Multidisciplinary Reviews

CONFERENCE PAPER
Published Online: May 12, 2024
https://doi.org/10.31893/multirev.2023ss081

Innovations in Strategic Management: Navigating Complexity and Driving Organizational Success

# A comprehensive review of agile techniques in academic institutions for promoting sustainability capabilities

**P. Vijayalakshmi[a] ✉ | Vipin Jain[b] | Ritesh Kumar[c] | Omkar Pandharkame[d]**

[a]Department of Entrepreneurship and New Venture Creation, JAIN (Deemed-to-be Univesity), Bangalore, Karnataka, India.
[b]Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India.
[c]Maharishi University of Information Technology, Uttar Pradesh, India.
[d]Department of ISME, ATLAS SkillTech University, Mumbai, Maharashtra, India.

**Abstract** Adaptability, dialogue, creativity, self-confidence, respect, responsibility, emotional intelligence and systemic perspective are a few examples of the critical competencies that must be transmitted using contemporary educational methods and through a changing and developing society, instruments to promote lifetime learning and Education for Sustainable Development (ESD). Due to the active participants and constructionist tenets involved, they have been established; applying agile techniques to the leadership of programs in multiple sectors might be a useful instrument to impart such skills. As a result, the study has started including some examples of applying agile techniques in learning, which gave rise to the term Agile Education (AE). This study conducts a systematic review to examine how this cutting-edge educational instrument has been applied to education to promote important sustainable development features. Results for 10 of the 121 studies reviewed that show a distinct connection among the essential ESD capabilities and AE are provided. It has been demonstrated that AE enhances the accomplishments, contentment and engagement of both instructors and students while fostering an environment for learning that promotes the growth of morally and environmentally conscious people.

**Keywords:** Education, Agile methodologies, Agile Education (AE), Education for Sustainable Development (ESD)

## 1. Introduction

The implementation of agile methodologies in educational organizations is a topic that is getting more and more attention today. Colleges and universities have a responsibility to develop strategies geared at adaptable instruction due to the changing requirements in employment. Due to the global emphasis on lifelong learning, the problem is pressing. Agility is essential for staying abreast of the evolving needs of the industry (Yusuf et al 2020). Educational institutions' current interest in using agile approaches to create novel teaching tools is a sensible response to such issues. The primary goal must consider the developments established by the global society while developing a framework for creating information and measuring the quality of education (Agarwal et al 2023). However, the education process itself is not what the labor market is most interested in; instead, what emerges through the process takes the shape of educated graduates with abilities that are appropriate for present employment or capable of fast adapting to specifics. Industries are encouraged to take advantage of initiatives designed to ensure education quality, regardless of their insignificant impact on the manner of actual educational advances (Moi et al 2021). The building block for achieving the overall objectives of sustainability is considered to be education, which must cover the environmental, social and economic facets of sustainable growth. To long-standing conflicts and problems for recognizing non-sustainable modes in economic manufacturing and consumer behavior lead to ecological decomposition and worldwide warming, including an increase in natural events (Omer and Noguchi 2020). ESD and social educational methodologies are connected. Social learning methods enable learners to collaborate on projects related to real-world problems while developing the theoretical ability to comprehend the problems at their disposal and provide solutions (Bolmsten and Kitada 2020). Agile approaches are innovative in ESD and have been presented to integrate the advantages of social learning in a flexible and responsive structure. The goal of ESD is to help people acquire the abilities that individuals require to participate in social and political processes, in addition to assisting their communities in developing sustainable growth (Ryazanova et al 2020). Educational institutions can implement an active method of sustainable growth sensitive to

local agendas and contexts, as recommended in the mentioned ESD information and regulations, by using social learning and community capacity-building approaches. Educational institutions are an essential method for creating responsible and environmentally conscious citizens as well as educating individuals for entering employment, has additional difficulties as a result of the evolving society. The education's primary goals should be to prepare students to recognize and respond to change, along with other goals such as creating flexible, self-driven lifelong learners and enhancing their capacity to live productive lives (Parsons and MacCallum 2019). To examine the connections connecting agile techniques and education that gave rise to AE, together with the abilities strengthened by its implementation and how they relate to ESD. Students must assess whether AE follows a practical educational structure that encourages instruction regarding current civilizations in an additional efficient and long-lasting manner (Elkhateeb et al 2019).

The present study's main objective is to create an environment that is utilized together with the technologies of Industry 4.0, including Agile New Product Development (ANPD) techniques, which could assist in achieving the Sustainable Development Goals (SDGs). To extract information on different ANPD procedures, technologies related to Industry 4.0, indicators of performance, their connections and how they relate to the achievement of SDGs (Palsodkar et al 2023). It occurs when individual creativity and adaptable organizational structures moderate the link between agility in operation and environmental cooperation. They have a good understanding of the way accomplishments are impacted by agility from past studies; however, they know regarding the way agility and collaboration sustainable development strategies are related (Bouguerra et al 2021). Critical skill development and its favorable effects on the region's starting rate. The process of globalization technology, intergenerational, as well as events, including the Corona virus epidemic are the few of the elements that create settings that are difficult for businesses. Resilient entrepreneurs can encourage innovations and sustainable growth across community and economics will be required to take uncertainty as a challenge and recognize chances for progress (Fischer et al 2021). During a period of worldwide climate conduct, higher education institutions (HEIs) might play an essential part as change agents promoting sustainable development (SD). In contrast, HEIs must address various difficult requests, including those brought on by globalization, massification, marketization and digitization (Giesenbauer et al 2020). The function of Big Data Analytics is to be a mediator among sustainable manufacturing companies' efficiency and key elements, which includes work behaviors, ethical behaviors, and ecological procedures, institutional connect procedures, financial issues, customs and overall quality management (Raut et al 2021).

Industry executives are challenged to demonstrate more environmental responsibilities as an effect of the increasing worldwide demand from consumers on the effects of climate change and the consequences for various manufacturing sectors. It has encouraged businesses and scholars to find and use different tactics for activities that are environmentally sustainable (Mathiyazhagan et al 2021). The obstacles preventing vendor engagement and the process elements that support an open discussion add to the knowledge on strategic flexibility and global leadership and provide concrete recommendations for interruptions such as COVID-19. Multinational corporations from advanced economies (AMNEs) encounter unique difficulties when governing the environmental standards in their supplier chains from emerging economies (Soundararajan et al 2021). The study examined the effects of customer emphasis on overall company efficiency using green supply chain management (GSCM) techniques following recommendations for improving the efficiency and effectiveness of medium-sized enterprises. The enterprises implement GSCM techniques as an indicator of their marketplace emphasis. In addition, market focus improves company efficiency using GSCM, an important pathway (Butt e al 2021). The experimental single-case analysis featuring the global digital company focuses on qualitative study design methods to offer both an empirical and conceptual examination of a brand-new marketing capacity we refer to as an agile marketing capacity. Agile leadership of a digital transformation initiative is recognized by both academics and practitioners (Moi et al 2021). To close the vacancy by identifying the contextual factors that impact a company's embrace of Agile software development (ASD) through the implementation of a theoretical framework developed from the business process management (BPM) approach. ASD has gained so much popularity that it is a very active research subject (Lee and Chen 2019).

Multiple studies have demonstrated the beneficial impact of information technology on general company performance. Since the difficult economic climate doesn't receive enough attention, the comprehension of the company procedure and capabilities that allow these advantages to be achieved is limited. The economic significance of Dynamically Accounting Database Systems (DAIS) is believed to have an ongoing issue for academics and practitioners for several decades (Al-Matari et al 2022). Manufacturers are attracting additional curiosity in recent decade. Contrarily, business people launch companies to take advantage of novel entrepreneurial possibilities; large firms monitor growing companies to aid in the improvement of their operational agile. It is challenging to manage innovative business models and evaluation (Silva et al 2020). In the LARGS framework, the present inquiry is to construct the structural relationship among the requirements and determine important variables for selecting suppliers. Organizations are looking for professionals to assist them in expanding their purchasing bases as well as be prepared for a variety of eventualities before the new COVID-19 pandemic (Sonar et al 2022). To construct networked supply chains using sustainable and agile concepts, including a particular emphasis on controlling risks. The intention aims to show whether using such a strategy can improve supply chain networks' resilience and adaptation while fostering sustainability and reducing possible disruptions (Shoushtari et al 2023). The inquiry is to determine and evaluate the elements contributing to an organization's readiness for agile sustainability. Agile sustainability is defined in the study as having

the ability to adapt to evolving circumstances and making the most effective use of the existing assets while promoting each of the three elements of sustainability (Thomas and Suresh 2023).

## 2. Methodology

### *2.1. Eligibility criteria*

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) selection criteria are used in the systematic examination described in this paper to identify the publications that meet the minimal standards for scientific correctness and quality. The initial action was to conduct a fundamental investigation across articles in Scopus and the Education Resources Information Center (ERIC), 2 recognized meta-search technologies which include more than 100 items sourced from different publications and institutions. Since ERIC is focused on education sciences, the outcomes are anticipated to be more constrained. However, despite having a wide objective, Scopus analyzes the most significant databases from the most significant publications. To obtain findings that included the three evaluation components of Agile Education, competencies and sustainability, an identical query was used for the two databases.

### *2.2. Search strategy and study selection*

In contrast to the 150 hits returned by the identical query on ERIC during the identical duration, the Scopus analysis produced 1300 results from 1992 to 2019. Despite that is less limited, Scopus findings contained interesting articles, including IEE Explore, which is probably the biggest resource for software and computer educational materials. ERIC's outcomes comprised less representative of a large proportion of IEE Explore outcomes; however, they proved more pertinent to the subject according to consideration. Following that, a description of the article was used to filter results from the search. If there was any confusion, three writers examined the summary. The findings of the initial filtering stage decreased from 150 documents to 102 works that were reviewed and examined. The total number of publications considered in the systematic examination was decreased to 12 by an additional selection process that sought to locate publications showing AE experiences while noting the establishment of ESD-related qualities. The PRISMA circulation representation is shown in Figure 1, which describes the evaluation procedure.

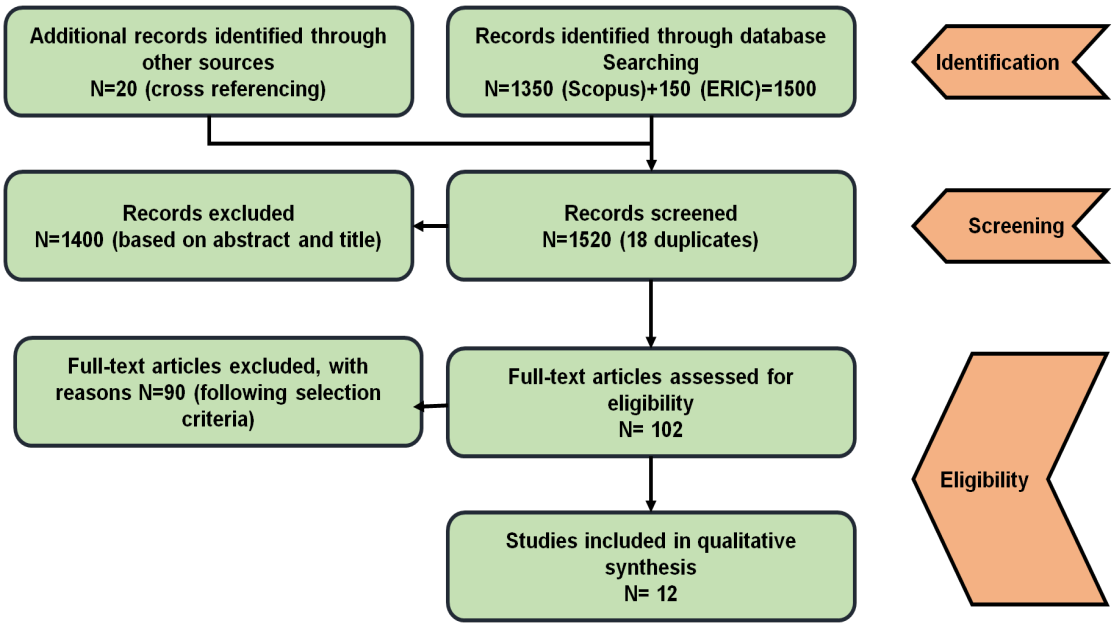


**Figure 1** PRISMA's flowchart outlining the systematic evaluation's screening procedure.

### *2.3. Criterion for selection*

ERIC entries absent from Scopus seemed to be individually uploaded to a separate database to gather information on the search query results. Table 1 and 2lists the selection criteria and studies characteristics that have been applied. The incidents involving computer science and engineering cannot be considered unexpected since these disciplines have used Agile techniques over the past decade. It is significant to mention that the majority of the articles were presented in the conference papers, which constitutes the usual environment for the demonstration of professional investigations utilizing novel pedagogical frameworks. This highlights the requirement for further establishing official inquiries, which proceed with the quality of isolated encounters.

**Table 1** The screening method used criteria for selection.

| Criterion for selection | Framework |
|---|---|
| Level of Education | Every level, with a focus on higher education |
| Geographical location | Global |
| Length of the paper | Minimum pages four |
| Area of subject | Every academic field |
| Learning based on competencies | Proof of talents transferred through Agile |
| Language | English |
| Sustainability Education | Evidence of the transmission of ESD skills through the use of Agile |

**Table 2** The listed studies 'characteristics.

| Reference | Methods | Objective | Findings | Education Level |
|---|---|---|---|---|
| (Sharma et al 2023) | Fuzzy Interpretive Structural Modeling Decision-Making Trial And Evaluation Laboratory (FISM-DEMATEL) | A total of twenty supply chain sustainability (SCS) accelerators were identified by the study after a thorough literature analysis and talks with the experts in the group. | This study is the result of the considered identification and definition of the promoters, as well as the evaluation, determination of the causal and beneficial linkages among variables. | Higher Education |
| (Fernanda et al 2018) | Modification of Scrum | Five goals include developing self-managed students, involving instructors and students, enhancing essential competencies and increasing team satisfaction and efficiency through the planning, development and monitoring of academic activities in an agile manner. | A substantial proportion of the instructional goals are completed and there is high satisfaction among students. Additionally, of course, optimum management includes competency acquisition. Increasing enthusiasm and inspiration. | Higher Education |
| (Venkatraman et al 2022) | Higher Order Thinking Skills (HOTS) | The study is to provide a suggestion for an agile method for creating intelligent educational techniques that encourage employees to adopt an innovative improving framework associated with Industry 4.0. | The first empirical research for graduates specializing in the business intelligence skill set needed for Industry 4.0 to occur was conducted in the study. Promising results from the pilot study open the door for additional investigation and instructional insights in this line of inquiry. | Higher Education |
| (Shoushtari et al 2023) | Supply Chain Network Design | The objective aims to show the process by which using a similar strategy can improve the distribution systems' adaptation and resilience to fostering sustainability and reducing possible interruptions. | The particular outcomes will differ based on the particular sector, the particular threats to the network and the particular design options. | Higher Education |
| (Al-Hamdan et al 2021) | The operational complexity of distant learning is becoming more complicated owing to agile teams. | Investigating the function of agile teams in Saudi educational institution supply chains during the COVID-19 crisis represents the study's objective. | As a result of the study's qualitative methodology, semi-structured interviews and thematic data analysis, an open-ended data-collecting instrument can be used. | Higher Education |

## 3. Results and Discussion

They provide a summary of the knowledge gained for each of the 12 studies that were chosen, with a focus on the authors' recognized acquired qualities. The eight tasks were ranked by 70 students and the most prevalent problems, each of they are connected to scrum planning, including producing weekly original content, calculating the duration of a specific assignment and listing each person's specific tasks, as shown in Figure 1.

### *3.1. Agile Education and Sustainability Competencies*

Education for sustainability entails the growth of several critical competencies that must encourage graduates to participate in society.

The skills involved are related to philosophical, methodological and socio-affective elements, which are included through the creation of a creative approach fusing the acquisition of knowledge using effective and productive education, discussed compared to the perspectives of equitable treatment, collaboration and consideration for the environment (López-Alcarria et al 2019).

### *3.2. Theories and designs for agile education*

When examining the educational principles and ideas that support agile education, they find that the concepts of experiential learning can be connected to the alleged advantages of implementing an agile strategy in education. Agile techniques have a strong constructivist foundation since people are seen as active learners. AE promotes the following constructivism-related essential competencies. Independence in the creation and development of education, analyzing potential solutions, collaboration, an integration of educational experiences using a person's social and relational surroundings, cognitive processing and reflecting are key components of intellectual inquiry in the process of knowledge production. People organize their information into a broad graph while they gather it from their individual experiences, utilization and control of many sources of data.

### *3.3. Education Using Agile Methodologies*

Agile methodology focuses less on complicated documentation than traditional waterfall methods and more on producing fully functional app software. In contrast to the waterfall model, agile prioritizes goals over procedures. Education consists of various projects of varying sizes that call for an organizational strategy to ensure the attainment of the goals (Neumann and Baumann 2021). Hence, it is appropriate to assume that the adoption of agile methodologies, which were demonstrated to be successful in concerning traditional methods of project management shown in Figure 2 and Table 3 to improve the achievement of development and supply chain management in industrial settings as well as across various public organizations, will improve the teaching and learning processes in Agile education.

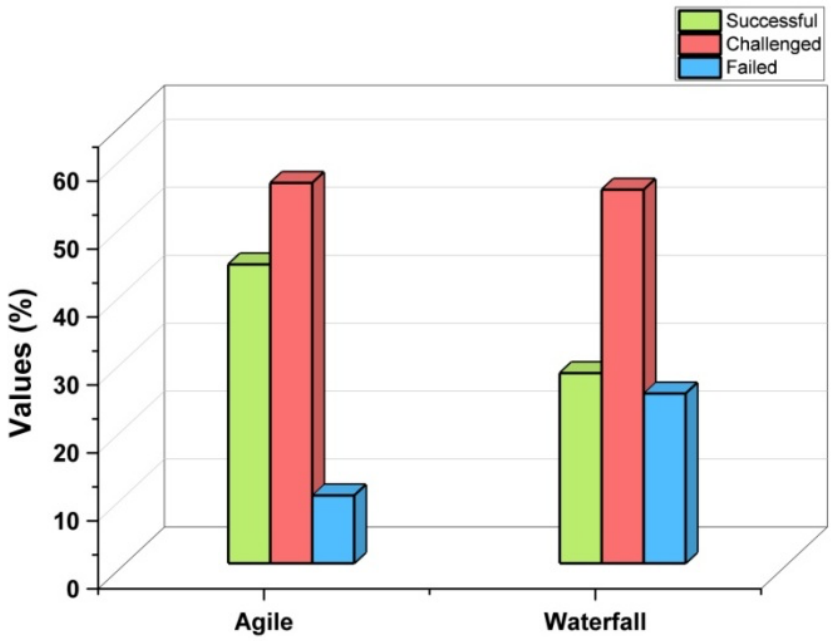


**Figure 2** Estimates of project achievement based on project management techniques.

**Table 3** Project management techniques.

| Management Techniques | Values (%) | | |
|---|---|---|---|
| | Successful | Challenged | Failed |
| Agile | 44 | 56 | 10 |
| Waterfall | 28 | 55 | 25 |

### *3.4. Publication type and subject agile education*

The distribution of results per year, publication type and subject are displayed in Figure 3 and Table 4. During the past ten years, interest in the subject of study has increased in computer science 43%, social sciences 29% and engineering 20%. Since Agile techniques have been used extensively in these fields over the past ten years, these instances of computer science and engineering cannot be considered disturbing. It is also significant to observe that the majority of the articles are published in proceedings of the conference, which represents an ordinary environment where investigations utilizing novel educational structures have been discussed while, in turn, demonstrating the necessity for establishing formalized studies that proceed to a collection of isolated incidents.

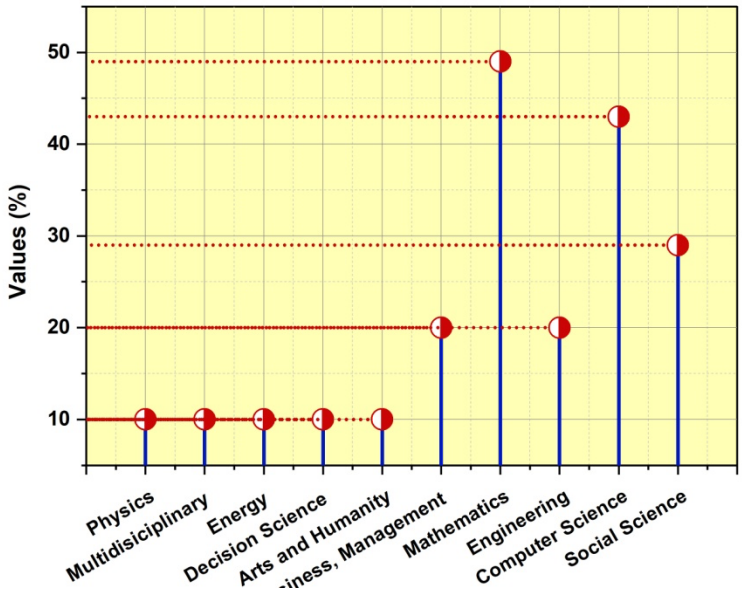


**Figure 3** The outcomes for publication type and subject agile education.

**Table 4** Agile education results by publication type and subject.

| Subjects | Values (%) |
|---|---|
| Physics | 10 |
| Multidisciplinary | 10 |
| Energy | 10 |
| Decision Science | 10 |
| Arts and Humanity | 10 |
| Business, Management | 20 |
| Mathematics | 49 |
| Engineering | 20 |
| Computer Science | 43 |
| Social Science | 29 |

### *3.5. Pre-test and post-test for each agile education*

The mean values for the 4 educational goals during the pre-test and post-test are displayed in Figure 4 and Table 5. Pre-tests and post-tests were utilized to evaluate each individual's degree of information before and after the training course. The pre-test included a list of unbiased inquiries that evaluated students' essential IT, English and teaching ability. Students performed a post-test to respond to the identical group of subjects after the instructions were concluded.

### *3.6. Benefits of agile adoption*

For students, teachers and educational institutions, adopting AE has several important advantages. Agile techniques, having their origins in the development of software, are used in educational institutions to produce educational settings that are more dynamic and productive. Implementing AE has several benefits, from greater problem-solving abilities and preparation for careers to higher levels of student engagement (Marnewick and Marnewick 2021). Education responds to the requirements of our modern times and gives students the knowledge and perspective required to achieve success in an environment that changes. Educational institutions have improved in educating learners about both the possibilities and difficulties of the decades to come since they keep fostering agility. The utilization of Agile has boosted software distribution for 64% of businesses, improved employee efficiency for 60% of businesses, enhanced delivery regularity for 51% of businesses and improved software quality for 45% of businesses in Figure 5 and Table 6.

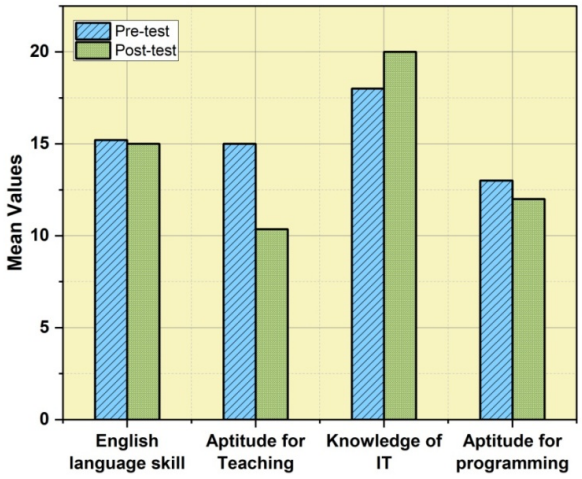


**Figure 4** Mean values for the pre-test and post-test for each of the four agile education outcomes.

**Table 5** Outcomes for pre-test and post-test for each of the four agile educations.

| Agile Educations | Mean Values | |
|---|---|---|
| | Pre-test | Post-test |
| English language skill | 15.2 | 15 |
| Aptitude for Teaching | 15 | 10.36 |
| Knowledge of IT | 18 | 20 |
| Aptitude for programming | 13 | 12 |

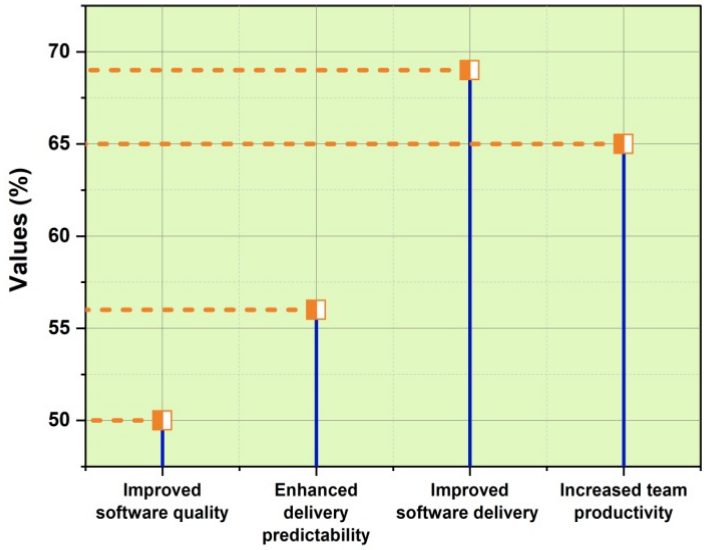


**Figure 5** Benefits of agile adoption [Source: Author].

**Table 6** Benefits of adoption that is agile.

| Benefits of Adoption | Values (%) |
|---|---|
| Improved software quality | 50 |
| Enhanced delivery predictability | 56 |
| Improved software delivery | 69 |
| Increased team productivity | 65 |

AE's fundamental principles include a dedication to sustainability competencies and innovative concepts and designs. It is an instructional approach incorporating agile methodology that encourages active participation, iterative development and individualized learning opportunities. Academic research, publications and articles covering various topics are published concerning AE. Pre and post-tests are essential for gauging the success of AE since they let teachers modify and improve their pedagogical approaches in light of data-driven insights. Adopting AE has many advantages, such as improved student engagement, problem-solving abilities, adaptability and preparing graduates for the ever-changing demands of the modern workforce (Zavits et al 2021). AE, in its simplest form, integrates traditional education with sustainability and educates students in a rapidly evolving world; the curriculum is dynamic and focused on students. Educational institutions can produce a more productive and engaged class of graduates who are concerned about sustainability and prepared to have a beneficial effect on the global community using agile approaches.

## 4. Conclusions

The fundamental competencies in which AE is established have connections with essential competencies for ESD that have been determined by studies throughout the preceding several decades. The current study illuminates both the potential and the present difficulty of agile techniques as a tactic to support models of economic sustainable development from the perspective of education. Using agile methodologies, educational organizations can develop adaptive and dynamic programs that can maintain the changing sustainability industry. Additionally, they promote an interactive educational environment in which individuals can cooperate, discuss concepts and test out innovative approaches. Agile techniques' continuous structure enables continual development, guaranteeing that sustainability education is current and essential. AE has numerous and diverse uses. Different approaches such as Scrum, Kanban, or Scrum/XP, can be customized for any educational institution or educational need and have a great deal of promise for adjusting to the constant educational demands of our changing society today. The future of employment in academic institutions employing agile methodologies will provide an emphasis on adaptation, teamwork and concrete abilities that will enable students to succeed throughout the field of sustainability.

## Ethical Considerations

Not applicable.

## Conflict of Interest

The authors declare no conflict of interest.

## Funding

The current review did not receive any financial support.

## References

Agarwal V, Hameed AZ, Malhotra S, Mathiyazhagan K, Alathur S, Appolloni A (2023) Role of Industry 4.0 in agile manufacturing to achieve sustainable development. Business Strategy and the Environment. 32(6):3671-88. DOI: 10.1002/bse.3321

Al-Hamdan AR, Alsulami SG (2021) The Role of Agile Teams in the Delivery of Distance Education in Saudi Universities Amid the COVID-19 Crisis. Qualitative Data Analysis. International Journal of Education and Literacy Studies9 (3):184-8. DOI: 10.7575/aiac.ijels.v.9n.3p.184

Al-Matari AS, Amiruddin R, Aziz KA, Al-Sharafi MA (2022) The impact of dynamic accounting information system on organizational resilience: the mediating role of business processes capabilities. Sustainability. 14(9):4967. DOI: 10.3390/su14094967

Bolmsten J, Kitada M (2020) Agile social learning–capacity-building for sustainable development in higher education. International Journal of Sustainability in Higher Education 21(7):1563-86. DOI: 10.1108/IJSHE-07-2019-0212

Bouguerra A, Gölgeci I, Gligor DM, Tatoglu E (2021) How do agile organizations contribute to environmental collaboration? Evidence from MNEs in Turkey. Journal of International Management 27(1):100711. DOI: 10.1016/j.intman.2019.100711

Butt P, Kamran M, Afzal F, Mukit MM (2021) Being agile in market orientation to enhance firm performance: the role of green supply chain management. International Journal of Agile Systems and Management 14(4):517-42. DOI: 10.1504/IJASM.2021.120237

Elkhateeb M, Shehab A, El-Bakry H Mobile (2019) learning system for egyptian higher education using agile-based approach. Education Research International. DOI: 10.1155/2019/7531980

Fernanda S, Manuel S, Germania R, Samanta C, Danilo J, Patricio A (2018) Agile methodologies applied in teaching-learning process in engineering. A case of study. In2018 IEEE Global Engineering Education Conference (EDUCON) (pp. 1201-1207). IEEE. DOI: 10.1109/EDUCON.2018.8363366

Fischer S, Rosilius M, Schmitt J, Bräutigam V (2021) A brief review of our agile teaching formats in entrepreneurship education. Sustainability. 14(1):251. DOI: 10.3390/su14010251

Giesenbauer B, Müller-Christ G (2020) University 4.0: Promoting the transformation of higher education institutions toward sustainable development. Sustainability 12(8):3371. DOI: 10.3390/su12083371

Lee JC, Chen CY (2019) Investigating the environmental antecedents of organizations' intention to adopt agile software development. Journal of Enterprise Information Management. 32(5):869-86. DOI: 10.1108/JEIM-06-2018-0119

López-Alcarria A, Olivares-Vicente A, Poza-Vilches F (2019) A systematic review of the use of agile methodologies in education to foster sustainability competencies. Sustainability11(10):2915. DOI: 10.3390/su11102915

Marnewick C, Marnewick AL (2022) Benefits realization in an agile environment. International journal of project management. 40(4):454-65. DOI: 10.1016/j.ijproman.2022.04.005

Mathiyazhagan K, Agarwal V, Appolloni A, Saikouk T, Gnanavelbabu A (2021) Integrating lean and agile practices for achieving global sustainability goals in Indian manufacturing industries. Technological Forecasting and Social Change 171:120982. DOI: 10.1016/j.techfore.2021.120982

Moi L, Cabiddu F (2021) An agile marketing capability maturity framework. Tourism management 86:104347. DOI: 10.1016/j.tourman.2021.104347

Moi L, Cabiddu F (2021) Leading digital transformation through an Agile Marketing Capability: The case of Spotahome. Journal of Management and Governance. 25(4):1145-77. DOI: 10.1007/s10997-020-09534-w

Neumann M, Baumann L (2021) Agile methods in higher education: Adapting and using eduscrum with real world projects. In2021 IEEE Frontiers in Education Conference (FIE) (pp. 1-8). IEEE. DOI: 10.1109/FIE49875.2021.9637344

Omer MA, Noguchi T (2020) A conceptual framework for understanding the contribution of building materials in the achievement of Sustainable Development Goals (SDGs). Sustainable Cities and Society 52:101869. DOI: 10.1016/j.scs.2019.101869

Palsodkar M, Yadav G, Nagare MR (2023) Integrating Industry 4.0 and agile new product development practices to evaluate the penetration of sustainable development goals in manufacturing industries. Journal of Engineering, Design and Technology. DOI: 10.1108/JEDT-02-2022-0101

Parsons D, MacCallum K (2019) Agile and lean concepts for teaching and learning. Agile and Lean Concepts for Teaching and Learning. Springer Singapore. DOI: 10.1007/978-981-13-2751-3. 2019

Raut RD, Mangla SK, Narwane VS, Dora M, Liu M (2021) Big Data Analytics as a mediator in Lean, Agile, Resilient, and Green (LARG) practices effects on sustainable supply chains. Transportation Research Part E: Logistics and Transportation Review 145:102170. DOI: 10.1016/j.tre.2020.102170

Ryazanova N, Naumov V, Kamennykh N (2020) Implementation trajectories of environmental education for sustainable development in formal, non-formal and informal education based on eduScrum project management methodology. InE3S Web of Conferences. EDP Sciences 169, p.05002. DOI: 10.1051/e3sconf/202016905002

Sharma M, Antony R, Tsagarakis K (2023) Green, resilient, agile, and sustainable fresh food supply chain enablers. Evidence from India. Annals of operations research. 1-27. DOI: 10.1007/s10479-023-05176-x

Shashi, Centobelli P, Cerchione R, Ertz M (2020) Managing supply chain resilience to pursue business and environmental strategies. Business strategy and the environment. (3):1215-46. DOI: 10.1002/bse.2428

Shoushtari F, Ghafourian E (2023) Antifragile, Sustainable, and Agile Supply Chain Network Design with a Risk Approach. International journal of industrial engineering and operational research 5(1):19-28. DOI: https://doi.org/10.1007/s11356-023-29488-4

Silva DS, Ghezzi A, Aguiar RB, Cortimiglia MN, ten Caten CS (2020) Lean Startup, Agile Methodologies and Customer Development for business model innovation: A systematic review and research agenda. International Journal of Entrepreneurial Behavior & Research. 26(4):595-628. DOI: 10.1108/IJEBR-07-2019-0425

Sonar H, Gunasekaran A, Agrawal S, Roy M (2022) Role of lean, agile, resilient, green, and sustainable paradigm in supplier selection. Cleaner Logistics and Supply Chain. 4:100059. DOI: 10.1016/j.clscn.2022.100059

Soundararajan V, Sahasranamam S, Khan Z, Jain T (2021) Multinational enterprises and the governance of sustainability practices in emerging market supply chains: An agile governance perspective. Journal of World Business 56(2):101149. DOI: 10.1016/j.jwb.2020.101149

Thomas A, Suresh M (2023) Readiness for agile-sustainability in health-care organizations. International Journal of Quality and Service Sciences. 2023 May 15. DOI: 10.1108/IJQSS-06-2022-0056

Venkatraman S, Benli F, Wei Y, Wahr F (2022) Smart Classroom Teaching Strategy to Enhance Higher Order Thinking Skills (HOTS)—An Agile Approach for Education 4.0. Future Internet 14(9) 255. DOI: 10.3390/fi14090255

Yusuf Y, Menhat MS, Abubakar T, Ogbuke NJ (2020) Agile capabilities as necessary conditions for maximising sustainable supply chain performance: An empirical investigation. International Journal of Production Economics 222:107501. DOI: 10.1016/j.ijpe.2019.09.022

Zavits K Fostering and Sustaining an Inclusive and Cognitively Diverse Learning Culture that Promotes Innovative and Agile Thinking. DOI: 10.1108/IJMPB-05-2022-0111