Integrating Sustainability into Economics Teacher Education

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Abstract. The provision of educational and economic services is a major contributor to the climate crisis, and the economic sector is the largest contributor to carbon emissions in the public sector in Indonesia. Teachers and entrepreneurs have an important role in fighting climate change through educational service practices and business practices. This involves maintaining the quality of current and future educational services and business practices through balancing environmental, social, cultural, ethical and financial constraints. To achieve this goal, integrating these sustainability skills into economics education is essential. A small number of economics programs have incorporated planetary health and sustainability theory into their curriculum, and there are no formal sustainability curriculum in undergraduate or postgraduate education and training. This is important to enable teachers and entrepreneurs to define sustainability theory taught at undergraduate or postgraduate level. This article proposes which topics should be included in sustainability curriculum and explores various methods that can be used to incorporate these topics into current educational frameworks.

Keywords: sustainability, curriculum, eeconomics education

1 Introduction

Sustainability has become an increasingly crucial aspect of our global landscape, and its integration into various educational domains has garnered significant attention. One such critical area is the realm of teacher education, where empowering educators to instill sustainability-focused practices and mindsets can have far-reaching consequences (Sengupta et al., 2020).

The existing literature highlights the multifaceted nature of this endeavor. Researchers have emphasized the importance of content-focused, active learning approaches in teacher professional development, which can foster collaboration, application of models in practice, and ongoing feedback and evaluation (Yue & Ji, 2021). Educators have also underscored the need for teachers to understand the transdisciplinary nature of sustainability-related knowledge, encouraging them to bring these interconnected issues

into the classroom and facilitate collaborative learning. Sustainability competencies, defined as the abilities, knowledge, and dispositions required to promote sustainable development, have emerged as a crucial framework for curriculum development and innovation in teacher education (García-González et al., 2020)

Integrating sustainability into teacher education, however, is not without its challenges. Faculties of education have encountered obstacles such as a lack of leadership, unfavorable perceptions of the role of sustainability in education, and a siloed approach within their own institutions. Addressing these barriers through a systems-level approach, which emphasizes institutional and policy-level change, can be instrumental in driving meaningful and lasting transformation.

By empowering teachers to become agents of change, education can play a pivotal role in advancing the United Nations' Sustainable Development Goals (SDGs). Ultimately, the integration of sustainability into teacher education represents a multifaceted and dynamic process, one that requires a holistic, collaborative, and adaptive approach to truly shape the future of sustainable development (Fischer et al., 2022)(Yue & Ji, 2021)(Evans et al., 2017)(Parry & Metzger, 2023)(Vukelić, 2022)(García-González et al., 2020)

Education and universities as educational institutions play a major role in implementing sustainable development. The word education appears in almost all sustainable development program documents at both international and national levels. Education for Sustainable Development (ESD) is increasingly entering official school curriculum. Rather than a separate subject, ESD is usually considered an interdisciplinary issue of concern to universities. The aim of this education is to foster the ability of children and adolescents to take part in building sustainable development. Studies show that implementing sustainable development is very demanding on teachers and does require special knowledge and abilities.

Teachers need specific content knowledge as well as pedagogical content knowledge for ESD implementation. These two forms of teacher knowledge are very important for successful learning at university as part of professional competence. It should be noted that competence does not stand alone; many things must be considered in the context of a particular teaching, school, culture, and society (Fischer et al., 2022)(Yue & Ji, 2021).

Embedding sustainability into the curriculum and teaching practices of teacher education is crucial. Existing approaches to this integration can be classified into four main categories: (1) embedding sustainability education widely across the curriculum, courses, and institution; (2) through a dedicated core/compulsory subject; (3) through electives; and through informal activities and initiatives (Yue & Ji, 2021)(Fischer et al., 2022)(Ferreira et al., 2007)(Yue & Ji, 2021)(Cebrián et al., 2020). A diverse range of strategies and models have been proposed and implemented to integrate sustainability into teacher education programs.

2   Method

The systematic literature review offers an organised and systematic method for selecting and critically analysing research relevant to the topic of integrating sustainability into teacher education (Khan et al., 2003). The review of existing literature on this topic provides a solid foundation for understanding the drivers and blockers for embedding education for sustainability (EfS) in teacher education (Wilson, 2012). This illustrates how universities in Indonesia aim to create Circular Economy competencies and skills in students of economic education study programs. This analysis provides a critical view of the trend of combining skills and competencies in economic education necessary for the emergence of a circular educator and entrepreneurship paradigm.

3   Results and Analysis

3.1   Reorienting Teacher Education To Address Sustainability

Indonesia participated in the Decade of Education for Sustainable Development (DESD) on World Environment Day in 2005 through the signing of a memorandum of understanding between the Ministry of National Education and the Ministry of the Environment. This was to reflect the Indonesian nation's commitment to the 2009 Bonn Declaration which mandates that every country must integrate the concept of Education for Sustainable Development (ESD) into its education system, teachers, subjects and curriculum development. The declaration stated that:

> *Reorient curriculum and teacher education programs to integrate ESD into both pre-service and in-service programs. Support teacher education institutions, teachers and professors to network, develop, and research sound pedagogical practice. Specifically support teachers to develop ESD strategies that can work with large class sizes, and to evaluate ESD learning processes.*

This marked a significant step towards integrating sustainability into the country's education system, including teacher education programs. However, research has revealed that some Indonesian teachers remain unfamiliar with the concept of education for sustainable development, and prospective teachers' knowledge in this area is limited. Similarly, in Pakistan, education for sustainability is not well understood or practiced by teacher educators in government colleges of education (Jumani & Abbasi, 2015).

Integrating sustainability into teacher education is crucial, as teachers play a vital role in shaping the knowledge, attitudes, and behaviors of future generations. Effective methods must be selected to improve teachers' professional quality and promote the realization of sustainable development goals. As Alkaher and Goldman noted, teacher training programs need to better prepare environmentally literate educators who can instill sustainable environmental behaviors in their students (Karim et al., 2021).

Teacher educators must be equipped with the necessary knowledge, skills, and attitudes to effectively incorporate sustainability into their teaching practices. This

includes understanding the economic, environmental, and social dimensions of sustainability, as well as pedagogical approaches that foster critical thinking, systems thinking, and action-oriented learning (Durrani, 2021) Sustainable development should be integrated throughout teacher education programs, not just as a standalone module or course.

Universities including TEIs (Teacher Education Institute) or LPTK (Indonesian Teacher Education Institute) have autonomy in developing their curriculum. The facts showed that collectively TEI had not done much to promote ESD. Most TEIs considered ESD to be a soft skill that was taught indirectly. Adopting different approaches to curriculum, pedagogy and assessment in different countries could be a solution.

It is important to identify the competences of ESD teachers before designing their curriculum, pedagogy, and assessment approaches. ESD teacher competences include the following:

a. Ability to introduce ESD across the curriculum.
   The idea of integrating ESD throughout the curriculum implies that every teacher is responsible for spreading ESD in his or her classroom. However, there is a danger if we promote the wrong concept of ESD. Therefore, teachers' knowledge of ESD and how to teach it must be updated regularly.
b. Ability to convince students of the importance of sustainable development. There is nothing more convincing than real life examples they experience. Teaching must identify ESD issues from students' experiences and relate these issues to life in general. Students must be sure that the problem is part of their responsibility.
c. Ability to create learning situations to facilitate students' understanding of ESD. Optimal learning takes place in situations that facilitate the learning process. The situation includes not only the physical but also the psychological and social atmosphere. This shows that luxurious rooms and buildings do not necessarily guarantee optimal learning. The most important thing is the teacher himself.
d. Ability to present examples of the application of ESD in daily life. Giving an example is one of the optimal teaching techniques. When ESD is integrated within the curriculum and across subjects, the source of examples becomes endless to explore.
e. Ability to collaborate with fellow teachers in joint programs in ESD. Because all teachers are expected to play a role in developing ESD programs, overlap between teachers and fields of study is inevitable. Overlap should be encouraged to facilitate learning when teachers collaborate for success in ESD.

It is hoped that in the near future we will see the following results:

a. An increase in faculty members who are fluent in ESD and willing to implement ESD
   into their syllabus.
   An active campaign must be initiated to transform teachers into ESD experts through formal and informal intentional dialogue and communication. Being initiated by lecturers textbooks on ESD is a good indicator of success.
b. A collection of research (e.g. case studies and action research) illustrating the reorientation of teacher education to address sustainability.

Research findings are the most powerful way to convince the public of new ideologies and perspectives including ESD. Small-scale research such as classroom action research and case studies are inexpensive but provide insight and inspiration for teachers, especially beginners. These findings should be shared to reach more people.

c.   Increased ESD discourse in conferences and publications.

Conferences and publications are good indicators of successful outreach and emerging awareness among the public. Teachers and researchers should be encouraged to attend conferences and share publications as part of professional development.

d.   An increase in the number of ministries and directorates in the Ministry of National Education that are incorporated into ESD policies (e.g. teacher certification guidelines and school curriculum).

To integrate ESD into TEIs or LPTK, ESD must be promoted into pre-service training and in-service training programs. Integration must be carried out within the framework described as follows.

a.   The pre-service training program, ESD is implemented in various ways including but not limited to the following: (1) Making ESD mandatory courses as part of the general subjects that TEI students must take. ESD courses should cover an introduction to ESD, ESD teaching techniques, ESD materials development, and ESD evaluation; (2) Encourage students to conduct research for graduation (thesis research) regarding ESD issues (3). Integrating ESD into internship teaching at partner schools.

b.   In-service training programs, ESD is implemented in many ways including the following: (1) Teachers are encouraged to conduct classroom action research on ESD themes; (2) ESD is included in training as part of professional development and promotion (3) Teachers are encouraged to collaborate with fellow teachers in developing ESD projects across the curriculum.

The integration of ESD will be clearly visible in the curriculum developed at all levels and types of education. The ESD-oriented curriculum is structured as a hidden curriculum by transforming three (3) dimensions of ESD (economic, social and environmental) into educational activities. These three dimensions concretely see the integration of the six (6) pillars of ESD (Holistic approach, Learning throughout Life, Focus on the Learner, Deep Thinking, Diverse Methods of Democratic Work, and Different Perspective) in learning activities.

In the end, education will produce a generation that has knowledge, skills and attitudes that contribute more to sustainable behavior to realize sustainability for society in accordance with the 5 (five) ESD indicators in learning, namely knowledge, problems, skills, values and perspectives. An illustration of how ESD values must be integrated into the TEI curriculum can be seen in the following image.
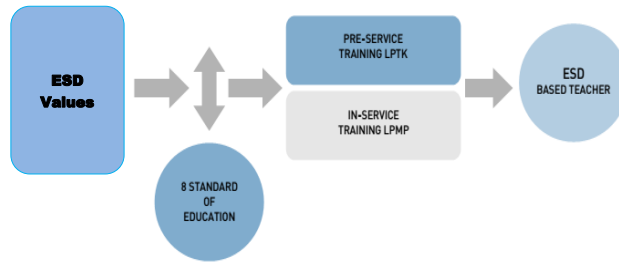
Figure 1. Integration of ESD values into the curriculum (UNESCO, 2011)

Integrating ESD values into the existing TEI curriculum requires a mechanism involving the following key components.

a. ESD which consists of environment, economy and culture is a concept that must be integrated into the existing LPTK or TEI and P4TK (Center for Development and Empowerment of Teachers and Education Personnel) curriculum;

b. The existing LPTK or TEI and P4TK curriculum varies from one institution to another, but they have many things in common. The integration must be interdisciplinary and holistic, where ESD is not a subject taught separately but is integrated into existing subjects;

c. Curriculum development at each level of education should be carried out by referring to the eight national education standards;

d. LPTK, LPMP (Education Quality Assurance Institute), and P4TK (Center for Development and Empowerment of Teachers and Education Personnel) are responsible for developing their own curriculum;

e. The expected final product of this mechanism is an ESD-based professional teacher.

3.2   CSCT Competence Model

The Curriculum, Sustainable Development, Competences, Teacher Training (CSCT) model is a model that allows the development of the competence needed by teachers in integrating ESD in education. The CSCT competence model focuses on teachers as individuals, as agents in an educational institution and as members of a particular community. Competence should enable teachers in these three roles to promote sustainable development. This means that these competences even touch the realm of a teacher's personal and social behavior, which should support sustainable development. Therefore, this model includes the teacher's overall personality in sustainable development issues, not just the professional aspect (Sleurs, W., 2008).

This model views ESD in the context of the challenges of life in society and summarizes the objectives of general education, namely; (a) Competence to understand and change one's life conditions; (b) Competence to participate in collective decisions; (c)

Competence for solidarity. This model distinguishes three dimensions of higher competence, namely: teaching/communicating; reflecting/visioning; networking. These three dimensions contain five competence domains: knowledge, systems-thinking, emotions, values and ethics, action and knowledge. Even though the CSTC model offers comprehensively defined competences, there is still a great need to concretely implement the ESD context taught by a teacher (Bertschy, Franziska, Christine Künzli, and Meret Lehmann, 2013).
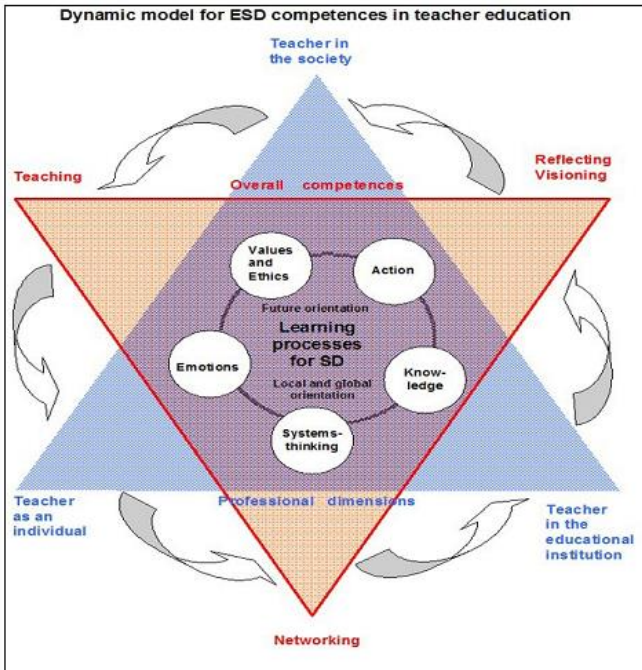

Figure 2. Curriculum, Sustainable Development, Competences, Teacher Training (CSCT) competence model Sleurs, W. (2008).

3.3   Entrepreneurship Education focused on Circular Economy

The Circular Economy (CE) is a trending topic that is increasingly gaining interest in public debate. Circular Economy aims to promote sustainable production and consumption models capable of closing the resource loop, CE has recently been proposed as an alternative paradigm of socio-economic development and a promising foundation for achieving the goal sustainable development. Universities and communities are called upon to contribute to the transitioning process of production, distribution and consumption systems towards a circular economy (Moggiet al., 2018) (Schaltegger and Wagner, 2011)(Centobelliet al., 2020).

Economic and entrepreneurship education that focuses on the Circular Economy debate requires basic thinking about learning objectives (why); content (what), student

targets and stakeholders (who) and learning process (how). These four areas are identified as general patterns of circular economy business education models.
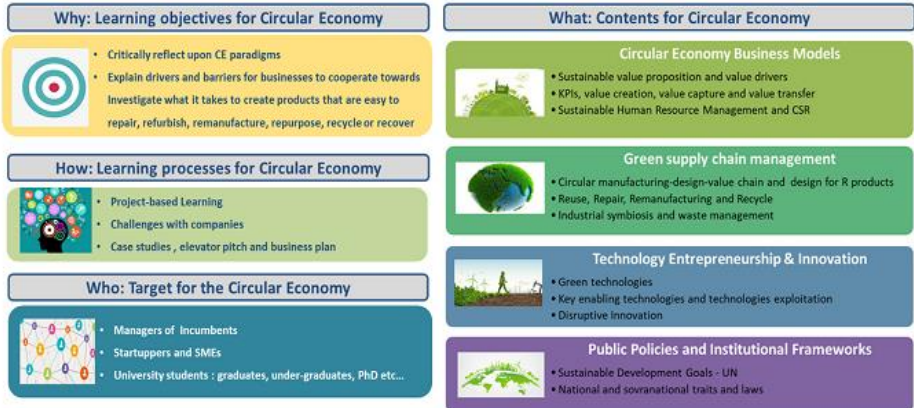

Figure 3. Multidimensional framework for circular Economy entrepreneurship education programmers (Del Vecchio, P., Secundo, G., Mele, G. and Passiante, G., 2021).

4   Conclusion

By integrating the concept of Education for Sustainable Development (ESD) into the education system, teachers, subjects and curriculum development. Education will produce a generation that has knowledge, skills and attitudes that contribute more to sustainable behavior. The Curriculum, Sustainable Development, Competences, Teacher Training (CSCT) model is an ideal platform for incorporating sustainability in preparing prospective teachers and entrepreneurs with a sustainable paradigm.

5   References

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