INDERSCIENCE PUBLISHERS
Linking academia, business and industry through research

International Journal of Education Economics and Development

ISSN online: 1759-5681 - ISSN print: 1759-5673
https://www.inderscience.com/ijeed

Sustainable development and blended learning in accounting education

Chara Kottara, Dimitra Kavalieraki-Foka, Fragiskos Gonidakis, Sofia Asonitou, Apostolos Zaridis, Vasiliki Brinia

DOI: 10.1504/IJEED.2025.10062903

Article History:

Received:	24 December 2023
Last revised:	02 January 2024
Accepted:	12 January 2024
Published online:	10 July 2025

Sustainable development and blended learning in accounting education

Chara Kottara*, Dimitra Kavalieraki-Foka, Fragiskos Gonidakis and Sofia Asonitou

University of West Attica,
Thivon Avenue 250, 12241,
Athens, Greece
Email: hkottara@uniwa.gr
Email: dkavalieraki@uniwa.gr
Email: fgonidakis@uniwa.gr
Email: sasonitou@uniwa.gr
*Corresponding author

Apostolos Zaridis and Vasiliki Brinia

Hellenic Open University,
Aristotelous 18, 263-35, Patra, Greece
Email: zaridis.apostolos@ac.eap.gr
Email: brinia.vasiliki@ac.eap.gr

Abstract: In recent decades, the scientific community has focused on sustainable development, as there are concerns about economic, social, and environmental resources. One of the key sustainability goals is Sustainable Development Goal (SDG 4) focusing on the quality of education both lifelong and university education where it is oriented towards free access, non-discriminatory, increasing the prospects for enhancing employment, entrepreneurship, and the acquisition of skills through new educational teaching methods that promote sustainable principles. The exploration of sustainable teaching approaches is inextricably linked to blended learning practices, which promote sustainability through the management of educational resources and the reduction of educational costs. Even today there is a limited number of published studies, where this academic study attempts to elucidate and reduce this gap by investigating blended learning in accounting courses through a literature review in order to identify any potential for sustainable development in academic environment.

Keywords: sustainable development; blended learning; accounting education; university; sustainability perspective.

Reference to this paper should be made as follows: Kottara, C., Kavalieraki-Foka, D., Gonidakis, F., Asonitou, S., Zaridis, A. and Brinia, V. (2025) 'Sustainable development and blended learning in accounting education', *Int. J. Education Economics and Development*, Vol. 16, No. 3, pp.301–315.

Biographical notes: Chara Kottara is a Lecturer at College and Economist – Accountant A' Class. She is PhD candidate, Department of Business Administration, University of West Attica, Greece. Her main research interests include accounting and finance, technology, university pedagogy, e-learning, blended learning and sustainable development.

Dimitra Kavalieraki-Foka is an Economist – Accountant A' Class/Lecturer Scientific Partner and PhD candidate, Department of Business Administration, University of West Attica, Greece. Her career is dedicated to finance, treasury, accounting, sustainability, teaching, academic research and volunteering.

Fragiskos Gonidakis is an associate teaching staff in Department of Business Administration, University of West Attica.

Sofia Asonitou is an Associate Professor of Accounting Education at University of West Attica. She received her PhD is in Accounting Education from Sheffield Hallam University and has MSc in Industrial Location and Development and MBA by VUB University of Brussels. She teaches accounting courses. Her main research interests include accounting education, professional skills and competencies of accountants, work readiness of accounting students, continuing professional development, and gender equality issues.

Apostolos Zaridis is an Assistant Professor, Department of Pedagogy and Teaching Competence in Economics and Management, Hellenic Open University. His main research interests include entrepreneurship and innovation, business strategy, SMEs management, logistics and supply chains, hospitality management, labour economics, environmental economics, business plans, quantitative methods in economics, and economic education and innovation in education.

Vasiliki Brinia is a Scientific Responsible, Department of Pedagogy and teaching competence in economics and management, Hellenic Open University, Greece. She is the Scientific Director of the Teacher Education Program of AUEB and Lecturer at the Department of Informatics of AUEB. She holds two Bachelor's in BA, an MBA, Diploma in Pedagogical Studies, Diploma in Counselling, PhD in Teaching Methodology and PostDoc Research in Teaching Methodology in Adults' Education. She has been an expert-advisor at the Greek Ministry of Education in the organisational and administrative restructuring of the Greek educational system.

1 Introduction

On the global map, universities have a great potential to contribute to sustainability, creating the conditions for economic prosperity, social equity, and environmental protection (AECC, 1990; Agbedahin, 2019). In order to increase the pace of sustainable development, it is necessary to have strategies and policies that help to promote appropriate conditions related to quality assurance processes to integrate sustainability in university institutions (Aleixo et al., 2020; Ahmed and Opoku, 2022). In addition, in the current period, there is a concern in the environment, economy and society about how resources will be secured for future generations (Aristovnik et al., 2020; Asonitou et al., 2020).

Several researchers state that in order to achieve sustainable development there must be a strategy to strengthen this culture through knowledge and education at global, national, regional and local levels (Asonitou et al., 2020; Ahmed and Opoku, 2022). The European Union, in the last decades, has been making a great effort through the accounting sector (green accounting), in order to activate all listed companies to adopt sustainable development practices, while raising the awareness of every citizen/consumer (Nor and Kasim, 2015; Baragash and Al-Samarraie, 2018).

This issue does not only concern each Member State in terms of gross domestic product (GDP) but also in terms of social and economic well-being (Barreiro-Gen et al., 2020; Beatson et al., 2020). In recent years, the accounting profession has been working to link businesses and universities (Byrne and Flood, 2008; Boyce et al., 2019) through accounting education in order to create the right conditions for the protection and cohesion of local communities, while overcoming any environmental and economic crisis (Bryce et al., 2004; Boeren, 2019). Up to now it has always been a concern to align accounting education with the needs of the labour market and business (Coetzee et al., 2018).

Today, universities provide lifelong learning programs without time and space constraints, through hybrid or blended learning. Blended learning has proven to be a teaching approach for experiential and meaningful learning. While, of key importance is the positive impact of e-learning platforms such as Moodle in providing a sustainable learning environment by reducing environmental impact and optimally enhancing sustainability (Cohen and Karatzimas, 2021). The purpose of this study is to investigate through the literature review the perspectives that can exist in the light of sustainable development in the field of education through the application of blended learning in accounting courses.

2 Literature review

The literature review is centred on two separate themes, firstly it examines blended learning in the context of sustainable development, and secondly it explores the application of blended learning within the realm of accounting education.

2.1 Sustainable development

Sustainability as a concept was more widely disseminated in the 1980s and more specifically with the speech of the Prime Minister of Norway at the UN General Assembly in 1987, where she used the term sustainable development for the first time and defined it as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Davies, 2015).

Table 1 Fields of the literature review

1	The sustainable development and blended learning.
2	The blended learning and accounting education.

Source: Own editing

Sustainability is essentially a multifaceted normative concept that integrates social, ecological, and economic dimensions and its achievement respectively requires a holistic approach that ensures coordinated operations between the social, economic, and environmental sectors (Diaz-Sarachaga et al., 2018). On this basis, and to address the challenges and risks at the global level, the United Nations has taken on the role of guiding all countries to align themselves on the path of development by adopting targets and indicators that incorporate the three dimensions of sustainable development (Davies, 2015; Diaz-Sarachaga et al., 2018).

More specifically, a new revised and more comprehensive version of indicators and targets to be achieved by all countries before the end of 2030, known as the 2030 Agenda, was published in 2015, including 17 goals (SDGs), 169 sub-goals and 232 indicators to monitor progress towards achieving the 17 goals (Davies, 2015). Among the 17 objectives, of particular importance is objective 4, which refers to quality education, focusing on lifelong learning which can act as a driving force for the development of a more cohesive and equitable society (Duff, 2004; Findler et al., 2019).

However, there is a growing trend of sustainability learning education, which is gaining ground in the academic community, based on the principles of sustainability. There is a clear orientation towards a more explicit educational system that will be effective if it meets the requirements for sustainability through a combination of human, social, environmental, economic, and technical dimensions. Today, universities are agents of sustainable development, as academic outcomes are achieved using technology and blended learning in an experiential way.

Sustainability has been explored by different sciences, such as philosophy, politics, and is inextricably linked to economic, social, and environmental science. In addition, sustainability deals with software systems classified as ‘green’, which are governed by reduced energy consumption costs (benefit for the energy crisis), with rational use of resources saving both financial and human resources (Garrison and Vaughan, 2008; Aristovnik et al., 2020). Everything points to the fact that the pace of sustainable development must be proportional to the degree of quality and efficiency in each scientific discipline.

2.2 Blended learning

Blended learning is a hybrid of traditional face-to-face learning and e-learning. More specifically, instruction takes place both in the classroom and online, while the e-learning component becomes a natural extension of traditional classroom (Hahn et al., 2013). Blended learning is a flexible approach to course design that supports the mixing of different learning times and positions, offering some of the conveniences of fully online courses without the complete loss of face-to-face contact (Harahap et al., 2019). As a result, several researchers consider it a more powerful learning experience than traditional or fully e-learning, with the aim of optimising learning outcomes and reducing the cost of the educational program (Nor and Kasim, 2015; Baragash and Al-Samarraie, 2018; Boyce et al., 2019; Asonitou et al., 2020).

Blended learning is governed by the following principles (Heinrichs, 2021):

- Orientation to learning outcomes (knowledge and skills).
- Personalised learning, catering to different learning styles of students, reaching their interest by motivating them.

- Each student brings different knowledge to the learning experience (according to their prior knowledge and experiences).
- In most of the blended teaching approach, effectiveness is linked to what students need, how and in what way they need to learn.

The term 'blended learning' has evolved to include a much richer set of learning strategies 'dimensions'. Today a blended learning curriculum can combine one or more of the educational methods and there is also a dimension for choosing a more social constructivist model of blended learning teaching adapted to the diversity of students and their particular individual needs (Holmberg, 2014).

In a broader context, the mix of blended learning is:

- Combination/mixing, offline and online forms of education.
- Combination of online and offline forms of learning.
- A combination of synchronous and asynchronous forms of learning.
- A combination of self-regulated and cooperative learning.
- Combination of organised and unplanned learning.
- A mix of theory, practice, and tools to support learning.

Therefore, the designers of the blend take into account the learning theories, the learning styles of the learners, the configuration of the learning environment and the electronic tools.

Studies and debates in the light of effectiveness in e-learning are characterised by two conflicting streams of research. On the one hand, empirical studies find the contribution of e-learning to the learning experience is equal to that of face-to-face classroom, and on the other hand, there are other empirical studies that contradict the equal effectiveness position but show that e-learning is superior (Nor and Kasim, 2015; Baragash and Al-Samarraie, 2018; Boyce et al., 2019; Karatzimas, 2020).

However, traditional forms of learning may not be effective enough in achieving learning outcomes, but by integrating them into blended learning they may perform better. Research at Stanford University and the University of Tennessee have derived positive findings regarding the effectiveness of blended learning, saying that the combination of e-learning and the traditional environment is better than traditional methods and individual forms of e-learning (Krivacek, 2016).

From the aforementioned it is presumed that blended learning according to the literature review is more effective method in terms of achieving learning outcomes and student satisfaction within a sustainable learning environment.

2.3 Blended learning and sustainable development

Through a comprehensive review of international literature on blended learning, it is evident that the application of sustainable development principles in practice can lead to radical sustainable improvements, such as efficiency, flexibility, and cost-effectiveness of learning, compared to traditional approaches (Hahn et al., 2013; Khanlarian and Singh, 2014). However, blended learning is not a one-dimensional approach to teaching, but a multi-dimensional affair with many perspectives that can broaden the culture of

sustainable education. The knowledge gained through the principles of the blended teaching approach can lead students to solve everyday problems, not just classroom-based exercises. For example, they can help to provide perspectives, that the academic knowledge gained will aid in addressing daily challenges related to sustainable development, oriented towards the three pillars:

a social cohesion

b environmental protection

c economic prosperity, in order to meet the needs of both the present and future generations (Lam, 2015).

Blended learning acts in a catalytic way as students are able to use e-resources by examining not only theoretical concepts but also very practical issues such as energy crisis, finance, environmental burden and how these issues can be improved through experiential learning and sustainable development practices (Duff, 2004).

Blended or hybrid teaching, in the modern global era, contributes to sustainable development through the quality use of software systems, such as a learning management system (LMS) and the widespread use of Moodle in universities around the world (López-Pérez et al., 2011). Researchers believe that the e-learning environment increases the effectiveness and quality of the learning experience, learning outcomes, students' satisfaction, and their active engagement (Duff, 2004; Davies, 2015; Diaz-Sarachaga et al., 2018). This is because internet tools are part of students' everyday life and applications such as Moodle are a familiar and quite friendly environment, saving resources that help in a multiplying way, promoting social cohesion, since the most distant students, often coming from low social levels and despite they are being financially weak, can participate in the courses successfully.

In addition, the non-use of transport by students contributes to the saving of economic (costs of travel, clothing, food) and energy resources (use of fuels that pollute the environment and increase the energy crisis using petrol, oil, etc.). The teaching strategy of blended learning contributes positively to the overall promotion of sustainable development. However, it is necessary to plan in the short and long term to ensure practices, strategies for the adoption of sustainable development by universities and stakeholders (teachers, students, state through the development of e-government and free access to the internet). The implementation of the strategies requires financial resources that are available to provide both technical and pedagogical support. While, in the implementation phase of blended learning, it is necessary to have identified and ensured all the procedures for supporting teachers and students (Garrison and Vaughan, 2008; Cohen and Karatzimas, 2021), in order to avoid any obstacles that may hinder the sustainability of 'green e-learning systems'. It is important that a university does not simply choose the cheapest practices for the implementation of blended learning, using low-cost technological equipment that will bring about any negative ecological impact on education since it uses resources (natural, energy, human and financial).

On the contrary, the issue of printed documents, which are a burden on the environment, must be considered, while it can easily be reduced through 'green platforms' such as Moodle, as all educational material related to lectures, assignments, feedback, tests, and assessments is available with easy access and flexibility without the fear of geographical barriers, providing equal opportunities for all students for quality education (Medina, 2018). In this way, the educational process does not have an

inhibiting factor in attendance, but instead helps those who work not to be driven to unemployment, but to acquire income (economic resources) without social exclusion (social cohesion). Educational platforms through the perspective of e-learning and blended learning, make it positive to empower students to participate in academic processes to act in a multidimensional, modern, and sustainable environment (Moustakas and Robrade, 2022). It seems that there is a new trend and perspective in order to save in every way even the scarcest resource in the contemporary global map, which is as much about the environment as it is about the socially and economically free access of students to university institutions and their participation in lifelong learning programs (Nortvig et al., 2018; Niedlich et al., 2020; Nousheen et al., 2020).

2.4 Accounting education

Accounting is concerned with the communication of financial reports and financial transactions of a particular organisation or business, where internal and external users will use them both for good decision making, investment or other viable purposes. The American Accounting Association (AAA) argued that future accountants had not acquired the skills needed to meet the demands of the job market (Niedlich et al., 2020). The Accounting Education Change Commission's (AECC's) key goals were initially the education of accounting programs to lead trainees to a perspective that the use of accounting information would help them use the course content throughout their lives in an active rather than passive manner (Boyce et al., 2019; Niedlich et al., 2020).

More specifically, trainers should help trainees to learn the content of the knowledge, because in the future it would be necessary for their successful careers, and they would be able to develop sustainable practices (Nortvig et al., 2018). Subsequently, the AECC focused on the importance of the introductory accounting course, as its knowledge and application could benefit the decision making of both investors, accountants, managers and generally those who use accounting information (Niedlich et al., 2020). The role and importance of introductory accounting courses has highlighted the need for upgrading and redefining the education at universities and the link with the labour market. Thus, new foundations were laid for accounting lecturers in undergraduate courses to provide accounting knowledge that would help students to develop relevant skills, which in turn would be useful both in the performance of their duties and in the process of making viable business decisions (Osgerby, 2013; Nousheen et al., 2020). In this context, AECC first emphasised:

a the role of teachers/lecturers in first-year introductory accounting courses at universities

b the interaction they should have with students in a traditional face-to-face classroom environment.

In recent years, it is widely accepted that accounting education using the internet can help to increase the number of students who are working or do not have easy access to university. This also requires highly qualified academic accounting professors who can use and engage students, increasing interest and keeping them in classes. The implementation of e-courses/e-learning was highly necessary as it facilitated the degree attainment of a large number of students and since there were events such as pandemics etc. (Pradhan et al., 2007).

More specifically, students needed a computer, an internet connection and time management skills to fulfil their personal responsibilities while attending classes. On the other hand, the research highlighted the perspective that e-learning facilitates increased access to accounting education courses and provides students with the opportunity for self-organised learning. It is important to further consider processes to improve the quality and effectiveness of courses such as the financial accounting course, as it is the basis of several undergraduate and graduate programs (Pradhan et al., 2007; Osgerby, 2013). In order to achieve sustainable development, accounting education institutions need to focus more on how to achieve this goal through a clear redefinition.

2.5 Blended learning and accounting education

The blended teaching method is at the heart of an evolutionary change in teaching and learning at universities (López-Pérez et al., 2011; Khanlarian and Singh, 2014; Harahap et al., 2019). It has been established through scientific investigation that the blended teaching environment is increasingly being incorporated at universities today, and the reasons are:

- The provision of enhanced pedagogy.
- The additional flexibility, in accessing knowledge through the use of technology.
- The opportunity it offers to students to reduce costs (such as travel, clothing, etc.), while increasing effectiveness metrics.

Furthermore, researchers stated that effective learning through blended teaching contributes to students' active learning, while motivating them and increasing the degree of self-efficacy and self-regulation of undergraduate accounting students (Pauw et al., 2015).

In a broader context, it is a fact that the courses should be carefully reviewed to ensure that they meet both the needs of the students and the modern requirements of the business world (oriented towards sustainable development). The fact that students are familiar with technology, having easy and fast information retrieval, without using printed papers that pollute the environment, contributes positively to e-learning. The use of 'green educational systems' creates a new perspective for adopting a culture of a sustainable environment (Phillips, 2017). In recent decades, both academic requirements and the labour market context have been changing through the adoption of teleworking. Teleworking was initially proposed as a strategic solution in times of pandemic, but this view is also supported in the current period where the level of energy crisis has increased. Several studies in accounting education try to examine innovative ways of teaching through blended learning to encourage social relationships between the lecturer and students, offering flexibility through technology and helping their active involvement. Students taking accounting courses reported that the blended learning environment improved their performance, satisfaction, and value of accounting (Pitulice et al., 2018).

Furthermore, there is a positive attitude of students towards the blended teaching method, with accounting lecturers understanding the necessity of sustainable educational practices, especially in the first year, as the basic and essential technical knowledge is provided through financial accounting (Duff, 2004; Pradhan et al., 2007).

3 Method

This scientific study is exploratory and secondary, through a literature review. The secondary research conducted focused on the knowledge areas of sustainable development, blended learning in accounting education, through the correlation of all the research issues under consideration, with sustainability as a reference point. The sources were drawn from scientific searches in Scopus and Google Scholar, by searching scientific papers using keywords as keywords: blended learning, sustainable development and accounting education. A total of 72 researches for the years 2010–2022 were studied, and the most relevant research related to this study was selected. More specifically, 23 researches came from Scopus and 14 from Google Scholar.

4 Findings

The approach to the results is based on the scientific findings of the global literature on the research areas under consideration.

Table 2 Bibliography

Keyword	*Scopus*	*Google Scholar*
Blended learning and sustainable development	4 papers	2 papers
Blended learning and accounting education	19 papers	12 papers

Source: Own editing

4.1 The triptych of the pillars of education-oriented sustainable development

It is necessary to redefine the three pillars of sustainable development to align them with the contemporary needs of the 21st century, where the effort for a sustainable system framed by positive prospects for future generations and respect for the present is intensifying as never before. Sustainable development must be governed by a culture, principles, and processes with sustainability as a milestone.

This trend and perspective should be adopted by all areas and by extension by accounting education both at the lifelong learning and university level.

4.1.1 Social cohesion

In the field of education there are various theories of learning (such as behaviourism, constructivism, connectivism) which have developed corresponding trends. As education is anthropocentric and students act as members of society, it becomes clear that they are governed by a degree of autonomy and interaction with both individual and social dimensions. It is understood that the learning process is often the result of experiential learning and interaction (social constructivism) with the use of technology (Bryce et al., 2004; Beatson et al., 2020; Ahmed and Opoku, 2022). Student participation and engagement creates a sense of community, even with the use of multimedia in a mixed classroom in a university institution. However, this possibility should not be constrained, temporally and geographically, but instead should offer autonomy, flexibility,

self-regulation, and lead to student self-actualisation (Osgerby, 2013; Nousheen et al., 2020).

4.1.2 Environmental protection

The environment today is burdened as never before with many problems and crises, which in turn create multiplying negative effects on society and the economy (Davies, 2015; Diaz-Sarachaga et al., 2018). However, education offers a perspective for creating students and citizens who will have the knowledge and skills to evolve societies around the world and who will be able to resolve either environmental or cultural issues (Agbedahin, 2019). In addition, it has been established that natural and man-made resources should not be wasted but should be used rationally, through a system of sustainable development that will optimally reduce the problems caused by climate change and the energy crisis (Findler et al., 2019).

4.1.3 Economic prosperity

Sustainable growth is emerging as a key pillar that can cushion the financial downturn and can help the economy as a whole. The crisis has been found to have a universal impact on all sectors of a country's growth, households, businesses, and jobs. Sustainable strategies can help to revive the economy and create jobs, while new technologies, through rational use, help to prevent the depletion of natural resources and the degradation of ecosystems. All these dynamics and perspectives can be achieved through quality education, dominated by technical knowledge and skills aligned with sustainable principles (Bryce et al., 2004; Boeren, 2019).

4.2 Blended learning in accounting education, as a perspective for sustainable development

Blended learning in accounting education and introductory courses such as financial accounting can provide an effective experience for students to deepen and understand basic principles that will be useful throughout their academic career (Stephenson, 2017; Tong and Wei, 2020).

Since the blended learning approach offers a more meaningful learning, while at the same time through the use of 'green learning management systems' for example Moodle promotes sustainable principles through digitisation rather than wasting environmental resources it has emerged as the most sustainable educational perspective. Table 3 presents the perspectives that work beneficially for empowerment of sustainability in a hybrid or blended learning environment in the context of accounting education (Tseng and Walsh, 2016; UNESCO, 2021).

5 Discussion

An important factor in addressing the economic, social, and environmental problems that have arisen globally is the full implementation of the 2030 Agenda for Sustainable Development for the indicators (SDGs) to become effective and for resources to be available not only in the present but also in the future. This culture should be cultivated

by all stakeholders and institutions to accelerate the pace of sustainable development (Davies, 2015).

Table 3 Prospects for sustainable development in the context of blended learning in accounting education

1	Adopting a sustainable culture through education.
2	Raising awareness of sustainable development practices, through a blended learning approach.
3	Training and improvement of 'green software systems'.
4	Familiarisation and implementation of sustainability principles by university institutions and accounting education stakeholders.
5	Collaboration of accounting education with other disciplines such as environmental education (increased degree of interdisciplinarity).
6	Promotion of a sustainable system, with respect to future generations.
7	Opportunities for education without time, economic, social, and geographical constraints (as offered by blended and e-learning).
8	Increased possibilities in LMS (for example Moodle) for professors and students, in order to increase sustainable education systems to the maximum extent possible, without using resources that would circumvent the triple objective of the pillars of sustainable development.

Source: Own editing

More specifically, the state through sustainable policies, businesses through the adoption of good practices and academic institutions should synergise in order to develop a 'sustainable system' through the application of sustainable development standards and principles. Universities and education institutions, in recent years, have been on a transformative education path focusing on quality indicators (Samkin and Stainbank, 2016). It has also been found that the economy is more than ever linked to control measures as well as accounting systems that can enhance economic prosperity and provide solutions to the financial crisis experienced by citizens around the world (Sustainable Development Goal 1, economic prosperity). It is no coincidence that the scientific community is trying to develop sustainability models at an interdisciplinary level as resources are referred to as economic (economic science), environmental (environmental science), social (sociological science) and technological (technological science).

Several studies have led to the view that the use of technology and the teaching approach of blended learning applied in both lifelong and university curricula helps sustainability as teachers and learners perceive the positive impact of technological educational tools as a new sustainable perspective with a positive outlook (Stephenson, 2017; Savaget et al., 2019; Tong and Wei, 2020).

The reduction in the cost of educational programs is also important, while free access without time and geographical restrictions helps teachers and students to have better academic progress (Tseng and Walsh, 2016). The benefits of technology-based training courses are paramount, as they provide a high degree of interactivity, engagement, and self-regulated learning (Warren et al., 2020; UNESCO, 2021). At the same time, learner satisfaction and learning outcomes are clearly improved compared to the traditional way (face-to-face teaching). Even in accounting education, research has shown that blended learning causes enormous economic, social, and environmental benefits, reinforcing the

fourth goal (SDG 4) which refers to ensuring quality education that prevents any exclusions of learners and promotes lifelong learning and university education to the maximum extent possible (Duff, 2004; Findler et al., 2019; Warren et al., 2020).

6 Conclusions and limitations

The main objective of this study is the exploration and connection of sustainable development with blended learning in accounting courses, as well as the formulation of useful elements and new perspectives for sustainable development in the world. The findings showed that the global map is constantly transforming, and the changes observed should be balanced and aligned with sustainability.

This calls for the full implementation of sustainable principles, where resources are used with respect for the future and the generations that will need to use them. In addition, the implementation and application of sustainable development policies and strategies requires a transitional period for transformative learning that will deepen teaching approaches such as blended learning.

Accounting education in universities needs to be aligned with the demands of the labour market, offering educational knowledge and skills that correspond to the development of students and citizens with a fully sustainable culture, which they will be able to apply, when necessary, both in their academic and professional careers.

More specifically, students in recent years have been observed to focus on sustainability and its impacts that promote respect for the environment, society, and economic prosperity. Accounting education through the application of blended learning, especially in courses such as financial accounting, promotes actions that offer quality, meaningful and sustainable learning. Through online platforms and new educational models based on social constructivist models, respecting social equity and cohesion, they can help students to improve their lives. Moreover, the stakeholders involved, such as businesses, governments, universities, even at a distance, provide students with the opportunity to acquire knowledge and skills that will bring them closer to adopting sustainable practices with better prospects and a solid foundation for the development of a rational sustainable system around the world.

The study has several limitations. For collecting sample articles, used two databases, and the review covered the period between years 2010–2022. Additionally, limited collection to papers composed in the English language.

The researchers suggest for more in-depth study of the topic, to compare how blended learning in sustainable development is approached in different cultural and socio-economic contexts, both globally and locally. Another suggestion is to conduct studies to assess the impact of blended learning on students' understanding and implementation of sustainable development principles in real-world scenarios and more specific among accounting graduates to evaluate their readiness to address sustainability issues in their professional roles. These research areas can offer significant understanding how blended learning can be optimised to enhance education in sustainable development within the context of accounting courses.

References

Accounting Education Change Commission (AECC) (1990) 'Objectives of education for accountants: position statement number one', *Issues in Accounting Education*, Vol. 5, No. 2, pp.307–312, DOI: 10.12691/jbms-4-1-3.

Agbedahin, A.V. (2019) 'Sustainable development, education for sustainable development, and the 2030 Agenda for Sustainable Development: emergence, efficacy, eminence, and future', *Sustainable Development*, Vol. 27, No. 1, pp.669–680.

Ahmed, V. and Opoku, A. (2022) 'Technology supported learning and pedagogy in times of crisis: the case of COVID-19 pandemic', *Education and Information Technologies*, Vol. 27, No. 1, pp.365–405.

Aleixo, A.M., Azeiteiro, U.M. and Leal, S. (2020) 'Are the sustainable development goals being implemented in the Portuguese higher education formative offer?', *International Journal of Sustainability in Higher Education*, Vol. 21, No. 2, pp.336–352.

Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N. and Umek, L. (2020) 'Impacts of the COVID-19 pandemic on life of higher education students: a global perspective', *Sustainability*, Vol. 12 No. 20, p.8438.

Asonitou S., Kottara C., Duan S., Yuan L. (2020) 'A comparative approach of e-learning accounting programs in Greece and China', in Kavoura, A., Kefallonitis, E. and Theodoridis, P. (Eds.): *Strategic Innovative Marketing and Tourism, Springer Proceedings in Business and Economics*, pp.2015–214, Springer, Cham, https://doi.org/10.1007/978-3-030-36126-6_23.

Baragash, R.S. and Al-Samarraie, H. (2018) 'Blended learning: investigating the influence of engagement in multiple learning delivery modes on students' performance', *Telematics and Informatics*, Vol. 35, No. 7, pp.2082–2098.

Barreiro-Gen, M., Lozano, R. and Zafar, A. (2020) 'Changes in sustainability priorities in organisations due to the COVID-19 outbreak: averting environmental rebound effects on society', *Sustainability*, Vol. 12 No. 12, p.5031.

Beatson, N., Gabriel, C.A., Howell, A., Scott, S., van der Meer, J. and Wood, L.C. (2020) 'Just opt in: how choosing to engage with technology impacts business students' academic performance', *Journal of Accounting Education*, Vol. 50, p.100641, DOI: https://doi.org/10.1016/j.jaccedu.2019.100641.

Boeren, E. (2019) 'Understanding Sustainable Development Goal (SDG) 4 on 'quality education' from micro, meso and macro perspectives', *International Review of Education*, Vol. 65, No. 2, pp.277–294, DOI: https://doi.org/10.1007/s11159-019-09772-7.

Boyce, G., Narayanan, V., Greer, S. and Blair, B. (2019) 'Taking the pulse of accounting education reform: liberal education, sociological perspectives, and exploring ways forward', *Accounting Education*, Vol. 28, No. 3, pp.274–303.

Bryce, P., Johnston, S. and Yasukawa, K. (2004) 'Implementing a program in sustainability for engineers at University of Technology, Sydney: a story of intersecting agendas', *International Journal of Sustainability in Higher Education*, Vol. 5, No. 3, pp.267–277.

Byrne, M. and Flood, B. (2008) 'Examining the relationships among background variables and academic performance of first year accounting students at an Irish University', *Journal of Accounting Education*, Vol. 26 No. 4, pp.202–212.

Coetzee, S.A., Schmulian, A. and Coetzee, R. (2018) 'Web conferencing-based tutorials: student perceptions thereof and the effect on academic performance in accounting education', *Accounting Education*, Vol. 27 No. 5, pp.531–546.

Cohen, S. and Karatzimas, S. (2022) 'New development: public sector accounting education for users-embedding e-learning and technology in teaching', *Public Money & Management*, Vol. 42, No. 4, pp.291–293.

Davies, J. (2015) 'An analysis of the sustainability of different methods of delivering higher education', in Leal Filho, W., Brandli, L., Kuznetsova, O. and Paço, A. (Eds.): *Integrative Approaches to Sustainable Development at University Level*, *World Sustainability Series*, pp.67–79, Springer, Cham, http://www.springer.com/la/book/9783319106892.

Diaz-Sarachaga, J.M., Jato-Espino, D. and Castro-Fresno, D. (2018) 'Is the Sustainable Development Goals (SDG) index an adequate framework to measure the progress of the 2030 Agenda?', *Sustainable Development*, Vol. 26, No. 6, pp.663–671.

Duff, A. (2004) 'Understanding academic performance and progression of first-year accounting and business economics undergraduates: the role of approaches to learning and prior academic achievement', *Accounting Education*, Vol. 1, No. 4, pp.409–430.

Findler, F., Schönherr, N., Lozano, R., Reider, D. and Martinuzzi, A. (2019) 'The impacts of higher education institutions on sustainable development: a review and conceptualization', *International Journal of Sustainability in Higher Education*, Vol. 20, No. 1, pp.23–38.

Garrison, D. and Vaughan, N. (2008) *Blended Learning in Higher Education: Framework, Principles and Guidelines*, Jossey-Bass, San Francisco, CA, USA, DOI: 10.1002/ 9781118269558.

Hahn, W., Fairchild, C. and Dowis, W.B. (2013) 'Online homework managers and intelligent tutoring systems: a study of their impact on student learning in the introductory financial accounting classroom', *Issues in Accounting Education*, Vol. 28, No. 3, pp.513–535.

Harahap, F., Nasution, N.E.A. and Manurung, B. (2019) 'The effect of blended learning on student's learning achievement and science process skills in plant tissue culture course', *International Journal of Instruction*, Vol. 12, No. 1, pp.521–538.

Heinrichs, H. (2021) 'Teaching sustainable development in a sensory and artful way – concepts, methods, and examples', *Sustainability*, Vol. 13, No. 24, p.13619.

Holmberg, J. (2014) 'Transformative learning and leadership for a sustainable future: Challenge Lab at Chalmers University of Technology', in Corcoran, P.B., Hollingshead, B.P., Lotz-Sisitka, H., Wals, A.E.J. and Weakland, J.P. (Eds.): *Intergenerational Learning and Transformative Leadership for Sustainable Futures*, pp.91–102, Wageningen Academic Publishers, Wageningen, The Netherlands, ISBN: 978-90-8686-252-8

Karatzimas, S. (2020) 'The beneficial role of government accounting literacy in developing participatory citizens', *Accounting Education*, Vol. 29, No. 3, pp.229–246.

Khanlarian, C.J. and Singh, R. (2014) 'An exploratory study of the online learning environment', *Issues in Accounting Education*, Vol. 29, No. 1, pp.117–147.

Krivacek, G.J. (2016) *The Effect of a Blended Teaching Method on Student Performance and Satisfaction in a First Accounting*, A Dissertation Submitted to the Faculty of Robert Morris University.

Lam, J. (2015) *The Student Experience of a BL Accounting Course: A Case Study in Hong Kong*, Doctorate Thesis Submitted to the University of Nottingham for the Degree of Doctor of Education [online] https://eprints.nottingham.ac.uk/31983/1/Thesis%20204110301%20Jeanne %20Lam%20% 28EThesis%29.pdf (accessed 15 February 2024).

López-Pérez, M.V., Pérez-López, M.C. and Rodríguez-Ariza, L. (2011) 'Blended learning in higher education: students' perceptions and their relation to outcomes', *Computers & Education*, Vol. 56, No. 3, pp.818–826.

Medina, L.C. (2018) 'Blended learning: deficits and prospects in higher education', *Australasian Journal of Educational Technology*, Vol. 34, No. 1.

Moustakas, L. and Robrade, D. (2022) 'The challenges and realities of e-learning during COVID-19: the case of university sport and physical education', *Challenges*, Vol. 13, No. 1, p.9.

Niedlich, S., Bauer, M., Doneliene, M., Jaeger, L., Rieckmann, M. and Bormann, I. (2020) 'Assessment of sustainability governance in higher education institutions – a systemic tool using a governance equalizer', *Sustainability*, Vol. 12, No. 5, p.1816.

Nor, A.S.M. and Kasim, N.A.A. (2015) 'Blended learning web tool usage among accounting students: a Malaysian perspective', *Procedia Economics and Finance*, Vol. 31, pp.170–185.

Nortvig, A.M., Petersen, A.K. and Balle, S.H. (2018) 'A literature review of the factors influencing e-learning and blended learning in relation to learning outcome, student satisfaction and engagement', *Electronic Journal of E-Learning*, Vol. 16, No. 1, pp.46–55.

Nousheen, A., Zai, S.A.Y., Waseem, M. and Khan, S.A. (2020) 'Education for sustainable development (ESD): effects of sustainability education on pre-service teachers' attitude towards sustainable development (SD)', *Journal of Cleaner Production*, Vol. 250, p.119537, DOI: https://doi.org/10.1016/j.jclepro.2019.119537.

Osgerby, J. (2013) 'Students' perceptions of the introduction of a blended learning environment: an exploratory case study', *Accounting Education*, Vol. 22, No. 1, pp.85–99.

Pauw, J., Gericke, N., Olsson, D. and Berglund, T. (2015) 'The effectiveness of education for sustainable development', *Sustainability*, Vol. 7, No. 11, pp.15693–15717.

Phillips, F. (2017) 'Are you making learning too easy? Effects of grouping accounting problems on students' learning', *Issues in Accounting Education*, Vol. 32, No. 3, pp.81–93.

Pitulice, I.C., Profiroiu, A.G. and Ștefănescu, A. (2018) 'Government accounting education for university undergraduates', *Transylvanian Review of Administrative Sciences*, Vol. 14, No. SI, pp.75–91.

Pradhan, P., Costa, L., Rybski, D., Lucht, W. and Kropp, J.P. (2017) 'A systematic study of sustainable development goal (SDG) interactions', *Earth's Future*, Vol. 5, No. 11, pp.1169–1179.

Samkin, G. and Stainbank, L. (2016) 'Teaching and learning: current and future challenges facing accounting academics, academics, and the development of an agenda for future research', *Meditari Accountancy Research*, Vol. 24, No. 3, pp.294–317.

Savaget, P., Geissdoerfer, M., Kharrazi, A. and Evans, S. (2019) 'The theoretical foundations of socio-technical systems change for sustainability: a systematic literature review', *Journal of Cleaner Production*, Vol. 206, pp.878–892, DOI: https://doi.org/10.1016/j.jclepro.2018.09.208.

Stephenson, S.S. (2017) 'Accounting community of practice pedagogy: a course management invention for developing personal competencies in accounting education', *Accounting Education*, Vol. 26, No. 1, pp.3–27.

Tong, Y. and Wei, X. (2020) 'Teaching design and practice of a project-based blended learning model', *International Journal of Mobile and Blended Learning*, Vol. 12, No. 1, pp.33–50.

Tseng, H. and Walsh, E.J. (2016) 'Blended vs. traditional course delivery: comparing students' motivation, learning outcomes, and preferences', *Q Rev. Distance Educ.*, Vol. 17, No. 1, pp.43–52.

UNESCO (2021) 'Berlin declaration on education for sustainable development', *UNESCO World Conference on Education for Sustainable Development*, Berlin [online] https://en.unesco.org/sites/default/files/esdfor2030-berlin-declaration-en.pdf.

Warren, L., Reilly, D., Herdan, A. and Lin, Y. (2021) 'Self-efficacy, performance and the role of blended learning', *Journal of Applied Research in Higher Education*, Vol. 13, No. 1, pp.98–111.