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Nurturing Collaborative Learning Environments – Disrupting Pedagogy

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Authors

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Abstract

In this working paper, we offer critical insights on the need to question and challenge existing learning environments, contexts, and modes of interaction. The current model of engagement with students, whether aware or not, not only imposes barriers to the optimal development of students and the manifestation of creative potential but also perpetuates an educational model specific to the industrial era, in which education was to develop “*series individuals*” that were necessary to support factory work and tasks has become obsolete, and it is being challenged by the fast development of technologies that allow efficient automation processes. This educational model, in which future citizens had to be prepared for repetitive work, which does not require much initiative but only in-depth knowledge in a specific field of activity, no longer applies in a society and a labour market where the main target capability is creativity and the ability to solve complex situations in novel and sustainable ways. The integration of collaborative learning within academic establishments fosters the development of vital competencies, including critical thinking, problem-solving, and effective communication. In addition to imparting subject-specific knowledge to students, collaborative learning more effectively equips them to confront the rigours and expectations of the forthcoming labour force, wherein cooperation and knowledge processes that create synergies are needed.

Keywords: Learning Environments, Collaboration, Pedagogy, Education, Economics, Change

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1 Introduction

Aligning with the United Nations Educational, Scientific, and Cultural Organisation (UNESCO), collaborative learning is identified as essential to help students achieve the United Nations 2030 Sustainability Agenda and its sustainable goals (UN, 2015). The importance of quality education in promoting lifelong learning takes a central stage as we aim to understand the importance of the educational system in supporting an economic paradigm shift, which include providing access to high-quality education and promoting lifelong learning. In addition, to conform to the skills emphasis of OECD and UNESCO's sustainability objectives, colleges and universities must prioritise the integration of collaborative learning within their academic curricula. This pedagogical approach is advantageous because it imparts students with social and environmental consciousness and academic knowledge. Students can cultivate critical competencies, including adaptability, collaboration, and innovation, which are fundamental for their future achievements and the advancement of society by engaging in collaborative learning. Innovative pedagogical frameworks need to offer support to students in the development of the necessary attributes to flourish and assume leadership roles as they identify their role as global citizens sharing a common future by rendering them invaluable assets for any institution that nurtures them (Saitua-Iribar et al., 2020; Gan et al., 2022). Existing research offers evidence of a significant correlation between economic development, access to education within collaborative working and learning environments. For instance, the UNESCO's Report "*Education for Sustainable Development Goals: Learning Objectives*" emphasises the significance of inclusive learning, particularly through collaborative efforts (UNESCO, 2017). The "*Future of Education and Skills 2030*" initiative by the OECD also acknowledges that collaborative learning is crucial for preparing oneself for the future. This is comparable to the guiding principle of education for sustainable development (ESD), which aims to equip students with the necessary knowledge, competencies, principles, and dispositions to promote sustainable development. On the other hand, the OECD emphasises the need to transform learning into a more interactive process that focuses on the ability to cooperate, communicate, and adapt within a rapidly changing world (Hodge et al., 2021).

The UNESCO and OECD reports also underscore the importance of learners actively participating in discussions, exchanging viewpoints, and collaborating with shared objectives to cultivate a sense of global citizenship and enhance their critical thinking abilities. Furthermore, educational institutions' implementation of collaborative learning is consistent with UNESCO and OECD recommendations that emphasise the significance of inclusive and participatory learning approaches and the development of future critical skills that are needed to be able to work as part of diverse working teams immersed on a global and complex international context (Zheng et al., 2014; Strauß & Rummel, 2020). Universities and colleges' initiatives prioritising the principles endorsed by UNESCO and OECD can promote collaborative learning through group projects and peer-to-peer learning. This approach aligns with UNESCO's sustainability goals, which aim to encourage active participation and create inclusive learning environments. Additionally, learning environments that foster participation and collaboration can lead to the development of creative and critical

thinking abilities. For instance, UNESCO's plan on "global citizenship education" highlights the need for students to actively participate and show empathy as responsible members of our global society. International competence courses, such as the one offered at the Universidad de Monterrey in Mexico, utilise this approach to unite students from various cultural backgrounds with the aim of promoting enhanced mutual comprehension and acquisition of information. This correlates with the generally accepted need for education that seeks to educate learners to collaborate toward common goals for sustainable development (Canton & Garcia, 2018).

Similarly, the OECD has highlighted the imperative for students to develop a suite of skills that are critical for success in the 21st century, including creativity, critical thinking, communication, and collaboration. Parra (2021) describes that publications from the OECD have also highlighted the gaps in digital learning readiness as evidenced during the COVID-19 pandemic, revealing significant disparities in digital literacy among educators and students, which, if addressed, could further bolster collaborative learning strategies. Therefore, creating courses that emphasise group work has become essential, and it cannot be limited to the personal choices of learners or educators. It needs to become a calculated and strategic transition to ensure that the next generation of leaders can adapt to and thrive in a world where everything changes. The outlined learning context aligns with the goal of creating citizens who are strong thinkers and doers but are also concerned about the world around them and their impact. This supports the idea of integrating educational goals with the pressing needs of social justice and environmental preservation. By integrating learning models that are in connection with real problems, students are prepared to succeed and take the lead in the future when creativity, flexibility, and collaboration are essential for individual, societal, and global prosperity when these traits are encouraged through collaborative learning methodologies (Hei et al., 2020).

2 Disrupting Pedagogy

Pedagogy is subject to significant debate and dilemma as discussions try to identify if learning and teaching should be considered a science or, instead, better understood as art. Despite respectable history, pedagogy has not yet managed to receive a universally accepted definition at a global level. Although there are various interpretations and formulations, pedagogy still seeks its meaning and recognition within the Educational Sciences. Valued by many and renegade by even more pedagogy today, it is mainly a science-focused, along with other sciences, on the study of the process of education and the analysis of variables that impact the development of the individual from an educational point of view within a much broader spectrum known as Social Sciences. With a fascinating past and founding myths, pedagogy begins to define itself as a science with the emergence of the masterpiece, considered by some authors, of *Didactica Magna*, a work elaborated by Jan Amos Comenius, philosopher and Czech pedagogue through which they lay the foundations of pedagogy as a stand-alone scientific field and the foundation of the subtitled teaching method and the universal art of learning all (Comenii, 1657; Compare, 1886; Lawton & Gordon, 2002).

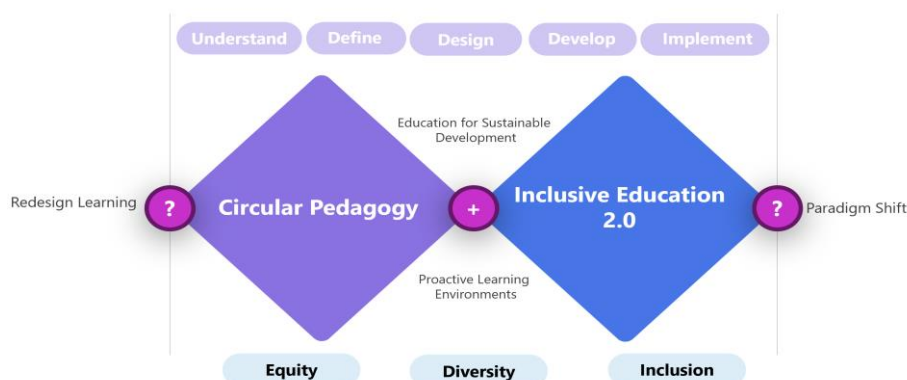


Figure 3: Redesigning Learning: Circular Pedagogy + Inclusive Education 2.0.
Source: Authors (2023)

This subtitle highlights the vision and mission of pedagogy to meet the needs of the tutor of students or what we now know through numerous official documents as education for all or the idea of no one left behind that can be articulated in Figure 3 as a pedagogical working context seeking to redesign learning. This idea refers not only to the 2030 Agenda, but also to the roots of education for all, the idea found in Martin Luther's work, although in fact, the idea highlights the importance of the teaching method in the transmission of information or the more known name of instruction and where equity, diversity and inclusion should be considered as a guiding compass of collaborative and proactive learning environments. Beyond these fundamental ideas of pedagogy, its purpose is to describe, classify and explain the complexity of the phenomenon and the educational process and guide educators' work. Given that education is humanity's response to social problems, it makes pedagogy a profound probabilistic character taking into account the different dynamics and organisation of societies, which may explain why a commonly accepted definition has not been reached so far (Shah, 2021; Friesen & Su, 2023).

Our contemporary society faces many challenges and the educational sector requires innovative approaches to support learning environments than are characterized by becoming more complex underlining the significance of pedagogy. The astounding velocity of technological evolution, globalisation, and the social, economic and climate challenges we face today make the entire literature, despite the impressive volume of writing, insufficient to outline a pedagogy that provides a comprehensive picture of the complexity of the environment in which we live. Traditionally, the literature presents a branch of general pedagogy that includes preschool pedagogy, pedagogy of small schoolchildren, large schoolchildren, adolescents and adults, and higher education pedagogy (with different specialisations – fields of activity). A second branch called defectology or, more recently, already dedicated special education, special psychopedagogy and-or, special educational requirements dedicated to all pupils and students who do not fit into typical developmental profile. Another important branch is the history of pedagogy, which is focused on developing education and educational institutions according to social organisation and requirements, and comparative pedagogy, which is concerned with how education systems are organised in different countries and at different historical

times. On the other hand, teaching or teaching methods are also an important branch of pedagogy and their applicability (Giroux, 1997; Shah, 2021; Friesen & Su, 2023).

This organisation reflects the main peculiarity of pedagogy, namely monodisciplinarity and segregation. However, in a super-connected world with impressive complexity, passing on specific knowledge to specific specialisations or disciplines is no longer enough to prepare students to engage in unpredictable and volatile learning and working environments that are constructed within growing levels of uncertainty and conflict affecting our global society and its diverse systems. Learners, educators, and researchers are facing many challenges. For them to be able to develop the skills necessary for tomorrow's society, they need not only monodisciplinary knowledge but also interdisciplinary and transdisciplinary knowledge. In this respect, it should be noted that we do not diminish the importance of monodisciplinary knowledge; on the contrary, we consider expertise and discipline-specific knowledge as a cornerstone to be able to engage with other disciplines aiming to solve real-life problems but mention that this knowledge is no longer sufficient to prepare students for tomorrow. Also, the segregation and delineation of the role practised in the traditional approach no longer respond to the current profile of the student who is increasingly represented by the mature student who is fine at the first specialisation or professional retraining. A cause of this phenomenon is the promotion of Lifelong learning, the economic dynamics, and the labour market demands and the need to transition towards collaboration, participation and diverse learning working contexts that build on individual competencies and skills that enable collaborative learning environments that are functional in a global context that is not limited to the needs of the labour market (Giroux, 1997; Giroux, 2003; Hadjar & Gross, 2016).

3 Reshaping Education

As a result, the role of the university professor is undergoing profound and dramatic changes. If, until recently, the teacher was considered the holder of absolute truth and the only source of information transmission to future citizens, this role no longer has applicability and no longer meets the real learning needs of students. In close connection with the role that until recently was undisputed, the ways of teaching and interacting with students are another hot point of discussion. We are not referring here to online or hybrid learning methods with human interactions that occur in the classroom and permanently affect the quality of learning, including the results achieved. Here, we are discussing the elements of the hidden curriculum and the educational climate as a whole (Jackson, 1990; Gertz et al., 2018; Bergan et al., 2018; Morley & Jamil, 2021).

It is quite impressive that although companies have long given up on this “series” type of activity model, it is still present in educational systems and extremely resistant to change. Given that the teachers put education into application, pedagogy is of enormous importance in providing the necessary support to all students to achieve their individual potential and to guide them as becoming critical members of diverse learning teams. The educational practice, beyond disciplines and teaching, makes or does not make a difference at the level of real skills developed in different training programs. However, in the current educational practice, regardless of the specialisation, there is a clear distinction between the roles of the teacher and the respective student between research and teaching activities and vocational training

(Bergan et al., 2018; Bergan & Damian, 2010; Psaltis et al., 2017; Clifford & Montgomery, 2014).

Based on these arguments, the new concept of circular pedagogy by Morales et al. (2022) proposes a new model of educational practice in which the delimitation of the role of teacher, student and researcher is no longer applied, these roles being ineligible, and the boundaries of disciplines are overcome by a transdisciplinary approach to education focused on solving real problems in everyday life, or what is called project-based learning and challenge-based learning, considering design thinking and full inclusion at the same time. In our opinion, circular pedagogy not only values the continuous flow of information in the three dimensions of the teacher, learner and researcher roles that are considered interchangeable roles and critical partners in learning processes seeking to build knowledge through participation and collaboration but also the inclusion and valorisation of all those involved in the process of building and rebuilding knowledge equally, beyond any barrier that could stand in the way of manifesting the creative potential so specific to all human beings. As a result, the concepts of circular pedagogy and inclusive education are intertwined, but they are defined by the acceptance and validation of different levels of reality and different levels of perception and include the acceptance of the fact that two opposite bridges that lead to diverse viewpoints can be valid at the same time. These considerations are the essence of transdisciplinary thinking on the basis of which these two concepts will be developed. Given that we live in a world of technology, the elements, including education 1.0-5.0 show the evolution of the technologies used in education to reduce as far as possible the disparities in access to and participation in quality education services in a context where a high level of educational services is known to correlate positively with a better quality of life, a better-paid job and a working context that embraces our role as global citizens that needs to be developed by supporting and nurturing the integration of the student voice as part of learning, teaching and research processes (Clifford & Montgomery, 2014; Morales et al., 2022; Pop et al., 2022).

4 Developing the Student Voice

The importance of integrating students as part of collaborative and participatory efforts is an initiative at Technology University (TU) Dublin where researchers and doctoral students are working together on what they have coined as the '*PhD Student Voice*' seeking to showcase practical implementation of collaborative learning concepts, emphasising a proactive and interactive approach to learning, teaching and engaging with research. This initiative is currently in its initial stages and focuses on a circular learning process in which doctoral students participate in a reciprocal knowledge-sharing environment. This environment is similar to the collaborative settings that UNESCO and the OECD consider important for future competencies. This project involved a group of doctoral candidates who actively participated in exercises aimed at knowledge sharing, knowledge exchange, and knowledge transfer, mainly to nurture a process driven by participation and collaboration. The group engages in collaboration with peers from the European University of Technologies (EUT+) and the European Laboratory for Pedagogical Action-Research and Student-Centred Learning (ELaRA). Under this framework, students have control over their educational path and engage in roundtable discussions at the TU Dublin City Campus

and different academic conferences. In the innovative learning context, an emphasis on the need to facilitate collaboration between learners and senior researchers emerges as a disruptor to challenge the traditional role of the supervisor and the relationship between the research team. Learning dynamics assume a more facilitative position where students are encouraged to take charge of discussions and navigate through various perspectives. The purpose of this setting is to improve active listening, communication skills, and critical thinking abilities. These are the fundamental qualities necessary for success in the interconnected world of the 21st century (Hamalainen & Vahasantanen, 2011).

Doctoral Studies Collaboration – A Critical Perspective

To address all educational challenges and urgent environmental calls for action, Higher Educational Institutions (HEIs) should revise the traditional PhD programmes and ensure they have a supportive learning environment for their students. Doctoral studies within the educational framework in Ireland occupy the highest level possible. The active research contributing to this working paper was driven by the team of doctoral students in close collaboration with academics, thus recognising the benefits of the shift to collaborative or team-based approaches. The working dynamic problems during collaboration were captured and mitigated during team performance.

In recent years, doctoral studies have received more attention from HEIs, industry, and policymakers due to the boom in the development of technologies and innovations in the knowledge economy (McKenna & van Schalkwyk, 2023). Working in a group allows students to support each other, share materials, and solve problems collectively. Even more critical is that the supervisor's departure from the project cannot disrupt collaborative work as significantly as in the traditional model (Guerin and Green 2015). Collaborative doctoral studies are seen as more suitable due to their ability to improve over time, which can also raise the completion rate (Cross and Backhouse, 2014; Timmins et al., 2014; Choy, Delahaye, and Saggars, 2015). Alongside the effectiveness of a team-based doctorate, such an approach is seen as beneficial for establishing international connections as learners and academics work together through institutions and countries (Fonn et al., 2016). Also, this is seen as enabling international doctoral and academic networks as education follows the trend of globalisation, as far as the economy does. Bringing different experts to the doctorate teams strengthens their productivity as an outcome and increases the interdisciplinarity nature of the research. As a result, learners can receive vital skills for future academic and industry careers, avoiding being narrow and too specialised, experiencing a lack of necessary skills (McCallin and Nayar, 2012; Vanstone et al., 2013; Carter-Veale et al., 2016).

Ireland offers various study opportunities, and doctoral studies are well established. Interest in PhD studies is stable in Ireland and has remained stable for eight years. As the research team of learners is represented by Technological University Dublin (TU Dublin), the University has also become a point of interest. The growing student population in the 2022/2023 admission year reached 25,785, specifically in PhD programmes throughout the country – 4% or 10,590 students, while in TU Dublin, among 25,245 students, 2% are doctorate (HEA, 2023). After the pick of interest in doctorate studies at TU Dublin in the 2017/2018 admission year, the next two years of decline can be explained by the pandemic effects and increased period



of the admission process due to the restrictions. The rising number of PhD learners declined again in 2022/2023, provoked by an increasingly unstable and uncertain global situation as illustrated in Figure 1 below.

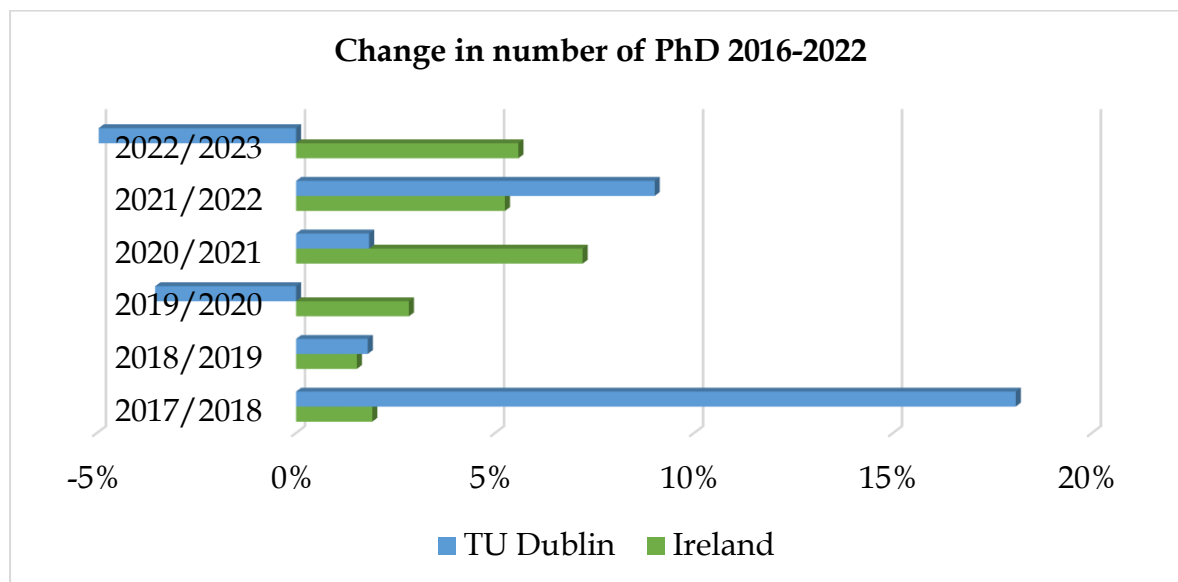


Figure 1: Number of Doctoral Students in Ireland + TU Dublin. Source: Adapted from HEA (2023)

Looking deeply into the learners' cohort in TU Dublin, researchers identified that the median age is 33 years, meaning that doctoral students are defined as mature students with an almost equal gender balance: 49.7% of females and 50.3% of males (HEA, 2023). To gain additional insights into the characteristics and features that define learners, we took a closer look at the learners' profiles by examining data from the Higher Education Authority that helps map the origin countries of doctoral students. The last eight-year trend clearly showed the growing percentage, equal to 30% of PhD candidates representing countries from outside the European Union, as illustrated in Figure 2. In comparison, the average growth from 2016 to 2022 equals 7%. Among the prominent donors for the Irish PhD studies India (21.6%) is an undoubted leader, followed by China (5.2%) and Nigeria (4.5%).

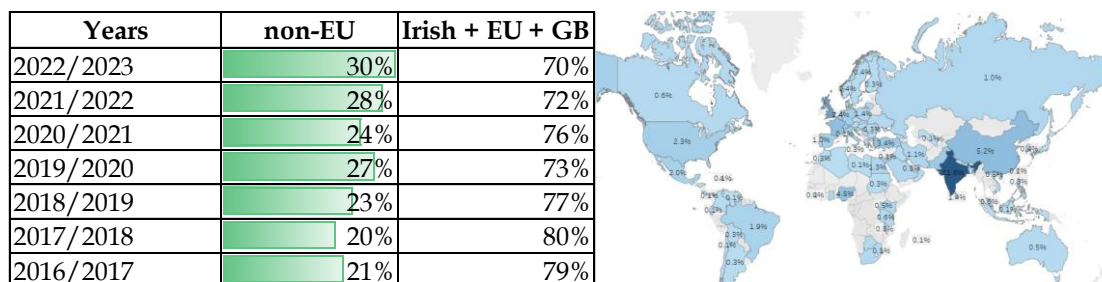


Figure 2: Doctoral Students at TU Dublin by Origin. Source: Adapted from HEA (2023)

Considering the complexities of the doctorate enrolment process from abroad and the immigration process overall, 30% of international learners in the cohort of PhD students can be considered as quite a high rate, which influences team dynamics within different research groups.

5 Challenges in Creating Functional Collaborative Research Teams

Every human interaction inevitably faces challenges, and the learners - academic environment is no exception. When starting a research project as a team, the first challenge will be focused on identifying relevant roles and understanding the team levels of expertise and their unique and shared skills and competencies (McKenna & van Schalkwyk, 2023; Vanstone et al., 2013). Researchers might lack knowledge in different areas; however, collaboration with academics can easily mitigate it by designing a diverse team that contributes to the identification of efficient task assignments. Another significant issue is the requirement for time and resource investment, as not every academic with a high profile might enjoy the idea of cooperating with the students (Choy, Delahaye, and Saggars, 2015; Wrigley, Wolfson and Matthews, 2021). However, limiting students' possibilities to collaborate will impact their ability to acquire the necessary skills for future careers and HEIs, as well as their supervisory style, if they decide to take this role in the future. Professional development for doctoral students is equally important as academic writing and research skills. But what does professional development in a PhD actually mean? Students of any HEIs can find the road map in their research regulation policies. For instance, TU Dublin includes research skills and awareness, ethics and social understanding, communication skills, personal effectiveness/development, teamwork and leadership, career management, entrepreneurship and innovation and offers five modules to cover all requirements (TU Dublin, 2023). Most of these skills can be achieved only in collaborative projects and/or teams as they give experience on how actual teams function, how to divide roles into teams, solve possible problems, and lead a particular part of the research. However, the working context for doctoral studies is anchored on a dysfunctional model that is limited to doctoral students' contact with their supervisor and that quite commonly limits students' opportunities to engage in collaborative work with other students and, more importantly with senior researchers that can contribute to their development and networking skills.

Moreover, the literature offers significant evidence highlighting the benefits of diverse research teams involving learners and academics that can significantly benefit from students' backgrounds and professional experiences that they bring to the team. It is of interest to consider that in the context of Technological University Dublin, doctoral students are characterised by being mature, mid-career professionals with established perceptions, solid motivation, and professional backgrounds that bring a different set of skills and challenges to the learning process. For example, students with developed professional careers bring a different set of skills, abilities and competencies that have been developed as a result of their interactions with industry, and that can result in bringing invaluable experiences and insights to research teams that can be structured and expanded through experiential learnings enriched by theoretical approaches and methods (Vanstone et al., 2013; Carter-Veale et al., 2016; McKenna & van Schalkwyk, 2023). These learners need less time for adaptation and

can show results in a short perspective. Building skills for future careers usually starts with the assistant lecturer opportunities that universities offer their doctoral candidates. However, academic support and guidance remain essential. Thus, the attitude to PhDs as a student must be reassessed, which demands a new approach to pedagogy and education.

6 Conclusion

Education needs a paradigm shift that involves understanding and internalising the importance of rethinking learning and education from a human-centric perspective. The transformation process involves the manifestation of empathy, compassion, and caring from a world that is growing in complexities and affected by a myriad of conflicts that are depicting a gloomy future that can become a reality if we, as humanity, do not change the way we live our lives and interact with our fellow human beings. This paradigm shift is as pressing as it is hard to achieve because academic culture promotes and facilitates values other than those related to collaboration, participation, knowledge exchange, working together, and caring for people and the planet. However, the process, although a difficult one, is not impossible to accomplish. The formation of multidisciplinary and cross-disciplinary teams that share values and participate in the co-creation of a sustainable development-oriented educational design and a new educational model in which each individual can find their place, value their expertise and creative capacity, and through the technologies currently available, facilitate the access and participation in quality education, can represent a way forward.

Inclusive education, from its holistic dimension, can contribute to a process of change where the teacher's attitude is to reduce barriers to learning for all students regardless of the particularities they may present. Though seemingly simple, this process of removing barriers to learning is far from easy to implement, given the variables involved. Beyond the main goal of providing education for sustainable development by creating proactive learning environments, redesigning learning involves a significant effort on the part of teachers, which is often time-consuming and energy-consuming. Moreover, teachers often face a lack of motivation if we consider that we cannot be sure of immediate learning outcomes, which are demonstrated later upon entry into the labour market. Redesigning learning that generates a paradigm shift is a lasting process involving human-centred education with elements of resilience, empathy, acceptance of all students and sustained care for their development, but also with a constant awareness of the real threats facing humanity, of which the most important threat to humanity and Human Security is climate change (Coetzer et al., 2023; Cazden, 2012; Rossouw & Frick, 2023).

7 References

- Bergan, S., Harkavy, I. R., & Europarat (Eds.). (2018). Higher education for diversity, social inclusion and community: A democratic imperative. Council of Europe Publishing.
- Bergan, S., Radu, D. (2010). Higher education for modern societies: competences and values (Council of Europe higher education series No.15).
- Canton, A., & Garcia, B I. (2018). Global Citizenship Education. <https://onlinelibrary.wiley.com/doi/10.1002/yd.20307>

- Carter-Veale, W. Y., R. G. Tull, J. C. Rutledge, and L. N. Joseph. (2016). "The Dissertation House Model: Doctoral Student Experiences Coping and Writing in a Shared Knowledge Community." *CBE—Life Sciences Education*, 15 (3): ar34. doi:10.1187/cbe.16-01-0081.
- Cazden, C. B. (2012). A Framework for Social Justice in Education. *International Journal of Educational Psychology*, 3, 178–198. <https://doi.org/10.4471/ijep.2012.11>
- Choy, S., B. L. Delahaye, and B. Saggars. (2015). "Developing Learning Cohorts for Postgraduate Research Degrees." *The Australian Educational Researcher*, 42 (1): 19–34. doi:10.1007/s13384-014-0147-y.
- Clifford, V., & Montgomery, C. (2014). Challenging Conceptions of Western Higher Education and Promoting Graduates as Global Citizens: Promoting Graduates as Global Citizens. *Higher Education Quarterly*, 68(1), 28–45. <https://doi.org/10.1111/hequ.12029>
- Coetzer, J-H, Et all (2023). Enhancing Human Security by Transforming Education Through Science, Technology, and Innovations. *CADMUS*, 5(1), March 2023, 7-20
- Comenii, J.A. (nd). Opera didactica omnia. Ab Afino 1827 aci 1657 continuata, AMSTERDAM!» Impensis D. Laurentii de' Geer Excudenmi Christophfrus Cwnradus, & Gabriel < Kov. Anno M. DC. LVII
- Compare, G., (1886). A history of pedagogy. Boston: D. C . Heat&Co
- Cross, M., and J. Backhouse. (2014). "Evaluating Doctoral Programmes in Africa: Context and Practices." *Higher Education Policy*, 27 (2): 155–174. doi:10.1057/hep.2014.1.
- Fonn, S., O. Egesah, D. Cole, F. Griffiths, L. Manderson, C. Kabiru, A. Ezeh, M. Thorogood, and C. Izugbara. (2016). "Building the Capacity to Solve Complex Health Challenges in Sub-Saharan Africa: CARTA's Multidisciplinary PhD Training." *Canadian Journal of Public Health* 107 (4): e381–e386. doi:10.17269/cjph.107.5511.
- Friesen, N., & Su, H. (2023). What Is Pedagogy? Discovering the Hidden Pedagogical Dimension. *Educational Theory*, 73(1), 6–28. <https://doi.org/10.1111/edth.12569>
- Gan, D., Alkaher, I., & Segal, T. (2022). Incorporating collaborative learning in teacher education to foster self-efficacy to implement environmental citizenship: an action research. *International Journal of Sustainability in Higher Education*. <https://doi.org/10.1108/ijshe-07-2021-0258>.
- Gertz, S. K., Huang, B., & Cyr, L. (Eds.). (2018). Diversity and Inclusion in Higher Education and Societal Contexts. Springer International Publishing. <https://doi.org/10.1007/978-3-319-70175-2>
- Giroux, H. A. (1997). Pedagogy and the politics of hope: Theory, culture, and schooling; a critical reader. Westview Press.
- Giroux, H. A. (2003). Public Pedagogy and the Politics of Resistance: Notes on a critical theory of educational struggle. *Educational Philosophy and Theory*, 35(1), 5–16. <https://doi.org/10.1111/1469-5812.00002>
- Guerin, C., and I. Green. (2015). "They're the Bosses': Feedback in Team Supervision." *Journal of Further and Higher Education* 39 (3): 320–335. doi:10.1080/0309877X.2013.831039.

- Hadjar, A., & Gross, C. (2016). Education systems and inequalities: International comparisons. Policy press.
- Hämäläinen, R., & Vähäsantanen, K. (2011). Theoretical and pedagogical perspectives on orchestrating creativity and collaborative learning. <https://doi.org/10.1016/j.edurev.2011.08.001>
- Hei, M., Tabacaru, C., Sjoer, E., Rippe, R., & Walenkamp, J. (2020). Developing Intercultural Competence Through Collaborative Learning in International Higher Education. *Journal of Studies in International Education*, 24, 190 - 211. <https://doi.org/10.1177/1028315319826226>.
- Higher Educational Authority. (2023). Statistics. <https://hea.ie/statistics/data-for-download-and-visualisations/key-facts-figures/>
- Hodge, S., Holford, J., Milana, M., Waller, R., & Webb, S. (2021). Who is 'competent' to shape lifelong education's future? *International Journal of Lifelong Education*, 40, 193-197. <https://doi.org/10.1080/02601370.2021.1976566>.
- Jackson, P. W. (1990). Life in classrooms. Teachers College Press.
- Lawton, D., & Gordon, P. (2002). A history of Western educational ideas. Woburn Press.
- McCallin, A., and S. Nayar. (2012). "Postgraduate Research Supervision: A Critical Review of Current Practice." *Teaching in Higher Education* 17 (1): 63–74. doi:10.1080/13562517.2011.590979.
- McKenna, S., & van Schalkwyk, S. (2023). A scoping review of the changing landscape of doctoral education. *Compare*. <https://doi.org/10.1080/03057925.2023.2168121>
- Morales, L., Coetzer, J.-H., Barkoczi, N., Pop, L., Marian, C., & Flynn, P. (2022). A Circular Pedagogy for Higher Education. Technological University Dublin. DOI: 10.21427/74V5-DT69
- Morley, D. A., & Jamil, M. G. (Eds.). (2021). Applied Pedagogies for Higher Education: Real World Learning and Innovation across the Curriculum. Springer International Publishing. <https://doi.org/10.1007/978-3-030-46951-1>
- Parra, G. (2021). Educators' ICT Literacy: A Prerequisite for the Future of Education Post-COVID-19., 9(2). <https://doi.org/10.24203/ajeel.v9i2.6543>
- Pop, L., Barkoczi, N., Morales, L., Jon-Hans Coetzer, Marian, C., & Flynn, P. (2022). Circular Pedagogy for Smart, Inclusive and Sustainable Education. <https://doi.org/10.13140/RG.2.2.36078.69449>
- Psaltis, C., Carretero, M., & Čehajić-Clancy, S. (Eds.). (2017). History Education and Conflict Transformation. Springer International Publishing. <https://doi.org/10.1007/978-3-319-54681-0>
- Rossouw, N., & Frick, L. (2023). A conceptual framework for uncovering the hidden curriculum in private higher education. *Cogent Education*, 10(1), 2191409. <https://doi.org/10.1080/2331186X.2023.2191409>
- Saitua-Iribar, A., Corral-Lage, J., & Peña-Miguel, N. (2020). Improving Knowledge about the Sustainable Development Goals through a Collaborative Learning Methodology and Serious Game. *Sustainability*, 12, 6169. <https://doi.org/10.3390/su12156169>.
- Shah, R. (2021). Conceptualising and Defining Pedagogy. *IOSR Journal of Research & Method in Education (IOSR-JRME)* e-ISSN: 2320–7388, p- ISSN: 2320-737x Volume 11, Issue 1 Ser. II (Jan. – Feb. 2021), pp 06-29.

- Strauß, S., & Rummel, N. (2020, June 29). Promoting interaction in online distance education: designing, implementing and supporting collaborative learning. <https://doi.org/10.1108/ils-04-2020-0090>
- Technological University Dublin. (2023). Prospective students. <https://www.tudublin.ie/research-innovation/research/postgraduate-research/prospective-students/>
- Timmins, F., B. Timmins, P. O'Rourke, S. Long, R. Ekins, and E. Coyle. (2014). "Interdisciplinary Doctoral Supervision: Lessons for Nurse Education and Practice." *Nurse Education Today* 34 (11): 1338–1342. doi: 10.1016/j.nedt.2014.05.01810.1016/j.nedt.2014.05.018.
- UNESCO. (2017). Education for Sustainable Development Goals: Learning Objectives. Paris: UNESCO. Division for Inclusion, Peace and Sustainable Development. Accessed 12 February, 2023, available online: <http://unesdoc.unesco.org/images/0024/002474/247444e.pdf>
- United Nations. (2015). Transforming our world: The 2030 Agenda for Sustainable Development [Technical Report]. UN. sustainabledevelopment.un.org
- Vanstone, M., K. Hibbert, A. Kinsella, P. J. McKenzie, A. Pittman, and L. Lingard. (2013). "Interdisciplinary Doctoral Research Supervision: A Scoping Review." *Canadian Journal of Higher Education* 43 (2): 42. doi:10.47678/cjhe.v43i2.2403.
- Wrigley, C., P. Wolifson, and J. Matthews. (2021). "Supervising Cohorts of Higher Degree Research Students: Design Catalysts for Industry and Innovation." *Higher Education* 81 (6): 1177–1196. doi:10.1007/s10734-020-00605-3.
- Zheng, L., Yang, J., Cheng, W., & Huang, R. (2014). Emerging approaches for supporting easy, engaged and effective collaborative learning. <https://doi.org/10.1016/j.jksuci.2013.10.00>