The Growth of Social Innovation Research in Higher Education Institutions (HEIs)

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Submitted date: 28-Apr-2024
Revised date: 12-Nov-2024

Abstract:

Purpose: This research seeks to explore the development of "social innovation (SI)" research within Higher Education Institutions context (HEIs)

Design/methodology/approach: The paper explores academic databases (Web of Science/Scopus/Sage), to identify relevant papers focused on SI. Using a Systematic Literature Review (SLR) with narrative-assessment approach, the 'VOSviewer' tool is employed to analyze relationships between themes/subthemes related to SI in HEIs. Additionally, Excel's polynomial-trendline feature is used to track publication numbers over time.

Findings: The research identified five themes related to HEIs and SI trends, each exposing important aspects of higher education and SI, including "*Sustainable Development; Social Entrepreneurship; Digital Transformation; Research; and Innovation Culture*." The research also identifies best practices of global universities and their SI programmes across 19 topics, including changes in publication volume since 1996.

Practical implications: The SLR reveals research gaps related to HEIs and SI trends that require further investigation. Each of these areas gives scholars/practitioners opportunities for in-depth investigation.

Social implications: Findings encourage global HEIs to implement SI, become acquainted with the present themes and the programmes conducted by HEIs, to recognise the importance of SI trends, and to fill HE provision gaps around SI.

Originality/value: This paper contributes to knowledge on the promotion of SI in HEIs and sustainable development, whilst identifying gaps for further research.

Keywords: HEIs, Social Innovation, Sustainable Development, Social Entrepreneurship, Digital Transformation, Innovation Culture.

Paper type: Research paper

I. Introduction

The COVID-19 pandemic highlighted the essential requirement for HEIs to cultivate resilience, which primarily involves their transformation towards proactive involvement with public, private, and governmental stakeholders (Bui *et al.*, 2021). Social innovation (SI) is defined in this paper as innovative activities and services that strive to meet social issues (Mulgan, 2006, p. 146). Further, social innovation is centred on the empowerment of disadvantaged groups (Mulgan, 2019) through the restructuring of cultural, normative or regulative practices in society, in order to enhance collective power (Heiscala, 2007).

HEIs play a crucial role in fostering SI by serving as knowledge producers (Carayannis and Campbell, 2012), disseminators and anchor institutions in their communities (Haddow and Brodie, 2023). HEIs have significantly improved their frameworks and implementations of SI in recent years, linked to their mission to inspire innovation by linking education, research, and collaboration with social transformation like entrepreneurship (SDG7s) (Mulgan, 2019). SI initiatives at HEIs have recently increased through strategic centres supporting social innovation (Feijóo-Quintas *et al.*, 2024), through a cyclical process, where cross-collaboration plays a crucial role in advancing sustainability (Dare *et al.*, 2023). This suggests that incorporating social commitments into the strategic goals of HEIs is important for HE development (García-Aracil *et al.*, 2023).

UNESCO (2017) urges educational institutions to adopt competency-based education to promote SDG learning, lifelong learning, and equip future generations for global challenges (SDG4). HEIs have emerged as key players in generating Social Innovation (SI) (Mdleleni, 2022), solving societal challenges (Goulart *et al.*, 2021), for example, SDG1 (No Poverty), SDG4 (Quality Education), and SDG10 (Reduced Inequalities) through knowledge discovery, transdisciplinary work, community engagement, and capacity-building (Moulaert *et al.*, 2013), as well as through

innovative business models that address social concerns and provide long-term sustainability in complicated situations (Scuotto *et al.*, 2023).

Despite the diverse approaches and structures of SI within HEIs, the mechanisms of knowledge exchange critical for enhancing innovation, remains underexplored (Iqbal, 2021). Further investigation is needed into the institutional frameworks – namely the policies, structures, partnerships, and cultural elements - that foster interdisciplinary collaboration and effectively translate research into solutions for societal challenges (Morsy et al., 2024).

Thus, this research expands on these suggestions by looking into how universities are adapting to societal needs through innovative approaches, through two primary research questions.

> *RQ1. Which findings and trends have arisen from research articles on social innovation frameworks in Higher Education Institutions (HEIs) over time?*
> *RQ2. What are the best HEI practices for SI identified in research papers?*

This paper uses a systematic literature review (SLR) with narrative assessment approach identified to examine trends in SI and HEIs outlined in research articles, carefully analyzing and synthesizing existing research to uncover patterns and emerging themes. Serving as an extended literature review, it integrates theoretical and conceptual insights throughout the findings, discussion, and conclusion to identify key themes, and *best HEI practices,* before proposing a research framework for advancing SI in HEIs.

II. Methodology design

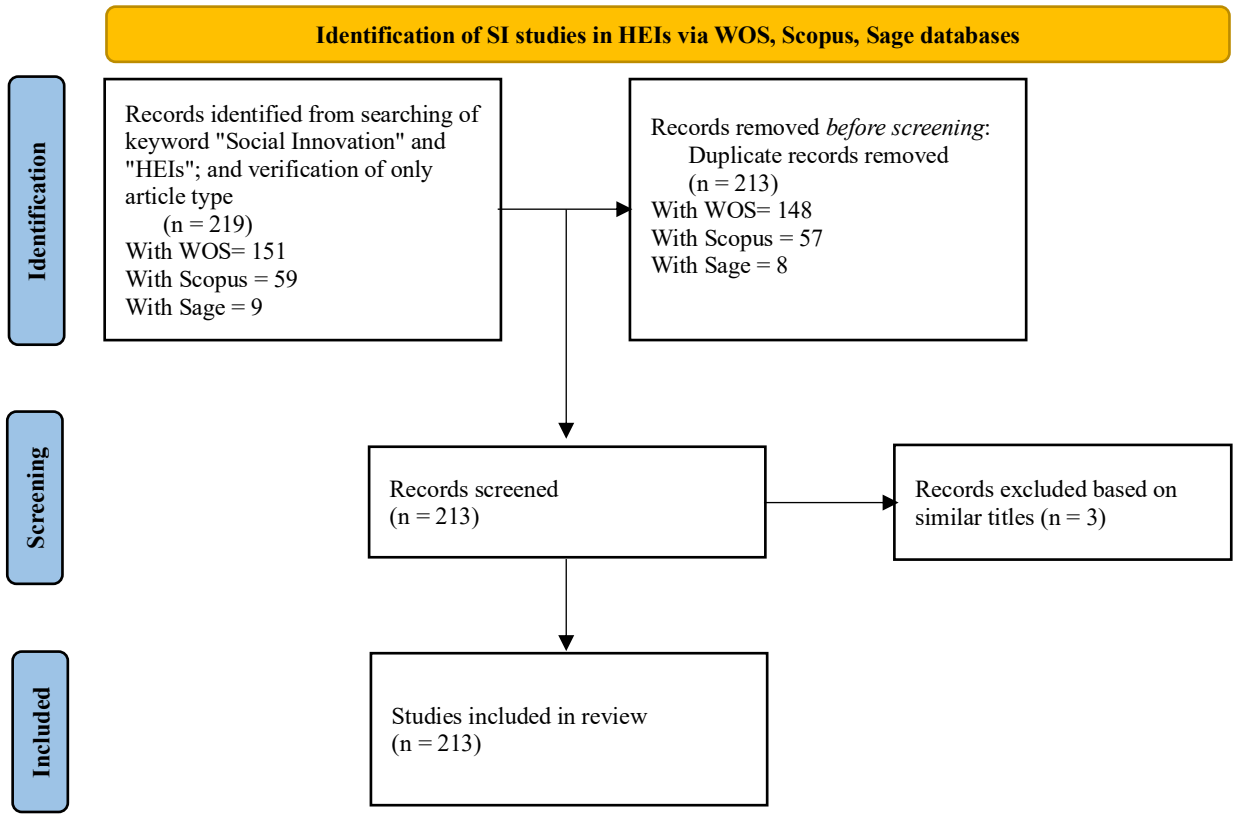
This research conducted a detailed examination of the SI literature (Morsy et al., 2024). Using a systematic literature review (SLR) with a narrative assessment approach, is the most commonly used method for synthesizing SLR results (Paul and Criado, 2020). Additionally, Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) are widely adopted in meta-analyses, while Cochrane reviews follow a structured protocol that defines the review question, sets inclusion criteria, and manages the review process based on Web of Science (WOS), Scopus, Sage Journals to collect and analyse data in three steps as follows.

1st Phase: extract peer-reviewed articles

The peer-review method, which originated in the 1700s, is an iterative approach aimed to maintain high standards in scientific writing while removing incorrect, misleading, or plagiarised information (Drozdz and Ladomery, 2024). Only peer-reviewed works with theoretical or empirical results were examined, as peer-reviewed work remains the most trustworthy benchmark of quality (Nicholas et al., 2015; Gisbert and Chaparro, 2023), as opposed to books and conference proceedings, which may receive less strict scrutiny (Deveugele and Silverman, 2017).

Using search-strings notably, "loose phrase -"HEIs" and "Social Innovation," meant that the results must identify the two terms in a connected fashion and that wildcards and lemmatisation were enabled, implying both single and plural forms. To ensure data integrity, the authors used Excel's "Highlight Duplicates" and "Remove Duplicates" functions to identify and eliminate duplicate documents across the three data sources based on similar titles. This approach helped us efficiently detect and remove redundant records. This process is outlined in the PRISMA diagram below.

1: PRISMA diagram summarizing the screening of references on social innovation (SI) in higher education institutions (HEIs).



Source: (Page MJ, McKenzie JE et al., 2021)

Research papers were selected and article searches were conducted using Mendeley and Google Scholar.

2nd Phase: Analysis tools

Using the VOSviewer algorithm, a Java-based software programme that creates maps from network data for easy visualisation and exploration, this provided a network analysis of “Social Innovation” and HEIs”, displaying data item indicators of “total link strength” and “occurrences”. Clusters are used to organise items, with each representing a unique group of interconnected elements, that are used to understand the occurrence of these themes in the dataset, and how frequently terms related to "HEIs" and "SI" appear in publications.

3rd Phase: Additional analysis method

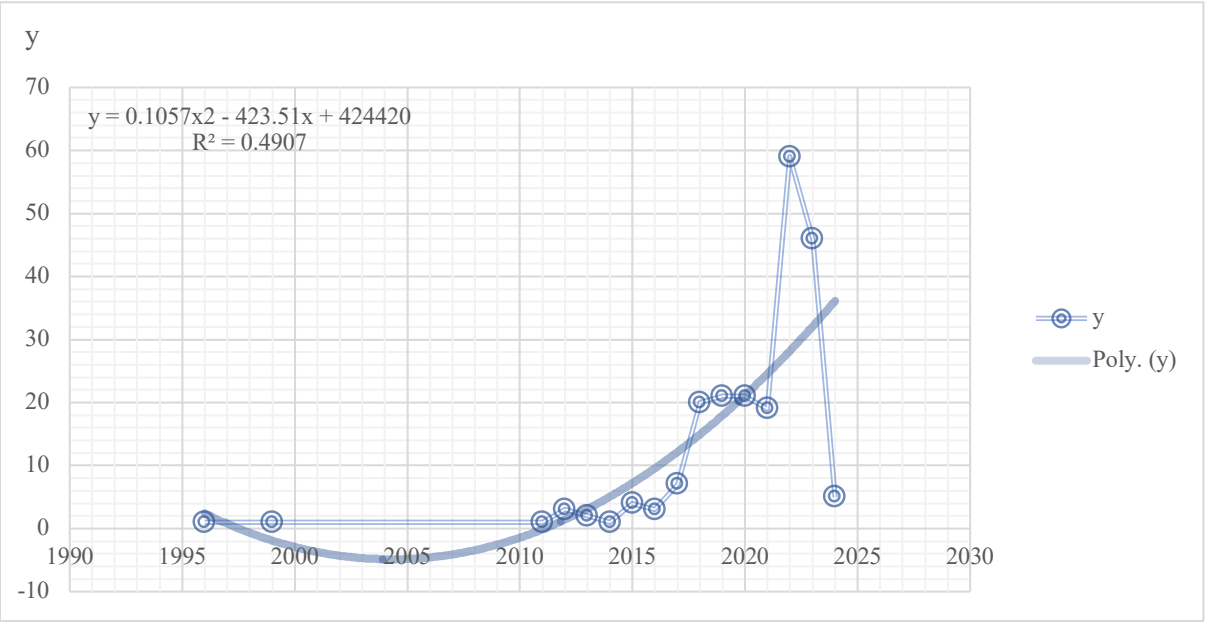
A polynomial trendline was used to calculate the number of HEI and SI publications from 1996 to 2024 based on the extracted papers from the three sources outlined above.

IV. Findings

4.1. Increasing Publications on Social Innovation in Higher Education Institutions

The study describes the growth of publications through time, synthesising data from three sources of documents. The chart below illustrates several peer-reviewed publications on "HEIs" and "Social Innovation" (refereed) from 1996 to 2024. Importantly, the quantity of papers about "HEIs" and "Social Innovation" has grown with time (R-squared=.49). However, the frequency of articles fluctuates.

Figure 2. The Growth of SI papers in HEIs, Authors' work 2024



Notes: Y: Frequency of articles/Polynomial,

A polynomial trendline (PT) is a curved line that is used to show fluctuations in data. The dependent variable is the number of published papers, while the independent variable is the number of years between publications. The selected variables will determine which model is most suited to the data. With an R2=0.4907, the PT illustrates a small increase in research papers over time. This quadratic model accounts for approximately 49.07% of the variability in the number of publications. The remaining 50.93% is unexplained by the model, implying that there are other factors or fluctuations influencing publication numbers that cannot be accounted for.

4.2. Social Innovation trends in HEI contexts

This section aims to explore how trends have arisen from research articles on social innovation framework HEIs over time throughout WOS, Scopus, Sage Database using VOSviewer analysis as follows.

- *VOSviewer analysis with the Web of Science (WOS) database*

When using VOSviewer approach with the Web of Science (WOS) database, it was discovered that "Social Innovation" (SI) at Higher Education Institutions (HEIs) is classified as Cluster 21 out of 45 clusters. It is linked to four key themes: *"Social entrepreneurship, sustainable development, sustainability, innovation*" with high occurrences and total link strength (see Figure 3 and Table I).

Figure 3. WOS themes SI in HEIs with subthemes, Authors' work, 2024

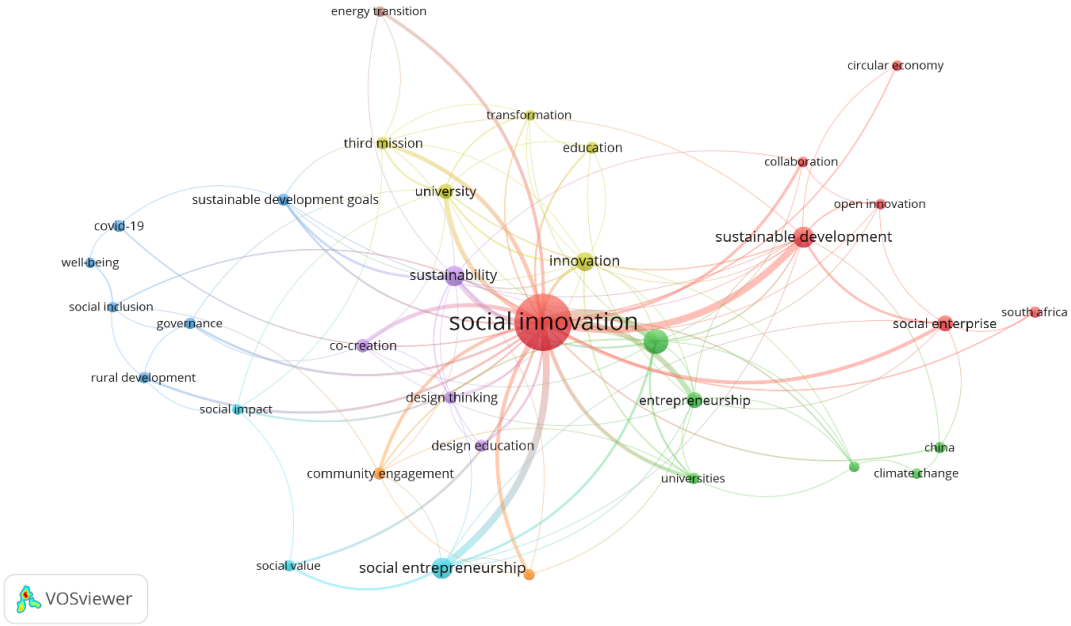


Table I: SI & HEIs subthemes from WOS, Authors' work, 2024

No	Keyword	Occurrences	Total link strength
1	Social Innovation	236	179
2	Higher Education	39	39
3	Sustainable Development	28	34
4	Social Entrepreneurship	28	30
5	Sustainability	26	27
6	Innovation	21	22

- *VOSviewer analysis with the* Scopus *database*

When the VOSviewer technique was used with Scopus database, "SI" at HEIs was discovered to be in Clusters 1 and 2 out of 5, which correspond to a theme: "*Digital Transformation*" with high occurrences and total link strength (see Figure 4 and Table II).

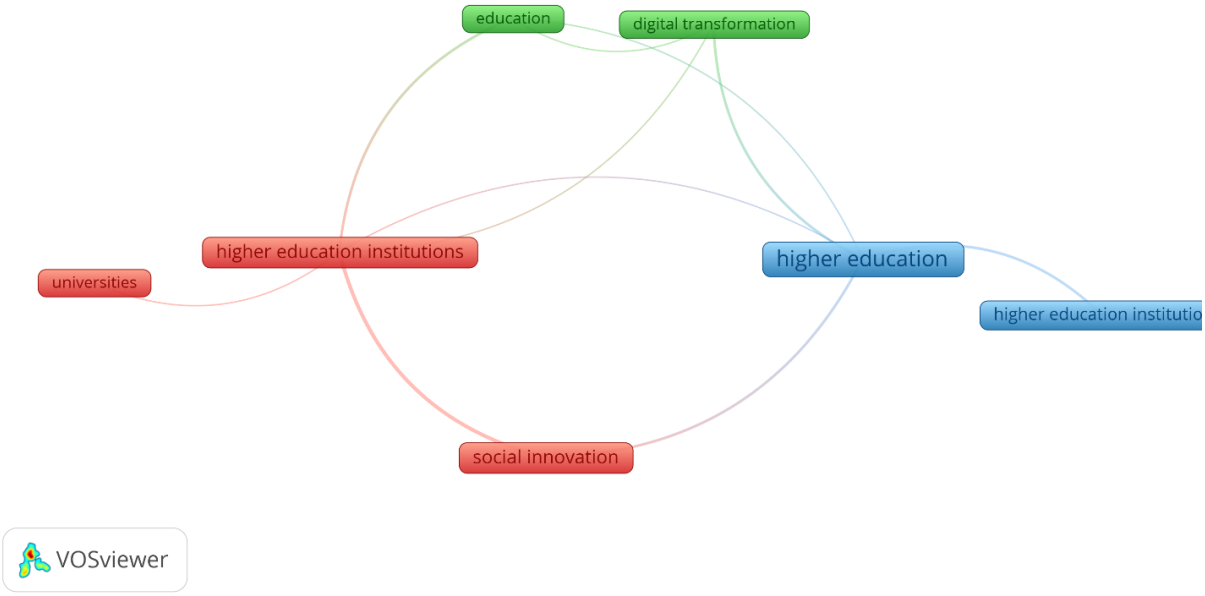


Figure 4. Scopus themes SI in HEIs with subthemes, Authors' work, 2024

Table II: SI & HEIs subthemes from Scopus, Authors' work, 2024

No	Keyword	Occurrences	Total link strength
1	Higher Education	16	8
2	Higher Education Institutions	9	8
3	Social Innovation	10	5
4	Digital Transformation	5	4

- *VOSviewer analysis with the Sage database*

Finally, using the VOSviewer algorithm on the Sage database indicated that "SI" at HEIs is placed in Clusters 1 and 3 out of 5 clusters, which are linked to two main themes: "*Study, Research & Innovation Culture*". (see Figure 5 and Table III).

Figure 5. Sage themes SI in HEIs with subthemes, Authors' work, 2024

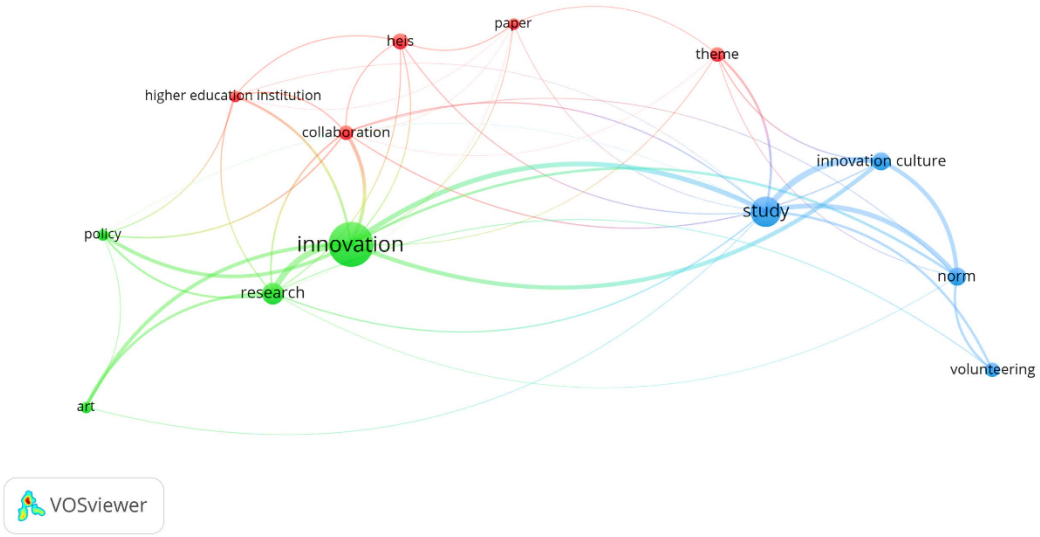


Table III: SI & HEIs subthemes from Sage, Authors' work, 2024

No	Keyword	Occurrences	Total link strength
1	Innovation	23	0.86
2	Study	14	0.86
3	Research	9	1.22
4	Innovation culture	7	0.86
5	HEIs	6	0.32

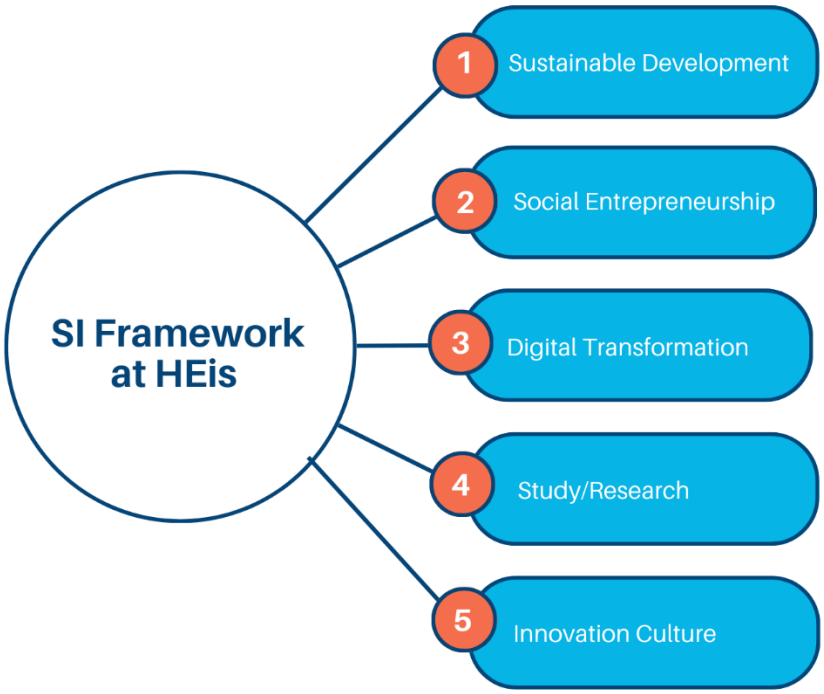
Table IV and Figure 6 describe the building of an SI framework for HEIs that incorporates "occurrence themes and subthemes" from the three sources converged.

Table IV: Themes SI & HEIs, with subthemes, Authors work, 2024.

No	Source	Themes	Subthemes	Count
1	WOS	HEIs, SI	Sustainable Development, Social Entrepreneurship, Sustainability, Innovation	4
2	Scopus	HEIs, SI	Digital Transformation	1
3	Sage	Innovation	Study, Research, Innovation Culture	2

From the list above, themes with the similar or comparable meanings are rearranged, yielding the refined model of SI framework in HEIs presented below Figure.

Figure 6. Refined model of SI research trends in HEIs, Authors' works, 2024



The next section will analyse trends within the five sub-themes to identify research advancements in social innovation within higher education institutions (HEIs), primarily based on references from 2019 to 2024, with a narrative analysis focusing on the state-of-the-art.

4.2.1. Sustainable development of SI in HEIs

Social innovation in HEIs focuses on three main streams of: curriculum transformation, community-university partnerships, and helix collaborations, emphasising the need for emerging countries to collaborate (Wu *et al.*, 2023). Social innovation in higher education would be more sustainable if it examined the longitudinal impacts of new teaching methods from various perspectives and situations (Lake et al., 2022), incorporating communities to help students improve academically, professionally, and personally (Cornet et al., 2023). Integrating education for sustainable development (ESD) is critical for teachers, whilst adding entrepreneurship courses and problem-based learning (PBL) to the curriculum significantly improved students' learning in entrepreneurship innovation (Albareda-Tiana et al., 2019; Liao et al., 2023). Further, exploring

skill learning methodologies using PBL, learning in disability-related areas, independent work across Social Education, Early Childhood Development (ECD), and Pedagogy to identify student learning patterns, are also crucial (Fernández-Jiménez *et al.*, 2019). Integrating Design Thinking (DT) is also essential, aligning programmes with the digital economy's needs for universities, advancing economic well-being and social progress during the refinement of the University-as-a-Service (UaaS) framework (Senivongse and Bennet, 2023). DT courses develop practical and emotional skills, encourage community participation for innovative problem-solving, and are critical for preparing future sustainability leaders in HEIs (Alvarenga et al., 2023). Educators suggest that DT imparts transformative social innovation skills to learners (McLaughlin *et al.*, 2023) and creative educational methods, for instance, technology for teaching focused on enhancing students' learning and experiences (Gashoot *et al.*, 2023).

Furthermore, the innovation in pedagogy is evident in recent social innovations in education, exemplified by the role of simulation-based exercises in the academic achievements of university students (Barrera *et al.*, 2021), academic English proficiency (Homateni Julius et al., 2023). Massive Open Online Courses (MOOCs) are utilized as bridge courses to meet HEIs' standards (Agasisti *et al.*, 2022), and are viewed as a disruptive innovation, that is highly practical and cost-effective (Canaran and Bayram, 2024). This approach examines MOOCs in terms of performance, advantages, and market impact; but they may also serve as an enhanced innovation by generating possibilities for students not provided by traditional HEIs (Al-Imarah and Shields, 2019). Implementing a Collaborative Online International Learning (COIL) model in an online collaboration programme enhances learners' intercultural awareness, global engagement, and personal and professional development (Vahed & Rodriguez, 2021).

HEIs can support dispersed institutes through strategies like prioritizing social purpose partnerships, incentivizing collaboration, leveraging global networks, and adopting budgeting models valuing economic and social impact (Lough, 2022). They can also equip students with SI relevant skills through interdisciplinary design workshops, to improve students' interpersonal competency for tackling real-world challenges (Gelbmann and Pirker, 2023). Logistical problems and varied degrees of commitment, as well as the importance of gaining deeper knowledge in order to drive consistent and sustainable initiatives among HEIs, should also be highlighted (Filho *et al.*, 2021).

Community Engagement is considered the third objective at HEIs to promote SI through the educational process (Donati and Wigren-Kristoferson, 2023), particularly in service-learning (López-De-Arana Prado *et al.*, 2023), and institution-based community innovation labs (Paunescu

et al., 2022). Universities can foster public-private partnerships and community engagement to address socio-economic challenges and promote social innovation (Sibhensana & Maistry, 2021). Successful university-community partnerships depend on equity, inclusive programmes, flexible design, and a supportive culture that encourages teaching and learning risks (Groulx *et al.*, 2021).

4.2.2. Social Entrepreneurship in HEIs

In Higher Education Institutions (HEIs), research on Social Entrepreneurship (SE), a form of SI, emphasizes integrating SE into SI curricula to foster innovation, develop sustainability mindsets, and enhance emotional intelligence (Tomasella *et al.*, 2023). Effective experiential learning, supported by university policymakers through a top-down approach, should focus on high-impact topics, innovative teaching, and the promotion of enterprise and self-employment (Jones *et al.*, 2013). A key component is experiential learning, which strengthens competencies and promotes a solidarity economy, cultivating civic-mindedness and encouraging entrepreneurship with a broader societal impact (Gómez et al., 2019). HE has advanced an education proposal for a solidarity economy, emphasizing competencies for citizenship, promoting awareness of solidarity economy, and encouraging entrepreneurship with broader societal impacts (Gómez et al., 2019).

A Corporate Social Entrepreneurship (CSE) curriculum that engages quadruple-helix stakeholders would advance this mission, requiring a flexible, cross-cutting approach to develop essential ideas and competencies (Rickhoff-Fischer *et al.*, 2021). Furthermore, innovation hubs and other support programmes offer regulatory support for academic entrepreneurship (AE), enhancing the contributions of HEIs (Gaspar Pacheco *et al.*, 2024). In practical terms, students should be seen as catalysts for change, with programmes designed to promote SE within local ecosystems (Thomsen *et al.*, 2018). Examples like the SISTOUR-LAB offer hands-on experience in creating hybrid business models, prototyping SIs, and developing sustainable tourism (Castro-Spila *et al.*, 2018).

For universities to transition into entrepreneurial institutions, they must prioritize knowledge sharing, both nationally and internationally, to expand networks (Kripa *et al.*, 2021). However, developing SE programmes involves navigating budget constraints, professor shortages, and complex social and academic issues (Roslan *et al.*, 2022). Incorporating the humanities and social sciences alongside business knowledge enhances SE competencies, while a community-oriented approach paired with adaptive skills and a triple-impact framework offers a powerful model for SI, especially in emerging economies (Premadasa et al., 2023; Vázquez-Parra et al., 2022). Amid rising social and environmental challenges like poverty, social entrepreneurship has become

crucial, highlighting the dynamics of sustainable ecosystems, social innovation, and integrated sustainable practices (Miah *et al.*, 2024)

4.2.3. Digital Transformation

Universities are prioritizing digital transformation strategies to equip students with essential skills and maintain a competitive edge in the global education landscape, aligning with the demands of Industry 4.0 (Mian *et al.*, 2020). HEIs are adapting their strategies to consider the complex, interconnected factors of the modern world, including political, economic, and environmental dynamics, as well as the lasting effects of COVID-19 (Trevisan *et al.*, 2024). Sustainable digital transformation, in particular, is highlighted as a necessary focus, allowing universities to respond to rapid technological advances, while ensuring long-term viability and resilience (Mohamed Hashim *et al.*, 2022).

Post-pandemic, institutions, businesses, and communities face the imperative to enact comprehensive social innovations (Macke *et al.*, 2018). HEIs were forced to go digital due to COVID-19, which prevented face-to-face classes and tutoring (Rof et al., 2020). In addition, there was a dynamic shift towards online exchange (Silla *et al.*, 2023). Virtual exchange project explores transformative learning outcomes, addressing the theory-practice gap and understanding development processes in virtual exchange projects (VEPs) (Fritz & Marchewka, 2023). This demonstrated the need to reassess the opportunities and barriers for students to gain digital skills (Singh et al., 2020). The majority of students said that digital tools were mostly utilised for institutional communication and peer interaction, rather than for the cultivation of networking and lifetime learning capabilities (Monteiro and Leite, 2021).

Digital technology has the potential to revolutionise this adaptable education method to maximize student outreach (Garcez *et al.*, 2022). Digital technologies (DT) have been demonstrated to exert a positive and significant impact on performance in the areas of scientific study, movement, globalisation and sustainability (Carvalho *et al.*, 2023). HEI transdisciplinary techniques can promote digital sustainability by boosting learners' knowledge and ideation procedures, generating digital services and goods that can help meet sustainable development challenges (Lampoltshammer *et al.*, 2021). Students are more willing to explore the potential given by technological education and learning (Zizka and Probst, 2024). The Digital Study Assistant (IDSA) has elements that assist learners to enhance their own self-control and organising abilities, as well as their learning preferences, performance, and the requirement to meet certain study objectives

(König *et al.*, 2024). HEIs must therefore adapt digitally in order to remain competitive, with strategic planning and stakeholder involvement critical to this (Koseda *et al.*, 2024).

4.2.4. Study/Research

Since 1995, HEI SI has been driven by partnerships between HEIs and technological companies (Westhead and Storey, 1995). Research reveals a growing interest in exploring the connection between open-science and innovation. Recent attention has centred on topics like education, responsible research, SI, co-creation, and AI (Sanabria-Z *et al.*, 2023). Combining both art and science to educate people is an innovative social approach that transcends academia, impacting diverse and socially disadvantaged areas (Alvarez-Castañon and Romero-Ugalde, 2022).

Recently, SI research in HEIs has assessed curriculum and initiatives, focused on how growth in SI competency may increase societal transformation (Glasserman-Morales *et al.*, 2024). The concepts relating to sustainability and SI are effectively and indirectly conveyed in the categories of mission, vision and values, curriculum, 'green campus' activities, and healthy environment strategies focused on labour rights and societal relations (Alvarenga *et al.*, 2024) . Further, research is now more focused on the SDGs, including Industry, Innovation and Infrastructure (Alden-Rivers, 2016; Schmidt and Stadermann, 2022); No Poverty (Greene, 2022), Quality Education (Isusi-Fagoaga et al., 2023), Click or tap here to enter text., and Reducing Inequalities (Ólafsdóttir and Gunnþórsdóttir, 2020).

4.2.5. Innovation Culture at HEIs

"Innovation" entails more than just the desire to do things differently; it also necessitates modifying surroundings (Palmer and Giering, 2024). Sciences related to computers, sociology, science and technology, and commerce were the most popular subjects, with "innovation" appearing as the most commonly used word, indicating the culture of invention fostered by hackathon events (Garcia, 2023). HEIs should establish a platform within the institution to cultivate a culture of SI focused on practice (Svennevik and Saidi, 2022). Indeed, HEI culture must shift towards engaging student entrepreneurs in innovation (Hall, 2021). Further, a sustainability-focused innovation culture fosters a forward-thinking mindset by promoting sustainable solutions, enhancing learning and knowledge exchange, and encouraging experiential approaches that inspire and cultivate students' entrepreneurial mindset (Endarwati *et al.*, 2023).

Based on the SI network analysis conducted, this research has identified a compilation of HEIs that implement SI culture and Table V lists key factors of these by country.

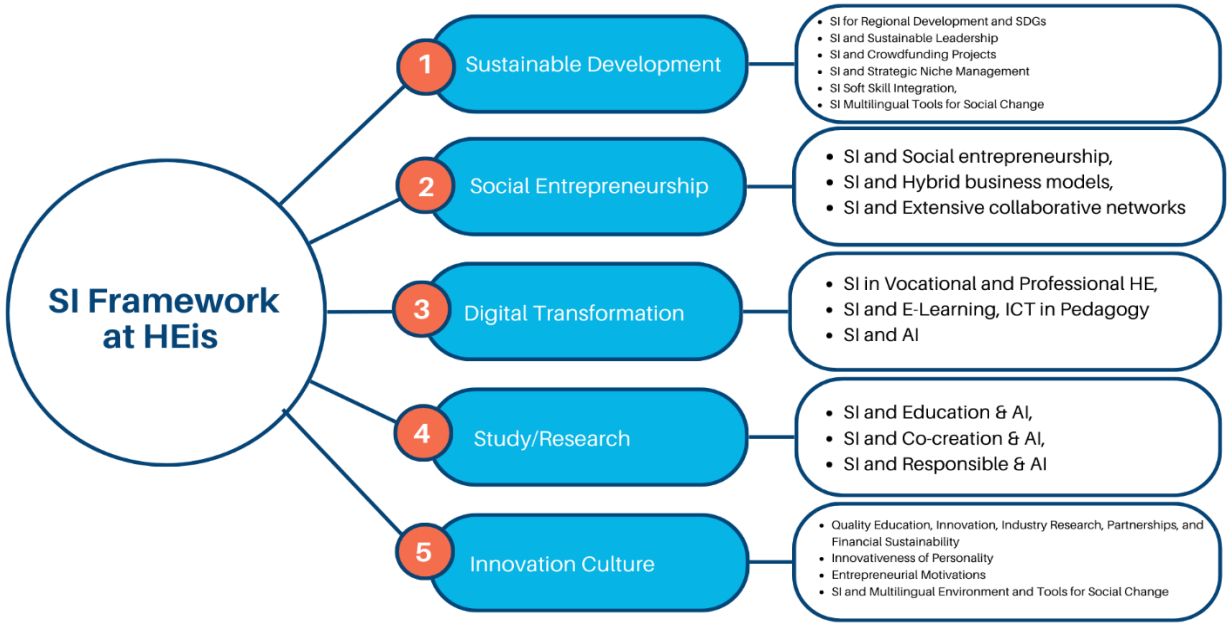
Table V. University and SI Framework by Country

No	University/ institute	SI and its adoption	Sources
1	Austrian HEIs	SI and community partnerships (CCPs)	(Fahrenwald *et al.*, 2023)
2	Belarus HEI	SI and employability of young graduates	(García-Aracil *et al.*, 2022)
3	Canadian university	Entrepreneurial motivations	(Kennedy *et al.*, 2023)
4	China and Pakistan HEIs	SI and niche management	(Iqbal and Piwowar-Sulej, 2022)
5	Indian HEIs.	SI and civic crowdfunding	(Bofylatos and Azariadis, 2022)
6	Mexican university	Design thinking process	(Cruz-Sandoval *et al.*, 2022)
7	New South Wales (UNSW) Hei	Climate action pedagogy	(Leimbach, 2022)
8	North Carolina at Chapel Hill Hei	SI and soft skill integration	(Skywark *et al.*, 2022)
9	Peninsular Malaysia - three northern states	Homelessness research and action	(Yoke *et al.*, 2021)
10	Portuguese HEIs	Social justice in SI and incubators	(Cunha *et al.*, 2022)
11	Spanish public universities	Action-research approach	(Cruz *et al.*, 2023)
12	The Georgia Institute of Technology	SI and SDGs (sustainable development goals)	(Hirsch *et al.*, 2023)

SI can transform education, leadership, and entrepreneurship, promoting sustainability, decolonisation, and social justice. SI promotes employability, incorporates ICT in vocational learning, and enhances community engagement through service learning. SI supports regional development and aligns with the SDGs, as well as fostering entrepreneurial skills, industry

partnerships, and financial sustainability, with action research and individual innovation driving systemic change. These practices are organised into the five themes shown below in Figure 7.

Figure 7. The last refined SI framework at HEIs



IV. Conclusions

This systematic literature review of 213 SI-related papers on the SI frameworks in HEIs, makes a significant theoretical and empirical contribution by identifying SI themes, subthemes, issues and best practices in HE. Further, the paper makes three additional contributions.

- ***First***, this research elaborates upon the work of Morsy et al. (2024), by synthesising fragmented studies and providing an examination of SI's theoretical suitability and practical implementation in HEIs. Using systematic review article data from three major sources (WOS, Scopus, and Sage), the paper identifies a continuous development framework for SI (see Figure 9).

- ***Second***, the paper's conceptual framework of SI and HEI themes, yielded five subthemes and 19 topics (see Figure 9), providing a deeper thematic knowledge of SI in HE.

- ***Third***, avenues for further research were explored and identified. Further research can explore the relationship between countries and the collaboration for SI and sustainable development in

enhancing students' understanding through international projects (Vasconcelos *et al.*, 2022). Investigation of the relationships with external partners, such as NGOs and government bodies in performing SI would also be useful (Peng et al., 2022), along with research on educator performance, staff fatigue, and managerial abilities at HEIs (Raisiene *et al.*, 2022).

The findings also have theoretical and practical implications. Theoretically, the data suggests that HEIs should look to promote an innovation culture. SI, as illustrated in Figure 7 and Table V, requires significant conceptual growth. Campus Community Partnerships (CCP) have been explored in earlier studies to improve the efficiency and efficacy of SI in HEIs; however, further research could explore the themes/sub-themes in Table VI. From a practical standpoint, this paper identifies the need for international projects, CCPs, research competencies, and sustainability competencies to embrace SI. Using the research themes, HEIs may now more effectively allocate resources and management assistance to SI (Figure 7; Table VI). Taken together, these implications can help educators who want to implement or improve SI in another field.

Main theme	Subtheme	Cluster	Links	Total link strength	Occurrences
HEIs, Social Innovation Project	International Project	10	8	8	1
Public and private partnership	Campus-community-partnerships	28	6	6	1
Science and research	Research competencies	7	11	11	1
	Qualitative research	30	12	12	1
	Research-and-development	32	8	8	1
Sustainable development	Sustainable competencies	1	9	9	1

Table VI. Future research themes

This study has several limitations. First, it proposes broad connections between subthemes and SI. Second, only three databases (WOS, SCOPUS, and Sage) were used, possibly missing relevant studies and grey literature. Third, due to the novelty of the concept, the screening method may have missed some studies. Despite these limitations, the systematic review's rigorous approach offers a clear categorisation of topics that support SI at HEIs, reducing research fragmentation and enhancing both study and practice.

REFERENCES

Agasisti, T., Azzone, G. and Soncin, M. (2022), "Assessing the effect of Massive Open Online Courses as remedial courses in higher education", *Innovations in Education and Teaching International*, Routledge, Vol. 59 No. 4, pp. 462–471, doi: 10.1080/14703297.2021.1886969.

Agasisti, T., Frattini, F. and Soncin, M. (2020), "Digital innovation in times of emergency: Reactions from a school of management in Italy", *Sustainability (Switzerland)*, MDPI, Vol. 12 No. 24, pp. 1–17, doi: 10.3390/SU122410312.

Albareda-Tiana, S., García-González, E., Jiménez-Fontana, R. and Solís-Espallargas, C. (2019), "Implementing Pedagogical Approaches for ESD in Initial Teacher Training at Spanish Universities", *Sustainability 2019, Vol. 11, Page 4927*, Multidisciplinary Digital Publishing Institute, Vol. 11 No. 18, p. 4927, doi: 10.3390/SU11184927.

Alden-Rivers, B. (2016), "Social innovation education: Designing learning for an uncertain world", *Advances in Digital Education and Lifelong Learning*, Emerald Group Publishing Ltd., Vol. 2, pp. 75–90, doi: 10.1108/S2051-229520160000002004.

Al-Imarah, A.A. and Shields, R. (2019), "MOOCs, disruptive innovation and the future of higher education: A conceptual analysis", *Innovations in Education and Teaching International*, Routledge, Vol. 56 No. 3, pp. 258–269, doi: 10.1080/14703297.2018.1443828.

Alvarenga, M., Aguiar Dutra, A.R., Fernandez, F., Thomé, R.L., Junges, I., Nunes, N. and Guerra, J.B.S.O. de A. (2024), "Proposal for a model integrating sustainability and social innovation in higher education institutions", *International Journal of Sustainability in Higher Education*, Emerald Publishing, Vol. 25 No. 4, pp. 728–743, doi: 10.1108/IJSHE-07-2021-0301.

Alvarenga, M., Fernandez, F., Thomé, R.L., de Aguiar Dutra, A.R., Junges, I., Nunes, N.A. and de Andrade Guerra, J.B.S.O. (2023), "The Role of Outreach Programs at HEIs: Promoting Sustainability Training Among Future Leaders Through Design Thinking", *World Sustainability Series*, Springer, Cham, pp. 413–429, doi: 10.1007/978-3-031-22856-8_23.

Alvarez-Castañon, L. del C. and Romero-Ugalde, M. (2022), "Training of communities of sustainability practice through science and art", *International Journal of Sustainability in Higher Education*, Emerald Group Holdings Ltd., Vol. 23 No. 5, pp. 1125–1138, doi: 10.1108/IJSHE-01-2021-0030/FULL/XML.

Barrera, F., Venegas-Muggli, J.I. and Nuñez, O. (2021), "The impact of role-playing simulation activities on higher education students' academic results", *Innovations in Education and Teaching International*, Routledge, Vol. 58 No. 3, pp. 305–315, doi: 10.1080/14703297.2020.1740101.

Belcher, B.M., Claus, R., Davel, R. and Jones, S.M. (2022), "Evaluating and improving the contributions of university research to social innovation", *Social Enterprise Journal*, Emerald Group Holdings Ltd., Vol. 18 No. 1, pp. 51–120, doi: 10.1108/SEJ-10-2020-0099.

Bofylatos, S. and Azariadis, P. (2022), "Supporting the emergence of Indian design through design and innovation centres – A methodological approach", *The Design Journal*, Routledge, Vol. 25 No. 4, pp. 537–555, doi: 10.1080/14606925.2022.2088093.

Booponoyeng Bayuo, B., Chaminade, C. and Göransson, B. (2020), "Unpacking the role of universities in the emergence, development and impact of social innovations-A systematic review of the literature", doi: 10.1016/j.techfore.2020.120030.

Bui, P.L., Tzu-Ling Chen, C. and Wickens, E. (2021), "Tourism industry resilience issues in urban areas during COVID-19", *International Journal of Tourism Cities*, Emerald Group Holdings Ltd., Vol. 7 No. 3, pp. 861–879, doi: 10.1108/IJTC-12-2020-0289/FULL/XML.

Canaran, Ö. and Bayram, İ. (2024), "English language teacher trainers' capacity building in sustainable development goals through MOOCs", *International Journal of Sustainability in Higher Education*, Emerald Publishing, Vol. 25 No. 3, pp. 445–469, doi: 10.1108/IJSHE-07-2022-0228/FULL/XML.

Carayannis, E.G. and Campbell, D.F.J. (2012), "Mode 3 Knowledge Production in Quadruple Helix Innovation Systems", *Mode 3 Knowledge Production in Quadruple Helix Innovation Systems*, Springer, New York, NY, pp. 1–63, doi: 10.1007/978-1-4614-2062-0_1.

Carvalho, A., Leitão, J. and Alves, H. (2023), "Digital transformation, state Hei performance and the moderating role of leadership", *International Journal of Leadership in Education*, Routledge, doi: 10.1080/13603124.2023.2281349.

Castro-Spila, J., Torres, R., Lorenzo, C. and Santa, A. (2018), "Social innovation and sustainable tourism lab: an explorative model", *Higher Education, Skills and Work-Based Learning*, Emerald Group Holdings Ltd., Vol. 8 No. 3, pp. 274–290, doi: 10.1108/HESWBL-03-2018-0032/FULL/XML.

Cornet, S., Barpanda, S., Guidi, M.A.D. and Viswanathan, P.K. (2023), "Sustainability education and community development in higher education using participatory and case based approaches in India", *International Journal of Sustainability in Higher Education*, Emerald Publishing, Vol. 25 No. 9, pp. 78–93, doi: 10.1108/IJSHE-07-2022-0242/FULL/PDF.

Cruz, J.L., Hewitt, R.J. and Hernández-Jiménez, V. (2023), "Can public food procurement drive agroecological transitions? Pathways and barriers to sustainable food procurement in higher education institutions in Spain", *Agroecology and Sustainable Food Systems*, Taylor & Francis, Vol. 47 No. 10, pp. 1488–1511, doi: 10.1080/21683565.2023.2248917.

Cruz-Sandoval, M., Vázquez-Parra, J.C. and Alonso-Galicia, P.E. (2022), "Student Perception of Competencies and Skills for Social Entrepreneurship in Complex Environments: An Approach with Mexican University Students", *Social Sciences 2022, Vol. 11, Page 314*, Multidisciplinary Digital Publishing Institute, Vol. 11 No. 7, p. 314, doi: 10.3390/SOCSCI11070314.

Cunha, J., Ferreira, C., Araújo, M. and Nunes, M.L. (2022), "The mediating role of entrepreneurial intention between creativity and social innovation tendency", *Social Enterprise Journal*, Emerald Group Holdings Ltd., Vol. 18 No. 2, pp. 383–405, doi: 10.1108/SEJ-04-2021-0022/FULL/XML.

Dare, A.M., Dittrich, R., Schondel, M., Lowney, M. and Hill, G. (2023), "Understanding sustainability as a cyclical process: insights from social innovation and the adaptive cycle", *International Journal of Sustainability in Higher Education*, Emerald Publishing, Vol. 24 No. 6, pp. 1290–1307, doi: 10.1108/IJSHE-11-2021-0492.

Deveugele, M. and Silverman, J. (2017), "Peer-review for selection of oral presentations for conferences: Are we reliable?", *Patient Education and Counseling*, Elsevier Ireland Ltd, Vol. 100 No. 11, pp. 2147–2150, doi: 10.1016/J.PEC.2017.06.007.

Donati, L. and Wigren-Kristoferson, C. (2023), "A legitimacy approach to social innovation initiatives at universities", *Science and Public Policy*, Oxford University Press, Vol. 50 No. 2, pp. 194–205, doi: 10.1093/SCIPOL/SCAC066.

Drozdz, J.A. and Ladomery, M.R. (2024), "The Peer Review Process: Past, Present, and Future", *British Journal of Biomedical Science*, Institute of Biomedical Science (IBMS), Vol. 81, doi: 10.3389/BJBS.2024.12054.

Endarwati, M., … Z.S.-T.J. of B. and 2023, undefined. (2023), "Nurturing Entrepreneurial Spirit Through Integrative Learning Method: The Role of Entrepreneurial Inspiration and Mindset", *So06.Tci-Thaijo.OrgML Endarwati, Z Sholikhah, BA PramukaThe Journal of Behavioral Science, 2023•so06.Tci-Thaijo.Org*, pp. 52-68.

Fahrenwald, C., Resch, K., Rameder, P., Fellner, M., Slepcevic-Zach, P. and Knapp, M. (2023), "Taking the lead for campus-community-partnerships in Austria", *Frontiers in Education*, Frontiers Media SA, Vol. 8, p. 1206536, doi: 10.3389/FEDUC.2023.1206536/BIBTEX.

Feijóo-Quintas, S., Gerbaudo-González, N., Gandoy-Crego, M., Gutiérrez-Moar, M. del C., Costa, E. and Facal, D. (2024), "Higher Education Institutions as Strategic Centers for Promoting Social Innovation in Gerontology: Insights from the Senior Innovation Lab Training Initiative", *Geriatrics (Switzerland)*, Multidisciplinary Digital Publishing Institute (MDPI), Vol. 9 No. 3, doi: 10.3390/GERIATRICS9030076.

Fernández-Jiménez, C., Fernández-Cabezas, M., Polo Sánchez, M.T. and Díaz Batanero, M.C. (2019), "Autonomous work and skill learning strategies applying problem-based learning: Experience of innovation in subjects related to disability", *Innovations in Education and Teaching International*, Routledge, Vol. 56 No. 5, pp. 617–627, doi: 10.1080/14703297.2018.1476173.

Filho, W.L., Amaro, N., Avila, L.V., Brandli, L., Damke, L.I., Vasconcelos, C.R.P., Hernandez-Diaz, P.M., *et al.* (2021), "Mapping sustainability initiatives in higher education institutions in Latin America", *Journal of Cleaner Production*, Elsevier, Vol. 315, p. 128093, doi: 10.1016/J.JCLEPRO.2021.128093.

Fritz, R. and Marchewka, M. (2023), "Transformative learning: Investigating perspective changes towards developing global human resources in a virtual exchange project", *Innovations in Education and Teaching International*, Routledge, doi: 10.1080/14703297.2022.2163277.

Garcez, A., Silva, R. and Franco, M. (2022), "The Hard Skills Bases in Digital Academic Entrepreneurship in Relation to Digital Transformation", *Social Sciences*, MDPI, Vol. 11 No. 5, doi: 10.3390/SOCSCI11050192.

Garcia, M.B. (2023), "Fostering an Innovation Culture in the Education Sector: A Scoping Review and Bibliometric Analysis of Hackathon Research", *Innovative Higher Education*, Springer Science and Business Media B.V., Vol. 48 No. 4, pp. 739–762, doi: 10.1007/S10755-023-09651-Y.

García-Aracil, A., Isusi-Fagoaga, R., Monteiro, S. and Almeida, L. (2023), "Social Commitment at Higher Education Institutions: Analysis of Their Strategic Plans", *Education Sciences*, Multidisciplinary Digital Publishing Institute (MDPI), Vol. 13 No. 12, doi: 10.3390/EDUCSCI13121185.

García-Aracil, A., Isusi-Fagoaga, R. and Navarro-Milla, I. (2022), "Employers' perceptions of young higher education graduates' employability in Belarus",

Https://Doi.Org/10.1177/17454999221145545, SAGE Publications Sage UK: London, England, Vol. 18 No. 1, pp. 104–122, doi: 10.1177/17454999221145545.

Gashoot, M., Eve, B. and Mohamed, T. (2023), "Implementing Technology for Teaching: The Use of a Mobile/Tablet Approach for Enhancing Students' Learning (Design Interaction) Technology-Enhanced Learning (TEL)", *Journal of Education*, SAGE Publications Ltd, Vol. 203 No. 1, pp. 230–241, doi: 10.1177/00220574211016397/ASSET/IMAGES/10.1177_00220574211016397-IMG5.PNG.

Gaspar Pacheco, A.I., Ferreira, J., Simoes, J., Mota Veiga, P. and Dabic, M. (2024), "Mechanisms for facilitating academic entrepreneurship in higher education", *International Journal of Entrepreneurial Behaviour and Research*, Emerald Publishing, Vol. 30 No. 6, pp. 1448–1479, doi: 10.1108/IJEBR-04-2023-0333.

Gelbmann, U. and Pirker, C. (2023), "Interdisciplinary Practical Trainings as a Contribution of Higher Education to Raising Sustainability Awareness Among the Public", Springer VS, Wiesbaden, pp. 235–255, doi: 10.1007/978-3-658-38319-0_11.

Geoff Mulgan. (2006), "The Process of Social Innovation", pp. 145–162.

Glasserman-Morales, L.D., Alcantar-Nieblas, C. and Nava-Lara, S. (2024), "The social innovation profile in students as a transformation strategy: structural equation modeling", *Frontiers in Education*, Frontiers Media SA, Vol. 9, doi: 10.3389/FEDUC.2024.1336576.

Gómez, M., Arteaga, I.H., Sophia, S.G.P.- and 2019, undefined. (2019), "Higher education and solidarity economy towards a territorial approach", *Scielo.Org.CoME Gómez, I Hernández Arteaga, S García PorrasSophia, 2019•scielo.Org.Co*, Vol. 15 No. 1, pp. 16–30.

Goulart, A.R., Liboni, L.B. and Cezarino, L.O. (2021), "Qualification as a societal challenge and the role of higher education from a system approach", *Higher Education, Skills and Work-Based Learning*, Emerald Group Holdings Ltd., Vol. 11 No. 5, pp. 1002–1019, doi: 10.1108/HESWBL-06-2020-0118/FULL/XML.

Greene, J. (2022), "The homelessness research and action collaborative: case studies of the social innovation process at a university research center", *Social Enterprise Journal*, Emerald Group Holdings Ltd., Vol. 18 No. 1, pp. 163–181, doi: 10.1108/SEJ-08-2020-0061.

Groulx, M., Nowak, N., Levy, K. and Booth, A. (2021), "Community needs and interests in university–community partnerships for sustainable development", *International Journal of Sustainability in Higher Education*, Emerald Group Holdings Ltd., Vol. 22 No. 1, pp. 274–290, doi: 10.1108/IJSHE-03-2020-0086/FULL/XML.

Haase, S. and Buus, L. (2020), "Translating government digitalisation policy in higher education institutions: the Danish case", *Nordic Journal of Digital Literacy*, Universitetsforlaget AS, Vol. 15 No. 4, pp. 246–258, doi: 10.18261/ISSN.1891-943X-2020-04-03.

Haddow, C. and Brodie, J. (2023), "Harnessing innovation approaches to support community and belonging in Higher Education", *Innovations in Education and Teaching International*, Routledge, doi: 10.1080/14703297.2023.2176907.

Hall, R. (2021), “Students as partners in university innovation and entrepreneurship”, *Education and Training*, Emerald Group Holdings Ltd., Vol. 63 No. 7–8, pp. 1114–1137, doi: 10.1108/ET-01-2021-0003.

Hirsch, J., Yow, R. and Wu, Y.C.S. (2023), “Teaching students to collaborate with communities: expanding engineering education to create a sustainable future”, *Engineering Studies*, Routledge, Vol. 15 No. 1, pp. 30–49, doi: 10.1080/19378629.2023.2176767.

Homateni Julius, L., McKenna, S. and Mgqwashu, E. (2023), “The conflation of English competence and academic literacy: A case study of three Namibian universities”, *Innovations in Education and Teaching International*, Routledge, doi: 10.1080/14703297.2023.2251948.

Iqbal, A. (2021), “Innovation speed and quality in higher education institutions: the role of knowledge management enablers and knowledge sharing process”, *Journal of Knowledge Management*, Emerald Group Holdings Ltd., Vol. 25 No. 9, pp. 2334–2360, doi: 10.1108/JKM-07-2020-0546/FULL/XML.

Iqbal, Q. and Piwowar-Sulej, K. (2022), “Sustainable leadership in higher education institutions: social innovation as a mechanism”, *International Journal of Sustainability in Higher Education*, Emerald Group Holdings Ltd., Vol. 23 No. 8, pp. 1–20, doi: 10.1108/IJSHE-04-2021-0162/FULL/PDF.

Isusi-Fagoaga, R., García-Aracil, A. and Navarro-Milla, I. (2023), “Impact of teaching-learning approaches on graduates’ learning outcomes: evidence in Belarus”, *Higher Education, Skills and Work-Based Learning*, Emerald Publishing, Vol. 13 No. 6, pp. 1234–1249, doi: 10.1108/HESWBL-03-2023-0056.

Jones, P., Jones, A., Skinner, H. and Packham, G. (2013), “Embedding Enterprise: A Business School Undergraduate Course with an Enterprise Focus”, *Http://Dx.Doi.Org/10.5367/Ihe.2013.0153*, SAGE PublicationsSage UK: London, England, Vol. 27 No. 3, pp. 205–215, doi: 10.5367/IHE.2013.0153.

Kennedy, A., McGowan, K. and El-Hussein, M. (2023), “Indigenous Elders’ wisdom and dominionization in higher education: barriers and facilitators to decolonisation and reconciliation”, *International Journal of Inclusive Education*, Routledge, Vol. 27 No. 1, pp. 89–106, doi: 10.1080/13603116.2020.1829108.

König, C.M., Karrenbauer, C. and Breitner, M.H. (2024), “Development guidelines for individual digital study assistants in higher education”, *International Journal of Educational Technology in Higher Education*, Springer Science and Business Media Deutschland GmbH, Vol. 21 No. 1, doi: 10.1186/S41239-024-00439-4.

Koseda, E., Cohen, I.K., McIntosh, B. and Cooper, J. (2024), “Internationalisation and digital transformation in HEIs: The impact of education 4.0 on teaching, learning and assessment”, *Policy Futures in Education*, SAGE Publications Inc., doi: 10.1177/14782103241226531.

Kripa, D., Luci, E., Gorica, K. and Kordha, E. (2021), “New Business Education Model for Entrepreneurial HEIs: University of Tirana Social Innovation and Internationalization”, *Administrative Sciences 2021, Vol. 11, Page 122*, Multidisciplinary Digital Publishing Institute, Vol. 11 No. 4, p. 122, doi: 10.3390/ADMSCI11040122.

Lake, D., Motley, P.M. and Moner, W. (2022), “Completing the CiCLE: long-term assessment of community-involved collaborative learning ecosystems for social innovation in higher education”,

Social Enterprise Journal, Emerald Group Holdings Ltd., Vol. 18 No. 1, pp. 28–50, doi: 10.1108/SEJ-10-2020-0089/FULL/HTML.

Lampoltshammer, T.J., Albrecht, V. and Raith, C. (2021), "Teaching digital sustainability in higher education from a transdisciplinary perspective", *Sustainability (Switzerland)*, MDPI, Vol. 13 No. 21, doi: 10.3390/SU132112039.

Leimbach, T., & M.T. (2022), *Learning to Change: Climate Action Pedagogy*.

Liao, W.C., Lin, C.L., Lou, S.J. and Chung, C.C. (2023), "A design and effectiveness evaluation of the Maker spirit–PBL innovation and entrepreneurship course", *Innovations in Education and Teaching International*, Routledge, doi: 10.1080/14703297.2023.2248987.

López-De-Arana Prado, E., Martínez-Mumñoz, L.F., Calle-Molina, M.T., Aguado-Gómez, R. and Santos-Pastor, M. a. L. (2023), "Construction and validation of an instrument for evaluating the quality of university service learning projects using the Delphi method", *Revista Espanola de Pedagogia*, Universidad Internacional de la Rioja, Vol. 81 No. 285, pp. 381–402, doi: 10.22550/REP81-2-2023-07.

Lough, B.J. (2022), "Decentering social innovation: the value of dispersed institutes in higher education", *Social Enterprise Journal*, Emerald Group Holdings Ltd., Vol. 18 No. 1, pp. 12–27, doi: 10.1108/SEJ-08-2020-0059/FULL/XML.

Macke, J., Sarate, J.A.R., Domeneghini, J. and Silva, K.A. da. (2018), "Where do we go from now? Research framework for social entrepreneurship", *Journal of Cleaner Production*, Elsevier, Vol. 183, pp. 677–685, doi: 10.1016/J.JCLEPRO.2018.02.017.

McGowan, K., Kennedy, A., El-Hussein, M. and Bear Chief, R. (2020), "Decolonization, social innovation and rigidity in higher education", *Social Enterprise Journal*, Emerald Group Holdings Ltd., Vol. 16 No. 3, pp. 299–316, doi: 10.1108/SEJ-10-2019-0074.

McLaughlin, J.E., Lake, D., Chen, E., Guo, W., Knock, M. and Knotek, S. (2023), "Faculty experiences and motivations in design thinking teaching and learning", *Frontiers in Education*, Frontiers Media S.A., Vol. 8, p. 1172814, doi: 10.3389/FEDUC.2023.1172814/BIBTEX.

Mdleleni, L. (2022), "University as a vehicle to achieve social innovation and development: repositioning the role of the university in the society", *Social Enterprise Journal*, Emerald Group Holdings Ltd., Vol. 18 No. 1, pp. 121–139, doi: 10.1108/SEJ-10-2020-0093/FULL/XML.

Miah, M.T., Lakner, Z. and Fekete-Farkas, M. (2024), "Addressing Poverty through Social Entrepreneurship for Sustainable Development: A Comprehensive Bibliometric Analysis", *Administrative Sciences*, Multidisciplinary Digital Publishing Institute (MDPI), Vol. 14 No. 1, doi: 10.3390/ADMSCI14010016.

Mian, S.H., Salah, B., Ameen, W., Moiduddin, K. and Alkhalefah, H. (2020), "Adapting universities for sustainability education in industry 4.0: Channel of challenges and opportunities", *Sustainability (Switzerland)*, MDPI, Vol. 12 No. 15, doi: 10.3390/SU12156100.

Mohamed Hashim, M.A., Tlemsani, I. and Duncan Matthews, R. (2022), "A sustainable University: Digital Transformation and Beyond", *Education and Information Technologies*, Springer, Vol. 27, pp. 8961–8996, doi: 10.1007/S10639-022-10968-Y.

Monteiro, A.R. and Leite, C. (2021), “Digital literacies in higher education: Skills, uses, opportunities and obstacles to digital transformation”, *Revista de Educación a Distancia*, Universidad de Murcia, Vol. 21 No. 65, doi: 10.6018/RED.438721.

Morsy, M., Trott, P. and Cho, D.S. (2024), “Corporate social innovation: a systematic literature review and research agenda”, *Society and Business Review*, Emerald Publishing, Vol. 19 No. 3, pp. 523–550, doi: 10.1108/SBR-06-2023-0176/FULL/PDF.

Moulaert, F., MacCallum, D. and Hillier, J. (2013), “Social innovation: intuition, precept, concept, theory and practice”, *The International Handbook on Social Innovation*, Edward Elgar Publishing, doi: 10.4337/9781849809993.00011.

Mulgan, G. (2019), “Social Innovation”, Policy Press, doi: 10.2307/J.CTVS89DD3.

Nicholas, D., Watkinson, A., Jamali, H.R., Herman, E., Tenopir, C., Volentine, R., Allard, S., *et al.* (2015), “Peer review: still king in the digital age”, *Learned Publishing*, John Wiley & Sons, Ltd, Vol. 28 No. 1, pp. 15–21, doi: 10.1087/20150104.

Nixon, S. and Brown, S. (2013), “A community of practice in action: SEDA as a learning community for educational developers in higher education”, *Innovations in Education and Teaching International*, Routledge, Vol. 50 No. 4, pp. 357–365, doi: 10.1080/14703297.2013.839392.

Ólafsdóttir, A. and Gunnþórsdóttir, H. (2020), “Námsframvinda nemenda í meistaranámi við Háskólann á Akureyri”, *Tímarit Um Uppeldi Og Menntun*, The Educational Research Institute, Vol. 28 No. 1, doi: 10.24270/TUUOM.2019.28.2.

Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., *et al.* (2021), “The PRISMA 2020 statement: an updated guideline for reporting systematic reviews”, *BMJ*, British Medical Journal Publishing Group, Vol. 372, doi: 10.1136/BMJ.N71.

Palmer, M.S. and Giering, J.A. (2024), “Characterizing Pedagogical Innovation in Higher Education”, *Innovative Higher Education*, Springer Science and Business Media B.V., Vol. 49 No. 3, pp. 453–473, doi: 10.1007/S10755-023-09681-6.

Paul, J. and Criado, A.R. (2020), “The art of writing literature review: What do we know and what do we need to know?”, *International Business Review*, Pergamon, Vol. 29 No. 4, p. 101717, doi: 10.1016/J.IBUSREV.2020.101717.

Paunescu, C., Ruohonen, A., Spencer, N. and Vavura, N.M. (2022), “Management framework for higher education institution-based community innovation labs”, *Management and Marketing*, Sciendo, Vol. 17 No. s1, pp. 364–380, doi: 10.2478/MMCKS-2022-0021.

Peng, F., Altieri, B., Hutchinson, T., Harris, A.J. and McLean, D. (2022), “Design for Social Innovation: A Systemic Design Approach in Creative Higher Education toward Sustainability”, *Sustainability 2022, Vol. 14, Page 8075*, Multidisciplinary Digital Publishing Institute, Vol. 14 No. 13, p. 8075, doi: 10.3390/SU14138075.

Raisiene, A.G., Rapuano, V., Raisys, S.J. and Lucinskaite-Sadovskiene, R. (2022), “Teleworking Experience of Education Professionals vs”, Vol. 2, pp. 171–183, doi: 10.21272/mmi.2022.2-16.

Ricardo-Barreto, C., Molinares, D.J., Llinás, H., Santodomingo, J.P., Acevedo, C.A., Rodríguez, P.A., Navarro, C.B., *et al.* (2020), “Trends in using ICT resources by professors in HEIs (higher education

institutions)", *Journal of Information Technology Education: Research*, Informing Science Institute, Vol. 19, pp. 395–425, doi: 10.28945/4601.

Rickhoff-Fischer, I., Schank, C. and Ortland, A. (2021), "Is Corporate Social Entrepreneurship a (So Far) Missed Opportunity for Higher Education Institutions? Evidence from Germany", *Sustainability 2021, Vol. 13, Page 13965*, Multidisciplinary Digital Publishing Institute, Vol. 13 No. 24, p. 13965, doi: 10.3390/SU132413965.

Rof, A., Bikfalvi, A. and Marquès, P. (2020), "Digital transformation for business model innovation in higher education: Overcoming the tensions", *Sustainability (Switzerland)*, MDPI, Vol. 12 No. 12, doi: 10.3390/SU12124980.

Roslan, M.H.H., Hamid, S., Ijab, M.T., Yusop, F.D. and Norman, A.A. (2022), "Social entrepreneurship in higher education: challenges and opportunities", *Asia Pacific Journal of Education*, Routledge, Vol. 42 No. 3, pp. 588–604, doi: 10.1080/02188791.2020.1859354.

Sanabria-Z, J., Cruz-Sandoval, M., Moreno-Romo, A., Gómez, S.B. and Ramírez-Montoya, M.S. (2023), "Research foresight in bridging open science and open innovation: overview based on the complex thinking paradigm", *International Journal of Innovation Studies*, Elsevier, doi: 10.1016/J.IJIS.2023.08.002.

Schmidt, S. and Stadermann, J. (2022), "Innovation Salons – Events for dialogical knowledge transfer between civil society and higher education institutions", *Local Economy*, SAGE Publications Ltd, Vol. 37 No. 6, pp. 526–538, doi: 10.1177/02690942231165920.

Scuotto, A., Cicellin, M. and Consiglio, S. (2023), "Social bricolage and business model innovation: a framework for social entrepreneurship organizations", *Journal of Small Business and Enterprise Development*, Emerald Publishing, Vol. 30 No. 2, pp. 234–267, doi: 10.1108/JSBED-02-2022-0094.

Senivongse, C. and Bennet, A. (2023a), "University-as-a-service: Designing thinking approach for Bangkok University business innovation curriculum and service development", *Innovations in Education and Teaching International*, Routledge, doi: 10.1080/14703297.2023.2253251.

Senivongse, C. and Bennet, A. (2023b), "University-as-a-service: Designing thinking approach for Bangkok University business innovation curriculum and service development", *Innovations in Education and Teaching International*, Routledge, doi: 10.1080/14703297.2023.2253251.

Sibhensana, B. and Maistry, S. (2021), "Conceptualising public-private partnerships for social innovation through community engagement in higher education institutions", *South African Journal of Higher Education*, Stellenbosch University, Vol. 37 No. 1, pp. 1–21, doi: 10.20853/37-1-5669.

Silla, I., Tordera, N. and Pérez-Nebra, A.R. (2023), "Online intercultural exchange: A case study in work and organisational psychology", *Innovations in Education and Teaching International*, Routledge, Vol. 60 No. 1, pp. 37–47, doi: 10.1080/14703297.2021.2003219.

Singh, A., Sharma, S. and Paliwal, M. (2020), "Adoption intention and effectiveness of digital collaboration platforms for online learning: the Indian students' perspective", *Interactive Technology and Smart Education*, Emerald Group Holdings Ltd., Vol. 18 No. 4, pp. 493–514, doi: 10.1108/ITSE-05-2020-0070.

Skywark, E.R., Chen, E. and Jagannathan, V. (2022), "Using the Design Thinking Process to Co-create a New, Interdisciplinary Design Thinking Course to Train 21st Century Graduate Students", *Frontiers*

in Public Health, Frontiers Media S.A., Vol. 9, p. 777869, doi: 10.3389/FPUBH.2021.777869/BIBTEX.

Svennevik, E.M.C. and Saidi, T. (2022), "Social innovation-As-practice: Establishing a social innovation program at a university", *Management and Marketing*, Sciendo, Vol. 17 No. s1, pp. 402–425, doi: 10.2478/MMCKS-2022-0023.

Thomsen, B., Muurlink, O. and Best, T. (2018), "The political ecology of university-based social entrepreneurship ecosystems", *Journal of Enterprising Communities*, Emerald Group Publishing Ltd., Vol. 12 No. 2, pp. 199–219, doi: 10.1108/JEC-08-2017-0068/FULL/XML.

Tomasella, B., Wylie, A. and Gill, D. (2023), "The role of higher education institutions (HEIs) in educating future leaders with social impact contributing to the sustainable development goals", *Social Enterprise Journal*, Emerald Publishing, Vol. 19 No. 4, pp. 329–346, doi: 10.1108/SEJ-03-2022-0027/FULL/XML.

Trevisan, L.V., Eustachio, J.H.P.P., Dias, B.G., Filho, W.L. and Pedrozo, E.Á. (2024), "Digital transformation towards sustainability in higher education: state-of-the-art and future research insights", *Environment, Development and Sustainability*, Springer Science and Business Media B.V., Vol. 26 No. 2, pp. 2789–2810, doi: 10.1007/S10668-022-02874-7.

UNESCO. (2017), "Education for Sustainable Development Goals: learning objectives", *Https://Www.Unesco.Org/En/Articles/Education-Sustainable-Development-Goals-Learning-Objectives*, available at: https://www.unesco.org/en/articles/education-sustainable-development-goals-learning-objectives (accessed 22 October 2024).

Vahed, A. and Rodriguez, K. (2021), "Enriching students' engaged learning experiences through the collaborative online international learning project", *Innovations in Education and Teaching International*, Routledge, pp. 1–10, doi: 10.1080/14703297.2020.1792331.

Vasconcelos, C., Silva, J., Calheiros, C.S.C., Mikusiński, G., Iwińska, K., Skaltsa, I.G. and Krakowska, K. (2022), "Teaching Sustainable Development Goals to University Students: A Cross-Country Case-Based Study", *Sustainability 2022, Vol. 14, Page 1593*, Multidisciplinary Digital Publishing Institute, Vol. 14 No. 3, p. 1593, doi: 10.3390/SU14031593.

Vázquez-Parra, J.C., García-González, A. and Ramírez-Montoya, M.S. (2022), "Ethical education and its impact on the perceived development of social entrepreneurship competency", *Higher Education, Skills and Work-Based Learning*, Emerald Group Holdings Ltd., Vol. 12 No. 2, pp. 369–383, doi: 10.1108/HESWBL-01-2021-0012/FULL/XML.

Westhead, P. and Storey, D.J. (1995), "Links between higher education institutions and high technology firms", *Omega*, Vol. 23 No. 4, pp. 345–360, doi: 10.1016/0305-0483(95)00021-F.

Wu, Y.J., Goh, M. and Mai, Y. (2023), "Social innovation and higher education: evolution and future promise", *Humanities and Social Sciences Communications 2023 10:1*, Palgrave, Vol. 10 No. 1, pp. 1–14, doi: 10.1057/s41599-023-01759-y.

Yoke, C., Ghani, A., Abdullah, K. and Ali, A.J. (2021), "Soft Skill Integration for Inspiring Critical Employability Skills in Private Higher Education.", *Eurasian Journal of Educational Research*, ANI Publishing Company. Kizilirmak Sokak 10/A Bakanliklar, Ankara, Turkey 06440. Tel: +90-312-425-8150; Fax: +90-312-425-8111; e-mail: aniyayincilik@aniyayincilik.com.tr; Web site: http://www.ejer.com.tr, Vol. 92, pp. 23–40, doi: 10.14689/ejer.2021.92.2.

Zizka, L. and Probst, G. (2024), “Teaching and learning in business schools post-pandemic: a digital future”, *Journal of International Education in Business*, Emerald Publishing, doi: 10.1108/JIEB-12-2023-0103.