ESD goals and soft skills competencies through constructivist approaches to teaching: an integrative review

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Article Info

ABSTRACT

Recent studies claimed that the absence of a paradigm is a challenge to developing education for sustainable development and soft skills competencies. This integrative study examines stimulating these transferable and transversal competencies through constructivist approaches to teaching from the cognitive, social, radical, and critical perspectives. The study argues that the use of constructivist approaches to teaching can contribute to the achievement of education for sustainable development and soft skills competencies through the delegation of power from teachers/lecturers to students. This, in active and interactive classrooms, empowers students and builds their confidence to develop on the personal, academic, and professional levels. The use of the cognitive constructivist approach assists in developing competencies based on a clear understanding of the cognitive structures of students in a vibrant classroom environment. The use of the social constructivist approach assists in constructing individualized learning environment based on predetermined zones of proximal development in sociocultural contexts. The radical and critical constructivist approaches to teaching, through the rejection of conventional epistemologies, allow students the freedom to creatively address issues related to environmental, economic, and social sustainability. This becomes effective through the fostering of self and social awareness, challenging existing ideas, and provoking innovative thoughts that are necessary to shape a sustainable future.

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1. INTRODUCTION

Scolars recenty claimed that there is no available paradigm to assist in achieving education for sustaibale development goals (ESDs) and soft skills competences [1], [2]. This integrative review study finds ways to address this issue. Stemming from the view that there is a shift in focus these days from the objectivist approaches to the constructivist approaches to learning, this study looks into constructivist approaches to achieve these skills and competencies. Traditionally, teachers were the center of the educational process. They decide on what students need to learn and the way they learn it. This included the textbook, the material, the concepts, and the theories. The successful completion of these courses is measured by students' ability to pass exams and provide accurate answers based on the given material [3]. Creative thinking is indeed accepted in objectivist approaches, but the new knowledge shall be measured based on what is already known and previously tested. Constructivist approaches, on the other hand, value students' contributions to classes and the learning environment. Sessions are flexible and the goals are set by students. Students also decide on what they want to learn, which makes classrooms open for discussions negotiations, and different perspectives. The

adoption of the constructivist approach to teaching is on the increase these days as learning is not measured by the amount of information a student acquires; it is measured by students' ability to use the information in complex real-world scenarios [3]. In this study, the adoption of the constructivist approach to teaching is investigated based on the context of sustainable education and soft skills development.

Education for sustainable development (ESD) is one of the initiatives that the education sector in UNESCO came up with to address the challenges our planet faces. As part of this initiative, UNESCO provides support in terms of approaches and non-formal educational programs to the member states to help in addressing these needs. According to UNESCO, [4] ESD shall be an integral part of education and learning in the long run. As a result, educators and institutions need to develop the quality of education and enhance learning in terms of learning environment, outcome, and pedagogy. Learning, in this sense, shall be carried out with increased participation based on critical reflection, systemic thinking, and analysis, participatory learning, thinking creatively for future scenarios, and collaborative learning, learning and teaching, as such, is viewed as an active process [5].

The pedagogical approaches to achieve ESD shall be carried out using active, experiential, and participative methods to ensure that students acquire the knowledge and retain it as part of their lifelong learning. The increased participation can be carried out by engaging students in constructive discussions and stimulus activities. This can also be supported through involvement in group activities and discussions in the form of task-based learning or group-based learning. The inclusion of case studies and real-life scenarios shall also provide a perspective to students as they can use them to analyze the situations and provide comprehensive input. These engaging activities change the dynamic of classrooms from teacher-centered to student-centered as students need to be empowered with knowledge and trust to help them become active learners, which is specifically important in this era in which education and learning are more of the ability to 'do' than the ability to 'know'.

The increased participation and the motivation to take initiative using innovative approaches are also methods that can be used to develop the soft skills of students. In order to develop soft skills, students need to become active members of their classrooms. They need to first, participate, and then, be engaged with their peers and teachers to make sure that they develop the skills. The development of skills is more than the ability to recall information or remember some concepts and their definitions. It is about the ability to understand, apply, analyze, evaluate, and create new wholes. The creation of these abilities and skills shall be the ultimate goal of learning as learning the types of informing and the pillars of persuasion, for example, do not make students effective informative or persuasive speakers. What helps them develop these skills is practice and involvement in activities and workshops. In this study, a number of theories of constructivism are reviewed, critiques of these theories are provided, studies that used these theories in sustainable education and soft skills development are critically examined, and findings and conclusions are drawn accordingly.

2.   CONSTRUCTIVISM THEORIES

Over the years, scholars developed a number of perspectives on studying constructivism. In this study, the focus will be on four perspectives that are the cognitive [6], [7], the social [8], the radical [9], [10], and critical [11]. The purpose of selecting these studies is related to their view of learning as a progressive and active construct, not a passive process [12], [13].

Piaget [6], [7] came up with his constructivist cognitive theory. He argued that humans construct knowledge and do not receive knowledge. This challenged theories that argued that human intelligence is a fixed entity that is based on inherited traits. Piaget [6], [7], thinking is the outcome of cognitive structure that is gradually built as a result of exposure. The process of thinking leads to learning, which is achieved through adaptation to the surrounding environment. This adaptation is a process that has three stages that are assimilation, accommodation, and equilibration. Assimilation means incorporating new ideas, information, or events into the preexisting cognitive structures. Accommodation takes place as existing ideas or structures change to accommodate new structures or information. Equilibration is achieved as the person reaches a balance between what he knows and what he learns. That is, equilibration is achieved as the person reaches a balance between assimilation and accommodation. To reach the balance and to make sure that students learned or developed understanding, it is important to have hands-on interactions. Piaget [6], [7], is not about transmitting information; learning experiences and it is based on interactions with the concepts in their environment.

Piaget [6], [7] cognitive theory emphasized the importance of engaging students through interactive and hands-on activities and practices to help them develop their cognitive structures and achieve learning. This can be achieved through learner-centered activities and practices in classrooms. Lecturing students and providing them with information through the traditional teacher-centered approach in the form of theory, instructions, and demonstrations do not fit the paradigms of Piaget's theory. Lecturers need to enrich the experience of students by providing an environment that they can use to build an experience. Students need to

be encouraged and motivated to question, experiment, and search for information themselves. To achieve this, the classroom shall be vibrant as students shall be allowed to argue and debate issues. They shall be allowed to work with peers and groups to develop ideas and discuss them freely without the fear of making mistakes. In this sense, making mistakes shall also be perceived as a learning experience for students. However, instructors and lecturers need to initially identify the cognitive level of students to identify their strengths and weaknesses. After that, instruction shall be as individualized as possible to make sure that students regardless of their cognitive level learn from these sessions and add to their experience in a way that would help them develop. This can be a time-consuming process for instructors, but it would, over some time, help students, regardless of their cognitive level, learn, understand, and develop as "to understand is to discover or reconstruct by rediscovery" [6].

In social constructivism, Vygotsky [8] believes that learning and education are developed by socialization. They are also culture-dependent as the capabilities of memory and attention depend on the cognitive tools that are provided by the culture and they include religion, history, traditions, language, and context. Therefore, learners need to initially immerse themselves in the social environment and after that adopt the experience. The concept of the zone of proximal development is at the core of Vygotsky's theory. The zone of proximal development, according to Vygotsky [8], is the difference between a child's potential growth and their actual development as measured by their capacity to solve problems without adult help or in collaboration with more peers. Vygotsky [8] believes that development is age-restricted as younger children/students are more receptive than elder students. However, [8] believes that with the help of lecturers/instructors and through social interactions, children/students will be able to cope with and comprehend concepts that cannot learn on their own. The zone of proximal development can be used as a reference point by curriculum experts and developers to create lesson plans for students. This emphasizes the importance of instructors in the cognitive development of students based on the social constructivism theory. The instructor may use a diagnostic test to determine the level of the student and determine the expected outcome by the end of the course or the semester. As such, instead of being a passive figure, the instructor actively contributes to students' knowledge gain and development [13].

Vygotsky [8] suggested classroom is vibrant and encourages participation. As the instructor introduced a concept, a theory, or an idea, the instructor needs to decide, based on the outcome of a diagnostic test, what is the current level of students (can be learned independently), the zone of proximal development (what can be learned with assistance), and the beyond reach level (what cannot be done even with help). As they decide on what can be learned with assistance, they start the learning process. While teachers encourage and assist dialogue by utilizing the natural flow of interactions in the classroom, students learn largely via interactions with their peers, teachers, and parents. Effective teaching and learning depend greatly on interpersonal contact and conversation, with the main objective being students' comprehension. Interaction between the teacher and the students as well as between the students themselves is emphasized in the Vygotskian classroom. Students are encouraged to question, summarize, predict, and clarify information and comprehension. In a Vygotskian classroom, learners receive flexible help and attentive direction based on their needs, but no one is forced to do anything. Discussions, research collaborations, electronic information sources, and project groups that focus on problem analysis are all introduced to students [14]. However, it is the responsibility of the teacher/ instructor to decide what to introduce to students and what to leave out. Social constructivism encourages the active engagement and collaboration of distinctive learners, as was also previously established in the Piagetian classroom.

In addition to the cognitive and social constructivism theories, we also have the radical constructivism theory [15], [16]. For Tobin [15], and Glasersfeld [16], radical constructivism is an "unconventional approach to the problem of knowledge and knowing" [15]. It starts with the assumption that knowledge is in the head of the person and that person has no option but to build connections based on that knowledge in reference to what he/she knows. That is, the construction of knowledge is mainly based on the experience of the person. Von Glasersfeld [10] admits that experience is subjective. Therefore, the construct or the interpretation of knowledge by different people differs as they have different experiences, and for Tobin [15], that is fine and accepted. To sustain personal coherence in the face of novel experiences and demands, learning is a continuous process of rewriting notions. Hence, fitting with other, flexible personal truths rather than compatibility with external reality serves as the primary criterion for personal truth. Glasersfeld [16] categorizes the backbones of radical constructivism into two main categories. Firstly, knowledge is actively constructed by the cognizing subject; it is not passively obtained through the senses or communication. Secondly, the biological concept of adaptation is a drive toward fit or viability. Cognition serves to structure the experiential environment for the subject, not to uncover an objective ontological reality.

According to Tobin [15], constructivism is a philosophy of knowledge for education that rejects conventional epistemology. Its application to education first calls for an explanation of what one hopes to accomplish. This brings up a significant issue. After all, education is a "political" endeavor. It serves two

purposes. On the one hand, teachers must provide their students the freedom to think clearly and independently. On the other hand, the current best ways of acting and thinking are to be passed on to the following generation. If students can see why learning something would be beneficial, they will be more driven to do so. Most of the objectives that determine a piece of knowledge's practical value are not so obscure that students would not be able to discuss them. This transitions from providing for the mundane material necessities of daily living to creating tranquility on an abstract level of the person's structure of experienced reality. For radical constructivists, the premise that each of us gives meaning to linguistic symbols and that, despite being strongly influenced by the social, meaning is abstracted from our unique subjective experiences is the basis for radical constructivists' denial of the existence of identically shared meanings that are shared on an objective basis [10]. Hence, in the strictest sense of the word, the meanings we generate are never the same or shared. Instead, 'interpersonal fit' is a socially negotiated concept that defines compatible meanings [9].

The critical perspective on constructivism, according to Fraser [11], examines constructivism within a social and cultural context, but it also adds a critical dimension intended to increase the success of constructivism in these contexts. Critical constructivism is a social epistemology, according to Fraser [11], that examines the socio-cultural environment of knowledge formation and serves as a model for cultural change. It also describes the learner as being suspended in semiotic systems similar to those previously discovered in social and cultural constructivism, confirming the relativism of radical constructivism. Critical constructivism places more focus on a learning teacher's efforts for transforming knowledge. It is a framework that makes use of critical theory to provide potentially disempowering cultural myths more apparent and, as a result, more amenable to discussion and critical self-reflection. The encouragement of communicative ethics, or the environment for starting a conversation aimed at attaining mutual understanding, is a crucial component of that paradigm [11]. The requirements include a commitment to dialogue that aims to achieve a reciprocal understanding of goals, interests, and standards, concern for and critical awareness of the frequently invisible rules of the classroom, including social and cultural myths, and a primary concern for maintaining empathetic, caring and trusting relationships. These myths work together to create a culture that views learning and teaching in the classroom as a trip through a pre-constructed landscape. Because of the tendency to reinforce itself and the effects of the broader culture, changing such deeply ingrained surroundings to dispel these misconceptions and advance constructivist alternatives is difficult. Fraser [11] makes the case for an upbeat strategy, contending that rather than acting valiantly alone, teachers should collaborate to reshape school culture.

Critical constructivism fosters more self-awareness and social awareness, which also fosters the freedom of thought necessary to identify authoritarian tendencies, link knowledge to power, and inspire people to take positive action. According to critical constructivism, which theorizes the relationship between power and knowledge in societies, only a select few groups and institutions can rise to prominence and be recognized as the owners of certain types of knowledge, and powerful groups continuously undermine competing knowledge to uphold the legitimacy of their knowledge construction. This method seeks to promote reflexivity and the opening of questions through dialogue and critical self-reflection, working to undermine conventional teaching and research methods that, maybe inadvertently, are involved in the reproduction of systems of class, race, culture, and gender oppression. Critical constructivism promotes the development of communication aimed at fostering understanding between groups. In various critical approaches, critical constructivist thoughts have been adopted. It promotes challenging prevailing knowledge production processes and opening up a discussion about critical awareness. As all people construct their knowledge in their thoughts, which are shaped by the culture they live in, knowledge from some communities is valued over information from others. The strategies of critical constructivism involve exposing oppressed knowledge while simultaneously looking for alternative discourses and fresh ways of thinking. To include previously excluded and marginalized knowledge in mainstream discourse, this technique seeks to critique dominant mechanisms of knowledge creation and tries to uncover elitist assumptions implicit in current knowledge [17].

The above sheds light on four of the constructivist theories namely: the cognitive, the social, the radical, and the critical constructivism theories. The theories present perspectives on classroom teaching, learning, and education. They emphasize the importance of involving students in their learning by empowering their choices. They also encourage questioning, seeking clarification, active participation, and experimenting to make sure that students achieve the most out of their education. As these approaches have advocates, they also have critics. The following section will discuss the critiques of constructivism, in general, and these four theories, in particular.

3. CRITIQUES OF CONSTRUCTIVISM THEORIES
Though constructivism has been hailed by many educators, it is not without criticism. Constructivist methods have drawn criticism in a number of ways. A number of researchers who oppose constructivism emphasized the negative aspects/outcomes of providing little or no guidance to students [18], [19]. They believe that the little guidance students receive may not help them in achieving the learning outcomes of classes

as it may distract them. Students may get lost and not benefit from classes. This concern can be considered valid if the instructor does not prepare well for classes. In constructivism classes, lecturers and teachers are expected to prepare in advance and work on the activities that they intend to present to students. The role of teachers/instructors is the role of the facilitator to lead a discussion and possibly redirect it if it goes out of context.

Another main criticism of constructivism theory relates to the negative consequences of the freedom given to students. Kirschner *et al*. [19] believe that empowering students and giving them the freedom to decide what to learn, on the one hand, and reaching their conclusion, on the other hand, leads to overlooking empirical findings and research. This concern can be considered invalid if the instructors use the inductive approach to teaching. That is, if the instructor starts sessions by introducing a number of open-ended questions and leads the discussion, and provides accurate experiments and correct clarifications, this will help students reach conclusions that are in line with the outcome of established research. Even though constructivist approaches focus on empowering students, they also emphasize the importance of the teacher/lecturer in classrooms. Teachers/lecturers, as students, play an active role in constructivist-run classrooms.

A further critique of constructivism claims that the use of constructivist approaches leads to interpreting knowledge differently. This leads to gaps in learners' bodies of knowledge as the approach does not lead to a proper understanding of concepts and material [20]. These critics argue that within constructivist-based pedagogies, giving learners adequate curricula is ineffective because curricula are centered toward all learners in the classroom while every individual has different thinking. Constructivism's detractors contend that conventional curricula are unproductive and inefficient for learners as a result. It can be argued that individual differences can be addressed using constructivist approaches. For example, Piaget [6] cognitive approach values individual differences and stressed the importance of carrying out diagnostic tests to identify individual differences. Based on the outcome of the diagnostic test, instructors shall provide sessions that meet the cognitive level of students and add to their experience in a way that would help them develop.

Piaget [6] approach was also criticized for ignoring crucial context elements in learning environments. The availability of educational resources, the necessity of integrating media into learning environments, learners' preferences, and the opportunity for individual student thinking were highlighted in this context. This review has become void over time [21]. These days, access to information, technology, and educational technologies has become the benchmark of this era, the information era. Students regardless of their geographical location have access to a big number of educational technologies and networks. The challenge in this era, 22 years after, is making sure that students use technology and artificial intelligence software in an ethical manner that does not affect their learning development [21]–[23]. In addition, the use of material shall be context-based. As instructors prepare for their sessions, they shall prepare based on available material and technologies. Constructivist approaches encourage active participation from students, and it does not undermine the active involvement of teachers and instructors who play the role of facilitators of learning and teaching.

These critiques, as mentioned above, can be overcome through proper planning and preparation, identifying individual differences, and context awareness. The conduct of classes based on constructivist approaches is demanding for students and lecturers alike. To carry out a successful session based on the concepts of any constructivist approach, lecturers need to prepare for the lesson inductively to make sure that the inquiry and the questioning are carried out for a purpose and lead to an already planned outcome. The activities shall be carefully thought out and well planned. The material shall be presented in a way that leads to providing answers. The context is also taken into consideration to make sure that all needed material is available. Unlike objectivist approaches to teaching, constructivist approaches to teaching start with students from the level they are in and help them develop to a new level. Personal knowledge and experience are taken into consideration as learning shall make sense to learners, otherwise, it will be impractical.

4.   CONSTRUCTIVISM APPROACHES: EMPIRICAL STUDIES

The constructivist approaches to learning have been used by a big number of teachers and instructors in the last few years. Researchers looked into using these approaches to teach students a number of courses that relate to a number of disciplines that include but are not limited to language, mathematics, physics, and psychology. In reference to students' development, Tynjälä [24] conducted an experimental study in teaching a psychology course using the constructivist and the traditional approaches to compare the outcomes. The study's findings showed that both groups referred to their learning as the acquisition of information. However, only a small number of students in the traditional group felt the same way, whereas the majority of students in the constructivist group underlined that the course helped to strengthen their thinking skills. Also, students in the constructivist group expressed their learning in a wider range of ways than those in the traditional group, who mostly described their learning in terms of information accumulation. Also, the majority of the students

in the constructivist group claimed that they developed teamwork, writing, and communication abilities. Unlike the traditional group in the study, the constructivist group was asked to answer questions in order to produce data for the study, but they were not given a final test for grading purposes. Although the conventional group's answers to the exam questions were longer, the constructivist group's answers contained a greater number of classifications, comparisons, assessments, and generalizations, which were signs of the development of more advanced thinking skills.

Henry [25], who examined the use of the constructivist approach in schools in the US, found that the usage of constructivist teaching tactics and the number of student behavioral referrals showed a weak but significant negative association, showing that the number of referrals per year decreased as the use of constructivist teaching strategies increased. This reveals that the use of the constructivist approach had a positive influence on the behavior of students. In addition, Henry [25] found that the use of the constructivist approach increased as the number of students in classes increased. This shows that the usage of the constructivist approach can assist in developing students understanding in big classes as teachers can make use of a number of strategies and techniques that would help students work dependently and independently in an active and vibrant environment. This can also lead to more engagement and development as hard-working students can work in pairs or groups with relatively weak students and help them understand lecturers and topics.

In reference to classroom characteristics, Snow [26] examined the characteristics of teachers who teach physics using constructs approaches. The findings of the study showed that the most widespread belief among these teachers is that successful science instruction and successful student science both entail a transfer of authority over the learning process from teacher to student. Instructors believed that, in contrast to the traditional lecture-centered approach, there needed to be a reduction in the visible role of the teachers and an increase in student-student contact. Regarding the impact of the experience, a number of the teachers stated the opinion that their involvement in the program had significantly improved their comprehension of some of the core physics principles. The findings imply that the more experienced teachers give less credit to their in-service training and they believe that they developed the social constructivist style on their own without the need for training.

In reference to teacher professional development, Komba and Nkumbi [27] looked into how Tanzanian mathematics teachers perceived constructivist teacher professional development. According to the study's findings, the majority of respondents said that constructivist teacher professional development was crucial as it helped teachers become better professionals. In a different study, Kitta [28] investigated ways to improve the pedagogical subject knowledge and abilities of mathematics instructors in Tanzania. The study found that a multifaceted professional development program on the use of constructivist approaches could help Tanzanian students learn mathematics better. Teachers realized that the professional development sessions on the use of constructivist approaches led to a variety of vital lessons. This opened the eyes of the teachers to the importance of the selection of the context-responsive design. It also brought to their attention the importance of preparing effective instructional resources. Teachers also realized the importance of peer collaboration as this would bring different perspectives to teachers teaching the same course.

The empirical studies above show that students benefit from constructivist teaching as it assists in developing students' thinking skills, communication skills, language and writing skills, teamwork and group work skills, and behavior. On the other hand, teachers need to make sure that they develop their skills to carry out constructivist lessons. Teachers need to be ready as constructivist classrooms have certain characteristics that include a transfer of authority through the use of the student-centered approach.

5.   SUSTAINABLE EDUCATION AND SOFT SKILLS DEVELOPMENT

Education for sustainable development (ESD) and soft skills development has gained momentum in education these days. Students are not merely expected to develop the hard skills relevant to their majors but they are also expected to develop "social, emotional, and behavioral skills" by Almeida and Morais [29], and competence in sustainability that leads to developing "the knowledge, skills, attitudes, and values necessary to shape a sustainable future" by UNESCO [30]. To build sustainable education and develop soft skills, scholars have initially looked into the qualities, competencies, and skills that need to be developed and after that looked into possible strategies that can be used to develop them.

Sá and Serpa [2] established a list of key components and competencies that need to be developed for sustainability. They recognized that one needs to assess complex systems, identify relationships, and deal with uncertainties. Understanding, analyzing, and assessing future scenarios shall also be developed. Normative competence shall also be developed in order to appreciate the norms and values of one's actions and negotiate sustainability values. Strategic competence shall also be developed to assist in coming up with innovative ideas and promote sustainability. Collaboration (i.e., learning from others), critical thinking (i.e., questioning practices and opinions), self-awareness (i.e., reflecting on one's role in society and motivating action), and

integrated problem-solving competence (i.e., applying different problem-solving techniques and designing solutions). Education for sustainable development (ESD) is crucial in enabling people to alter their perspectives on the world, interact with it differently, and actively contribute to society's transformation. ESD is transformative in that it gives people the tools they need to develop the knowledge, skills, values, and behaviors necessary to create a sustainable future. This new educational model is based on the creation of an interactive, student-centered, and action-oriented teaching-learning process in classrooms [31], [2].

For soft skills, [32]–[34] believe that "soft skills, or transversal competencies, are person-related and not task-specific because they are relevant in any context. Soft skills enable specific professional behaviors and are critical to the transferability of skills to different activities" (p. 2). Hard skills, on the other hand," are more technical and specific and enable people to perform their function from a mechanical point of view" [2]. Pluzhnirova [33] distinguished between soft skills and hard skills in that soft skills are culture and general profession competencies while hard skills are professional competencies. Soft skills involve emotional intelligence while hard skills involve logical intelligence. Though soft skills are situational, hard skills are rigid as the organizational culture does not influence them. Whereas soft skills are developed through process and experience, hard skills are developed through formal education. Pluzhnirova [33] also added that the achievement of hard skills will lead to formal certification, but there is no formal certification given for the attainment of soft skills. This last point is debatable as recently there are a big number of institutions and colleges that provide formal training for soft skills and provide certification for completing the course. However, if the development of soft skills through elective and compulsory (not major-related) courses is the intended meaning here, this can be the case. In fact, a big number of institutions these days proudly state that, in addition to the hard skills gained in universities, their graduates are also equipped with soft skills that would make them successful professionals and employees in their workplaces. This point is also the intended focus of this study.

The development and mastery of soft skills (in the form of Pluzhnirova [33] categorization) have become a sought-after quality in graduates these days. Graduates, in addition to their hard skills in their majors, are also expected to have developed soft skills that would help them excel in their workplaces. According to AlAfnan [35]; and Hagen and D. Bouchard [36], active listening, communication, collaboration, creativity, critical thinking, leadership, cultural knowledge, innovation, interpersonal relationship management, ethics, professionalism, and problem-solving are the non-technical competencies that are needed to succeed in workplaces these days. Students will be better equipped to analyze problems and give integrated answers in collaborative work by developing this set of soft skills. Thus, students shall be able to develop, throughout their education, in addition to the hard skills, the soft skills, which are transversal and complementary to any profession. This is because the current professional context is characterized by high volatility and constant dynamics. Training for the competencies that enable people to effectively address the needs that are currently present in the actual world is vital in this age. However, the question is how can teachers help students develop the needed soft skills and the skills that are needed for sustainable education (i.e., education for sustainable development) [37].

According to UNESCO [5], to develop sustainable education, we need to move to active and experiential learning. Students need to be involved in classes to help them develop creative thinking and the ability to act. This, according to UNESCO [5], can be carried out through critical reflection in the form of learning journals, study groups, and reflective accounts. Students shall also be encouraged to practice systemic thinking and analysis in the form of project-based learning, and the use of the campus as a learning environment. In addition, participatory learning can plan a significant role in this through the use of group learning, peer learning, stimulus activities, case studies, and experiential learning. Additionally, students shall be encouraged to think about future scenarios through problem-based learning, future scenarios, and real-world inquiry. Finally, students need to be encouraged to do collaborative learning through co-inquiry, work-based learning, collaborative learning, and inviting guest speakers. The strategies used above can assist in education for sustainable development as they can also assist students to develop the needed soft skills for their future carries.

The strategies provided above can assist students to develop the needed skills and competencies, however, the implication of these strategies can be a real problem. According to Asonitou [1], the incompatibility of strategies with teachers' values, expectation gaps, teaching and research incentives, limitation in resources, students' attitudes, teacher attitudes, cultural dimension, and physical barriers are among the obstacles that may hinder the development of soft skills among students. According to Sá and Serpa [2], the literature reveals a wide range of barriers to the implementation of strategies designed to help students in higher education develop their soft skills. These barriers are not only organizational or contextual but also inherent in the institutional actors themselves, including the teaching staff and the students.

In addition to the aforementioned barriers, [38] –[42] also highlighted the absence of pedagogy as one of the impediments to skills development. This study argues that the development of soft skills and ensuring

education for sustainable development (ESD) can be carried out through the adoption of constructivist approaches to teaching and learning. These approaches, as mentioned above, can assist in developing students' soft skills and lifelong learning skills through the adoption of the student-centered approach to teaching which through the constructivist pedagogy can lead to active participation, involvement, critical thinking skills, and creative thinking skills. Constructivist pedagogy can lead to the development of soft skills, on the one hand, and the personal and professional characteristics of students, on the other hand, to make them independent learners who seek to find answers to their inquiries through questioning, experimenting, and searching for information.

6. DISCUSSION

Following UNESCO's initiative to promote education for sustainable development and the European Union's initiative to build sustainable competencies in learners, calls have increased to equip learners with transferable skills, soft skills, and transversal competencies in schools and higher education institutions. Lecturers/teachers, on the one hand, need to use strategies and approaches that widen the scope of students to make them think out of the box, and students, on the other hand, need to participate more in the learning process. The ultimate goals of these initiatives are to cultivate students' knowledge, on the one hand, and make them ready for the challenges of tomorrow, on the other hand.

Educational institutions, over the past few years, have initiated and promoted the use of certain strategies to assist in the development of sustainable education and soft skills. The nuclei of these strategies focused on promoting increased participation based on critical reflection, systemic thinking, and analysis, participatory learning, thinking creatively for future scenarios, and collaborative learning. This can be carried out through discussion groups, stimulus activities, developing case studies, problem-based learning, project-based learning, and collaborative learning and co-inquiry (Plymouth University, n.d.). This can also be carried out through several activities and practices that include, but are not limited to, experiential learning, role-play, teamwork methods, case studies, and extracurricular activities [39]. In this context, the lecturer, a consultant, experts from the industry, or peer groups can be considered as the resource persons and the classroom is the paramount location to develop these skills [37]. However, the incompatibility of strategies with teachers' values, expectation gaps, teaching and research incentives, resource limitations, student attitudes, teacher attitudes, cultural dimensions, physical barriers, and the absence of paradigm are just a few of the challenges that the development of these soft skills must overcome [1], [2]. Therefore, there is a need to establish a paradigm to develop soft skills and sustainable education.

The constructivist approaches to teaching, based on theories [6]–[9], and empirical research, provide the paradigm for developing soft skills and sustainable education in students. The foundation of the constructivist teaching methodology is the delegation of power from teachers to students. The choice of what they want to study and how they want to learn it is left up to the students. Students are encouraged to analyze, predict, summarize, and further explain their understanding of the material. Students are also urged to experiment, ask questions, and do their own research. Constructivist-based classes engage students through interactive, hands-on activities and practices that support the growth of their cognitive structures and learning. These engaging activities transform classroom dynamics from teacher-centered to student-centered, which is crucial in this age when learning and education are more about the ability to 'do' than the ability to 'know'. Students must be given the knowledge and trust to help them become active learners. This is true because, according to the constructivist paradigm, knowledge is actively created by the cognizing subject rather than being passively acquired through communication.

The cognitive constructivist theory by Piaget [6], which emphasizes the value of involving students in hands-on, interactive activities and practices to aid in the development of their cognitive structures and learning, can be used to develop students thinking, reasoning, decision-making, problem-solving, language skills, memorization and recall, and perception soft skills and competences. Teachers need to make sure that the classroom is vibrant, as students shall be allowed to argue and debate issues to develop these cognitive structures and transferable skills. Teachers, however, shall be patient with students as moving from the assimilation stage, adding new ideas to the preexisting ideas, to the accommodation stage, changing ideas to accommodate new ideas, is time-consuming. In this context, teachers shall make sure that they initiate discussions, allow students to think of different perspectives to emphasize these ideas and reinforce these ideas to help students accommodate these students and reach the equilibration stage. As part of this process, teachers shall be able to identify the strengths and the weaknesses of their students to make sure that all students, regardless of their cognitive level, develop and learn. This development can be ignited through personalized instruction.

The social constructivist theory by Vygotsky [8] emphasizes that learning is socialization and culture-dependent as the capabilities of memory and attention depend on the cognitive tools that are provided by the culture (i.e., religion, history, traditions, language, and context), provides the tool for personalized learning

through the concept of the zone of proximal development. Curriculum specialists and developers can utilize the zone of proximal development as a guide when developing lesson plans for students. Based on the social constructivism theory, this highlights the role of teachers in students' cognitive growth. To ascertain the student's proficiency level and the expected results by the end of the course or semester, the instructor may administer a diagnostic test. Depending on the outcome of these diagnostic tests, students receive adaptable assistance and careful guidance, but nothing shall be forced. Students are introduced, through teacher-student or student-student interactions, to discussions, research collaborations, electronic information sources, and project groups that concentrate on problem analysis, which would eventually assist students in their development and learning.

The radical constructivism theory by von Glasersfeld [9] which begins with the premise that knowledge is held within an individual's head and that the individual is forced to construct connections based on that knowledge concerning what he or she knows, can be used as a paradigm to develop education for sustainable development competences and skills. The rejection of conventional epistemologies is key here to allow the student the freedom to creatively address issues related to environmental, economic, and social sustainability. The use of personal knowledge and observations is key in this process as instructors can start with students' knowledge, attitudes, and values regarding key issues that need our attention (i.e., biodiversity, climate change, food and farming, leadership, and change, accountability, globalization, population, cultural diversity, peace and conflict, human rights, intercultural understanding) and think of ways to shape a sustainable future. The subjective attitude toward these issues shall not be seen as an inadequacy; it shall be viewed as a method to enrich in-class discussions, arguments, and debates.

The critical constructivism theory by Fraser [11], which is a social epistemology that examines the socio-cultural environment of knowledge formation and serves as a model for cultural change, can add another perspective to develop soft skills and education competencies. Critical constructivism promotes reflexivity and the opening of questions through dialogue and critical self-reflection. This is carried out through the fostering of self-awareness and social awareness, which also fosters the freedom of thought necessary to inspire people to take positive action. The critical constructivist theory is a paradigm that can assist learners in challenging existing ideas and provoking innovative thoughts that are necessary to shape a sustainable future. This standard of education is also necessary as it provides students with the platform and the space to think out of the box to develop new ideas regarding current challenges to improve the quality of life. The use of the critical constructivist approach in classrooms can assist students in developing critical thinking, creative thinking, communication, leadership, innovation, problem-solving, decision-making, and active listening skills as it empowers students and puts them in the driving seat through the promotion and motivation of participation and partaking [35].

The successful implementation of constructivist approaches in classrooms, based on empirical findings, is context-dependent. The attitude and willingness of teachers play a significant part in terms of conduct and power. Constructivist approaches to teaching emphasize the importance of power and authority shifting from teachers to students. This can be one of the setbacks as not all teachers are willing to delegate authority to students. In addition, even though teachers in constructivist-run classes play the role of facilitator rather than the role of teacher, they need more time to prepare and plan for their classes. Even though this practice is time-consuming, it brings amazing results as, according to Henry [25] and Tynjälä [24], constructivist approaches to teaching help students develop higher thinking skills, superior cognitive skills, and better attitudes than students who attend traditional classes.

7. CONCLUSION

This study, based on theory and empirical studies, examined the use of constructive approaches to teaching to develop education for sustainable development and soft skills competencies. As the development of these competencies among students has received a lot of attention recently, researchers have looked into developing strategies to assist teachers in their conduct. However, the absence of a paradigm remains a big challenge to developing these competencies.

This study argues that the development of these competencies is better harnessed in a constructivist environment through the application of a number of theories. Firstly, lecturers need to understand the processes of cognitive development (assimilation, accommodation, and equilibrium), based on cognitive constructivist theory, to make sure that they conduct classes in an effective manner that would lead to learning and skills development. As not all students learn at the same pace, the concept of the zone of proximal development, based on social constructivist theory, shall provide insights into the importance of individualized learning to avoid leaving out any student.

Classes shall be conducted actively and interactively using the student-centered approach to empower students and give them the confidence to not only learn but also not fear mistakes and learn from them. Radical

and ritical constructivist theories shall provide the needed platform for students to develop creative and critical thinking skills through questioning the present and developing future scenarios through problem-based learning and real-world inquiry.

The implication of the above paradigm shall assist students in developing education for sustainable development and soft skills competencies that are needed by students and graduates in the twenty-first century. However, the successful implication of this paradigm depends on lecturers' and teachers' willingness to shift power to students and assent to the role of facilitators of learning in classrooms.

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