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Abstract

European countries need active and proactive educational systems assisted by models that can drive a cultural transformation, which supports sustainable socio-economic and environmental development. In this paper, we reflect on the future of European education by engaging on a critical review of the literature, which informs the further development of a novel pedagogy that we have coined as “*Circular Pedagogy*.” We offer some insights on how the foundations of a new educational model (ANEM) could be cemented and solidly supported by pillars that acknowledge our societies' rich and diverse cultures. Furthermore, the discussions are framed as part of the European University of Technology's (EUt+) consortium, as we reflect on its future educational model. Technological universities are in need of novel pedagogies that drive change as we “*think human first*.” European education faces significant challenges derived from the need to enable learning environments guided by equity, diversity, and inclusive frameworks for all categories of diverse learners. We propose a learner-centred, dynamic, and proactive pedagogy that can help us to manage and navigate the inevitable cultural conflict that will emerge as different societies and individuals seek to work together, to enable a better understanding and identification of the triggers that might arise due to potential cultural clashes and detachment.

Keywords: ANEM, Advanced Learning Technologies, Cultural Transformation, Circular Pedagogy, Technological Universities

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Introduction

The world economy faces major challenges due to failed economic and social models that have resulted in significant damage and deterioration of our environment. According to the 2023 IPCC Report,

"Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming" (IPCC, 2023, p.4).

Economic and business activities have contributed to creating imbalances in our ecosystems. The scientific evidence suggests that humans are altering many geological processes on Earth, causing environmental damage, and contributing to a growing socio-economic divide. Human activities have led to the beginning of a human-dominated period named the Anthropocene, believed to have started in the mid-20th Century (Waters et al., 2016). Our existing socio-economic models are at the centre of a dramatically growing divide between the world's richest and poorest economies (Raworth, 2017; World Bank, 2013). The current economic, social, and environmental dilemma requires changing how we understand our relationship with our planet and society. As academics working in technological universities across Europe, we argue that to enable the required changes, we need to reflect on how to initiate an evolving process that will last and will lead us towards a positive contribution to our global society and to offer a sustainable legacy to future generations. Within this process we turn our eyes towards education, in particular, to the role that technological universities can play in a process that requires deep thinking and transformation.

We propose to rethink our engagement with pedagogy and its importance in higher education as we argue that new and alternative approaches are needed. Moreover, our experiences signal a growing divide between the importance of pedagogy to support the academic community and the narrowed focus on disciplinary domains. Historically, pedagogy has been a neglected area of study within higher education and remains detached from daily academic routines. Pedagogy does not have parity of esteem with STEM, leading to a natural rejection by the academic community of its importance (Davies, 1994; Obanya, 1993). To explore the significance of pedagogy to support education transformation in Europe, the remainder of the paper examines the importance of sustainable education as we seek to gain a better understanding of the need for educational change and how we can contribute to it (Fawns, 2022; Carroll, 1961; Davies, 1994;). The importance of multicultural and plurilingual learning environments is considered in the section that follows.

Multiculturalism and Plurilingualism for Sustainable Education

Current socio-economic and environmental challenges require new ideas on how the educational system and our academics, researchers and students are open to collaborating. We need to develop a new educational culture that aligns with the demands of our evolving society and pressing sustainability needs. We argue that to achieve the needed transformation, it is vital that we understand our role as educators in enabling change. Technologies can help us to inspire our students, learning, partners, staff, alumni, and leadership teams. We acknowledge that a change in organisational culture is challenging as it is deeply rooted in hidden assumptions, beliefs, values, norms, rules, and organisational practices. However, we have an opportunity to create and develop a new culture for our European University of Technology (EUt+), and this paper reflects on our vision for our proposed framework.

EUt+ has identified student mobility as essential, due to its significance in reinforcing our sense of belonging. It provides a solid foundation for our common identity as we take our first steps in creating of our future educational working framework. Students are encouraged to embrace the idea of a single university supported by different campuses across Europe and guided by sound academic guidelines where learners will be able to develop their learning paths and lifelong learning training needs. Learners' needs are not merely limited to demands of the economic system or to the pressures of the labour market. Rather, educational models should be able to offer flexibility that accounts for diversity of learners evolving needs. Our commitment to mobility is supported by the benefits it provides to students' development due to their involvement in international exchanges, not reduced to a single lingua franca (Grindei et al., 2022). This fact enables students to discover the richness of Europe's cultural diversity, represented by different languages and cultural heritage. In line with Grindei et al. (2022) insights, plurilingualism emerges as an essential skill in the co-creation of knowledge, closely connected to our novel pedagogy – “Circular Pedagogy” - where students/learners, teachers, and researchers work together to embrace the value of transdisciplinary education supported by diverse and plurilingual learning environments (Morales et al., 2022; Pop et al., 2022). An additional disruption to current modes of learning can be identified in the potential offered by EUt+ to become a living research laboratory that integrates creative learning and teaching spaces, in which theories and concepts around plurilingual communication and learning are being discovered, discussed, and negotiated following a knowledge sharing process.

The reviewed literature offers evidence on how learning environments that support language exchange help to create a more inclusive learning environment. By sharing a common foreign language, students, teachers, and researchers can present their hometowns and countries, customs, and traditions, translating words and phrases into their mother tongues, discovering points of contact/common ground/points of intersection between learners, common or very similar experiences, practices, expressions, and gestures where learners gain a better understanding of each other. Thus, they push back the boundaries of their intercultural competence by exploring culturally significant issues. More than ever, understanding others means finding how one's own culture fits into the global tapestry of cultures (Bennett, 2015; Feng et al., 2009; Lustig & Koester, 2010). Very often, however, instructors in multicultural classrooms may encounter certain issues arising from hasty judgements that students may instinctively form based on their own culturally embedded perceptions. Research on intercultural relationships has often turned into a search for inter-cultural differences, disregarding universal characteristics and playing down similarities. Moreover, by focusing on the native/target culture differences, we often overlook that the learners' collective identity is formed within an intricate system of different cultures rather than in one-to-one opposition. Thus, instead of learning more about themselves by learning about others, students might reinforce certain myths or prejudices, such as cultural distance or stereotypes (Grozdanova, 2002). Consequently, a balanced approach should be adopted to avoid such flaws, presenting cultural diversity against the background of what unites us. If we are successful in helping our students feel part of the truly global community, the inevitable process of comparison will lose its negative connotation, as they will be looking at diversity in a positive way enabling the development of inclusive learning environments, as differences will be positively loaded, and biased views could be substantially minimised. The first and the most important prerequisite for achieving these goals is related to providing the learners with an inclusive learning environment where everyone is treated fairly and with respect and where personal values, needs and aspirations are recognised and respected.

Inclusiveness also involves providing educators with appropriate didactic training and experience in international contexts, communicating standards to all students and where the teacher can navigate emerging conflicts or potential misunderstandings. Students would need continuous support in developing study skills, including academic and discipline-specific language training for future academic and professional communications. Moreover, students should be provided with virtual and other digital learning spaces as these spaces offer access to

learning environments that are attuned to our current needs and might emerge as tools that enable the creation of more inclusive learning environments (Bianchini, 2013; Martin & Nakayama, 2010; Patel et al., 2011; Spencer-Oatey & Franklin, 2009). Furthermore, educators need to navigate complex learning environments aiming to integrate all students into the learning environment, which involves managing diversity to help students develop intercultural competencies and become aware of the value of cultural diversity and empathy by embracing positive elements, and by learning from negative experiences. This can be achieved by promoting interactive learning based on collaboration, team building and using cultural diversity of the students as a resource for the extension of knowledge, and openly discussing cultural differences. This new approach involves embracing change in methodologies, such as team teaching, peer-tutoring, and tandem learning. There is no denying that the overall process should entail appropriate integration of technology, construed in a broad perspective, in teaching and learning objectives in higher education, as a prerequisite for ensuring its sustainability. The physical implementation of technical devices or technological resources into the classroom would be an approach that will hardly promise efficiency. Technology is a tool whose effectiveness in the process would be achieved by reconsidering techniques for utilising it for pedagogical purposes, also including the STEAM fields where already technology has become an integral part of the professional curricula and skills development. Hence, we can speak of "technopedagogy" or pedagogy enhanced by means of new technologies (Asad et al., 2021; Lyonga et al., 2021; Narayanan & Komalavalli, 2022; Yusof et al., 2019).

The understanding that technology can enhance teaching, learning and research practices is a critical element of our work at EUt+. Technology brings new opportunities and additional avenues for skill development, efficient use of tools during classes and supporting innovation in teaching tech-driven fields of education. Hence, technology and innovation are fundamental aspects of the educational model that we are considering for STEAM education within EUt+ as we explore enhancing knowledge delivery effectiveness. Technology offers enormous potential to the academic community that seeks to be involved in lifelong learning and research practices with a focused approach towards critical thinking, development of analytical skills, innovation, content delivery and debate. Students' inner motivation and ethical approaches towards teaching and research practices could be delivered more effectively with the support of technologies and innovation. The next section aims to provide a connection between cultural transformation and the importance of a new pedagogical approach towards higher education guided by our novel "*Circular Pedagogy*" (Morales et al., 2022; Pop et al., 2022).

Circular Pedagogy to Drive Universities Cultural Transformation

Quality and success of teaching-learning-research processes are closely linked to higher education institutions' major stakeholders. We can identify teachers, students, and researchers as critical players. However, we cannot neglect the importance of other stakeholders in university consortia, including government bodies, community groups, NGOs, international educational organisations, the labour market, and the industrial network. Our environment, natural resources and ecosystem emerge as critical actors that have been overexploited, demanding a new approach to understanding our relationship with our planet. Understanding the interactions and impact of teachers and students in EUt+ requires a deep understanding of the culture of each university through shared values and beliefs, common assumptions and expectations, and behaviours related to student learning, teachers learning, educational leadership, the quality of relationships inside and outside the university and the readiness for change (Elkordy & Iovinelli, 2021). Through universities' it would be possible to start a time of change that leads to the required cultural transformation as we confront the reality and challenges associated with sustainable societies. Within the educational system, it is vital to consider the role of students as potential change agents and drivers of sustainable societies in alignment with the UN 2030 Agenda and the Sustainability goals (UN, 2015). New educational models should be capable of stimulating students' dynamic and active participation throughout the learning journey. The role of the teacher then changes from a dominant position towards a more interactive and dynamic role (Hanesworth, 2016). The teacher takes a dynamic position as it embraces the form of a facilitator, a coach, a supporter, or a mentor that guides students, whilst challenging their creativity and knowledge. The teacher is critical in encouraging students to take ownership of the learning process (Narayan and Komalavalli, 2022).

Furthermore, and according to Leichenko et al. (2022), Jareño et al. (2014), and Purcell et al. (2019), and the role of the teacher needs to evolve so that it is not limited to a passive approach focused on knowledge transmission. Our societies require a different approach to learning, teaching and research that acknowledge that the student, the teacher, and the researcher are interchanging their roles continuously as they engage with the learning process. In our response to current educational needs, ANEM seeks to address five critical points: i) to respond to the demands of the knowledge and digital economy; ii) to encourage interdisciplinary and transdisciplinary learning, teaching and research environments; iii) to offer a dynamic educational offer supported by technology and innovation; iv) to stimulate innovation and to turn universities into transdisciplinary living labs for impact; v) to connect our society with the

reality of climate change and environmental degradation (Fortes et al., 2019; García-Martínez et al., 2019; Koper, 2014; Siekkinen et al., 2020).

As depicted by our proposed "*Circular Pedagogy*" in Figure 1 (below), we need to be able to navigate a learning model that progresses towards learning, teaching and research activities within Complex Learning Environments that are fast evolving and that require a new approach towards the way we teach, we learn and do research.

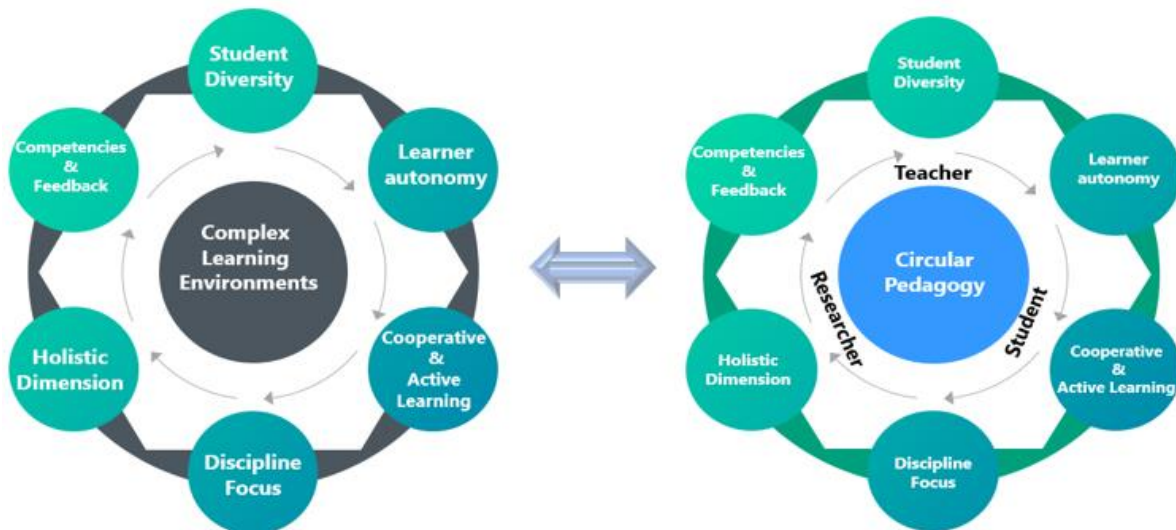


Figure 1: Circular Pedagogy to Navigate Complex Learning Environments.

In parallel, higher education institutions are facing dramatic changes due to the lifelong learning process and pressures from the labour market that demand continuous reskilling, upskilling, and the development of new competencies. The diversity of the student population demands new levels of support towards teaching and learning activities that foster learners' autonomy and embrace active learning spaces where teachers and students emerge as active co-creators of the learning process and content. In our quest for ANEM for EUt+, significant changes need to be considered as part of innovative learning environments that enable critical and constructive engagement between students, teachers, and researchers as they become aware of their interlinked roles. Therefore, it is important that we reflect on the basic features of our proposed new learning environments and how they are interconnected, which we summarise as follows. Critical thinking, creativity, imagination, analytical and active skills are vital and should take a key role, as our learners engage on questioning and inquiring about existing knowledge if we wish to add valuable contributions and innovate when approaching problems and designing their potential solutions (Kerruish, 2023; Nannes & Hellstén, 2005). Curricular

design and alternative assessment and feedback processes need to be reconsidered in the context of a complex learning environment and how they can be enabled. Active, constructive, personalised and authentic feedback can play a critical role to ensure that learners can identify and leverage their weaknesses and strengths. We further argue the need for a different view towards weaknesses, as they should not be considered a negative element of learning; they need to be integrated as part of the learning experience if we aim to overcome challenges and support learners' positive development. Teachers' understanding of their evolved role as co-learners emerges as a fundamental part of change that will help teachers to navigate different roles as their students develop. Teachers, researchers, and students should understand their roles as co-creators of learning environments that consider sustainability challenges and are guided by the aim of driving change and impact (OECD, 2020, UNESCO, 2021). Therefore, we need to develop an educational model that is attuned to our knowledge and digital economy. As such, the importance of digital literacy in our proposition to enable a transition towards more integrated, inclusive, and welcoming learning environments capable of supporting the needs of our modern society is considered in the section that follows.

Circular Pedagogy to Frame Digital Literacy

Pedagogical interaction, the methods and approaches used, require a change that will rearrange pedagogical paradigms and bring forward new methodologies and alternatives to teaching, learning and research processes. Contemporary perceptual attitudes are remodeled by technology and the digitalisation of many human activities affecting individuals' and society's personal and professional lives that are conducive to economic growth and development. In alignment with Schumpeter (1942) concept of "*Creative Destruction*" that is core to capitalism where "*the old way*" of doing things is continuously challenged by newer and better alternatives. Another essential aspect that deserves to be mentioned is the changing profile of the "*new*" learner with the entire set of needs, attitudes, previously acquired skills and knowledge, set goals and expectations about the applicability of the knowledge acquired in the educational institution. We have to invariably take into account of the fact that modern learners develop their own technological culture and technological experience, which in many cases exceed that of their educators (mainly those in the field of humanities), which is especially true for engineering students who make their choices often based on their love for engineering and technology. The pragmatic approach for educators would be to perceive technology as a "*meeting place*" with their learners, where they can co-create content that adapt available scientific knowledge to the new digital format of pedagogical interaction (Chu et al., 2017;

Cummings & Blatherwick, 2017; Gosper & Ifenthaler, 2014; Huang et al., 2019; Kattington, 2010; Pellegrino et al., 2012; Sachs, 2015;).

In the case of EUt+, where STEM fields of study are predominant, technology is already a big part of teaching content and learning processes. Technology provides a context for skill and knowledge transfer through the possibility of inclusive feedback, better availability of learning materials, better communication tracking, more flexibility in scheduling and communicating, improved security if institutional tools are used, and with better management, probably more time to learn, prepare and engage on research activities. Nevertheless, the practicality of engineering and other related STEM fields is part of the educational contextual reality. Further research studies need to be developed aiming to provide more insight into the pros and cons of extra technology usage in teaching, in this case, for practical skill development, if there is a limit and if there is one, clearly define it. Rigid educational models do not offer sufficient support to current needs as they cannot address modern societies' challenges that are not isolated to the needs of global societies and global demands.

Higher education institutions are forced to adapt to a new organisational logic driven by digital innovation and transformational leadership. There are multiple possibilities that educational agents can take up and process with their particular preferences and ideas in the context of sustainable learning situations and the demands of creating sustainable economic, financial and social systems (Butollo et al., 2022; Elkordy & Iovinelli, 2021; Riasanow et al., 2019). Current challenges demand different ways of thinking, which implies that we need to consider different approaches towards learning, teaching, and research activities.

Figure 2 below further depicts our EUt+ ideation of "*Circular Pedagogy*" and how it connects and engages with its different stakeholders, as we consider institutional complexities and reimagine the need for an organisational context that embraces cultural transformation. A transformation guided by learning driven by European values that nurture learning processes, which aim to contribute to improving our engagement with our natural resources and social interactions, and to developing the values that provide the foundation of EUt+ ANEM guided by equity, diversity and inclusion (EDI) in action.

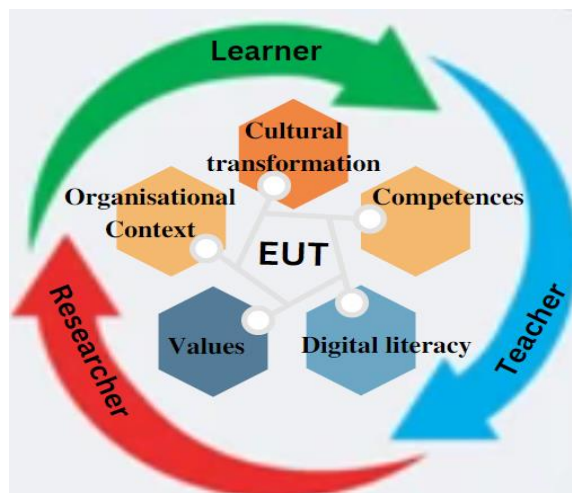


Figure 2: Circular Pedagogy: Interchangeable roles of learner teacher, and researcher inside EUT+

The foundations of ANEM for EUT+ need to be open to exploring existing and dominant constructs and challenging them to enable sufficient space for creativity, criticality, and willingness to challenge the status quo. However, we cannot forget that each person embraces the educational process differently, being individual and collective actors that play implicit or explicit roles, depending on i) the perceived positioning of self and others, ii) cultural biases in critical thinking that are seen as a filter of the information practices of digitalisation, iii) the ties between diverse cultural and technological backgrounds and iv) rethinking of essential factors that influence the acceptance of technological improvements in educational environments (Kerruish, 2023; Smith et al., 2022).

Within EUT+, our proposed "*Circular Pedagogy*" offers the opportunity to explore further our interchangeable roles: where we challenge the idea of roles that are separated in the following way: i) from the one who teaches to the one who learns, which means there must be one who researches, ii) from the one who learns to the one who researches, which means there must be one who teaches, or iii) from the one who researches to the one who teaches, which means there must be one who learns. We argue that the learning process becomes dynamic, and teachers, learners, and researchers will simultaneously embrace different roles, and we collaborate towards the co-creation of knowledge. Therefore, EUT+ can have a core role in promoting equity in innovation by providing appropriate pedagogical support for creative and scholarly learning practices that are supportive of technology and innovation. The use of digital technologies, involving collaborative efforts in using and designing digital tools, "*provides ample opportunities for creative digital participation* (Laakso et al., 2021, p.2)" as we reflect on the need for educational change in the following section.

Are Higher Education Institutions Ready for Cultural Change?

In the context of our modern societies, Higher Education Institutions face significant pressure to offer learning environments and learning experiences that can respond to a fast-evolving society. We are immersed in uncertain environments, amplified by higher levels of complexity due to a large amount of ambiguity (Jensen, 2019; OECD, 2017, 2020, 2022; Schneegans et al., 2021; World Bank, UNICEF, FCDO, USAID, the Bill & Melinda Gates Foundation, 2022). Future global citizens should have access to useful and helpful knowledge to adapt to a volatile world, and the Universities should provide access to an educational model which facilitates all students the chance to develop proper skills and competencies which will allow them to face current changes at the time that they are equipped with skills that will enable them *"to anticipate and respond to the nature and speed of change; to acting decisively without always having clear direction and certainty; to navigate through complexity, chaos, and confusion; to maintain effectiveness despite constant surprises and a lack of predictability"* (Glaeser, 2022; Facer, 2021; Erçetin & Potas, 2019; UNESCO, 2014; World Bank, 2011). Uncertainty, ambiguity, complexity, chaos, and confusion are closely linked to our natural evolution and development, as reflected by Albert Einstein,

"We can't solve the problems at the same level of thinking that we were at when we created them" (Albert Einstein, 1879 – 1955).

Therefore, universities need to examine, revisit, and inquire about existing educational paradigms, particularly existing teaching-learning routines, and their detachment from research and sometimes from our current reality. We are used to making a clear distinction between research, teaching and learning processes. Our universities foster environments that praise research activity while undermining the importance of equitable and quality teaching and learning environments. Our society's development did not connect universities as spaces for high-quality research activity, but our modern society has adjusted because of our evolving needs. Consequently, research activity has become a major demand in the academic world, but we have not embraced the change by providing appropriate systems to bring together learning, teaching and research. We need to create an educational model that boosts our life conditions and evolution by developing *"major engines of economic growth and prosperity, state and community building, and social progress"* (World Bank, 2013), and this means that we cannot separate the role of the learner, the researcher, and the teacher, but at the same time we cannot

limit the learning process to the needs of economic growth and prosperity (Emler & Frazee, 1999; Looney, 2009; Omic & Halb, 2018).

According to a report from the OECD (2022),

"The world is witnessing a growing disconnect between an infinite growth imperative and the finite resources and delicate ecosystems of our planet; between the financial economy and the real economy; between the wealthy and the poor; between the concept of gross domestic product and the well-being of people; between technology and social needs; and between governance and the perceived voicelessness of people" (Boix Mansilla & Schleicher, 2022, p. 6).

Under these conditions, learners' competencies require the integration of capabilities and skills that equip them to be able to manage and live in an uncertain future, manage, and co-exist with disruptive technological change, and reflect on the need to create and develop a new social education model guided by the United Nations Sustainable Development Goal (SDG 4) aiming to foster high-quality education for sustainable development. The full title of SDG 4 is,

"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UN, 2015, p.19).

To drive change, we need to reimagine the purpose of education (Coetzer et al., 2023; OECD, 2022; UNESCO, 2021). Existing models, existing systems and practices are not capable of responding to emerging challenges. As such, we require a *"new sciences of learning"* and new and alternative pedagogies that bring together various disciplines and provide space for social psychology, cognitive psychology, brain research, neuroscience that help us to update and redesign our approaches to teaching, learning and doing research (Banich & Compton, 2018; Calvo & D'Mello, 2011; Carter et al., 2019; Fovet, 2020; Luhmann, 2017; Murphy & Honey, 2016; OECD, 2022; Raley & Preyer, 2010).

According to Cronin (2008, p.2), we need to integrate different branches of knowledge because *"our world has problems, but the universities have departments."* Our academies are worried about their areas of expertise, discipline-specific requirements, and the importance of developing their research portfolios, resulting in inadequate learning, and teaching environments, and as a result the neglect of student learning and developmental needs. The future of higher education requires that traditional universities review their practices, as they

are not in alignment with current socio-economic and environmental needs. Universities' leadership teams need to consider that there is a need to engage in a transformation as doing nothing is not an option.

"the quality of personalised student learning will be key to institutional success.... Transformation is not only about curriculum, learning delivery, student support and research. It is about the back office, operating model, technology and, fundamentally, the sum of capabilities that reside in the organisation" (KPMG, 2022, p.3).

Moreover, one of the major challenges faced by cooperation relates to securing and sharing resources and minimising conflict emerging from dominant partners. Access to resources means engagement with power dynamics that can lead to conflict and difficulties in working towards common goals that do not differentiate between institutions and where we embrace the idea of a single university that works together across its united European campuses. This reflection is essential because our behaviours are linked to our personal beliefs and values. In the transition towards a European Technological University that can provide an educational offer that aligns with our society's demands. Therefore, it is critical that we consider the impact of cultural transformation and how universities will navigate existing and emerging challenges (Armstrong et al., 2010; Gertz et al., 2018; Hanesworth, 2016; Kuhn, 1970; OECD, 2014; Sanger & Gleason, 2020). As part of our cultural transformation, we need to reflect on the needs of our European society and its importance in developing a sustainable educational model, which we consider in the following section.

European Society Requires a New Educational Model

Over the past few decades, we have witnessed unprecedented global economic, demographic, and socio-cultural changes due to globalisation, transnational migration, and various political transformations. These trends are shaping the future of modern Europe, making it more and more culturally diverse, increasing the multicultural character and the number of languages, religions, and ethnic and cultural backgrounds found on the continent. Historically, languages and cultures are connected to national identity. After World War I, European nation-building forces used national languages as a component of legitimising national states, especially in Central and Eastern Europe. The fall of empires and imperialism allowed European peoples to break away and build nation-states, to forge a "*national*" culture and "*national*" language at its core. The birth of the European Union and its subsequent enlargement resulted from opposing centripetal forces, where national states converged into a supra-statal structure (Schmitt, 2019).

European society is trying to overcome divisive elements towards a common cultural identity, in which all national and local languages are respected and promoted. In practice, this means that multilingual communication should become the norm in any socio-cultural and economic environment (Baylis et al., 2008; Best et al., 2015; Gough & Scott, 2007; Ninnes & Hellstén, 2005; Paulsen, 2017; Rhodes et al., 2006; Stone, 2014). As a multilingual, multicultural, and internationalised higher education institution, the EUt+ may face difficulties in implementing multilingual communication to avoid extensive use of one or another of its languages as lingua franca at the expense of the use of all others. The high level of collaboration and networking presented in our *"Circular Pedagogy"* requires effective communication among partners with a wide linguistic repertoire. It is here where advanced digital literacies and employment of technologies and artificial intelligence (AI) can contribute to maintaining effective communication, whilst using multiple languages that our plurilingual stakeholders speak. The interchangeable roles of learners, teachers, and researchers in our *"Circular Pedagogy"* model will contribute to creative use of technologies for preserving languages, promoting language learning, and fostering an organisational culture, which shares common values in diversity.

Conclusion

The European University of Technology (EUt+) should be able to respond to the ideal of solid training, with serious cultural and scientific bases, with the development of responsibility and civic participation of all educational agents. Neither education nor research should be geared exclusively toward meeting market demands and accelerated technological development. The university intervenes in the labour market and socially to defend and maintain the values of quality, comprehensive education, and training and to strengthen participatory citizenship and cultural resilience. With digitisation, everything has become interconnected due to the emergence of networked social systems and digital social transformation. By changing roles, as teachers, students, and researchers within EUt+, collaborating with external parties and experimenting differently in different fields, we aim to reflect and engage on a dialogue that consider the need for a new educational model that is more attuned to our modern and evolving society. Learning technologies and innovation emerge as critical players in developing a novel pedagogy where the student, teacher and researcher take interchangeable roles that are more aligned with lifelong learning processes. To make progress, it is essential that we first learn how new inclusive learning environments can be articulated to help us address our evolving society's learning needs and demands. We are cognisant that education worldwide faces a stark and unpleasant reality as the students' learning experience is significantly impacted by social

status and economic disparities. Students are often confronted with difficult situations involving racism, discrimination and exclusion that materialise in students suffering mistreatment and microaggressions in learning environments still blind to the biases forwarded through teaching practices. The richness of our European cultures and languages and their significance in helping us to work together are paramount in our quest for high-quality education that cultivates, promotes, and cherishes European educational values while welcoming other cultures and languages. Therefore, in this paper, we provided a critical reflection on the importance of developing new and alternative pedagogies attuned to current challenges and acknowledging higher education institutions' needs. Our future research will examine and reflect on the need to identify ways to promote equity and inclusivity in the light of social justice in education for sustainable development and organisational cultural shift as we keep exploring how to develop the EUt+ educational model for sustainable development that we are coining as ANEM for EUt+.

References

- Armstrong, A., Armstrong, D., & Spandagou, I. (2010). *Inclusive Education International Policy & Practice*. SAGE Publications.
- Asad, M. M., Aftab, K., Sherwani, F., Churi, P., Moreno-Guerrero, A.-J., & Pourshahian, B. (2021). Techno-Pedagogical Skills for 21st Century Digital Classrooms: An Extensive Literature Review. *Education Research International*, 2021, 1-12.
<https://doi.org/10.1155/2021/8160084>
- Banich, M., & Compton, R. J. (2018). *Cognitive Neuroscience*. Cambridge University Press.
- Baylis, J., Smith, S., & Owens, P. (Ed.). (2008). *The Globalisation of World Politics: An Introduction to International Relations*. (4th ed). Oxford University Press.
- Bennett, J. M. (2015). *The Sage Encyclopedia of Intercultural Competence*. SAGE Publications.
- Best, A., Hanhimäki, J. M., Maiolo, J. A., & Schulze, K. E. (Ed.). (2015). *International History of the Twentieth Century and Beyond*. (Third edition). Routledge/Taylor & Francis Group.
- Bianchini, J., Akerson, V., Barton, A., & Lee, O. (2013). *Moving the equity agenda forward: Equity research, practice, and policy in science education*. Springer.
- Boix Mansilla, V., & Schleicher, A. (2022). *Big picture thinking. How to educate the whole person for an interconnected world. Principles and practices*. OECD.
- Butollo, F., Gereffi, G., Yang, C., & Krzywdzinski, M. (2022). Digital transformation and value chains: Introduction. *Global Networks*, 22(4), 585–594.
<https://doi.org/10.1111/glob.12388>
- Calvo, R., & D'Mello, S. (2011). *New Perspectives on Affect and Learning Technologies*. London: Springer Science+Business Media.
- Caroll, J. (1961). Neglected Areas in Educational Research. *Phi Delta Kappan*, 42, 339-343.
<https://www.jstor.org/stable/20342616>
- Carter, R., Aldrige, S., Page, M., & Parker, S. (2019). *The Human Brain Book*. DK Publishing, United States.
- Chu, S. K. W., Reynolds, R. B., Tavares, N. J., Notari, M., & Lee, C. W. (2017). *21st Century Skills Development Through Inquiry-Based Learning*. Springer, Singapore. doi:10.1007/978-981-10-2481-8
- Coetzer, J.-H., Morales, L., Flynn, P., Lia, P., Barkoczi, N., Munteanu, S., Campian, C., & Rajmil, D. (2023). Enhancing Human Security by Transforming Education through Science, Technology, and Innovations, *Cadmus*, 21(1), 7.
- Cronin, K. (2008). *Transdisciplinary Research (TDR) and Sustainability*. Ministry of Research, Science and Technology (MoRST), Institute of Environmental Science and Research Limited (ESR).
https://www.learningforsustainability.net/pubs/Transdisciplinary_Research_and_Sustainability.pdf
- Cummings, J. B., & Blatherwick, M. L. (Ed.). (2017). *Creative dimensions of teaching and learning in the 21st Century*. Sense Publishers.
- Davies, B. (1994). On the Neglect of Pedagogy in Educational Studies and its Consequences. *Journal of In-Service Education*, 20(1), 17-34.

- Elkordy, A., & Iovinelli, J. (2021). Competencies, Culture, and Change: A Model for Digital Transformation in K-12 Educational Contexts. In S.H.D. Ifenthaler (Eds.), *Digital Transformation of Learning Organizations* (pg. 203–218). Springer International Publishing. https://doi.org/10.1007/978-3-030-55878-9_12
- Emler, N., & Fraze, E. (1999). Politics: The Education Effect. *Oxford Review of Education*, 25(1-2), 251-273. doi:10.1080/030549899104242
- Erçetin, Ş., & Potas, N. (2019). *Chaos, Complexity, and Leadership 2017. Explorations of Chaos and Complexity Theory*. Springer, Cham.
- European Commission. (2021). *Compendium of Inspiring Practices on Inclusive and Citizenship Education*. Luxembourg: Publications Office of the European Union.
- Facer, K. (2021). It is not just about jobs: Education for economical wellbeing. In UNESCO, *Education Research and Foresight. Working Papers*. ED-2021/WP-29/1, UNESCO, Paris.
- Fawns, T. (2022) An Entangled Pedagogy: Looking Beyond the Pedagogy—Technology Dichotomy. *Postdigital Science and Education* 4, 711–728.
- Feng, A., Byram, M., & Fleming, M. (2009). *Becoming Interculturally Competent through Education and Training*. Multilingual Matters.
- Fortes, S., Santoyo-Ramón, J. A., Palacios, D., Baena, E., Mora-García, R., Medina, M., . . . Barco, R. (2019). The Campus as a Smart City: University of Málaga Environmental, Learning, and Research Approaches. *Sensors*, 19(6), Article 6.
- Fovet, F. (2020). Universal Design for Learning as a Tool for Inclusion in the Higher Education Classroom: Tips for the Next Decade of Implementation. *Education Journal, Special Issue: Effective Teaching Practices for Addressing Diverse Students' Needs*.
- García-Martínez, I., Fernández-Batanero, J. M., Cobos Sanchiz, D., & Luque de la Rosa, A. (2019). Using Mobile Devices for Improving Learning Outcomes and Teachers' Professionalization. *Sustainability*, 11(24), Article 24.
- Gertz, S., Huang, B., & Cyr, L. (2018). *Diversity and Inclusion in Higher Education and Societal Contexts: International and Interdisciplinary Approaches*. Springer International Publishing AG.
- Glaeser, E. L. (2022). Urban resilience. *Urban Studies*, 59(1), 3–35. Retrieved from <https://doi.org/10.1177/00420980211052230>
- Gosper, M., & Ifenthaler, D. (2014). *Curriculum Models for the 21st Century: Using Learning Technologies in Higher Education*. Springer, New York.
- Gough, S., & Scott, W. (2007). *Higher Education and Sustainable Development: Paradox and Possibility*. Routledge.
- Grindei, L., Campian, C., Ciupe, A., Todea, L., Munteanu, S., & Moga, L. (2022, June). The European University of Technology-A perspective on building a pioneering higher education system based on a human-centred technology. In *2022 31st Annual Conference of the European Association for Education in Electrical and Information Engineering (EAEEIE)* (pp. 1-4). IEEE.
- Grozdanova, L. (2002). Cultural Diversity in a Unifying World – A New Challenge for English Textbook Writers. *Small Languages in the Big World*. In *British Council Bulgaria, Lettera. Sofia*, 126-145.

- Hanesworth, P. (2016). Equality and Diversity in Learning and Teaching in Higher Education. *Papers from Equality Challenge Unit and Higher Education Academy joint conferences*. Equality Challenge Unit.
- Huang, R., Spector, J., & Yang, J. (2019). *Educational Technology: A Primer for the 21st Century*. Springer, Singapore.
- Jareño, F., Jiménez, J. J., & Lagos, M. G. (2014). Cooperative learning in higher education: Differences in perceptions of contribution to the group. *International Journal of Educational Technology in Higher Education*, 11(2), Article 2.
- Jensen, T. (2019). *Higher Education in the Digital Era: The Current State of Transformation Around the World*. International Universities Association.
- Kattington, L. E. (Ed.). (2010). *Handbook of Curriculum Development*. Nova Science.
- Kerruish, E. (2023). Critical thinking in higher education: Taking Stiegler's counsel on the digital milieu. *Pedagogy, Culture & Society*, 1–17. Retrieved from <https://doi.org/10.1080/14681366.2023.2183983>.
- KPMG (2020). The Future of Higher Education in a Disruptive World. KPMG International. <https://kpmg.com/xx/en/home/industries/government-public-sector/education/the-future-of-higher-education-in-a-disruptive-world.html>
- Koper, R. (2014). Conditions for effective smart learning environments. *Smart Learning Environments*, 1(1), 5.
- Kuhn, T. (1970). *The structure of scientific revolution*. University of Chicago.
- Laakso, N., Korhonen, T., & Hakkarainen, K. (2021). Developing students' digital competences through collaborative game design. *Computers & Education*, 174. Retrieved from <https://doi.org/10.1016/j.compedu.2021.104308>
- Leichenko, R., Gram-Hanssen, I., & O'Brien, K. (2022). Teaching the “how” of transformation. *Sustainability Science*, 17(2), 573–584.
- Looney, J. W. (2009). *Assessment and Innovation in Education*. OECD Education Working Papers, No 24. Paris: OECD Publishing.
- Luhmann, N. (2017). *Education as a Social System*. Springer Nature.
- Lustig, M., & Koester, J. (2010). *Intercultural Competence: Interpersonal Communication Across Cultures*. (6th ed). Allyn & Bacon.
- Lyonga, N. A., Moluayonge, G. E., & Nkeng, A. J. (2021). A Study of Techno-Pedagogical Skills and Teachers' Performance in HTTTC Kumba, Cameroon. *European Journal of Education and Pedagogy*, 2(1) 46–50.
- Martin, J. N., & Nakayama, T. K. (2010). *Intercultural Communication in Contexts*. (5th ed). McGraw-Hill Higher Education.
- Morales, L., Coetzer, J.-H., Barkoczi, N., Pop, L., Marian, C., & Flynn, P. (2022). A Circular Pedagogy for Higher Education. Retrieved from Research Gate: <http://dx.doi.org/10.13140/RG.2.2.10493.44001>
- Murphy, R., & Honey, R. (2016). *The Wiley Handbook on the Cognitive Neuroscience*. Wiley Blackwell.

- Narayanan, A., & Komalavalli, T. (2022). Integration of techno-pedagogical skills in teacher education to enhance employability skills among prospective teachers. *Scholarly research journal for interdisciplinary studies*, 10(73), 17642–17646.
- Pellegrino, James, W.; Hilton, & Margaret, L. (2012). *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. National Research Council (U.S.). The National Academies Press.
- Ninnes, P., & Hellstén, M. (2005). *Internationalising Higher Education: Critical Explorations of Pedagogy and Policy*. Comparative Education Research Centre. Springer.
- Obanya, P. (1993) The Sad Neglect of Pedagogy in Education Reform Programme. In *UNESCO-Africa: six-monthly journal of the Dakar Regional Office*, UNESCO
- OECD. (2014). *Equity, Excellence and Inclusiveness in Education Policy Lessons from Around the World*. OECD.
- OECD. (2017). *Educational Opportunity for All: Overcoming Inequality throughout the Life Course*. Paris: OECD Publishing.
- OECD. (2020). *Addressing Societal Challenges Using Transdisciplinary Research. OECD Sciences, Technology, and Industry*. OECD Science, Technology and Industry Policy Papers, No. 88, OECD Publishing, Paris,
- OECD. (2022). *Building the future of education*. OECD Publishing.
- Omic, E., & Halb, J. (2018). *Educational inequality in Europe. Tackling inequalities in Europe: the role of social investment*. Retrieve on 03 14, 2023, de pe <https://coebank.org/>: <https://coebank.org/en/news-and-publications/ceb-publications/educational-inequality-in-europe/>
- Patel, F., Li, M., & Sooknanan, P. (2011). *Intercultural Communication: Building a Global Community*. SAGE.
- Paulsen, M. B. (Ed.). (2017). *Higher Education: Handbook of Theory and Research*. (Vol. 32). Springer International Publishing. doi:10.1007/978-3-319-48983-4
- Pop, L., Barkoczi, N., Morales, L., Coetzer, J.-H., Marian, C., & Flynn, P. (2022). *Circular Pedagogy for Smart, Inclusive and Sustainable Education*. Technological University Dublin. DOI: 10.21427/9AN6-3816
- Purcell, W. M., Henriksen, H., & Spengler, J. D. (2019). Universities as the Engine of Transformational Sustainability toward Delivering the Sustainable Development Goals: "Living Labs" for Sustainability. *International Journal of Sustainability in Higher Education*, 20(8), 1343–1357.
- Raley, Y., & Preyer, G. (2010). *Philosophy of Education in the Era of Globalization*. Taylor & Francis, New York
- Raworth, K. (2017). *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*. London: Random House.
- Rhodes, R. A., Binder, S. A., & Rockman, B. A. (2006). *The Oxford Handbook of Political Institutions*. Oxford University Press.
- Riasanow, T., Setzke, D. S., Böhm, M., & Krcmar, H. (2019). Clarifying the Notion of Digital Transformation: A Transdisciplinary Review of Literature. *Journal of*

- Competences, Strategy & Management*, 10, 5–31. <https://doi.org/10.25437/jcsm-vol10-24>
- Sachs, J. (2015). *The Age of Sustainable Development*. Columbia University Press.
- Sanger, C., & Gleason, N. (2020). *Diversity and Inclusion in Global Higher Education*. Palgrave Macmillan.
- Schneegans, S., Lewis, J., & Straza, T. (2021). *UNESCO Science Report: the Race Against Time for Smarter Development*. UNESCO, Paris.
- Schumpeter, J. (1942). *Capitalism, Socialism, and Democracy*. Harper & Bros, New York.
- Siekkinen, T., Pekkola, E., & Carvalho, T. (2020). Change and continuity in the academic profession: Finnish universities as living labs. *Higher Education*, 79(3), 533–551.
- Smith, T., Avraamidou, L., & Adams, J. D. (2022). Culturally relevant/responsive and sustaining pedagogies in science education: Theoretical perspectives and curriculum implications. *Cultural Studies of Science Education*, 17(3), 637–660. Retrieved from <https://doi.org/10.1007/s11422-021-10082-4>
- Spencer-Oatey, H., & Franklin, P. (2009). *Intercultural Interaction: A Multidisciplinary Approach to Intercultural Communication*. Palgrave Macmillan.
- Stone, D. (2014). *Goodbye to all that? The story of Europe since 1945*. (First Edition). Oxford University Press.
- IPCC. (2023). *Synthesis Report of the IPCC Sixth Assessment Report (AR6)*. The Intergovernmental Panel on Climate Change. <https://www.ipcc.ch/report/ar6/syr/>
- UN (2015) United Nations General Assembly. Resolution Adopted by the General Assembly on 25 September 2015. A/RES/70/1. Available at: <https://sdgs.un.org/2030agenda>.
- UNESCO. (2014). *Global Citizenship Education. Preparing learners for the challenges of the twenty-first century*. UNESCO, Paris.
- UNESCO. (2021). *Reimagining Our Futures Together. A new social contract for education. Report From The International Commission On The Futures Of Education*. Report from the International Commission on the Futures of Education. UNESCO, Paris.
- Waters, C. N., Zalasiewicz, J., Summerhayes, C., Barnosky, A.D., Poirier, C., Gałuszka, A., Cearreta, A., Edgeworth, M., Ellis, E.C., Ellis, M., & Jeandel, C., (2016). The Anthropocene is functionally and stratigraphically distinct from the Holocene. *Science*, 351(6269), aad2622.
- World Bank. (2011). *Atlas of Global Development: A Visual Guide to the World's Greatest Challenges*. The World Bank. doi:10.1596/978-0-8213-8583-8
- World Bank. (2013). *Atlas of Development: A Visual Guide to the World's Greatest Challenges*. The World Bank. doi:10.1596/978-0-8213-9757-2
- World Bank, UNICEF, FCDO, USAID, the Bill & Melinda Gates Foundation. (2022). *The State of Global Learning Poverty: 2022 Update*. World Bank.
- Yusof, M. M. M., Alias, N. A., Luanan, J. E., & Jain, J. (2019). The Integration of Techno-Pedagogical Approach in Teaching and Learning among Lecturers in Public Universities in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 9(13), 232-250.

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