capabilities, this endeavor adds new functionalities, including decentralized identities for legal entities and credential revocation.

Keywords: Blockchain, EBSI, SSI, cross-border

References

- Padmasheela, K., Hylli O., and Pirkkalainen, H. (2023) How can European blockchain services infrastructure be used for managing educational digital credentials?, The proceedings of the 14th Scandinavian Conference on Information Systems (SCIS). Association for Information Systems.
- Tan, E., Lerouge, E., Du Caju, J., & Du Seuil, D. (2023). Verification of education credentials on European Blockchain Services Infrastructure (EBSI): action research in a cross-border use case between Belgium and Italy. *Big Data and Cognitive Computing*, 7(2), 79.

Politehnica University of Timisoara's Contributions to the EBSI-NE Project

Radu Vasu¹, Andrei Ternauciu², Victor Holotescu³, Carmen Holotescu⁴, Diana Andone⁵

¹²³⁵ Politehnica University Timisoara, Romania: radu.vasiu@upt.ro; andrei.ternauciu@upt.ro; victor.holotescu@gmail.com; diana.andone@upt.ro

⁴ Ioan Slavici University of Timisoara, Romania: carmenholotescu@gmail.com

Correspondence: Radu Vasu: radu.vasiu@upt.ro

Abstract:

This poster highlights Politehnica University of Timisoara's (UPT) central role in the EBSI-NE project, specifically coordinating Training Activities on EBSI (T3.3) and Demystifying Public Seminars (T4.2).

The EBSI-NE consortium aims to enhance the European Blockchain Services Infrastructure (EBSI) by the deployment of EBSI production nodes and the provision of support services to the EBSI network at the European level.

In Task T3.3, UPT coordinates the online workshops organized by the partners to improve technical proficiency in EBSI services. Topics include onboarding, wallet connections, node requirements, setting up pre-production nodes, and utilizing various tools.

In Task T4.2, UPT coordinates the seminars featuring expert speakers to demystify the EBSI network, purpose, and use cases, following the 5W approach.

The seminars are held in national languages and online, engaging local to national stakeholders and culminating in an EU-level event in English.

All presentation materials are shared under Creative Commons licenses. UPT also issues open badges and verifiable credentials to participants, fostering community engagement within the EBSI ecosystem.

Keywords: blockchain, digital education, digital credentials

Summary

This poster highlights Politehnica University of Timisoara's (UPT) central role in the EBSI-NE project, specifically coordinating Training Activities on EBSI (T3.3) and Demystifying Public Seminars (T4.2).

The EBSI-NE consortium aims to enhance the European Blockchain Services Infrastructure (EBSI) by the deployment of EBSI production nodes and the provision of support services to the EBSI network at the European level.

In Task T3.3, UPT coordinates the online workshops organized by the partners to improve technical proficiency in EBSI services. Topics include onboarding, wallet connections, node requirements, setting up pre-production nodes, and utilizing various tools.

In Task T4.2, UPT coordinates the seminars featuring expert speakers to demystify the EBSI network, purpose, and use cases, following the 5W approach.

The seminars are held in national languages and online, engaging local to national stakeholders and culminating in an EU-level event in English.

Educational Technologies

All presentation materials are shared under Creative Commons licenses. UPT also issues open badges and verifiable credentials to participants, fostering community engagement within the EBSI ecosystem.

Generative AI Adoption in Higher Education: Bridging the Gap Between Traditional Models and Emerging Challenges

Ana Lelescu¹

¹Department of Educational Sciences, West University of Timisoara; ana.lelescu@e-uvt.ro

Correspondence: Ana Lelescu: ana.lelescu@e-uvt.ro

Abstract

The rapid emergence of Generative AI in higher education presents unique challenges for technology adoption models. The aim of this poster is to provide a snapshot of research findings related to the applicability of existing theoretical frameworks, highlighting their limitations in addressing novel considerations such as AI literacy, ethics, pedagogical beliefs, and evolving higher institutions' roles in stimulating educators.

Keywords: Generative AI, Higher Education, Technology Adoption, Theoretic Models/Frameworks

Summary

The emergence of Generative AI (GenAI) technologies exemplified by an increasing number of advanced large language models chatbots such as ChatGPT is rapidly transforming the landscape of higher education (Ali et al., [2023](#); Bond et al., [2024](#)). Although the potential of GenAI to augment teaching and assessment practices (Lelescu & Kabiraj, [2024](#)), personalize learning experience (Kaplan-Rakowski & Grotewold, [2023](#)), and streamline administrative tasks is a topic of active research, its adoption and integration into higher education is still in its early stages (Cukurova et al., [2023](#); Ogunleye et al., [2024](#)). However, this field is expected to expand rapidly as individuals and organizations across various professions globally become increasingly familiar with GenAI.

While traditional technology acceptance models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have been instrumental in the adoption of AI in education (Mohsin et al., [2024](#)), they may not fully capture the complexities associated with GenAI in this context. The unique capabilities of GenAI, including its ability to generate original content and engage in human-like interactions, introduce novel considerations around ethics, AI literacy, and the changing role of higher education institutions (Bhaskar & Rana, [2024](#)).

The purpose of this poster is to provide a snapshot of current research done to examine the applicability of existing theoretical adoption frameworks to GenAI in higher education as part of the author's PhD thesis dissertation. The findings are based on recent literature reviews and empirical studies and aim to provide a more comprehensive understanding of facilitating the responsible integration of GenAI in education settings.

References

- Ali, O., Murray, O. Murray, P.A., Momin, M., & Al-Anzi F. S. (2023). The knowledge and innovation challenges of ChatGPT: A scoping review. *Technology in Society*, 75, 102402. <https://doi.org/10.1016/j.techsoc.2023.10242>
- Bhaskar, P., & Rana, S. (2024). The ChatGPT dilemma: Unravelling teachers' perspectives on inhibiting and motivating factors for adoption of ChatGPT. *Journal of Information, Communication and Ethics in Society*, 22(2), 219–239. <https://doi.org/10.1108/JICES-11-2023-0139>

- Bond, M., Khosravi, H., De Laat, M., Bergdahl, N., Negrea, V., Oxley, E., Pham, P., Chong, S. W., & Siemens, G. (2024). A meta systematic review of artificial intelligence in higher education: A call for increased ethics, collaboration, and rigour. *International Journal of Educational Technology in Higher Education*, 21(1), 4. <https://doi.org/10.1186/s41239-023-00436-z>
- Cukurova, M., Miao, X., & Brooker, R. (2023). Adoption of Artificial Intelligence in Schools: Unveiling Factors Influencing Teachers Engagement. *International Conference of Artificial Intelligence in Education 2023*, 13916. https://doi.org/10.1007/978-3-031-36272-9_13
- Kaplan-Rakowski, R., & Grotewold, K. (2023). Generative AI and Teachers' Perspectives on Its Implementation in Education. *Journal of Interactive Learning Research*, 34(2), 313–338.
- Lelescu, A., & Kabiraj, S. (2024). Digital Assessments in Higher Education: Sustainable Trends and Emerging Frontiers in AI Era. In Grosseck G., Ion G., Malita L., Sava S., *Digital Assessments in Higher Education: Navigating and Researching Challenges and Opportunities*, Springer Publishing.
- Mohsin, F. H., Md Isa, N., Ishak, K., & Mohamed Salleh, H. (2024). Navigating the Adoption of Artificial Intelligence in Higher Education. *International Journal of Business and Technopreneurship (IJBT)*, 14(1), 109–120. <https://doi.org/10.58915/ijbt.v14i1.433>
- Ogunleye, B., Zakariyyah, K. I., Ajao, O., Olayinka, O., & Sharma, H. (2024). A Systematic Review of Generative AI for Teaching and Learning Practice. *Education Sciences*, 14(6), 636. <https://doi.org/10.3390/educsci14060636>

Innovating Assessment Design in the Light of Large Language Models Use

Ruslan Ramanau¹

¹Faculty of Business and Law, Open University, United Kingdom; ruslan.ramanau@open.ac.uk

Correspondence: Ruslan Ramanau: ruslan.ramanau@open.ac.uk

Abstract:

Large language models provide opportunities and pose challenges for assessment in higher education, especially in contexts where written assignments are used extensively. This poster presentation will reflect on the rationale and processes re-designing assessment on a large online module in Business and Management as well as on the implications of the changes for module delivery. The authors would like to both share their current teaching practice and to exchange experiences of assessment re-design with other educators attending this research workshop.

Keywords: Large language models, ChatGPT, online assessment, assessment design

Summary

Widespread use of large language models (LLM) from late 2022 has created disruption in higher education worldwide. Tools such as ChatGPT enable generation of new content in the form of text or images and are used by higher education students increasingly frequently. There is extensive literature on both new affordances and challenges of LLM adoption. On the one hand, LLMs can enable:

- a. Greater accessibility in the form of timely help and access to relevant content;
- b. Greater personalisation of learning and interactivity;
- c. Automation and generation of new ideas, concepts and artefacts (Wang et al., 2024).

However, the challenges of adopting LLM tools are also numerous, such as tendency for LLM systems to hallucinate, provide inaccurate information or cite false information sources (Lye and Lim, 2024), which create significant disruption to existing assessment practices. Despite a significant amount of conceptual work on re-designing assessment in the light of LLM use, evidence on the effectiveness of these innovations is relatively scarce to date.

The study proposed in this poster presentation identifies possible ways of re-designing assessment on a large purely online module in Business Management at a UK university. Students studying the module are provided with access to module material, synchronous and asynchronous communication tools and with support from their tutors, who provide academic guidance, mark and provide written feedback on student submissions. Current assessment design incorporates a mix of formative and summative assignments, mostly in the form of case studies. From the summer of 2023 drawing on evidence from student submissions and tutor accounts, LLM use has been steadily growing and manifested itself in the use of irrelevant subject material, non-existing reference sources or generic responses to assignment questions.

To counter these tendencies the module team aims to re-design assessment tasks based on extant literature (e.g. Wang et al., 2024) and guided by experiences of other university programmes, by:

- a. Shifting emphasis towards more authentic and analytical tasks, where students reflect on assessment material in the light of current developments in business and analyse module material in greater detail;
- b. Diversifying content presentation by using media other than images and text, such as audio – or video logs or diaries;
- c. Introducing reflective pieces where students describe and explain the processes of completing assessment tasks;
- d. Incorporating LLM tools into assessment and getting students to compare and contrast AI generated artefacts with ideas presented in the module material.

This poster presentation will provide a more comprehensive and nuanced overview of module re-design and will seek to gain feedback from educators implementing similar initiatives in the context of other online Business Management programmes.

References

- Lye, C. Y., & Lim, L. (2024). Generative artificial intelligence in tertiary education: Assessment redesign principles and considerations. *Education Sciences*, 14(6), 569. :10.3390/educsci14060569
- Wang, N., Wang, X., & Su, Y.-S. (2024). Critical analysis of the technological affordances, challenges and future directions of generative AI in education: A systematic review. *Asia Pacific Journal of Education*, 44, 139–155.

MicroCredX Project Solutions for Micro-Credential Exchange

Maja Dragan¹, Hagen H. Hochrinner¹, Raimund Hudak², Klaus Rupp², Lear Schmitt², Mitchell Peters³, Jon Altuna⁴, Amaja Arroyo Sagasta⁴, Jon Aldazabal Basauri⁴, Henri Pirkkalainen⁵, Miiko Siivonen⁵, Anthony Camilleri⁶, Martina Darmanin⁶, Ursula Göz², Estela Daukšienė⁷

¹FH JOANNEUM Institute of Applied Production Sciences, Austria; maja.dragan@fh-joaanneum.at

²Duale Hochschule Baden-Württemberg, Germany, klaus-dieter.rupp@dhw-heidenheim.de ursula.goez@heilbronn.dhw.de

³Universitat Oberta de Catalunya (UOC), Unit for Skills Foresight and Labour Market Research, Spain; mjosep@uoc.edu

⁴Mondragon University, Spain; jaltuna@mondragon.edu aarroyo@mondragon.edu

⁵Tampere University, Finland, henri.pirkkalainen@tuni.fi miiko.siivonen@tuni.fi

⁶Knowledge Innovation Centre, Malta, martina@knowledgeinnovation.eu

⁷EDEN Digital Learning Europe, Estonia; estela.dauksiene@vdu.lt

Correspondence: Estela Daukšienė: estela.dauksiene@vdu.lt

Abstract:

MicroCredX is an Erasmus+ program-funded project focusing on discussing the challenges that micro-credentials bring to Higher Education Institutions and analysing, testing and developing some guidance information for institutions to overcome those challenges. The project runs from 2022 to the end of 2024. Together with various templates for institutions to use while making institutional decisions, the project has already developed four major project results that are publicly available – (1) Micro-credential Opportunity Analysis Tool, (2) Micro-credential Recognition Strategy, (3) Micro-credential Course Catalogue, (4) Micro-credential Network Model and a (5) Micro-credentials Implementation Framework.

Keywords: micro-credentials, higher education, network, recognition, exchange

Summary

Micro-credentials are short, thematically focused courses with a final, transparent assessment procedure described. Although in 2022 The European Council published a [Recommendation on a European approach to micro-credentials for lifelong learning and employability](#), the EU Member States were encouraged to adopt a common approach to MCs and adhere to a common definition; there still exists different understandings of what a micro-credential is, as well as how institutions may issue and recognise them. The Council defined micro-credential as

“[...] the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes will have been assessed against transparent and clearly defined criteria. Learning experiences leading to micro-credentials are designed to provide the learner with specific knowledge, skills and competencies that respond to societal, personal, cultural or labour market needs. Micro-credentials are owned by the learner, can be shared and are portable. They may be stand-alone or combined into larger credentials. They are underpinned by quality assurance following agreed standards in the relevant sector or area of activity.” (Council of the European Union, 2022, p.5a)

The MicroCredX project has run from 2022 to the end of 2024. Within the collaboration of 5 Higher Education Institutions, an institutional network and an innovation centre, the following project results have been developed (MicroCredX, 2024) and could be used by higher education institutions:

The Micro-credential Opportunity Analysis Tool, which proposes a set of indicators and guidance for an institution to create its micro-credentialling strategy in a way it could measure its success later.

The Micro-Credential Recognition Strategy, which creates an environment by which participating institutions and invited other institutions can recognise MCs issued by other institutions.

The Micro-Credential Course Catalogue, which suggests courses that lead to micro-credentials for the students of partnering institutions.

The Micro-Credential Network Model, which defines the conditions for other HE institutions to join a network, either by suggesting courses that lead to micro-credentials or by recognising micro-credentials suggested by the MicroCredX partner institutions.

Even more, the consortium made a step further and has developed a **Micro-credentials Implementation Framework**, which includes seven domains: starting from (1) Policy and Strategic Planning, (2) Unifying Design Principles, Minimum Standards, and Critical Information Requirements, guiding on (3) *Approaches to Teaching and Learning*, (4) *Technologies and Platforms*, and (5) *Industry Alignment and Forecasting*, and finalised with (6) *Quality Assurance Alignment* and (7) *Recognition guidance steps*.

To find the project results, please visit the project website: <https://microcredx.microcredentials.eu/project-outputs/>

References

Council of the European Union. (2022). *Proposal for a Council Recommendation on a European approach to micro-credentials for lifelong learning and employability* (2021/0402(NLE), 9237/22; pp. 1–34). Council of the European Union. <https://data.consilium.europa.eu/doc/document/ST-9237-2022-INIT/en/pdf>

MicroCredX: micro-credentials Exchange project. (2024). About the project. Deliverables - Micro-CredX outputs. <https://microcredx.microcredentials.eu/project-outputs/>