Journal of Positive School Psychology
2022, Vol. 6, No. 3, 9021–9034 http://journalppw.com

Authentic Learning for developing key competencies in Sustainability: A Review

Arti Chopra[1], Dr. Padmakali Banerjee[2]

[1]Principal, Amity International School, S-46, Gurugram, Research Scholar, Amity Business School, Amity University Haryana;
[2]Pro Vice Chancellor, Amity University Haryana

Abstract

It has been observed that unless the learning is contextual and allows meaningful association with the realistic situations, either students do not get engaged fully or their retention is for a shorter span, thus defeating the whole purpose of education. According to some teachers, their students are less likely to remember what they learned if the concept remained on paper, abstract or disconnected from real-time experience. On the other hand, learning experientially in authentic contexts has provided good results as a teaching- learning pedagogy. As part of authentic learning activity, tasks identified have connection to the real-life problems and situations that students face outside the classroom, both presently and in the future. This paper aims to come up with a learning model for educationists that includes integration of sustainability competency in the curriculum by making learning authentic. It includes, suggestions to provide opportunities for authentic, student sustainable design projects at school level that would deal with SDG's by letting students, do disciplined enquiry, pitch for their solutions, in a bid to create new knowledge, as shown in Fig 1.

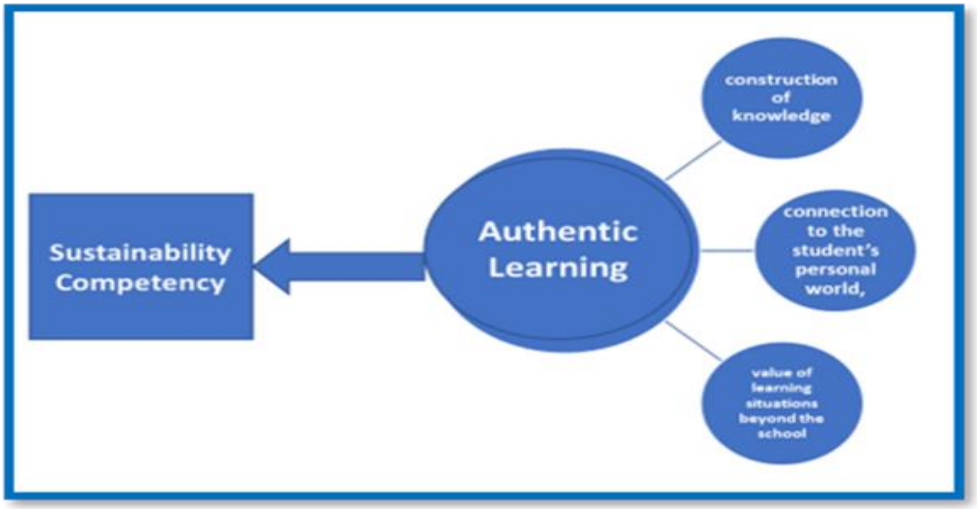


Figure 1: Authentic Learning concept

This concept would certainly enable the teachers in meeting the learning outcomes set for the course of study and add value beyond school for learners.

Keywords— Authentic learning, Competency, SDG, pedagogy, knowledge, learning outcomes, learning by doing

INTRODUCTION

'Educating the mind without educating the heart is no education at all'.

This famous quote by Aristotle, is meaningful and applicable in today's context as well. Educating the youth of this century by teaching them about optimum usage of all resources, in a bid to guard the interest of all living beings, through strategic initiatives, shall not only help educators meet their learning outcomes but also enable them to voice their futuristic vision. This process that begins right from an individual student's habit formation to formulation of policies at Govt's level, or bringing in reforms for embracing sustainability at the teacher's level, is important; as it helps in attaining the desired learning outcomes, which is the ultimate goal of education. This could be achieved through active engagement of learners in the problems of the real world and making learning interdisciplinary, based on problem solving. The construction of knowledge in a complete task driven environment, connection to the student's personal world, attention to the value of learning situations beyond the school, and cooperation and communication can make learning more authentic. This would certainly address the desire of educators to inspire youth to achieve the universal aim of passing on the green earth to future generations as inherited from their ancestors. The integration of sustainability with education in all areas, to change the behavior of individuals, in a bid to live in harmony with their society, environment and the planet is rightly termed as sustainability education.

2 The need to enhance Learning Outcomes of Authentic Learning practices for developing key competencies

2.1 According to a UNICEF publication titled *What we do- Every girl and boy in school and learning*, half of primary school-going children – which constitutes nearly 50 million children – are not achieving grade appropriate learning levels. (*Source: National Achievement Survey, NCERT 2017*). It is indicated that readiness level for children below 5 years has been far below expected levels. Citing the vision of the UNICEF Education Programme, the report further adds that girls and boys including the most marginalized, will enjoy sustained and equitable benefit from quality education with the planned learning outcomes, that could focus on foundational learning and life skills. It is surely a matter of concern that if the learning levels are not achieved, we need to find out what went wrong in executing the teaching learning activity and if the learning could be more contextualized in imparting important life skills.

2.2 Evidences indicated in a journal by United Nations in India, titled *Education and Employability*, that children are not learning at expected levels. According to the National Achievement Survey which was conducted in 2015 by the National Council on Educational Research and Training, for Class 5 students, only less than half the mathematical questions and reading comprehension questions posed in the survey were answered correctly. This made many of us wonder if the learning patterns being followed could be revisited.

2.3 According to a position paper published in 2018, by Organization for Economic Co-operation and Development (OECD), titled - *The future of education and skills Education 2030*, Education needs to prepare young people to face challenges of real life and for the world of work; it needs to equip students with the skills they need to become active, responsible and engaged citizens. Advocating the "design principles" for changes in curricula and education systems that will be relevant in different countries over time, Authenticity was featured, in the paper, as one of the integral components, apart from teacher agency, inter-relation, flexibility and engagement. Authenticity here means that learners should be able to link their learning experiences to the real world and have a sense of purpose in their learning. This requires collaborative and interdisciplinary learning along with the mastery of discipline-based knowledge.

2.4 The new challenges posed by 21st century on the limitations of resources, sharing practices across the world, environmental threats, health and safety issues are quite a

threat on the existence of humanity. Added to these are the statistics revealed on public portals that learning outcomes in educational best practices are also being challenged. This is as per the New Education Policy'2020, issued by MHRD, Govt of India, in line with the global education development agenda reflected in the Goal 4 (SDG4) of the 2030 Agenda for Sustainable Development, adopted by India in 2015.The gap between the existing learning outcomes and the outcomes which are actually required, must be narrowed by undertaking major reforms that bring the highest integrity, equity and quality into our system, right from early childhood care and education, right up to higher education. This really calls for making learning Authentic, as an essential setting that education requires to move towards sustainable, meaningfuland relevant learning in the 21st century.

2.5 One of theHarvard University Journal, describes Authentic Learning as the learning activities that are either carried out in real-world contexts, or have high transfer to a real-world setting. Authentic Learning has its roots in constructivist theory, which says that the best way to learn is to actively engage with problems and materials constitutes (Mayo, 2010). As stated by John Dewey, "[E]education is not an affair of 'telling' and being told, but an active and constructive process" (Dewey, as cited in Mayo, 2010, p. 36). It is possible to have Authentic learning take place within the walls of the classroom. The common element to these methods is that they activate students' motivation and curiosity by presenting them with real-world problems that they feel are interesting and important.

2.6 UNESCO clarifies that learners of all ages are empowered with knowledge, skills, values and attitudes as per Education for Sustainable Development (ESD) to address the interconnected global challenges we are facing, including environmental degradation, climate change, loss of biodiversity, inequality and poverty. Learners of all ages need to be prepared, to find solutions for the challenges of today and the future. We should take individual and collective action to change our societies and care for the planet. The informed decisions thus taken would make education transformative in value and spirit.

2.7 Be it the central (CBSE, ICSE, etc.) or various state boards in India, environmental education is limited to mere facts and figures, with little practical value. This is the reason why the students are not able to grasp the gravity of the issue. Specific environmental problems at the national and state, city, or district levels need to be emphasized such that students will be able to understand and relate to the issues. If the teachers wish to talk about plastics in our water bodies, students shall grasp the concept better, if they are shown a pond in their neighborhood. If the students are made to realize how closely linked environmental issues are to their own lives and future, they shall be motivated to devise solutions This has been quoted in *The Print*, in an article by Indu K Murthy and Abhinav Pratap Singh.

2.8A section of*Edugraph*, the e-paper, is said to have reported that school principals in India say that the current curriculum is all about making posters and slogans. Lot of projects are made on Earth Day, to mark its celebration, but the students seldom learn to implement it in their regular life. All schools ensure to teach students about the concepts and definitions of pollution, global warming and climate change. The prevention strategies are also taught but when it comes to implementation, students seldom consider them in their daily life.

2.9. In USA, there is wide-spread support for sustainability education, but it is hard to implement in schools in a systematic way without broader changes to the educational system, including curricula and pedagogy. In a paper in *International Journal of Early Childhood Environmental Education*, written by Ginsburg, Julia L.; Audley & Shannon, it was stated that almost all of the teachers who participated in their study wanted to include sustainability education within their pedagogical approaches, and they did so by focusing on routine sustainability practices, but felt that due to curricular and parental barriers, they could not engage in more morally good sustainability practices. Thus, it can be

concluded that sustainability needs to be part of school culture.

2.10 According to SDG INDIA Index & Dashboard 2020-21, *Partnerships in the Decade of Action*, released by NITI Aayog, SDG Index Score for Goal 4 ranges between 29 and 80, for States and between 49 and 79 for UTs, and the average being 57, giving us a lot of room for improvement. The statistics reveal that, nine States and two UTs had Index scores less than 50 and had fallen behind in the Aspirants category. What is really astonishing is the Gross Enrolment Ratio for higher secondary education is standing at 50.14%, and for students aged 18-23 years, enrolled in, HIGHER EDUCATION, it is only at 26.3%. This calls for an introspection that education needs to be made more practical and lucrative for our youth.

Figure 2- NITI Aayog releases SDG India Index and dashboard 20-21

3 OBJECTIVES

Keeping the need to enhance Learning Outcomes of Authentic Learning practices for developing key competencies, we have narrowed down on the objectives of this paper, which are:

1 To enhance the learning outcomes in education by making learning authentic

2 To integrate real life challenges in the curriculum with reference to SDG's

3 To recognize Sustainability as a necessary Competency to be focused upon in our schools

4 LITERATURE REVIEW

Some intense study that has captured the essence of our thought process, and is cited for reference to throw light on the subject.

4.1 Learning in an authentic environment provides a further enhancement of Student Learning Outcomes

It is widely believed that Student Learning Outcomes are those statements that determine what the students know, can demonstrate or can do when they have completed or participated in a course. At Higher Education Institutions, in order to achieve optimum student learning outcomes in a study program, assessments should be conducted in an authentic and meaningful learning environment, such as service learning. This study, titled- *Improving Student's Learning Outcomes through E-Service Learning,* is based on Authentic Learning strategy. By injecting Authentic Learning strategy in conducting this Service-Learning program, it allowed participants to be able to assess the problem in real life situation and come out with a proposed idea to solve the problem, in addition to using the skills that they are developing personally. Moreover, learning by doing through this Service-Learningproject, using Authentic Learning strategy approach enabled student to be more interactive among peers and increase their understanding in the subject matter. Thus, this study concluded that in an authentic environment, if e-Service Learning is integrated, it enhances Student Learning Outcomes.

4.2 Current educational efforts are inadequate for achieving transformative action, changing individual behaviors is essential

According to a paper titled, *Educating for Sustainability: Competencies & Practices for Transformative Action*, by Erin Frisk and Kelli L. Larson, individuals adopt different values, attitudes, habits, and behaviors, to achieve sustainable future, which are often imbibed at a young age. It appears that the current educational efforts are insufficient for achieving transformative action. Alternative forms of knowledge such as procedural, effectiveness, and social knowledge are essential to effectively educate for sustainability. The changing individual behaviors and motivating collective action is essential to achieving a sustainable future and is therefore a central motivation of sustainability education. In order to truly achieve the transformative change that sustainability calls for, there is a need to incorporate behavioral change motivators, into school programs and curriculum, for continuous guidance and support.

4.3 In authentic classrooms, students are given more ownership over what they learn, the teacher assumes the role of the facilitator

In authentic classrooms, students are made process/task owners/enablers, to integrate multiple contents and multiple skills holistically. The author W. Maina in the paper titled *Authentic Learning: Perspectives from Contemporary Educators Faith,* felt that, when students lacked sufficient background knowledge or skill, they felt less successful, and many of them struggled in the environment. The struggling students, when contacted, expressed a desire to improve the classroom by working in teams so that they could mentor each other. This could be achieved by increasing resources, decreasing class size, and making the teacher more accessible. As currently understood, the role of a teacher must undergo a shift for authentic learning to get implemented successfully. In this transition, the teacher assumes the role of the facilitator and abandons the image of the "sage on stage" cliché to enable the learners to take responsibilities for their own learning. Authentic learning involves increasing enthusiasm and motivation, thus enabling learners to take decisions concerning their learning.

4.4 Teaching methods need to support authentic learning

Sustainable development (SD) is a multidimensional issue. However, research findings have reported **a big difference** between students' behavior and awareness. In another paper written by Andreja IstenicStarcic, Maja Terlevic, Lin Lin and Maja Lebenicnik, titled, *Designing Learning for Sustainable Development: Digital Practices as Boundary Crossers and Predictors of Sustainable Lifestyles*, it is identified that study programs designed are more focused on awareness outcomes, compared to behavioral outcomes. The authors have argued for a model based on an understanding of learning as boundary crossing, for higher-order learning outcomes manifested in a sustainable development behavior. Teaching methods supporting authentic learning integration with a student in a center and its digital social practices, need to be considered for higher educational institutions.

4.5 Teachers need digital competence to bring in sustainable reforms to transform teaching learning process

Beyond the very pressing immediacy of the pace of change induced by internationalizing tendencies, a world without borders, there is increasing pressure on teachers to be more agile, and adaptive, specifically at incorporating new emerging technologies into their pedagogical practices. The teachers are not always proficient in the use of digital technology, in teaching, learning and assessment. In order to harness the potential of digital technology in teaching, learning and assessment, it is important to establish an agreed framework or professional learning plan for digital competences that teachers really need rather than enhance their sense of responsibility and capacities to transform the teaching learning process. These expressions are from,

Sustainable Teaching in an Uncertain World: Pedagogical Continuities, Un-Precedented Challenges, a research paper by Rachel Farrell and Ciaran Sugrue.

4.6 To facilitate sustainability focused Authentic Learning, student internship as an important component

Shane D Inder, writes in the paper titled *Authentic Learning Opportunities for Sustainable design Curriculum informed by Interdisciplinary Staff*, that Authentic Learning benefits students in many ways. In this study the authors have elucidated Anecdotal evidence from a three-week, sustainability focused Authentic Learning through multidisciplinary collaborative project internship, leading to students' engagement. The student internships enable the students get involved to gain insight into real world commercial projects, while providing staff effective support to help manage research and/or teaching capacity. To facilitate sustainability focused Authentic Learning in multidisciplinary collaborative project, the author advocates student internship as an important component. This includes opportunities for authentic student sustainable design projects at an undergraduate and postgraduate level, the development of learning and teaching field trips and case studies, and sustainable design curriculum development.

4.7 Students must become comfortable with the complexities of ill-defined real-world problems.

According to a research paper titled Authentic Learning for the 21st Century: An Overview by Marilyn M. Lombardi -Learning-by-doing is generally considered the most effective way to learn. The author rightly says that the Internet and a variety of emerging visualization, communication, and simulation technologies are now making it possible to offer students authentic learning experiences ranging from experimentation to real-world problem solving. Along with memorizing facts and practicing technical procedures, beginning students should be learning the schema through which they "recognize whether a problem is an important problem, or a solution an elegant solution, or whether a solution is rightly identified to begin with". To be competitive in a global job market, today's students must become comfortable with the complexities of ill-defined real-world problems. If the students are exposed more to authentic disciplinary communities they shall be prepared to deal with ambiguity and put into practice analytical reviews and better communication required of them as professionals.

4.8 The goal of academic sustainability programs is to enable students to plan, conduct, and engage in sustainability research

The research paper titled -*Key Competencies in Sustainability: A Reference Framework for Academic Program Development* by Arnim Wiek, Lauren Withycombe and Charles L. Redman, provides a viable solution. This study suggests that sustainability education should enable students to analyze and solve sustainability problems. It shall allow students to anticipate future sustainability challenges, as well as to seize opportunities for sustainability. As advised by the authors, and shown in figure 3, the goal of academic programs based on sustainability, is to enable students to plan, conduct, and engage in sustainability research and problem solving based on the interplay of systems-thinking, anticipatory, normative, strategic, and interpersonal competencies. The review identifies the relevant literature on key competencies in sustainability; synthesizes the substantive contributions in a coherent framework of sustainability research and problem-solving competence; and addresses critical gaps in the conceptualization of key competencies in sustainability.

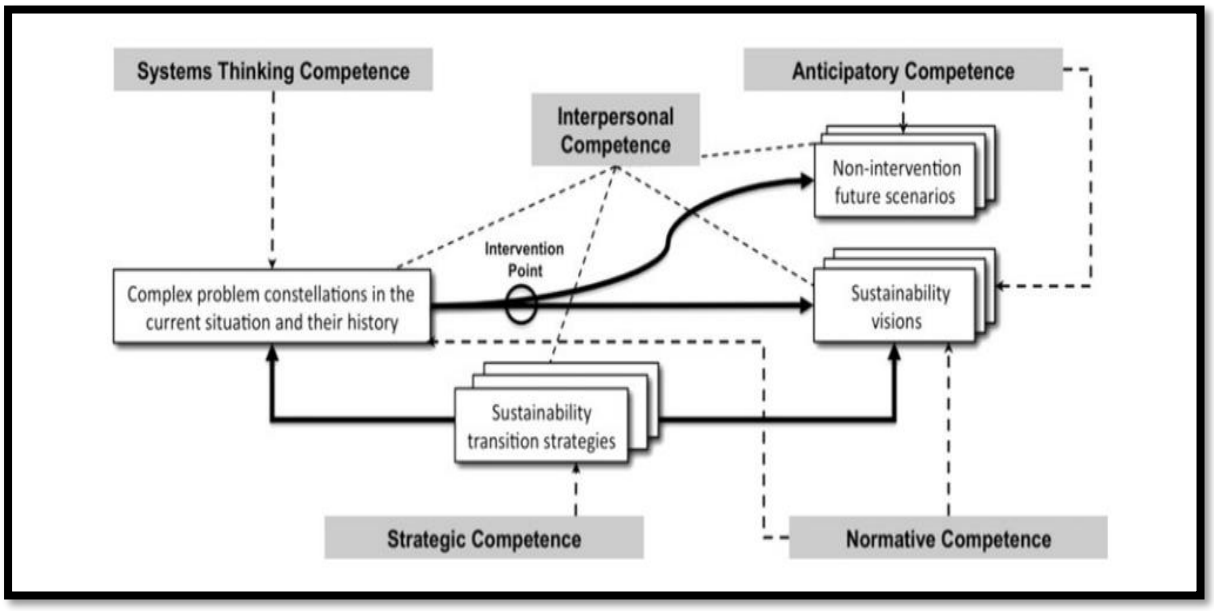


Figure 3: Key Competencies in Sustainability

4.9 Exchange of experiences and Mutual support among education institutions is essential for sustainable academic practices

The authors Arnim Wiek, Lauren Withycombe& Charles L. Redman in the paper *Real-world learning opportunities in sustainability: from classroom into the real world*, analyze the literature on sustainability education to determine how much real-world learning opportunities can contribute to building key competencies in sustainability. Real-world learning opportunities can align well with key competencies in sustainability. It is observed that normally students when engaging in such opportunities, do not automatically build competencies. Opportunities need to incorporate three principles to be effective: collaborative design, coordination and Integration in general introductory courses. To develop these pioneering efforts into sustainable academic structures and practices, exchange of experiences and mutual support among universities will be critically important

4.10 We need to foster sustainability into education inside and outside the classroom

According to UN Report titled *Sustainability Competences* by Bianchi, Guia, Unsustainable production and consumption patterns, and natural resources depletion driven by a growing demand have contributed to deteriorating the planet at an increasing rate (UNEP, 2019).New competences are needed for citizens, consumers, professionals, communities, and society at large to be able to tackle these sustainability challenges, and create new paradigms that can lead to global sustainability (Steinfeld & Mino, 2009; UNESCO, 2014). As argued by Sipos and colleagues (2008), we need to redesign our education curricula in order to foster the kind of critical thinkers and ethical problem solvers, who take responsibilities towards the planet. This requires the development of a common framework to integrate key sustainability competences into our education. The six key competences that represent their framework are: systems-thinking competence, anticipatory competence, normative competence, strategic competence, interpersonal competence and integrated problem-solving competence. Intrapersonal and implementation competences.

4.11 Using a range of assessment tools is necessary development of sustainability competencies

To improve the assessment methodology and tools of sustainability competencies the authors G. Cebrián, J. Segalàs and Àngels Hernández in the paper *Assessment of sustainability competencies: a literature review and future pathways for ESD research and practice* , have suggested conduct of longitudinal studies using

summative, formative and self-assessment tools, carry out comparative analysis of different assessment tools against sustainability competencies and develop specific rubrics for each sustainability competence

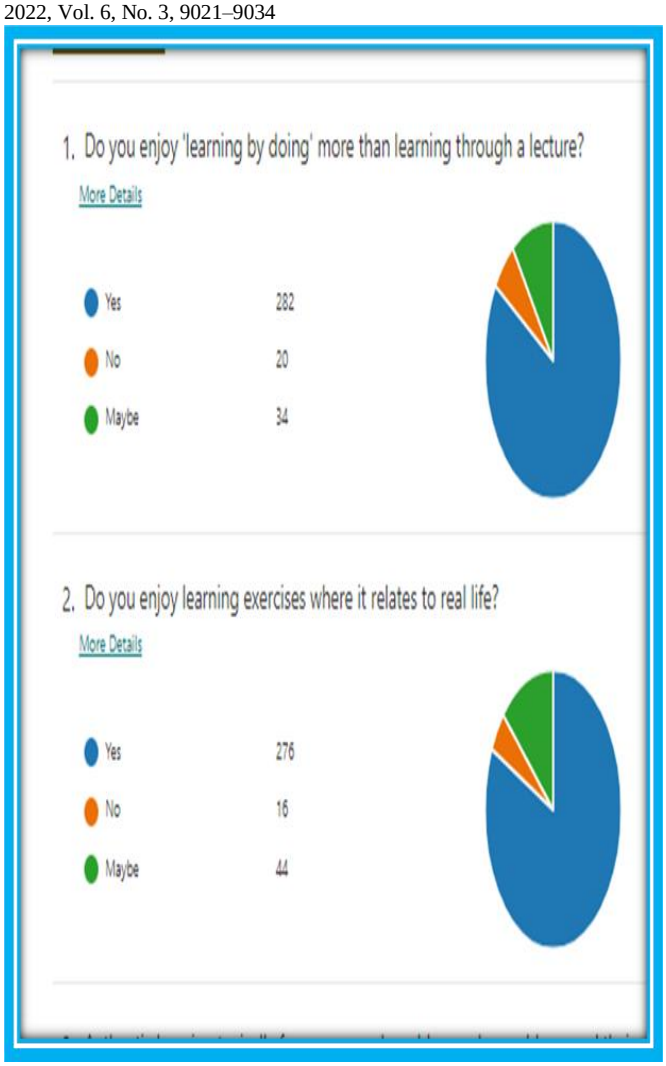
4.12 Professional training of Teachers required for implementation of the ideas of sustainable development

According to D Vasilevska& A Geske, as mentioned in the paper - *Competency-Based Approach to Educational Content for Sustainable Development in Latvia,* an important role in the implementation of education for sustainable development belongs to teachers. For this, teachers must have appropriate professional competencies. As a result of the survey, it was shown that the ideas of sustainable development in the education system as a whole are perceived positively, but the urgent need is professional training and advanced training of teachers for their implementation. These results indicate that teachers rather critically assess their level of training and almost 80 % would like to improve qualifications in ESD (Educational Sustainable Development). Among the preferred forms of continuing education are thematic continuing education courses on ESD seminars, conferences, exchange of experience with colleagues, visiting open classes, master classes and independent study of methodological literature.

5 METHODOLOGY

We understand that in a sustainable society, human beings live in harmony with the natural environment, conserving resources for their future generations, so that everyone enjoys social justice and a high quality of life. A follow up study done in some schools by us have indicated that the students encouraged to find solutions to SDG's, would be able to form relationships between the environment, society and the economy. Such interdisciplinary regimes shall enhance the sustainability competence in children thus giving them the acumen to handle the challenges of real life specially pertaining to keep their environment safe by conserving it. The Literature Review presented in Section 4, elucidates the same too. The results of the survey done are captured in its true spirit here, for reader's reference.

5.1 A Survey was done for 336 schoolstudents of grade VIII-IX, to find out if Authentic Learning Practices are enjoyed by students. While 84% affirmed enjoying learning from real life much more than simply lecture method, another 82% enjoyed learning exercises where it related to real life. TheField visits, were the most popular exercises, for authentic learning that could make them typically focus on real-world, complex problems in a bid to find their solutions.Thestudents preferred display of any skill, over other means of Assessments, namely reports, demonstrations or debates, as an Authentic means of Assessment.



Questionnaire:

1.Do you enjoy 'learning by doing' more than learning through a lecture?

2.Do you enjoy learning exercises where it relates to real life?

3 Authentic learning typically focuses on real-world, complex problems and their solutions. Which of the following exercises done in this regard you enjoy the most? Role-playing exercises, Problem-based learning activities, Project based learning activities, Inquiry based (fact finding) activities, Collaborative (group work) activities, Computer simulation activities, Case based studies, Scientific observation activities, Field Visits or Others

4 Authentic assessment is the measurement of "intellectual accomplishments that are worthwhile, significant, and meaningful," as contrasted with multiple-choice tests. Which of the following Authentic Assessment pattern, you are most comfortable with, that truly assesses you : Reports/journals, Debates/speeches, Live interviews, Performance of any skills, Demonstrating use of

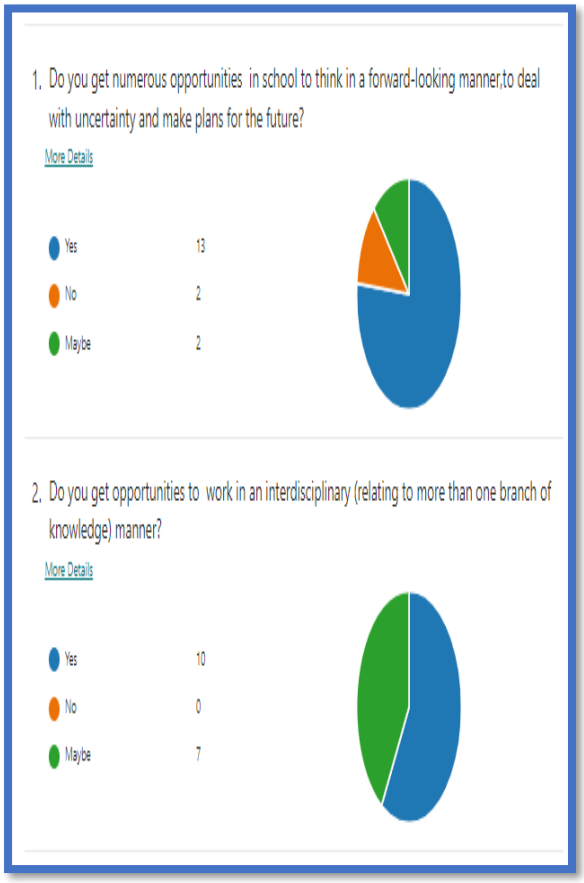
Figure 4-Survey on authentic learning in classroom

5.2 In another Survey of Sustainability Competence done with 60 students of grade XI & XII in a school of Haryana, India, the results were quite interesting. These students were given opportunities to grow in an environment where real life problems were integrated in the curriculum by the teachers. With collaboration and mentoring support, they were allowed to critically analyze, express themselves and take feedback in a bid to create products of value. The results are summed up as:

- 76% affirmed about numerous opportunities provided by school to think in a forward-looking manner, to deal with uncertainty and make plans for the future or development or **Future thinking competency & Strategic thinking competency**
- 59% confirmed about getting opportunities to work in an interdisciplinary (relating to more than one branch of knowledge) manner indicating development of **Intrapersonal Competency**
- 82% confirmed of getting suitable environment to build open-minded perception, transcultural understanding and cooperation, thus developing **System Thinking Competence.**
- 94% said to have possessed ability to feel empathy, sympathy and solidarity, pointing toward acquiring **Value Thinking Competence.**
- 88% confirmed about getting opportunities to acquire competence for planning, analyzing and implementation indicating instilling

Integrated Problem-Solving Competence.

- 76% said to have possessed Competence to motivate themself and others systems, referring to **Intrapersonal competence**.
- 76% were able to acquire Competence to reflect on current issue and then the ability to create a more sustainable vision for that issue or having **Interpersonal competence.**



QUESTIONNAIRE

1.Do you get numerous opportunities in school to think in a forward-looking manner, to deal with uncertainty and make plans for the future? **2.**Do you get opportunities to work in an interdisciplinary (relating to more than one branch of knowledge) manner?**3.** Do you get suitable environment to build open-minded perception, transcultural understanding and cooperation?**4**. Do you possess ability to feel empathy, sympathy and solidarity? **5.**Do you get opportunities to acquire competence for planning, analysing and implementation? **6**.Do you possess Competence to motivate yourself and others? **7.**Have you been able to acquire Competence to reflect on current issue and then the ability to create a more sustainable vision for that issue?

Figure 5:Survey of Sustainability Competence

5.3 I have come up with an Authentic Learning Enabled Sustainability model that describes 8 steps to accomplish Sustainability Competency by making learning authentic, and exposing students to real life problems. The details of the steps of model are as follows:

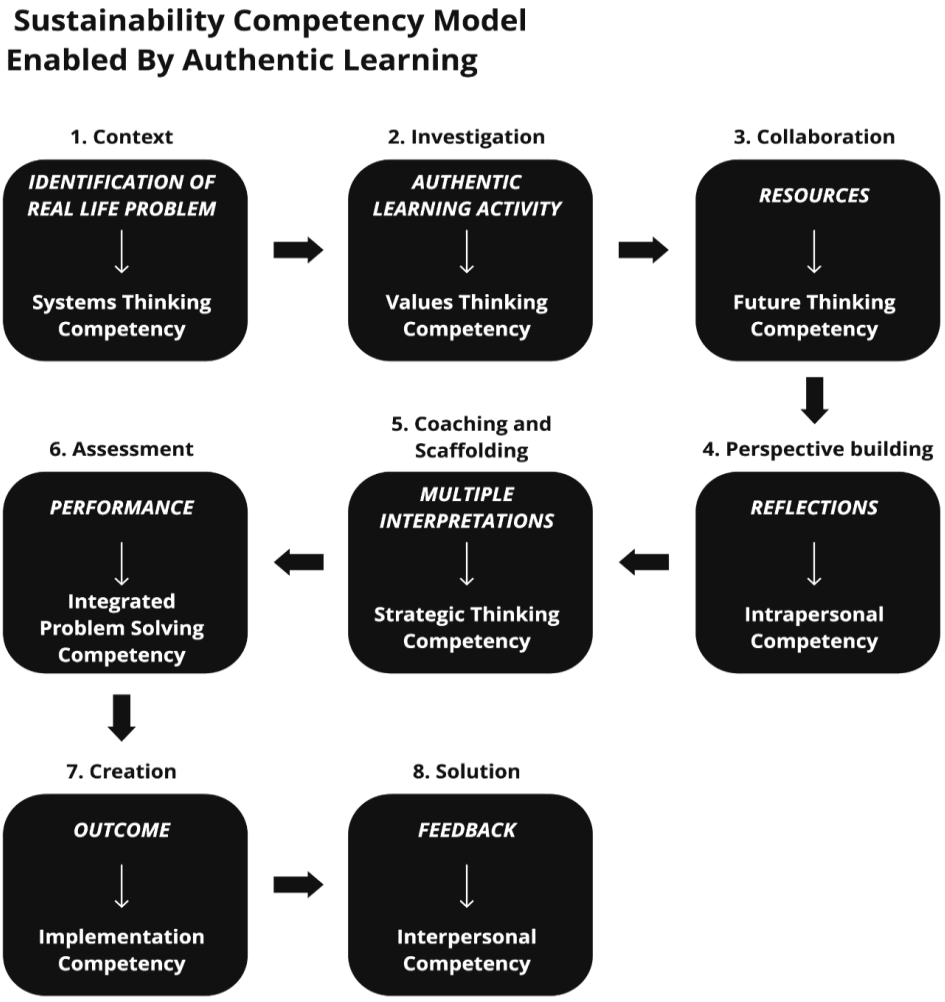


Figure 6:Authentic Learning Enabled Sustainability model

5.3.1 Context: Authentic learning is centered on authentic, relevant, real-world tasks that are of interest to the learners. This involves identification of real-world problems, relatively undefined, that are open to multiple interpretations. This shall enable learners to analyze complex systems across many domains like society, environment, economy, taking concerns from local to global, and creating cascading effects in systemic issues leading to sustainability. This shall further the development of Systems Thinking Competency.

5.3.2 Investigations: Authentic activities comprise of complex tasks to be investigated by students over a sustained period of time requiring significant investment of time and intellectual resources. Students can be provided opportunities through authentic activities to examine tasks from a variety of theoretical and practical perspectives using a variety of resources that requires students to distinguish irrelevant from relevant information. Students become engaged in complex tasks and higher-order thinking skills, such as analyzing, synthesizing, designing, manipulating, and evaluating information, thus attaching values to each of the component. These activities shall enable students to acquire **Values Thinking Competency**, that would help them to clarify their own values and to understand how values are contextually, culturally, and historically reinforced.

5.3.3 Collaboration -It is a known fact thatsuccess is not achievable by an individual learner working alone. Collaborations are integral to the task of engaging in Authentic

activities. Learning spaces are flexible to support individual, partner, small group and whole group work.A learner takes up a variety of roles and responsibilities within a group and engages with peers or adult mentors. Resources like course content, and online sources help in collaborative construction of knowledge. The collaborative groups shall be able to iterate and continuously refine their own futures thinking, recognizing the assumptions about how society works and how they influence the status quo. Such a reflection on how they might influence futures thinking shall develop **Future thinking Competence.**

5.3.4 Perspective Building -Authentic learning, allows for competing solutions and a diversity of outcomes instead of one single correct answer and this provides students with the opportunity to examine the problem from different perspectives. TheAuthentic activities enable learners to make choices, make learning interdisciplinary and reflect on their learning both individually and as a team or community. This enables the learners to become aware of one's own emotions, desires, thoughts, behaviors, and Personality. The learner learns to regulate, motivate, and continually improve oneself drawing on competences related to emotional intelligence and social and emotional learning, thus paving way for acquisition of **Intrapersonal Competence**.

5.3.5 Coaching & Scaffolding -Learners employ instructional scaffolding techniques at critical times. As a learner engages with the problem-solving task, mental representations are created or enhanced and knowledge transfer, if any, that emerges is driven by the representation formed in the mind of the learner. When developing solutions to complex, ill structured problems the learners must engage in strategic thinking (Larkin, 1989) which includes use of procedural steps, having strategies for identifying and meeting sub-goals, and using metacognitive strategies for directing, monitoring and evaluating individual learning, to be successful. Several studies have demonstrated (Lajoie et al, 2001; Suthers, 1998) that learners need to be coached in acquiring these skills. **Strategic Thinking Competency**is developed to creatively plan innovative experiments to test strategies.

5.3.6 Assessment - Within the learning task, Assessment of authentic learning is integrated seamlessly, in order to reflect similar, real-world assessments. This is known as authentic assessment and is different than the traditional learning assessments in which an examination is given after the knowledge or skills have hopefully been acquired. This kind of **Integrated problem-solving Competency** enables, learners to combine and integrate steps of the sustainability problem solving process or competences, while drawing on other ways of knowing.

5.3.7 Creations - Students produce a product that can be shared with an audience outside the classroom. These products do not aim to only earn a grade but have value in their own right. The polished products or conclusions are not merely exercises or sub steps in preparation for something else. TheAuthentic activities culminate in the creation of a whole product valuable in its own right. This encourages imbibing I**mplementation Competency** amongst learners or collective ability to realize a planned solution toward a sustainability-informed vision.

5.3.8 Solution The resulting products are concrete, thus allowing them to be shared and critiqued; this feedback allows the learner to be reflective and deepen their learning.The Authentic activities allow for diverse interpretations and competing solutions, rather than yielding a single correct answer obtained by the application of rules and procedures. The emerging

InterpersonalCompetencyenableslearnerto apply the concepts and methods of each competency not merely as "technical skills," but to truly engage and motivate diverse stakeholders.

6 CONCLUSION

The students who went through our Questionnaire, were heard saying that they are motivated by solving real-world problems involving practical skills, applications, and habits of mind that would be useful in life

outside of school—such as in a future job, for example. These students often expressed a preference for doing an act rather than mere listening. At the same time, most educators too consider learning-by-doing, as the most effective way to learn. Yet for decades, we know that authentic learning has been difficult to implement. It is true that certain experiments are too dangerous, difficult, or expensive to conduct in the classroom; many are simply impossible to perform. We the authors feel that the students encouraged to find solutions to such SDG's, would be able to form relationships between the environment, society and the economy.

Our paper is an attempt to deduce that in authentic classrooms, if the students are given more ownership over what they learn, and are required to integrate multiple contents and multiple skills holistically, they shall be enabled to address the issues of sustainability by coming up with viable solutions for SDG's. This shall enable educationists not only to achieve the learning outcomes but ensure development of empathy amongst future global citizens who would understand how to conserve their resources, which is a definite move towards sustainability. Though the Sustainability Competency Model enabled by Authentic Learning, further needs to be tested in many environments, and situations by readers, but it provides an outline for how one can help in building Sustainability Competence among 21st century learners. It can be concluded that if we make learning authentic in our classrooms, students of all ages shall attempt to find solutions for the challenges of today and the future. Incorporation of SDGs in the curriculum in our schools is the way forward for education to be transformative. And this would certainly let our youth make informed decisions, take individual and collective action to change our societies and care for the planet.

7 REFERENCES

1. anak Marcus, V. B., Atan, N. A., Jumaat, N. F., Junaidi, J., & Said, M. N. H. M. (2018). Improving student's learning outcomes through e-service learning based on authentic learning strategy. Innovative Teaching and Learning Journal, 2(1).
2. Bianchi, G. (2020). Sustainability competences.
3. Brundiers, K., Wiek, A., & Redman, C. L. (2010). Real-world learning opportunities in sustainability: from classroom into the real world. International Journal of Sustainability in Higher Education.
4. Cebrián, G., Segalàs, J., & Hernández, À. (2019). Assessment of sustainability competencies: a literature review and pathways for future research and practice. The Central European Review of Economics and Management, 3(3), 19-44.
5. Co-Authors, S. I., &Withell, A. AUTHENTIC LEARNING OPPORTUNITIES FOR SUSTAINABLE DESIGN CURRICULUM INFORMED BY INTERDISCIPLINARY STAFF RESEARCH.
6. Didham, R. (2018). Education for sustainable development and the SDGs: Learning to act, learning to achieve.
7. Frisk Redman, Erin & Larson, Kelli. (2011). Educating for Sustainability: Competencies & Practices for Transformative Action. Journal of Sustainability Education.
8. Farrell, Rachel & Sugrue, Ciaran. (2021). Sustainable Teaching in an Uncertain World: Pedagogical Continuities, Un-Precedented Challenges. 10.5772/intechopen.96078.
9. Frisk Redman, Erin & Larson, Kelli. (2011). Educating for Sustainability: Competencies & Practices for Transformative Action. Journal of Sustainability Education.
10. Ginsburg, J. L., & Audley, S. (2020). " You Don't Wanna Teach Little Kids about Climate Change": Beliefs and Barriers to Sustainability Education in Early Childhood. International Journal of Early Childhood Environmental Education, 7(3), 42-61.
11. IstenicStarcic, A., Terlevic, M., Lin, L., &Lebenicnik, M. (2018). Designing learning for sustainable development:

Digital practices as boundary crossers and predictors of sustainable lifestyles. Sustainability, 10(6), 2030.
12. Knobloch, N. A. (2003). Is experiential learning authentic? Journal of Agricultural Education, 44(4), 22-34.
13. Lombardi, M. M., &Oblinger, D. G. (2007). Authentic learning for the 21st century: An overview. Educause learning initiative, 1(2007), 1-12.
14. Maina, F. W. (2004). Authentic learning: Perspectives from contemporary educators.
15. Organisation for Economic Cooperation and Development (OECD). (2018). The future of education and skills: Education 2030. OECD Education Working Papers.
16. Vasilevska, D., &Geske, A. (2020, May). Competency-Based Approach to Educational Content for Sustainable Development in Latvia. In The Proceedings of the International Scientific Conference Rural Environment. Education. Personality (REEP) (Vol. 13, pp. 340-347).
17. Wiek, Arnim & Keeler, Lauren & Redman, Charles. (2011). Key Competencies in Sustainability: a Reference Framework for Academic Program Development. Sustainability Science. 6. 203-218. 10.1007/s11625-011-0132-6.