

Sustainable Learning: A Curriculum Perspective For Higher Education

LI SHUNJI

SEGI University
lishunji0411@126.com

ABSTRACT

The article explains Sustainable Learning and Education (SLE) in the context of higher education development. SLE is a comparatively new emerging concept in the education domain. The core philosophy of SLE is found in the education system that is based on sustainability. Sustainability is a border concept explored in the context of Natural Sciences, Engineering and Information Technology. However, higher education needs more research in this domain. Based on literature and analysis of recent research papers a framework has been proposed in this study that describes proliferate and renewable curriculum methods flexible enough to meet the demands of changing circumstances. The curriculum of higher education should first identify the reason for the change. There are three forces that push towards the development of sustainable education which are changes in technology, complex problems and societal changes. Education cannot meet these changes with strong sustainability principles. These principles are credibility, dialogue, improvement, participation, reflection, regulation, challenge, sustainability, transparency and Transferability. Based on principle the higher education curriculum needs the ideation and transformation process in conventional methods. The ultimate expected outcome of the SLE is to produce innovators, flexible systems managers, complex problem solvers. The article has three-fold contributions, first, it addresses the gap in academic research on sustainable learning, secondly, it provides guidelines to police makers, thirdly every member of society can learn from this research paper, why sustainability is vital for a better future of existing and coming generations.

Keywords: Sustainability, Higher Education Sector, Sustainable Learning, Flexible Systems, Transferability

Introduction

Sustainability is all about creating the capability in existing policies and process of different disciplines to undergo in a relatively continuing way across numerous areas of life. In contemporary times, it refers generally to the capacity for earth's environment and human development to co-exist (Settembre-Blundo et al., 2021). Current research papers focus on reviewing the theoretical definition and conceptualization of sustainable learning in context of higher education sector. The objective is find the ways of teaching that help in 5 areas. The first areas of study active learning. The second area is renewing and re-earning, the third area is developing independent collaborative learning and the fourth is transferability and firth one is flexibility

continuity. The research will also provide important future direction areas to researchers.

As sustainable learning is combatively is new term, therefore, there is little consensus on definition, assessment and application. The researchers differentiate the sustainable learning from sustainable development. Sustainable development is highly studied yet sustainable learning needs focus. SLE is becoming new educational philosophy which deals with curriculum, teaching and learning related methods in different circumstances (Niinimäki, 2015). SLE is drawing the researcher's attention towards proactive international learning methods that help both individuals and groups in learning (Powell et al., 2020). The other work of research in sustainability such as energy domain work practices can also be applied in broader

perspective in education sector (Faraut et al., 2020). The basic pillars of sustainability need application and examination .

Sustainable education system must include three things: (1) Clarity in the concept and purpose of sustainable learning in higher education (2) listing of principles of sustainability in context of higher education (3) proposed curriculum for higher education institutions. As proposed by world economic future skills of 2025, the article focuses on development of critical thinking, innovation and active learning approach among students of higher education through principles of sustainable learning. The researcher concluded that higher education should focus more on organization of societies that helps the learner in brainstorming and implementing sustainable practices (Viberg et al., 2021)

As shown in below figure sustainability deals with social , economy, ecology, health, community vibrancy, sociology, equity , resources

maintenance and efficiency related aspects. All these aspects can be taught in the classroom. Sustainability in earlier days focused on materials, and situation related to tangible aspects. However with time it also focuses on assessment and social aspects (Alghazi et al., 2020).

The basic difference between the sustainable learning or pedagogy and SLE is sustainable learning so content specific. The adjective word sustainable explains the process of non-duplication and maintenance without interpreting the weak points. SLE represents the process of learning. SLE also makes the education resilient with changing local and global skills. The literature of sustainable learning has developed 4 main themes. The first is about energy and renewable resources. It is the methods identified to facilitate basic life requirements such as water or food to be consumed or renewed (Ben-Eliyahu, 2021). Therefore, inspecting learning as the reserve to be renewed

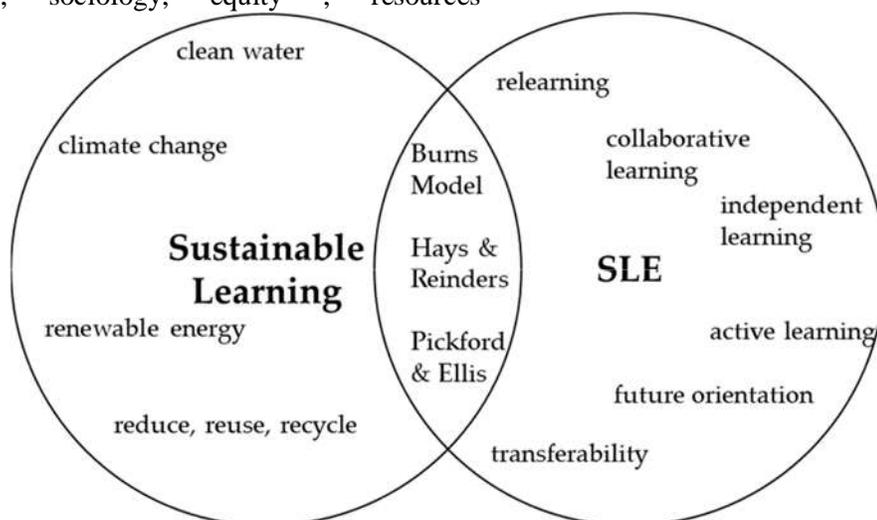


Figure 1: Sustainable Learning and SLE

through lifelong learning and education becomes an important component of SLE [18,19]. This is referred as restorative and relearning. The second aspect in literature is interdependency of human and natural resources on earth. It highlights the answerability and obligation which humans need to learn to maintain the durability. A lot of work in sustainability is also referred to preparing the individual with the proper knowledge, approaches, tools, and skills to preserve and create conditions for continuous and renewable energy,

individually and collaboratively (Hays & Reinders, 2020). This element is also referred to as independent and collaborative learning. The third theme of sustainability involves in taking action to preserve the earth's resources. sustainability demands from humans to be lively, pledge, and create solutions to ensure the sustainability of resources. Applied to learning require active learning. The fourth theme which literature repeats is sustainable learning pedagogy. Transferability of learning happen in

formal and informal settings. Despite of all these themes in context of higher education much work is not done. The themes repeated again and again in the literature are renewing and releasing , independent collaborative learning, active learning and transferability(Sebastián-López & González, 2020).

Triggers of Sustainable Learning In Higher Education

Sustainable education system is vital because of critical development in technology. Today in 21st century students need continuous skills to acquire and consume knowledge. In this regard, strong and critical changes are required in higher

education and universities (Farooq et al., 2018). The below figure shows the technological development happened over the years which demands changes in higher education system. In terms of assessment from 1990 to 2000 was era of automated administration and conventional scoring. The generation two ear was from 2000-2010 in this era adaptive testing was core development. Since 2010 till 2025 the era is generation and generation four of technological development. The generation 3 continuously demands the continuous integrated assessment and generation four will focus on personalized feedback and tutoring(Gómez-Zermeño, 2020). Thus developing a sustainable way of learning is vital. Knowledge management is done at different levels. Global and local level.

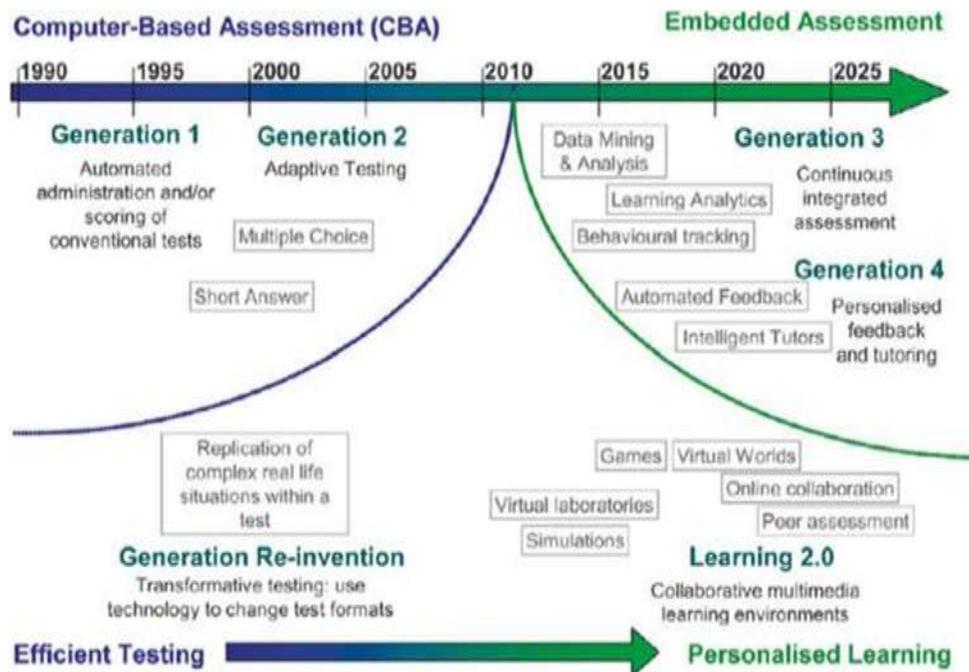


Figure 2 Technology-enhanced assessment trends an overview

Source: Redecker (2013)

Table 1 Changes in education system at local and global level

Systemic Level	Macro	Quadruple Thinking	Democracy of knowledge	of	Democratic Capitalism	Global
Structural and organizational		Knowledge culture	Entrepreneurial university		Academic Firm	Global/ Local

meso level	Innovation Networks			
Individual micro level	Creative Approach	Entrepreneurs' employees mix	Sustainable entrepreneurship	Local

Sustainable learning in higher education Principles

Sustainable learning is also supposed to address the insufficiency's of replications of solutions and incremental learning (Stroh, 2015). This builds a new way of learning addressed in years ago in literature

Sustainable Learning and Education tries to fulfil the most asked questions of new paradigm in two unified ways: (1) enhancing and advancing the learning-unlearning-and relearning cycle (Zhao, et al, 2013)

Principles of Sustainable Higher Education. Higher sustainable education has 10 principles.

Credibility

The first principle of sustainability is credibility (Alam et al., 2012; Nayeem et al., 2019). It is referred to systematic assessment. Credibility is also referred to extend of quality of students work that enable reasoning, effective and valuable judgmental skills that results into learning. Based on the ability to create skills external and internal standards are selected (Sweeney & Swait, 2008; S. W. Wang et al., 2017).

The second principle of higher education is Dialogue. The credibility also refers to credibility of institutions producing skill sources. The credibility must address three triggers of complex existing models, social changes and technological changes (R. P. Singh & Banerjee, 2018).

Dialogue: A sustainable education system promotes opened mindedness (Abad-Segura & González-Zamar, 2021; Awuzie & Abuzeinab, 2019). The outcome must promote dialogue. Dialogue in literature has been referred as source of assessment in formal and informal between participants that eventually creates the policies and process. Dialogue promote consensus over

rigid process that leads towards sustainable learning (Hendricks, 2020).

Improvement: improvement should be key objective in any learning system. It should be properly assessed. Improvement shares useful information on achievements. It also highlights the challenges in education and learning. Improvement also offers opportunities for learning and development.

Participation: Participation involves Assessment involves all members, Contributors, students, aristocracies and teachers in the education system. Participation of system creates flexibility and eventually leading towards better education system. Participation creates collaboration and responsible attitude in learners. Collaboration also increases engagement.

Jones (2021) critically analysed the forms of policy in higher education pertaining to conceptions of spreading participation in higher education services of England. Participation of students in learning has been an important issue in academic circles since last decade. For instance Bacchi's (2012a) wrote on the strategy of participation. the article titled, 'What's the Problem Represented to be?' (WPR). Participation in higher education has been referred as need for sustainable assessment.

Administrative education has been linked with causes of participation in higher education (HE) amongst the entities from low socio-economic circumstances. A study was conducted on students in England to identify the difference in participation of students based on their social economic class has proposed that poor accomplishment in secondary schools is further vital in explaining lower HE participation rates among students from low socio-economic circumstances than barriers arising at the point of entry to HE. Similar findings were also observed in studies on earlier education and improvement of

participation among students lower socio-economic class (Chowdry et al., 2013)

Reflexion

Reflexion in wordy meaning is the throwing back by a surface or body of light, temperature, or voice without riveting it. **In higher education it is referred to** valuation in the learning activities that promotes impulsive, analytical and hazardous belief through substantial task. It enables personal and group evaluations.

(Chan & Lee, 2021) conducted study on multilevel perspective on the challenges of exploitation and reflections in higher education through a comprehensive literature review. Through literature analysis of several studies' reflection emerged as vital aspect in sustainable learning evaluation.

6. Regulation: regulation is referred to valuation developments in independence and liberation, promoting empowerment and initiative in the learning process which can be transferred to extra-academic, professional and social contexts.

Ryan (2013) studied reflections in higher education valuation activities. Currently the education system is unable to educate students to knowledge both in academic and practical way via reflection. The researcher suggested to teach students the reflect their knowledge in profound and transformative behaviours.

7. Challenge

Assessment provides engagement with challenging tasks, providing demanding and motivating assignments which require the use of increasingly high-level skills and performance.

8. Sustainability

Sustainability should be part of assessment and valuation in the higher education system.

The latest covid-19 impact on the health, economy, education and other sectors has led to emphasis of sustainability. The academics has recommended the universities to incorporate sustainability in the curriculum. Valuation inspires learning that is premeditated, perpetual for life,

development, offering opportunities which will create better life skills in youth (Treve, 2021).

Vieira & Nogueira (2019) explored the course of the policies of assessment and regulation in Brazil's higher education. Brazil higher education started this process started in the 1970's, when the postgraduate assessment initiatives were created. This policy was implemented at national level and it continued over the years. This initiative led to better results. Hence sustainability is recommended as core principle in the higher education system.

Transparency: Transparency valuation is supported out against a set of transparent rules, standards and criteria which guide students to achieve the required learning outcomes.

Kalokora & Lekule (2019) conducted study on transparency in higher education in cotext of human resource management. The scholar has highlighted the benefits and challenges of transparency in higher education system.

Said-Hung et al (2018) studied the level of transparency in higher education sector of Colombia The transparency and the right of entree to public information in that country was analysed. The researcher included 197 registered public and private higher education institutions in study. The researcher observed insignificant development in the transparency related matters.

Transferability: Valuation is undertaken in a way that is comprehensible, consistent and unified within the programme, module, course or theme matter such that it avoids division and discontinuation from learning.

C. Wang et al (2020) studied transferability and recognized it as a tool to create the ability in student for apply knowledge in real life critical situation. In higher education self-determination theory can help in transforming the knowledge. Therefore the researchers studied 301 students and observed their level of perceived knowledge transfer. Study concluded self-determination theory as framework for developing better skills in students.

Skill of transformation is critical skill ignored in higher education. Researcher focused on

developing transferability skill in students (Bazana et al., 2018).

A Curriculum for the Future

The dynamics of education has changed. The companies which claimed to have best learning methods have been transformed. Bigger educational institutes are also transforming, Thus current study provides the curriculum for future in such a way that it should have flexibility inside its design so that it gets better with changes in sociological and technological domain. The curriculum promotes continuing and professional education. The objective new curriculum is to equip students with the skills of skills, knowledge, tools to create and sustaining methods, systems for ongoing sustainable learning. Skill of flexibility and sustainability are important to survive in future for both individuals and companies (Ahmed et al., 2021; Settembre-Blundo et al., 2021; N. Singh, 2010)

Fewer researchers such Hays (2016,2022) has worked on developing sustainable course development. One of the reason researchers not working on it is broader scope of sustainable. In addition the term sustainable learning and sustainable teaching are new words for researchers. The core problem for education sector for taking sustainable only under climate. Fewer researcher also named in transformative sustainability in education. The purpose of developing sustainable educational learning development is to design multi-fold themes with the main objective that empower and equip education enterprises. This sustainable learning can be created through literature, participation, credibility and reflection skills. This applies deep understanding of principles of sustainability.

Sustainability also referred to long lasting quality. a sustainable system demands the balanced use of explore and exploit. For human systems, it demands optimal use of resources and existence for continued maintenance.

Sustainable development needs a notion and ideas without damaging the resources of future. All types of resources tangible and intangible are limited on earth. Human are supposed to make content that helps in continuity. The basic theme is not exploiting the resource of universe.

Development needs big reinvention and modification of conventional education and professional training and development. In a sustainable education system that students are expected to show thoughts and actions in accordance with the principles and triggers of social change. The education system must put desire of continuous improvement in students. The thought of knowing already stops the learning curve. A person can never learn things who believes of knowing already. This attitude helps in long term survival.

The universities research department courses based on sustainability will help not in learning for themselves but also educating the policy makers. By nature the best way of delivering the quality work is delivery through sustainable way.

Outcome of Sustainable Learning in Education

Renewing and Relearning

The core responsible of any sustainable is to renew resources whenever required. The core of sustainable living is sustainable learning. Sustainable living avoids misuse of resources and focuses more on durability. Sustainable learning focuses on sharing of information and strategies on optimal uses of resources. It also involves recycling of products and services. Renewing also deals with resources renewable assessment. The learning includes the indicators assessment and reflection. SLE helps students in monitoring learning the areas of improvement in their learning based on course history and their learning need. This way of learning enables students in learning new things(Zhao, 2005)

Evaluation leads towards better self-assessment. Self-assessment can be provided by parents, peers and supervisors and even by the strangers. Once should be prepared with the assessment throughout their lives. Assessment provides standards, this can lead to considerable frustration in youth in their days but in the end, it can leads towards sustainable. However experience people always learn from evaluation. This SLE help in making world a better place(Yang et al., 2017).

Independent and Collaborative Learning

Independent and Collaborative Learning is basic requisite of Sustainable learning. It creates community which knows they self-learn and self-sustain thorough hit and try. Independent and collaborative learning teach social support and platform. It also teaches the ways to get help from others. Collaborative learning involves different levels of students in a project; thus it promotes multidisciplinary learning. Multidisciplinary learned is accepted as a tool for enhancement of collaborative learning as students also depend on the other people around such as friend, family and elders in the community. Laszlo and Laszlo (2007) proposed that societies of knowledge are, in spirit, sustainable educational communities which view learning as the procedure of not only acquiring but also creating knowledge. When entrenched within the measurements of intellectual capital knowledge production and learning are regarded as critical as aspect in global commodity, which not only for produces and disseminate sustainable pedagogy nonetheless also as a production source that reintroduces and regenerates itself

Active Learning with a Future Orientation

To ensure sustained learning, one must be an active participant in their own learning. Active learning refers to learners seeking information actively and intentionally. Active learners can apply feedback loop. Feedback loop happens when output as system is based on input and cause and effect. Feedback loop helps in applying learnings of students. The recyclable way of learning always learns to sustainable learning. In modern days when leaning is defined as “Learn, Unlearn and Relearn”, inclusion of active learning leads towards better results.

Over the years sustainability scope has been extend to several walks of life (emami et al., 2023; Hays & Reinders, 2020; Sridhar et al., 2020; Svensson et al., 2022). In education sector sustainable learning and education or SLE is a philosophy introduced recently. The core objective of SLE is develop sustainable teaching framework that will make the world a better place. Sustainable education will make education liberating, self-efficient and conscious. So far, in literature a very little has been talked about SLE

in education. The researchers could not find any prominent theory or model in this which is criticised and appreciated. Fewer papers are writing on theoretical and practical foundation of SLR for example (Ben-Eliyahu, 2021; Hays & Reinders, 2020). In future it is expected the researcher will formulate and found the ideas on this concept. In this study the researchers have focused on creating a strong vision of SLE in higher education based on learning and teaching paradigms discussed in literature

The SLE will open new paradigms of learning in higher education. Vision provides a direction for educationists. The sustainable curriculum development will develop systematic thinking in the learners and finally create organizational learning and change ability among students.

There are several reasons and needs for development of new paradigms in education. The first reason is complexity in existing models that are not keeping the pace with disruptive changes in the market. Currently socially is facing disruptive changes due to technology, social changes and environmental forces. A new paradigm is required to fight these changes(Aalberse et al., 2015). The old approaches in teaching and learning were designed for conventional word which are not coping with the unconventional changes(Hays & Reinders, 2020). The world transforming cautiously, changes are compulsory for survival of firms (Farooq & Raju, 2019a, 2019b). In addition, there replication in available solutions. The sustainable learning helps in sorting out the relevant activities.

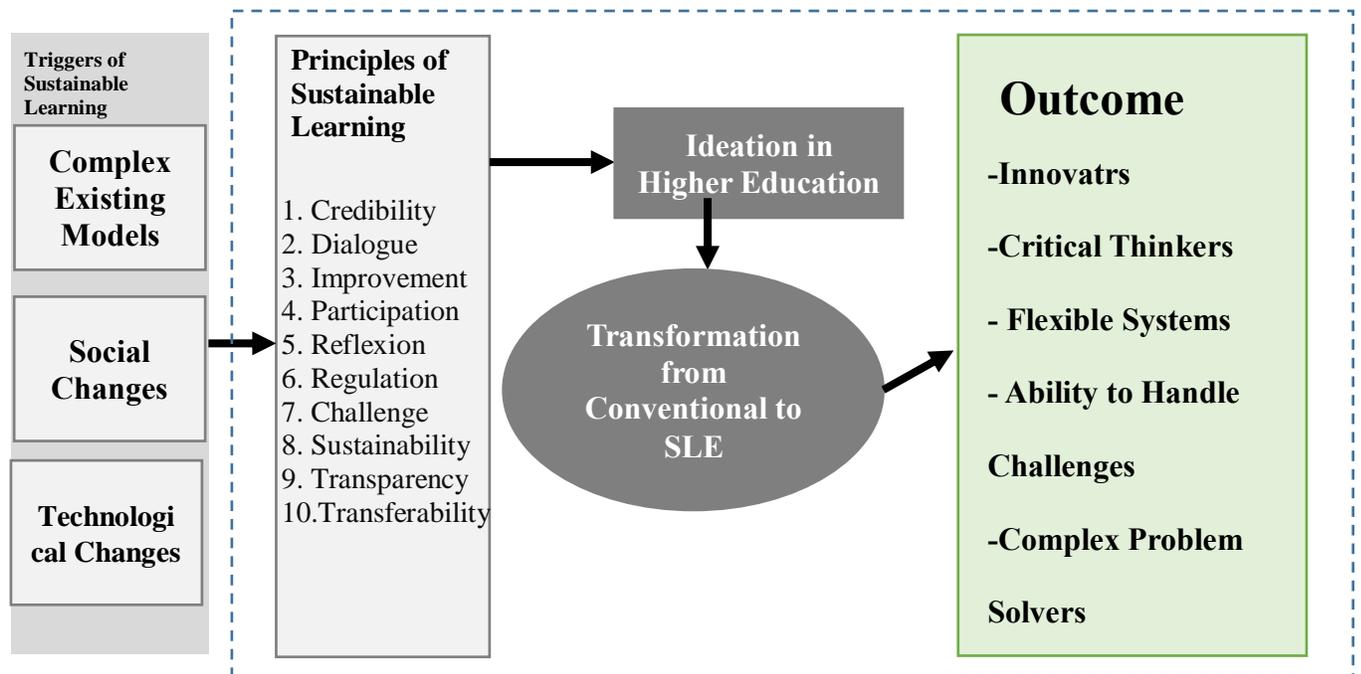


Figure 3 Sustainable Learning in Education Proposed Framework

What Comprises a Sustainable Curriculum?

Sustainable curriculum compromises of addressing the key technological and social issues. Sustainable learning foundation must be on credibility, dialogue, Improvement, participation, reflexion, regulation, challenge, sustainability, transparency and transferability.

Sustainability as per academics is not an option, but is imperative. The only way forward is accepting the sustainability as it not only keeps the environment intact but also helps in creating an ecosystem. Sustainability is supposed to reduce the production of consumables, if the consumption

of consumables cannot reduced its core agenda should be recycling and disintegrating. sustainability also built design and durability. Sustainability brings ease, adaptability, flexibility and ability of modification. Sustainability promotes self-sufficiency. sustainability promotes use of renewable energies such as sun-light. Sustainability promotes use of self-sustaining and self-sufficiency. All rest of the methods solve fewer problems on other hand sustainability solves more than one problem in same time. It addresses the problems of existing people and also problems of coming generations. Sustainability promotes equity. Sustainability promote biodiversity. It reduces waste, sustainability promotes optimism.

Table 2 Sustainability in Education A Win-Win Approach

▪ Principles and practices of sustainability in educational learning	▪ Theory and behaviour of Multifaceted Adaptive Systems
▪ Systems Thinking and Design	▪ Notions of disorder, discontinuity, and rise
▪ Environmental science	▪ Malicious and virtuous cycles
▪ Terrific Problems	▪ The nature of information and knowing, and their confines

▪ Self-direction and beginner independence	▪ Intervention and efficacy
▪ Altering role of leaders and management	▪ Patterns and paradigm shift
▪ Mindfulness and Thoughtful Action	▪ Active Learning and Act Research
▪ Conceit and self-effacement	▪ Separate accountability and cooperative action
▪ International Citizenship	▪ Authority of paradox
▪ Conjunction and divergence of education and knowledge	▪ Glitches and promises of teaching
▪ Management change and innovation	▪ Imagination and the creative process

Sustainable Learning In Education: A way forward

Win-Win Learning

The sustainable learning provides win-win situation for all stakeholders. It guides existing people about optimal use with the guidelines to save the nature and resources for coming generation. SLE is about individual, companies, non-profit organizational and societal changes. The core them in educating individuals, organizational and society for higher education is to teach community to protect and nurture ourselves and community. It encourages to seek new opportunities for growth and development through efficient way. Sustainable learning equips all stake holders with knowledge, skills and tools of problem solving. *Ultimately it creates a win-win situation for all.*

Principles, Paradigms, and Paradoxes: Sustainable Learning and Education Themes

Sustainable learning educational themes and paradigms. Sustainable creates win-win situation in 20 areas.

It provides Principles and practices of sustainability in educational learning. Sustainable education must base on certain policies. The researchers are expected to review global and local aspects of educational philosophies. Understand the key development constructs. All educational departments should focus on triggers in individual, educational and country level aspects.

In addition to basic principles, the theory of behaviour must adapt the multifaceted adaptive systems. This theory promotes the mutually responsive and responsible behaviour of members in a community. The researchers worked on validation of theory in higher education of different countries.

Sustainability third area is systematic thinking and design. Design just does not shares the cover of the package. It also promotes the thinking. Systematic thinking leads to better idealization and optimal use of resources. Another theme that emerged in recent years notions of disorder, discontinuity and rise. This theme demand research on sustainable solutions in education systems.

Another area of research in environmental sciences. It covers the theme of optimal use of natural resources. The resources are finite. Therefore approach of environment is vital.

Sustainability is important to address malicious and virtuous cycles. Traffic problems are another reason which needs handling. Pollution handling, less traffic and optimal routes management and promotion of public transport are key area of the study. Another theme of sustainability has emerged as the nature of information and knowing, and their confines, self-direction and beginner independence, intervention and efficacy, altering role of leaders and management, Patterns and paradigm shift, mindfulness and Thoughtful Action, active Learning and Act Research, conceit and self-effacement, separate accountability and cooperative action, international Citizenship,

Authority of paradox, conjunction and divergence of education and knowledge, glitches and promises of teaching, management change and innovation and imagination and the creative process. All the themes are paradigms has been core area of study for researchers.

3. Discussion

The changes in educational system are required because of technological, environmental and social changes. Towards these social changes researchers are expected to transform the education system particular the philosophies. One aspect can be making random changes on curriculum. The other aspect is through systematic design and system proposing systematic changes in education system. The four key aspects in learning are renewing the learn system and incorporating relearning in it, independent and collaborating learning , active learning and education transferability. (List all 12 here)

In SLE feedback incorporation is the core learning process. The cognitive system design understanding is key technical aspect in feedback loop. Researchers in latest research papers has also indicated the SLP as a strategy to regulate and enhance motions of learners. All SLR activities need an environment which needs the stakeholder in form of parents, teachers, students, peers and professional experts. Knowledge learned in such environment can be developed into a process which facilitation the standardization of learning. Such kind of Model is closer to 21st century learning related goals which promotes flexibility, independent collaborative learning, creativity in learning through multimedia platforms. Learning can also happen by providing scaffolding for transformable learning which promotes resilient, adversity between different modes of learning.

Sustainability must also incorporate the learner's level of understanding and skills. For instance vigilant learners can cope up with changes in changes in circumstances. The Covid-19 pandemic impacted the educational institutions a lot. A lot students could not carry their learning activities. However, those students which had the ability to learn themselves and accept new changes in learning paradigm grew. In addition the

new developments in technology are bringing new areas for learners where they are not dependent on any organization or institution. However the learning has also the drawback of no validation or approval of correctness. The unverified content published on channels can also lead toward misleading information. Therefore for sustainable learning even in multimedia open platforms the principals of sustainable learning must be applied.

Students normally face two types of crises. First are crises in colleges, university due to certain external factors. It can also be low quality education. However the second is not in control of university and students such Covid-10 pandemic has changed lot of dynamics in the education domain. Still both situation needs continuity in learning activities in the organizations. The higher education is supposed to maintain the educational activities. The Covid-19 pandemic has taught once lesson to higher education institutions to stay vigilant and updated for such situation. SLE strategies also need methodological development at advance level to meet learning demands of individuals, organization and society.

SLE is also helps students in enhancing the required skills in their domain. For example in case of writing skills a learner is expected is learn the spelling test to reflect the cognitive work of writing. In literature it has named as metacognition. In addition to understanding the spelling for a writer the understanding behaviour is also vital which is named as meta behaviour. Meta behaviour also reflect an individual behaviour to understand another requirement. For instance a learner is expected to understand the important task for an activity. A learner is also expected to follow a calendar to reach a goal though a systematic way.

Conclusion

Sustainable learning and education have become core area of interest for several researchers (Skene and Murray, 2017). Several departments in higher education such as engineering, environmental sciences, management sciences and economics have explicitly worked on SLE curriculum. Despite of focus and initial researchers there are

more areas total explore in sustainability of higher education Stough, et al, 2018).

Sustainability in higher education should be focused on addressed modern day problems in parallel with incorporating lessons from conventional education system (Levine, 2017)

Change and innovation should be foundation of sustainability-based curriculum (Dyer and Dyer, 2017). However education should incorporate level of education of learners. (Bowen and Fincher, 2018). Current study has focused on providing the triggers and need of sustainability-based education. Earlier researchers also shared the 11 principles of assessment required in the higher education (Ahmed et al., 2021; Settembre-Blundo et al., 2021; Ufua et al., 2021)

World is changing rapidly; with rapid changes the required skills are changing. World economic forum has shared latest skills required for expert in coming years. Kate Whiting (2020) proposed in world economic forum that 50% of people working as employee in the organization need to update their skills. By the end of 2025 50% of employees will not be able to grow and more forward without world economic forum highlighted skills. The technology has advanced and requirements of jobs are changing rapidly.

World economic forum has listed the problem solving and critical thinking as top skills. This is the reason the researchers have listed the outcome of sustainable learning as critical thinking, problem solving and innovative solution providers. World economic forum has also highlighted that resilience, active learning , flexibility and stress tolerance skills. Emotions management is the key player in better decision making of any individual. A survey through world economic forum has also shown that several employees are trying to improve the skills. These skills if not learned individuals and company can get disrupted as conventional skills are no more required. Regarding world economic forum the Professor Klaus Schwab said:

"We have the tools at our disposal. The bounty of technological innovation which defines our current era can be leveraged to unleash human potential"

"We have the means to reskill and upskill individuals in unprecedented numbers, to deploy precision safety nets which protect displaced workers from destitution, and to create bespoke maps which orient displaced workers towards the jobs of tomorrow where they will be able to thrive."

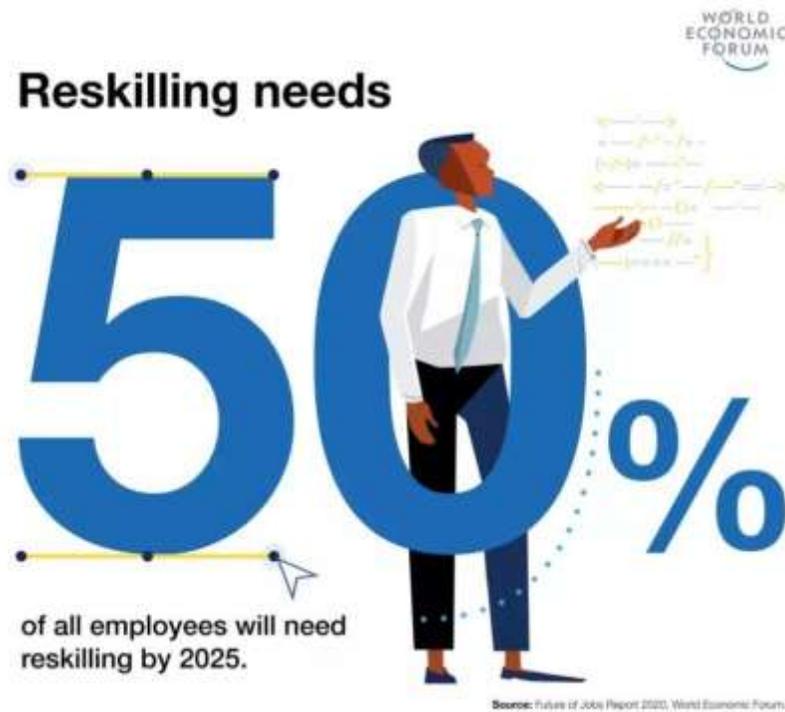


Figure 4 50% of employee need to updated their skill

Source:(Kate Whiting, 2020)

The forum has estimated that by 2025, almost 85 million jobs will be displaced by a change in the requirement of labour between machines and humans. In addition the world economic forum

has said that 97 million will emerge through algorithms, machines and artificial intelligence.

The top 10 skills world economic forum has recommended will be in demand in next 5 years.

Top 10 skills of 2025



Source: Future of Jobs Report 2020, World Economic Forum.

Figure 5 Top 10 Skills of 2025

Source: (Kate Whiting, 2020)

Through collaboration with LinkedIn world economic forum has also analysed the top of courses professionals are attending to enhance their skills. In literature it is observed that

marketing as emerging as a special subject(N. Singh, 2010). People are taking class about product marketing, digital marketing, computer interaction with humans. These skills normally take 6 months. 94% of employees already working in organization pick the new skills easily.



Time needed to start building new skills online in jobs of tomorrow

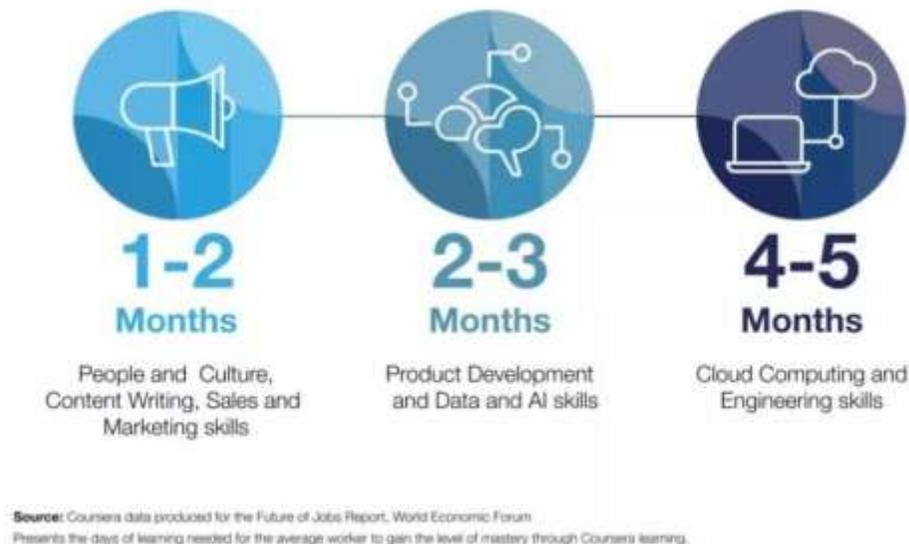


Figure 6 Time Required for Learning New Skill

Contribution of the Framework

The proposed framework for sustainable learning in education has three-fold applications. First it sets ground for academics to look into changes in the world based on technological, social, environmental, economic, legal aspects. These forces are pushing for the changes in the learning processes. The recent pandemic has also forced the academics to think more about sustainable learning. Second contribution of the framework is for the practitioner's, policy makers in higher education sector. The higher education in every sector is responsible for policy management related to education. The sustainable starts from educational institutes. Students must be taught in practical ways to care for resources. The third application of research work is in the society. Society as a whole is also responsible for better environment management. The parents or elders

who teach kids to use resources carefully grow responsible citizens in the countries.

The framework also explains how independent learners can fulfil their demands of learning in different circumstances. The framework also insurance long term learning and creating of student's education experts who will transfer the learned skills to coming generations. The focus of SLE is promote skills as way of sustainable life. The framework also incorporates the global and local aspects of learning. It also views the learning as per skill level of the learner. The paper promotes skill-based learning and problem-solving capability creation among students. SLE must be incorporate in formal education system. Complete incorporation of SLE in conventional education can be difficult. However, practitioner's and policymakers are recommended to start the SLE from starting point which is restructuring the

courses as per basic principles of sustainable education. Only active learning helps in sustaining the knowledge.

The second step towards development of sustainable education is to promote goal making. Students' life and career goal must be around sustainability.

The literature also suggests that active learning helps both teachers and students to learn in an environment. As the technology is growing, learners are learning to learn isolate. The platform such as YouTube promote self-learning. Universities are introducing self-paced programs. However all these learning tactics are not promoting social interaction and care. The sustainable learning education must promote the active learning in parallel with ability of students to do collaborative work for betterment of society . Flipped class rooms are one way to promote learning. The learn formats should be projects based on groups, that will eventually help learners in working as a teach and understand others. This format of learning will enable flexible, sustainable and multidimension learning that will promote open-mindedness, rebuilding of knowledge and ability of students to solve complex problems

Novelty of the Framework

The current study prosed framework of SLE has threefold novelty. The first is practical level. The framework explicitly shows the reason of sustainable learning in education. The changes in society and demand of solution of complex problem is demanding the SLE. In addition technological development and new platforms for self-learning are promoting without team learning. The independent yet collaborative way of learning is demand of era. Second novelty is in the incorporation of latest research work in the framework. Academics will be able to understand the SLE in better way and take as foundation . the researcher can also validated the framework. The third contribution is in the methodological development. The paper suggests the policy makers to start SLE from course structure, as transforming the course to SLE completely can be challenges. Second step in the SLE should be goal setting for setting leads towards final

implementation of sustainable learning in education.

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