

## e-IJEAS

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## ABOUT THE JOURNAL

e-IJEAS is a peer-reviewed Inter Disciplinary e-Journal Published by NSS Training College, Ottapalam. This journal aims to publish innovative and quality papers in a wide range of topics diverse and subjects. The journal also intends to help researchers, scholars, students and everyone else who are interested in academic research activities, in publishing papers on various issues across multiple disciplines. This journal invites original contributions as well as Review articles in important methodological and substantive areas in education, humanities, social sciences.

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## **EDITORS WORDS**

**Dr. Seema Menon K.P**

*Editor-in-Chief*

*Associate Professor,*

*NSS Training College, Ottapalam, Kerala.*

It is with great pleasure that I welcome you all to the very first edition of this e-journal, Volume 1, Issue 1, December 2020.

With on-going research and developments, education is a dynamic & vibrant field. This e-journal intends to be a window, in terms of both research knowledge and opportunities, for research scholars, teachers and students in the area of education. This e-journal intends to provide research knowledge and opportunities, for research scholars, teachers and students in the area of education.

In line with the theme of education, this issue of e-IJEAS focuses on various educational matters. Scholarly papers of this issue focuses on Mental health, Emotional stability using Yoga, School library as a resource for English language.

As the Editor in Chief of e-IJEAS, I am thankful and wish to express my gratitude to all contributors for their time, effort and valuable thoughts and supporting us in the preparation of this issue. I also express my thankful gratitude to all, who have extended their helping hands in their different capacities for the preparation of this issue.

Constructive suggestions for the development of this e-journal are always welcome.

**Dr. Seema Menon K.P**

Editor-in-Chief, e-IJEAS

Ottapalam,

18<sup>th</sup> Dec 2020

## ENHANCING MENTAL HEALTH OF PROSPECTIVE TEACHERS THROUGH STRESS MANAGEMENT PRACTICES

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### Abstract

*Education is meant for the all-round development of the individual to equip one with skills for adjustment with social environment and mental health of the individual play a key role in this unique adjustment. Since the teachers are the care givers of future generation, the facilitators of learning experiences and the engineers behind social construction, the mental health of teachers has to be taken care of with seriousness. In this era of continuous change, it is easy to prone to stress and hence to mental health problems. The busy work schedule of teachers makes them under excessive stressful condition. Adopting preventive measures is better than adopting curative measures. Hence it is necessary to equip the prospective teachers with measures of self-care for stress management. Here we discuss some practices to enhance the mental health of prospective teachers through stress management practices. The practices we discuss in the present paper are very easy to administer in the field of teacher education and are very effective in stress management. They are low cost or no cost practices economic in terms of money and effort. Administrative and implementing authorities have to take care in adopting policy measures to enhance the mental health of prospective teachers and the teaching community.*

Key words: Mental health, Stress, Stress management

### Introduction

Important aim of education is to help the individual to equip with skills necessary for making adjustment with the environment. Mental health is the prominent factor which helps for the effective adjustment with the social world. The condition of psychological maturity is known as mental health. The physical, cognitive, affective, behavioural and social dimensions of a mentally healthy person will interact functionally with one another and with the environment. Mental health makes the individual to be resilient to stress, to respond effectively to challenges, to be productive and fruitful for oneself and for community.

According to World Health Organisation, “Mental health is a state of wellbeing in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community”. WHO emphasises that mental health is not just the absence of mental disorders. In this era of fast continuous changes, due to busy schedule of life and work prone people towards stress and there to mental health issues.

### Why Mental Health of Prospective Teachers Matters?

Education is the process through which continuous development of an individual is ensured. It rebuilds the individual's life experience through active thinking and understanding. The teacher is in the pivot position in the process of education since the teacher is the facilitator

of learning experience. The emotional balance and mental health of teachers play an important role in the making of physically and mentally healthy generation.

Teaching is a profession having 24x7 hours schedule. The teacher has to take care of student matters, has to plan teaching-learning experiences according to learning objectives, has to adopt proper evaluation techniques, has to maintain classroom and school discipline, has to create a democratic climate, has to solve peer group issues, has to address learner diversities and exceptionalities since no two individuals are equal. This heavy schedule will definitely create an excess job stress. The future generation, their development and success are in hands of the teacher and hence the maintenance of mental health of the teacher is very essential.

It is better to get away from mental health problems than to cure it after the occurrence. For this we have to stress-proof the young teachers. In order to generate competent, psychologically healthy teachers we have to train the prospective teachers through stress management practices. If the stress management practices are adopted as a part of curriculum, we can create mentally healthy generation of teachers.

### **Stress Management Practices**

Here we discuss some stress management practices which we can adopt in the field of teacher education.

#### **1. Mental Health Education**

Basic information about the concept of mental health, mental health problems and types, signs and symptoms of mental health problems, the importance of mental health, preventive measures of mental health problems etc. should be incorporated in detail as part of the curriculum. This knowledge will help the prospective teachers to provide self-care by avoiding or managing stressful situations according to the demand of circumstances.

#### **2. Flexible Hours**

The class hours, break timings, the start time and end time can be made flexible to make prospective teachers competent to tackle the lessons of time management and to cope with their anytime work schedule which is a part of their professional life. In this practice, class can start at 8.30 am on some days instead of usual 9.30 am timing or class can disperse at 5pm instead of 4pm. The lunch break timings also can be changed likewise on some days. This will help the prospective teachers to handle the changes in time schedule of their work in professional life without any stress.

#### **3. Change of Working Space**

The classroom rotation can be practiced daily or weekly. This will also help to reduce stress associated with change in work place. Similarly prospective teachers have to be trained to work in quiet as well as less-busy and more-busy working climate also. This will help them to work effectively under any schedule.

#### 4. Role Changes

The prospective teachers should be given enough provisions to play different roles in group activities. They have to work as a good team member, group leader, coordinator, facilitator etc. the key roles, subordinate roles and roles behind the curtain should be trained. This will enable them to cooperate in any working climate; whatever may be their role.

#### 5. Self-Awareness and Self-Management Practices

It is very essential for a person to know his competencies and disabilities and this add to the professional competence. Ample opportunities should be provided for self-awareness through healthy and constructive criticism. Self-reflection, peer evaluation and teacher evaluation etc. will help the prospective teachers in developing self-awareness and self-management.

#### 6. Social Skill Development Practices

Enhanced social skills are an essential quality for a good teacher. The social skills like effective open communication, cooperation, empathy, friendship making, self-discipline etc should be inculcated among prospective teachers through community-oriented activities like conscientization programs, community service programs like cleaning public places, addressing common people, cooperative and collaborative works etc.

#### 7. Job Demand Training

Job stress increases the mental health problems and can be prevented by confirming job requirements. Prospective teachers should be given clear, current and adequately detailed job descriptions and awareness about their responsibilities and social expectations. Moreover, they should be equipped with technological skills to become competent in their professional life in this era of technological advancement.

#### 8. Orientation towards Life Long Learning

Learning enhances self-confidence. It increases knowledge and make us competent. The teachers should have a positive attitude towards lifelong learning since they should be equipped with the latest knowledge. They should keep in touch with novel knowledge and advancements in technologies. The prospective teachers should be encouraged to attend seminars, workshops, additional training programs and to pursue online open courses. These practices will create a positive attitude in prospective teachers towards lifelong learning.

#### 9. Yoga and Meditation

Yoga and meditation make the brain active. These practices stimulate the left prefrontal cortex of the brain which is an area associated with positive emotions. Meditation enhances sensation and attention. These activities release stress and hence provide mental health.

#### 10. Slow Breathing Technique

When we are under excessive stress or tension our heart beat increases. Slow breathing reduces the heart beat and it helps to calm emotions. This help to focus on present and help

to deal with mental conflicts. Slow breathing technique can be easily practiced any time anywhere and is very effective and useful in our day-to-day encounters.

### Conclusion

The development and progress of nation is decided in her classrooms. The fortune of the future generation is in the hands of teachers. In this fast-changing world, it is very easy to prone to stress and mental health problems. Once the psychological balance is lost, it is very difficult to regain the state of equilibrium. Hence the prospective teachers should be trained to balance their psychological equilibrium with proper stress management practices. Proper measures should be taken by universities and teacher education institutions to enhance the mental health of prospective teachers through stress management practices. Then only we can generate courageous, determined, calm, hardworking, competent, skilled teachers with self-awareness and self-management to cater the needs of present era.

### References

- Baum,A.(1990). Stress, intrusive imagery and chronic distress. *Health Psychology*, 9(6),653-675. Retrieved from <http://psycnet.apa.org>
- Harmon-Jones, E. (2019). *Cognitive Dissonance: Reexamining a Pivotal Theory in Psychology* (2<sup>nd</sup> ed.). Washington,DC: American Psychological Association
- Siler,B. (2011). Stress Relief: Why crying supports Emotional wellness. Retrieved from <http://www.huffingtonpost.com>
- Taylor,S.E.(2008). *Health Psychology*(6<sup>th</sup> ed). Retrieved from <http://books.google.co.in>
- World Health Organisation (2004). Promoting mental health: concepts, emerging evidence, practical (summary report). Geneva:World Health Organisation

## SCHOOL LIBRARY AS AN AUTHENTIC RESOURCE FOR ENGLISH LANGUAGE CLASSROOM

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### Abstract

*The twenty-first century witnessed tremendous change in all walks of life. Along with the other areas, new technology has brought a great change in education. There have been several innovations in the field of Education and English Language Teaching (ELT). The concept of teaching English has changed drastically now. In the present-day language teaching-learning process, the learner has become the center of learning. The present generation of teachers of English has been using a variety of teaching resources to satisfy the needs and interests of their learners. Usage of authentic resources in addition to the prescribed textbook is the current trend in language classrooms. It is found that it improves the standards of learners and it also develops their language skills enormously in English language classrooms. Peacock (1997) states, "Authentic resources are more motivating for students, even lower-level students, than artificial resources". Briton (1991 cited in Qura, 2001) says, "Authentic resources relate more closely to learners' needs, for they build a connection between the language classroom and the outside world". The teachers use all the available authentic resources such as newspapers, magazines, storybooks, movies, radio, TV programs, songs, posters, and notices so that the learners show more interest in their learning. Authentic resources play a vital role in promoting learning and creating interest among learners to learn the English language naturally.*

*There are a lot of authentic resources available in English, but some of the teachers find it hard to identify suitable authentic resources for their class. Finding a suitable authentic resource is depending on the creativity and hard work of a teacher. It will be easy to identify an authentic resource from the school library and use it effectively in the teaching-learning activity. Almost all schools are having a simple library, but the question is how could teacher use it as a suitable authentic resource for enhancing learning. Most of the school libraries have been used for leisure time reading. The present paper brings to light the use of libraries at school as an authentic resource by the teachers in the English language classrooms. For this purpose, this paper initially discusses authentic resources and the advantages and disadvantages of authentic resources in the field of education. Then this paper brings out the importance of the school library as an effective authentic resource that is used in the English language classrooms. Later, this paper emphasizes how they assist the teachers of the English language in their teaching, and also how they help the learners to learn English in a better and easier way.*

Key words: School Library, English Language

### Introduction

The present era of technology gave a new dimension to almost all fields of knowledge. The field of education has highly benefited due to the changes in technology in teaching and learning. The

focus on teaching-learning has changed from focusing on what the teacher does to what the learner does and how the learner processes information during the lesson. The earlier teacher was everything in the teaching-learning process. Textbooks were considered the sole resource of knowledge in a classroom. The introduction of the internet and computers in education has made the process of teaching easy and accessible for all teachers and learners. The use of technology has become indispensable in learning today. The teachers have been using the internet to download resources for teaching, update their knowledge and get immediate solutions for their teaching. The Internet becomes a place of educational resources. After the introduction of smartphones, a big change is seen in the learning style of the learners. The pandemic Covid 19 has resulted in the introduction of hybrid and blended learning. The learners started using both online and face-to-face learning together. Studies conducted during the Pandemic time showed that there was a digital divide existed between learners. A large number of students were excluded from online learning. They did not have access to the internet and digital gadgets.

The present-day learners get the opportunity to use various sources for studying anything. The use of authentic resources finds to be a useful means for them to improve their learning skills. The teachers can use the authentic resource as an additional resource to develop the skills of their learners. The authentic resources help the teachers for reinforcing the learning items and can give additional tasks to their learners. The teachers use all the available authentic resources such as newspapers, magazines, storybooks, movies, radio, TV programs, songs, posters, and notices so that the learners show more interest in their learning. Authentic resources play a vital role in promoting learning and creating interest among learners to learn the English language naturally. The authentic resources create interest among the learners since the teachers select the resources with proper care by taking the needs and interests of the learners. Authentic resources are used in the teaching of English to attain better results in teaching the English language. Books in the school libraries can be used as a source of authentic resources in teaching English. Libraries at school are the centers of knowledge in any educational institution. All schools have libraries and the official records show that they have enough books in stock to support learning. Using library books as an authentic resource will not only improve the quality of teaching-learning of the English language at schools but also help in removing the gap created by online digital learning.

### **Authentic Resources**

A resource is authentic only when it contains authentic natural text. According to Tomlinson (1984), “An authentic text is a text which is not written or spoken for language teaching purposes. In general, authentic resources are those resources which are designed for native speakers, and not prepared for pedagogical purposes.”

There are lots of resources available to English language teachers today: from printed textbooks to online digital teaching tools. They can all support and enrich English lessons in the classroom. An authentic resource for the English language could be any resource written in English that was not created for intentional use in the English language classroom. Authentic resources could be newspapers, magazines, storybooks, movies, radio, TV programs, songs, posters, and notices. Using this resource to teach the English language can make the learning process even more

engaging, imaginative, and motivating for students. It could be useful to elicit genuine and natural responses from learners.

Newspapers, magazines, novels, stories, restaurant menus, and comics can be used as an authentic printed resource for the ELT classroom. Radio news, songs, phone messages, and podcasts can be used as an authentic auditory resource for the ELT classroom. Posters, signboards, and postcards can be used as an authentic visual resource for the ELT classroom. Films, documentaries, commercial advertisements, television programs, and video tutorials can be used as authentic audio-visual resources for the ELT classroom. Websites, blogs, Social networking posts, and games can be used as authentic online resources for the ELT classroom.

### **Advantages of Authentic Resources in the English Language Classroom**

An authentic resource provides rich language inputs to learners and helps them to get a much better output in English language learning. It fills the gap between the classroom and the outside world. Learners will be able to understand the real nature of the target language in a better way. It enhances the knowledge of grammar in the learner and it boosts the vocabulary of the target language effectively. It also improves the intercultural understanding of English and pronunciation.

Authentic resources allow learners to connect with the natural - real language of English native speakers. It improves the skills of English language learners as it gives a real-life experience to them in learning English. Authentic resources expose rich language inputs to the learners. It allows all the learners to become better listeners and better readers. It also helps the learners to connect with the real model of the target language naturally.

In any type of education, motivation is indispensable. The authentic resource motivates learners. Authentic resources help the learner to use the target language confidently like a native speaker. It gives a positive effect on learners' motivation. Learning a language means not only learning a language but learning a new culture. The authentic resource allows the learners to learn the native culture language along with the new language.

Authentic resources are to be selected only by looking at the need and significance of the topic discussed in the class. As it addresses the need of the learner it becomes significant in learning. It helps the learners to study English with a purpose. Authentic resources also help teachers to improve their creativity in teaching. Authentic resources are different from textbooks. It is up to the creativity of teacher in selecting and presenting an authentic resource in the class for language learning. As it is a useful tool teacher are benefited from using authentic resources. It is considered one of the effective methods for communicative English language teaching. Authentic resources will improve the language skills and linguistic knowledge of the teachers. It will also improve the intercultural understanding and creativity of teachers in teaching English.

### **Disadvantages of Using Authentic Resources in The English Language Classroom**

Even though authentic resources in English provide a natural and rich atmosphere for learning the English language in the English classroom, it has some disadvantages. An authentic resource is a natural material other than a text for language learning, it can frustrate a weaker learner from

learning English. It could contain difficult vocabulary and complex language structures. An average student may feel it difficult to understand the natural material of English in language learning. It may increase the burden on the teachers to identify suitable authentic resources for the class and adapt it to the level of the classroom. Only a creative teacher could make it more effective. As we use natural native authentic resources in the class, it would be culturally biased material for the learner.

The disadvantage of authentic resources could be overcome by choosing the resources carefully considering the age and level of the learners. Teachers have to be careful in selecting language elements according to the interest of the learners. It would help teach the English language by planning activities with the proper support of pedagogy in the classroom. Different tasks based on the authentic resource will be helpful for the learner to increase their interest in learning.

The teacher should select those resources that are readable to students. It should be at the level of the learner. The books should be relevant and have an adequate structure and vocabulary at the level of the learner. The selected resource should be helpful for the teacher and the learner to present in the class.

### **School Library as a Source of Authentic Resource**

Libraries are considered as the bank of knowledge. The library is inevitable in every school. The size of the library may vary from primary to higher secondary schools. Authentic resources could be available in every school library. It will be easy to identify an authentic resource from the school library and use it effectively in teaching-learning activities. Even though the schools are having a library many of them are using it as a place for reading especially leisure time reading. It is widely accepted that libraries are useful in improving academic excellence among students.

The School library is an easily available authentic resource repository of any school. In school libraries, one can see various printed authentic resources on any subject. The use of library books in academic activities is very important. Only a creative teacher can use the available resources in the library effectively in classroom academic activities. During the time of the pandemic, Covid 19 blended and digital learning became popular. Most countries including India practiced digital learning. But a large number of students were outside of the learning process due to the lack of resources helpful to achieve digital gadgets and internet data. If we use library books as a source of authentic resources it will be helpful for the students from lower-income sections to get a quality education.

An experimental study conducted by SCERT Thiruvananthapuram in 2020 proved that providing library resources as input in classroom activities could improve the academic quality of students. In the study, they planned the lesson creatively by including authentic resources as input for the class. They administered the study in five schools by preparing a library reference package for Basic science, Malayalam, and Social science in the fifth standard. The study proved that after the use of referencing packages remarkable changes had occurred in students in their performances and the product made by them. This finding revealed the effectiveness of the library on the academic quality of students. Another study conducted by Abdelghani Remache, Al Ain University of Science and Technology, United Arab Emirates found that in Communicative English language teaching authentic resources is very useful. Authentic

resources are found useful in raising students' interests and motivation and instigating the acquisition of an effective communicative competence in the English language.

### **School Library as a Source of Authentic Resources for English Language Teaching**

The authentic materials movement led by Krashen (1985), Nunan (2004), Ellis and Larsen-Freeman (2009), as well as other proponents of Communicative Language Teaching (CLT) put forward the idea that authentic materials are carefully selected and creatively adapted for classroom instruction can help learners to develop English language acquisition and boost the motivation of learners. They strongly objected to the idea of language learning material writers who compose texts specifically to selected structural and lexical items. They had a belief that the passages do not take from the learner's real-world context and are thus bound to hinder language use and performance in the target settings.

The current trends in English Language Teaching methodology focus the attention on bringing real-life language to the classroom through incorporating authentic materials rather than materials that are simplified and presented in the textbooks. The simplified language materials will not give a rich real and natural experience to the learners. Authentic materials would link the learner to the real world. Using authentic materials has profound implications for classroom instruction, language acquisition, motivation, and language learning. When the classroom activities give importance to reading and reference books from the library will provide an opportunity for the learner to enrich their critical thinking and language skills. It is highly advisable to include authentic English library resources for English language learning. In school libraries, there would be various magazines, newspapers, novels, stories, poems, and even comics in English. Using these authentic resources creatively will be helpful for the teacher in an ELT classroom to provide a rich input to learners. When we compare authentic materials with online resources, printed materials have more pedagogical value in teaching language. If we print authentic materials of English and use them as input material, it will be helpful for the teachers to use them in their classes.

### **Conclusion**

In this thematic paper, there is an attempt made to focus on the effective use of authentic resources in English language classrooms. First, this paper has discussed authentic resources then it discussed the advantages and disadvantages of authentic resources in teaching-learning. After that, this paper has brought out the importance of authentic resources in English language classrooms. Furthermore, this paper has emphasized the effective use of the school library as a source of authentic materials and how they are useful to the teachers in their teaching. It also discussed how they help the learners to learn the English language easily and effectively. Authentic resources help bring up the desired learning skills in the learners. As authentic materials provide the opportunity for the English language teachers to adapt various strategies to teach the learners using library resources in their classrooms. The learners have a chance to learn the language in a positive way. Authentic materials in the library are more economical and easily accessible anywhere. If the teachers of English have started using them in their everyday classrooms it will be effective for English language learning. The teachers could also promote

their learners' language skills enormously by adopting the authentic materials that create interest among the learners.`

The teachers of English are advised to be creative in selecting authentic resources that concentrate on the needs and interests of the learners and use the school library resources effectively in improving the learning skills of the learners. Authentic resources are to be selected only by looking at the need and significance of the topic discussed in the class. As it is a useful tool, teachers are benefited from using authentic resources. It is considered one of the effective methods for communicative English language teaching. Authentic resources will improve the language skills and linguistic knowledge of the teachers. It will also improve the intercultural understanding and creativity of teachers in teaching English.

### References

Guariento, W. and Morley, J. "Text and Task Authenticity in the EFL Classroom." *ELT Journal*, vol. 55, no. 4, 2001, pp. 347-353.

Kelly, C. et al. "Effective Ways to Use Authentic Materials with ESL/EFL Students." *The Internet TESL Journal*, vol. 8, no. 11, 2002, pp. 1-5.

Wangusa, A. and Kajimbwa, M. *Newspapers in Education as Approach to Improve Learning Achievements*, 2010.

Parupalli Srinivas, Rao, The Effective use of Authentic Materials in the English Language Classrooms, Article in *Shanlax International Journal of Arts Science and Humanities* · July 2019

Remesh N K, Developing Library Reference Package and Assessing the Effectiveness for Improving the Academic Performance of Upper Primary Students, SCERT Thiruvananthapuram March 2020.

<https://www.youtube.com/watch?v=qpsu27vnooU>

[https://www.researchgate.net/publication/308938820\\_THE\\_IMPACT\\_OF\\_AUTHENTIC\\_MATERIALS\\_ON\\_THE\\_QUALITY\\_OF\\_EDUCATION/citation/download](https://www.researchgate.net/publication/308938820_THE_IMPACT_OF_AUTHENTIC_MATERIALS_ON_THE_QUALITY_OF_EDUCATION/citation/download)

## YOGA AS A TOOL FOR EMOTIONAL STABILITY IN CHILDREN

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### Abstract

*Emotions are mental states triggered by neurophysiological changes and are linked to thoughts, feelings, behavioral responses, and a level of pleasure or displeasure. Day to day life experience influences people a lot. The concept of emotional stability, at any level, refers to the outcomes of normal emotional development. Children must be able to control their emotions as well as express them appropriately. Yoga is a spiritual exercise that has been practiced for thousands of years to help the body and mind. It is an excellent tool for releasing emotional tension and experiencing the healing that comes with it. This paper discusses how practicing yoga may be made use of for improving emotional wellbeing and emotional stability in children.*

Key words: Emotions, Emotional stability, Yoga

### Introduction

Emotion is a powerful experience. They are human reactions to events or situations. It brings color and flavor to life. Emotions are a state of being that frequently refer to as subjective feelings. Subjective experience, expression, cognitive appraisal, and physiological responses combine to form emotions (Levenson, Carstensen, Friesen, & Ekman, 1991). The word 'Emotion' is derived from the Latin term "emovere," which means "to stir, agitate, or move." As a result, an emotion is defined as a stirred-up state of the human being. The type of emotion that a person experience determines the situation in which the emotion is aroused. Research on emotions states that there are two types of human emotions: positive and negative emotions (Mangal, 2004). Positive emotions are those that are pleasurable to experience. Negative emotions, on the other hand, are those one does not enjoy experiencing. Depending on the situation, emotions which are subjective have both positive and negative consequences.

Yoga is the science of right living, and as such, it is intended to be practiced on a daily basis. It affects the physical, vital, mental, emotional, psychic, and spiritual aspects of the individual. The Sanskrit word yuj, which means to unite and denotes "union" or "oneness," is where the word "yoga" originates. Yoga is a holistic exercise that emphasizes mind-body connectedness and includes postures, breathing, and meditation. According to studies, "yoga can help children live a stress-free and balanced life while also maintaining their mental health" ((Hagen, I., & Nayar, U. S., 2014). Yoga is a spiritual science of self-realization that entails discovering oneself through a spiritual journey. Yoga improves emotional stability and reduces the negative thoughts in the mind (Smith et al., 2011).

Emotions are most closely associated with Patanjali's concept in yoga psychology. Yoga, according to Patanjali, is "Chitta vritti nirodha," which is Sanskrit for "stilling the whirlpools of the mind." When practicing yoga, the yoga sutras (basic principles) provide a "blueprint" of what

happens on the inside – our mind, emotions, and the entire inner body. Studies on emotions have revealed that yoga boosts positive emotions while decreasing negative emotions (Dwivedi, U.,et.al, 2015 & Kumari, S.et.al.,2017).

### **Importance of emotional stability in children**

Any experience, whether good or bad, elicits emotion, and emotion is the ultimate gift of life. Without emotions, it is difficult to give meaning to one's life. A comfortable life requires emotional stability. It is the ability to control one's emotions even in the most extreme situations. Children's emotions are often underestimated because children tend to focus on how they behave rather than how they are feeling. Putting a lot of emphasis on developing good habits and manners leads to the assumption that children will learn about emotions and how to deal with feelings that overwhelm them as they explore the world on their own.

Emotions are present in all activities and are the primary drivers of thought and behavior. Emotional well-being is an important part of a child's healthy development. As parents, teachers and caregivers, it is critical to recognise that children frequently respond to emotional experiences and stressful situations in ways that are very different from adults. Because their capacity to think about and express their emotions is not yet fully developed, they understand, think about, and talk about their experiences differently than adults. Distorted thinking, intense anxiety, bizarre motor acts, and abnormal mood swings are common in children with severe emotional disturbances.

Emotional stability is a state of balance of mind in which individual strengths, their desires, ambitions and needs are in harmony with the stress of themselves and the environment. In the case of children, without it, they may experience internal chaos, frustration, and loneliness. Emotional health has an impact on other aspects of health, such as physical, mental, and social health. Unresolved emotional issues can manifest as psychological problems and affect how people interact with others. Children with emotional instability are prone to being impulsive and making quick judgments without considering the consequences.

The emotional pressures of children such as issues in school, a family change, or a disagreement with a friend are increasing day by day, leading them to the imbalanced and maladaptive personality of society. Tests, exams, homework, and deadlines are linked to different emotional states that encompass frustration, anxiety, and loneliness. Children's happiness is truly found in simple interactions with peers. Parents who devote as much time as possible to providing love and care for their children also makes them happy. Emotion regulation that is effective allows children to adapt to a wide range of environmental situations. When it becomes uneven or imbalanced, however, it is more widely recognised, and the negative consequences can be hazardous to emotional health. On the other hand, unstable children are prone to wide, frequent, and often unpredictable mood swings that can swing from extreme to extreme.

### **Role of Yoga in controlling Emotions of children**

Yoga has numerous physical, mental, and spiritual benefits. Yoga through its physical postures (asana), breathing practices (pranayama), cleansing techniques (kriya), meditation therapies (dhyana) and relaxation training (yoga nidra) yields a positive effect in the management of stress

in children (Tikhe, S& Ramarao, N,2011). “Yoga might give children a framework for processing and handling their emotions, helping to defuse anger and stress.” (Harper, J. C.,2010).

One of the most important aspects of educational growth and development is emotional stability. It is not only one of the most important factors of personality patterns, but it also aids in child development regulation. The concept of stable emotional behaviour refers to the outcomes of appropriate emotional growth. Even in harsh situations, a child who is able to keep his emotions calm and under control may be emotionally stunted or act childishly at times. Pupils must be able to control his/her emotions adequately and also express them appropriately (Kumar, 2013).

It is good to begin teaching and practicing yoga to children at a young age. “Seven years is generally considered a good age, but have waited till nine, because it is important that a child is offered many things and that they can make an intelligent choice about them as it benefits their physical development as well as their emotional and overall well-being”( “Yoga for Children – Introducing Kids to Yoga”, 2020). It also aids children in the development of interpersonal relationships, stress management, and mindfulness, all of which are skills that may be useful later in life.

Yoga if practiced on a regular basis can help children live a healthier, happier, and more peaceful life. Yoga is increasingly being incorporated into school curricula to address a growing demand for self-regulation skills such as emotion regulation, stress, anxiety, and other psychological disorders. Children must understand emotions, as well as when and how they affect them and should feel their emotions without suppressing them, but should also avoid allowing their emotions to control and manage them, and yoga practice can assist in doing so.

Yoga can be done at any time. But sun salutation is the best practice for yoga. Yoga should be done when children are feeling energized and motivated. During yoga practice, muscle tension begins to be released, and this process can release associated emotions tied to the muscles. Yoga practice strengthens the physical, mental and emotional body and enhances the ability to handle difficult emotions and past trauma.

### **Yoga practice for Emotional Release**

Yoga is a holistic approach to achieving mental, physical, and spiritual balance. Teaching yoga to children helps them stay disciplined, calm, and focused, as well as maintain emotional stability. Some yoga practices for emotional release are:

#### **1. Pranayama: Yogic Breathing**

Yogis have used breath control, or pranayama, for centuries to improve concentration and vitality. Pranayama inhales positive energy and exhales negative energy. "Prana" is responsible for all vital functions and is rooted in the existence of consciousness behind the body and mind. Kapalabhati attempts to raise and release emotions that are near to the surface of the body by stimulating and moving them. Emotions that have surfaced can be expressed and released most effectively by mouth breathing, especially sadness and grief. Mouth breathing activates the emotional body.

## 2. Vocalize: make sounds

Maintaining a yoga position while making sounds opens the throat chakra, enabling stress and emotions to exit the body. A loud sigh eases anger; humming offers pleasure; and groaning calms dread.; and howling releases sadness. Vocalizing is especially crucial for fully releasing emotions from the body when they become triggered and start to bubble to the surface.

## 3. Asana: backbends and hip openers

The main places where emotional strain is held in our bodies are the hips, shoulders, chest, and throat. During asana practice, keep a record of these locations, or scan entire body before one begins to check for tension or discomfort in these areas. One might focus on yoga poses that target that area once they have determined where in their bodies emotional strain is stored. For example, Dhanurasana is an excellent asana for improving children's mental health. It also improves body endurance by making the back and abdominal muscles more flexible. Gomukhasana is a seated yoga posture that enhances flexibility, improves posture, and relieves tension by stretching the arms, triceps, shoulders, and chest.

## Conclusion

Emotional development begins at a young age, as children become aware of a wide range of emotions, and continues to develop as they mature. The ability to monitor and control emotions shapes the mind and guides it toward a healthy lifestyle. In yoga, emotional stability is linked to mind stillness and not identifying with the mental/emotional process. It could be used to help achieve life balance. The yogi has acquired skills as a result of his or her yogic practices, and emotions are present without being lost in them. Yoga may be beneficial for a variety of physical and emotional issues. For a specific period of time, rhythmic and daily practice of Yoga can bring about remarkable changes in leading a stable life, and it can thus be concluded that yogic practices may have the ability to calm the mind and reduce emotional problems.

## Reference

- Burgin, T. (2021, June 16). *Emotional Release Through Yoga (Benefits, Tips & Poses)* • Yoga Basics. <https://www.yogabasics.com/learn/emotional-release-through-yoga/#:%7E:text=During%20yoga%20practices%2C%20we%20begin,difficult%20emotions%20and%20past%20traumas.>
- Dwivedi, U., Kumari, S., Akhilesh, K., & Nagendra, H. (2015). Well-being at workplace through mindfulness: Influence of Yoga practice on positive affect and aggression. *AYU (An International Quarterly Journal of Research in Ayurveda)*, 36(4), 375. <https://doi.org/10.4103/0974-8520.190693>
- Hagen, I., & Nayar, U. S. (2014). Yoga for Children and Young People's Mental Health and Well-Being: Research Review and Reflections on the Mental Health Potentials of Yoga. *Frontiers in Psychiatry*, 5. <https://doi.org/10.3389/fpsy.2014.00035>
- Harper, J. C. (2010). Teaching Yoga in Urban Elementary Schools. *International Journal of Yoga Therapy*, 20(1), 99–109. <https://doi.org/10.17761/ijyt.20.1.x8373458w8140810>

- Kumar, P. (2013). A study of emotional stability and socio-economic-status of students studying in secondary schools. *International Journal of Education and Information Studies*, 3, 7-11
- Kumari, S., & Kale, D. (2017). Effect of 1-month yoga practice on positive-negative affect and attitude toward violence in schoolchildren: A randomized control study. *International Journal of Educational and Psychological Researches*, 3(3), 180.  
[https://doi.org/10.4103/jepr.jepr\\_69\\_16](https://doi.org/10.4103/jepr.jepr_69_16)
- Levenson, R. W., Carstensen, L. L., Friesen, W. V., & Ekman, P. (1991). Emotion, physiology, and expression in old age. *Psychology and Aging*, 6(1), 28–35.  
<https://doi.org/10.1037/0882-7974.6.1.28>
- Mangal, S. K. (2004). *ADVANCED EDUCATIONAL PSYCHOLOGY, SECOND EDITION* (2nd ed.). PHI.
- S. (2015, October 31). *15 Best Yoga Poses For Kids*. MomJunction.  
[https://www.momjunction.com/articles/easy-and-effective-yoga-poses-for-your-kids\\_00377906/](https://www.momjunction.com/articles/easy-and-effective-yoga-poses-for-your-kids_00377906/)
- Tikhe, Sham & Ramarao, Nagendra. (2011). Yoga for children. TANG. 1. 4.1-4.4. 10.5667/tang.2011.0008.
- Yoga India Foundation. (2021, July 30). *Managing Emotions with help of Yoga*:  
<https://yogaindiafoundation.com/managing-your-emotions-with-yoga/>
- Yoga for Children – Introducing Kids to Yoga*. (2021, December 10).  
<https://Isha.Sadhguru.Org/in/En>. <https://isha.sadhguru.org/in/en/wisdom/article/yoga-children-introducing-kids-yoga>

## EDUCATION FOR ATTAINING SUSTAINABILITY

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### Abstract

*Undoubtedly, it can be said that timely development should occur in human life. But it should be in such a way that the development should aim at the overall improvement of our planet. It is with this view UNESCO has given priorities for attaining the goals of sustainable development. The United Nations has put forth 17 Sustainable Development Goals which provides a blueprint for prosperity and for the people and the planet. The UN has included Education as one of their goals for sustainable development. This paper discusses the reciprocal relationship of Education and Sustainable Development Goals (SDG). SDG Goal 4 deals with Quality and Inclusive education for all and targets to provide quality, equitable and free education without any disparities and at the same time enhance the skills of the youth which will help them find better employment opportunities and develop entrepreneurial skills. This will improve the economic stability and thereby their standard of living. It also emphasizes on Ensuring Inclusive and Equitable quality education at the same time promotes lifelong learning opportunities for all. Education will make them aware of the umpteen problems our earth is facing and will encourage them to collectively strive for a sustainable world irrespective of Race, Religion and Economic status. Therefore, Education plays a crucial role in creating a sustainable and equal world which is even more relevant in today's pandemic affected world. Education is the most effective means that can confront the challenges of the future.*

KEY WORDS: Sustainable Development, Knowledge Economy, Inclusive Education, Lifelong learning, 5 Ps of Sustainable Development, 3 Es of Sustainable Development

### Introduction

Human life is undergoing changes from the origin itself. We humans are constantly evolving and always looking for new and better ideas to make our lives easier and comfortable. All these interventions are influencing/affecting not only our fellow living beings but also the ecology and thereby the universe itself. The quest of humans for acquiring knowledge has resulted in so many changes on this planet. We are now capable of landing our spaceships at the Moon with scientists hinting at a possibility of Life on Mars. We have made remarkable progress in all the sectors from Health and Medicine to Transport and Educational sectors as part of Globalization. We have been constantly exploiting our earth to make our lives better without thinking of the adverse effect it will have on the environment which is pure greed. The changes we make to the environment as part of our greed cannot be classified as Development. True development is when we create a world which is sustainable and equal, keeping in mind the innumerable living beings and our ecosystems as well. A kind of development that improves the quality of human life and at the same time conserves the diversity and vitality of Earth. The systemic approach of the interaction of Man, Society and Nature constructs the heart of a Sustainable World. The

combination of Environment protection Education and Resource management Education is essential in creating a Sustainable world.

### **Sustainable Development**

Sustainable Development is reinforcing Economic and Social Development along with Environmental protection to meet the basic needs of present and future alike. The UN put forth the Sustainable Development Goals (SDG) as part of the 2030 Agenda for Sustainable Development which has the most discussed topic in recent times. SDG's aims at overall development of the planet, not only the human, it emphasizes on bringing peace and prosperity to the people and the planet. Merely focusing on the advancement in human life without considering the biotic and abiotic components around can't be termed as 'development'. Development as mentioned by the UN is achieving a higher quality of life and mutually reinforcing Economic stability, Environment protection and social development to bring balance to the society. Sustainable development is the development of the present without compromising the ability of future generations. UNESCO has given priorities for attaining Global goals, thereby ensuring better and quality living for all without any disparities.

There are 17 framed Sustainable Development Goals which includes the overall development of the planet (UNO, n. d.). It aims for global peace and prosperity. SDGs represent some of the most urgent and universal needs of the modern world which must be dealt with at the earliest. We can translate these values and principles to quantifiable results which is possible through proper planning and participation. The goals are as follows:

1. No Poverty
2. Zero Hunger
3. Good Health and Well-Being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Required Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institution
17. Partnerships for the Goals

SDG 4 deals with Education for Sustainable Development. Ensuring Quality and Inclusive Education for all to build their skills and knowledge to promote sustainable development. SDG 12 deals with 'Awareness for sustainable development and lifestyles in harmony with nature' and to promote employment opportunities by Sustainable Tourism. The SDGs are integrated with each other and hence action done in one area will affect the other. The development must balance Economic and Social sustainability including Environmental protection.

<b>Pillar/Area</b>	<b>Priorities</b>
Social	Gender Equity, Good Governance, Human rights, Access to Education
Cultural	Preserving Indigenous knowledge and Cultural Heritage
Economic	Urbanization, Rural Development, Food Security
Environmental	Mitigating Climate change, Conserving Biodiversity and Natural Resources

Brundtland commission described Sustainable Development as “Development that meets the needs of the future without compromising the needs of the present ”.

Sustainable Development refers to the three major components of human existence:

- Economical
- Ecological
- Human

Quality and Inclusive Education will help develop new profound skills which can be addressed in solving individual problems and maximize profits. An economic plan that fosters economic growth and at the same time preserve the quality of the environment for future generations is the need of the hour. To create long term sustainable values by optimal use and recycling. The present and future values on the natural resources should be maintained in order to meet the needs of the future generations. Economic growth is central to successful globalization.

The Covid-19 pandemic has caused an unprecedented human crisis in the form of unemployment and Recession. The per capita income has shrunk and in order to boost the economy, various skill development programmes and entrepreneurial schemes have been developed by the government.

Ecological Sustainability is built on a long-term perspective of conserving Biodiversity, combat desertification and maintaining a balance between the ecosystems. The productive infrastructure functions of the biosphere involve proper and efficient degradation of waste, circulation of Biogeochemical cycles, maintaining the regenerative potential of the soil and efficient use of Renewable resources. The implementation of policies in tackling plastic and waste disposal, mitigating climate change and Global warming must be done at the earliest.

To produce a place where people can live in harmony and be able to breath fresh air, eat food which is free from chemical residues, reduce pollution of all sorts forms the basis of a sustainable world.

**Eco-tourism:**

Ecotourism is uniting conservation of biodiversity as well as the communities. It helps in providing financial benefits for the local people and hence strengthens the economy at micro-level. Government is promoting Ecotourism destinations in order to increase sustainable travel. It is about conserving biodiversity and minimizing the carbon footprint.

**Ecological sustainability:**

We are part of nature and completely depended on her for all our basic needs. To respect nature is to respect life, to approach life with humility and compassion. We must make the best use of resources to conserve nature. To preserve the complexity of ecosystems and safeguard their habitat. The use of renewable resources and lead a low entropy life. We should protect all the species from cruelty and take special measures to conserve the endangered species.

The 5 Ps of Sustainable Development include:

1.Peace

- To foster Peaceful and Inclusive communities which are free from violence and live in harmony. International communities must come together to promote peace and end violence of all sorts by strong institutions of justice and not military interventions.

2.Prosperty

- Ensuring all human beings can enjoy a prosperous and happy life which is possible only through Technological, Social and Economic progress. Smart and Innovative approaches which paves way to strong economic foundation.

3.Planet

- Protecting the planet from degradation, managing natural resources to meet the needs of the present and future and taking necessary actions on climate change. It is crucial for our planet's survival.

4.Partnership

- Mobilizing the means required to implement this Agenda through a revitalized Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focusing the needs of the poorest and most vulnerable.

5.People

- Eradication of Poverty and Hunger in all its forms to ensure a healthy environment where no one is left behind. Fundamental Development of all the living beings which includes providing a better livelihood and empowering all the sectors of people. Empowering the women by asserting them with equal opportunities.

Environmental Education broadly includes issues of poverty, inequity, values, and ethics. The inequalities based on caste, creed and social strata are still prevalent, proper education and awareness must be spread to end all sorts of disparities. It Involves understanding of the ecological principles and also involves a new concept of reality. Embracing plants, animals as well as people is essential for humans. It will help lead a life in harmony with nature and foster a mutual relationship between man and environment.

### **Principles of Sustainable Development**

- People are entitled to lead a Healthy and Productive life with harmony.
- Prevent Environmental Degradation and undertake cost-effective measures.
- Eradicate poverty and improve the standard of living.
- Conserve, Restore and Protect the health and integrity of the Earth's ecosystem.
- Promote an open international economic system that leads to economic growth and sustainable development in all countries.
- Encourage the creativity and ideals of the youth and also the traditional knowledge of indigenous people.
- Reduce Gender disparities and provide equal opportunities equally.
- Environmental protection, Peace and development are interdependent.

### **Education for Sustainable development**

*SDG 4 – Ensuring inclusive and equitable quality education to promote lifelong learning opportunities for all*

Education for Sustainable Development (EDS) is one of the goals of Sustainable development. It aims to empower the learners with knowledge, skills, values and attitudes so that they will be able to face the global challenges like climate change, biodiversity issues, poverty, inequality, degradation of environment, etc. by 2030 (UNESCO, n. d.). The notion of “Education for Sustainable Development” was first put forth at the ‘International Conference on Environment and Society: Education and Public Awareness for Sustainability’ by UNESCO and the Government of Greece in 1997. It was a noble initiative by the UN to declare 2004-2015 as the decade of Education for Sustainable Development. Education is multidisciplinary, improvement in this field will indirectly improve all the other sectors too. . One of the Sustainable Development Goals is ensuring quality education. It aims at giving good quality education to people in all sectors of society and providing life-long learning opportunities to them. Keeping this in view, the New Education Policy of India, 2020 has given prominence to give good quality education to all, irrespective of caste, creed, gender, community, geographical area, etc. NEP 2020 aims at giving education to meet the needs of the digital era. SDG aims at ensuring primary and secondary education irrespective of any bias. It aims at developing quality technical and vocational courses. Keeping this in view India has made Education one of the fundamental rights of the children. The Right to Education Act makes every child from the ages 6 to 14 entitled to free and compulsory education.

Education can bring social transformation among the people and create a common future, it is a key component of innovation that leads to a social change. It is about formulating strategies for solving and evaluating inter-generational issues. The most literate nations usually have the highest per capita rates of consumption and leave lesser ecological footprints compared to other nations with lesser per-capita rates. Data collected by UNESCO Statistical Yearbook and World Education Report shows great disparities on the national average of years on education. This provides evidence that Education plays a crucial role in development of human-kind and thereby the development of the nation and also better understanding on climate and our environment and make developmental changes to tackle them. The importance of learning and Capacity building is to be acknowledged to make our Earth more sustainable. Sustainability is a multi-faceted agenda, it can help make substantial development in most sectors. Hence, Education is the key to transform our earth into a better place and contribute to a sustainable future.

Education for sustainable development is a lifetime process. It goes well beyond the limits of formal education and exists in a form of lifelong learning conditions for the development of environmental consciousness and formation of ecological culture. One of the key purposes of Education is the development of systemic worldview and critical thinking along with acquiring knowledge and skills contributing to sustainable development of the society.

It is necessary to reconsider the notion of education quality that includes both global and local traditional knowledge that supports emotional and practical abilities, potential and capabilities including improving the cognitive abilities of students and their endowment with value, ecological integrity and equitable well-being. Involvement of children is the most important component of Education for Sustainable Development. The following should be considered

- 1) Planetary awareness
- 2) Caring for future generations
- 3) Nurturing bioregional cultures and local knowledge
- 4) Expanding our ethical horizon
- 5) Celebrating life

Planning in education should be interdisciplinary and should take all groups into consideration. There should be necessary changes in the curriculum and participation of representatives of all strata and spheres in the discussion and planning of sustainable development.

Providing good education means making the learner face the challenges of the newly so-called developed world and to help them find solutions for these issues and make our world a safe and secure place for prosperous and peaceful living. It is about creating positive behaviour and creating new consciousness in the course of human development to create skills and technology to tackle complex problems of development and find solutions to global crises. The idea of sustainable development should form a conceptual base and a foundation of the entire system of education.

Education helps making developments in the following factors:

1. Decision Making
2. Quality of Life
3. Implementation

### 1. Decision making:

Education will directly affect the decision-making skills of the youth as it provides the learner with better understanding of the subject. It will help in solving the problems accurately and makes one critically aware of the subject. Good decisions can go a long way and provide fruitful interpretations for a better future.

### 2. Quality of Life:

A future-oriented education helps in better understanding of the interconnections between Ecology, Economy and Social Equity. It helps in economic and social well-being and thereby improves the Standard of Living of the people.

### 3. Implementation:

Critical thinking helps in making better decisions and implementing better ideas. Formulating a structured development process to mitigate climate change, conserve biodiversity and implement them to make our world a better place to live for all the living beings. Better opportunities for participation and reflection has to done

Globalization affects political, economic and cultural spheres in highly contradictory ways. Technology and Politics will not only depend on the economics but also vary from region to region and hence policies must be formulated and implemented keeping in mind the overall development and the contribution the region can make towards sustainable development. The role of education and skills is very prominent in international trade to improve the economy of the place. There has been rapid advances in science and technology which enhances the knowledge and ideas on production and services also called the Knowledge Economy.

Education is a basic right. SDG 4 also has linkages with all the other SDGs across the 2030 Agenda. Access to quality education will help create mobility and reduce inequalities in the society. Education is essential in tackling critical challenges like climate change and will help youth prepare for employment in the high-skill jobs and is a foundation for peaceful and prosperous societies. Investments in education that are not accompanied by concurrent progress in other aspects of human wellbeing will fall short of enabling all people a good standard of living. Good child health and nutrition are essential to not only increase attendance but also improve educational achievements. Similarly, ending poverty and thereby reducing the pressure on the children to work which affects their physician and mental health. Hence it is essential to increase the universal school enrolment. There should be steps taken towards the objective of 'leaving no one behind'.

### **Achieving Sustainable Development through Education**

Sustainable Education encompasses the broader concepts of Socio-cultural and Socio-political issues such as Poverty, Equality, Democracy and Quality of life in relation to the environment. It helps in making necessary developments to improve the quality of life both locally and globally and thereby creating a secure and suitable environment for the future generations as well.

Giving proper quality education is one of the SD goals. It can also be said that by giving proper education, it is easier to achieve the other 16 goals of SDG. Through proper education, everyone will be aware of the condition our planet is facing, mainly the climatic and environmental hazards. It will make learners or future generations aware that the poor condition of nature is due to the quest of humans to make their life easier by exploiting nature. Quality education can make the learner aware that the development of today should not be done by grabbing the future of the next generation from them. Development should be done without destroying the peaceful condition of the planet.

Rosman, Omar and Zahari (2019) in their study reports that teachers are of the opinion of integrating sustainable development into the daily teaching, even in the technology subject. Proper guidelines should be made to inculcate the aspect of Sustainable Education. The areas of science and technology for sustainability has increased substantially and these interventions have been very successful by far. Research for people rather than Research on People has been a major change in recent times. Research for Social change promotes forms of research which explicitly deals with participatory relations, it encourages participatory inquiry techniques and creates a common idea for a sustainable world. The participation of the students, local residents as well as local government is vital in developing a sustainable world.

The change in the existing curriculum is important in reinforcing the sustainable development goals. It should be inculcated in the students right from their childhood that it is their responsibility to build a sustainable world.

education needed for the present era can open many employment opportunities before the future citizen. Hence through a better job they can bring betterment in their life conditions. Slowly the poverty can be eradicated. No man with a hungry stomach will be there in future if given age-appropriate education. Every person should have access to basic facilities like clean drinking water and healthy food.

The other aim of education is ensuring a healthy life and well-being. One who gets proper education will know how to keep themselves and those who are around them healthier in all aspects. They will take actions for good hygiene including proper sanitation, good water supply etc. They will be aware of the need to consider all as humans, irrespective of gender. Male dominant society will be slowly changed to no gender disparity society, where all gender will be treated similarly. If the employer and the employee is properly educated, it can create a good working condition. A healthy working condition can contribute to the economic growth of the employee, employer, as well as the nation.

The aim of promoting peaceful and inclusive societies for sustainable development can be definitely achieved by providing quality education. It will enable the future generation to think critically on every subject and to take the correct decision to keep this planet where we are living, happy and peaceful. The competitive mind among nations resulting in war should have to be changed. Education for sustainable development should aim at developing a competitive mind in the people for making their surrounding stress free, tension free and peaceful.

Education provides the means to transmit knowledge, values and skills across generations, enabling societies to set the foundation for thriving in the future. Awareness and

communications strategies sometimes lack sustainable and sufficient financial resources. The four main levels of learning depending on the age are

- a) Basic/Elementary education: It includes elementary, higher and vocational education which is very important and the basic right of each child.
- b) University : This includes Graduate and Post Graduate courses. University plays a crucial role in developing knowledge. It introduces the learner to technical and scientific areas.
- c) Organizations : Education from institutions and companies. It is different from universities. They play a major role in implementation and promotion of sustainable development policies.
- d) Lifelong Learning

Lifelong learning is the process of gaining knowledge through experience and more often learning that takes place outside our walls is usually overlooked and knowledge is hard to measure because it gives us experience and better understanding and not confined to certificates. Proper awareness must be spread from the grassroot level on the SDG's and the role of each individual in developing a sustainable world. Fostering sustainable and long- term behaviour changes in the youth can be included through the integration of SDGs in the educational curricula.

Especially in a rapidly changing world with global integration and technological; shifts, educational needs must evolve constantly to the changing demands. The ways in which learning prepares individuals for decent work, as well as for life or 'global citizenship' is increasingly important. Decisive action is essential in solving modern day problems and developing new skills and techniques are important. Efforts are being taken to revolutionize the educational system and make changes to the curricula to respond to the technology revolution. The re-orientation of education provides greater accountability in terms of outreach and provides a number of materials that could be accessible to a wide number of people. The benefits of these research materials or case studies can go a long way in making a difference making it accessible to learners who are interested in acquiring knowledge.

Efforts to improve access to schooling and the quality of education are to be made to make progress towards universal completion of primary and secondary schooling. The slowing down of progress could reflect difficulties reaching those populations that are being left behind. It could even be associated with other deprivations like Poverty and poor nutrition that must be addressed to enable children to attend school.

Accordingly, greater support and resources are needed for making relevant initial and continuous professional developments, appropriate recruitment and deployment processes, decent working conditions, and opportunities for sharing promising practices, professional autonomy and career pathways for teachers. Teachers and educational institutions should be involved in the monitoring and development of education policy.

#### 1. Re-orientation of curriculum, teaching and learning

Education and Research related institutions and curriculum development institutions should take special care keeping in mind the cognitive development of the learner in mind. Education policies that Foster an increased quality of teaching and learning in education for sustainable

development and allow for more integrated forms of teaching and learning should be strengthened.

## 2. Capacity Building

Capacity Building programmes for teachers, managers and facilitators to initiate and enhance inspired forms of learning in schools, universities and the workplace must be initiated. It helps in facilitating and strengthening the social learning and networking building between schools, other educational institutions and other potential partners. These capacity programmes must be done at Non-Formal and Informal learning settings as well.

## 3. Resources and Materials

The resources must be constantly reviewed, updated and improved as per the changes occurring and must not be restricted to traditional knowledge. It should also be available in multiple languages, open-sourced and accessible.

## 4. International and Regional Co-operation

The utilization of inter and intra-regional networking will help in promoting and strengthening Education for Sustainable development at the national level and also at the global level. The intensifying competition has paved way for proactive approach and thereby leading to training and cooperation focusing mainly on training and transfer of technology. Quest for innovative products and processes has led to this development globally.

## Conclusion

SDG Target 2030 has been taken into granted by almost all nations of the world. It is true that almost all citizens of the world long for a peaceful living. If properly implemented and succeeded in achieving the SDG target our earth will be transformed into a heaven. One of the aims of SDG is ensuring quality education to all thereby making the future generation to face the future challenges from the society and nature and finding a sustaining solution for that. If given proper education to all as early as possible, it will be easier to attain the other 16 goals of sustainable development, for an educated generation will act more effectively than others. Nations would concentrate more on giving quality education. Then, it will make it halfway to the other goals. It helps develop competence to think in a forward-looking manner and to deal with the uncertainty and therefore make plans for the future. The 3 Ps of Sustainability (People, Planet and Profit) and the 3 E's (Efficiency, Environment and Equity) is correlated with Education being the catalyst between the two. Sustainable development requires changes in peoples' attitudes and values, and education allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future.

## References

United Nations (n.d). Sustainable Development. Department of Economic and Social Affairs

UNESCO (n.d.). Education for Sustainable Development. United Nations Educational Scientific and Cultural Organization. [https://en.unesco.org/themes/education-sustainable-development#:~:text=Education%20for%20Sustainable%20Development%20\(ESD,of%20biodiversity%2C%20poverty%20and%20inequality](https://en.unesco.org/themes/education-sustainable-development#:~:text=Education%20for%20Sustainable%20Development%20(ESD,of%20biodiversity%2C%20poverty%20and%20inequality).

Rosman, R.N., Omar, M.K., Zahari, Z. (2019). The Integration of Education for Sustainable Development (ESD) in Design and Technology Subject: Through Teacher's Prospective. *Asian Journal of Assessment in Teaching and Learning*. 9 (2)

Anastasia Nasibulina, (2015). Education for Sustainable Development and Environmental Ethics: Journal on Science direct

Mikiko Cars Emma E. West :Education for sustainable society: attainments and good practices during the United Nations Decade for Education for Sustainable Development (UNDESD)

Jane Wright. Education and Sustainability - Responding to the global challenge: Academia

## STRATEGIES FOR AUGMENTING BLENDED LEARNING APPROACH TO TEACH THE TOPIC 'ELECTROMAGNETISM' AT THE SECONDARY LEVEL

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### *Abstract*

*In the 21<sup>st</sup> century, knowledge-built economy is driven by identical factors - globalisation and the Information Communication Technology-ICT. The vivacious role of schools in preparing students with knowledge, higher-order thinking and performance skills to succeed in the 21<sup>st</sup> century can be accomplished through blended learning approach. Blended learning or hybrid learning is a mixture of online learning and face-to-face learning methods. A critical goal of blended learning is complete understanding of the content. The student needs to identify everything about the content, so blended learning tools help with different learning strategies whether it is online or offline. There is no shortage of learning methods here. This can be achieved depending on the student. One of the main factors disrupting traditional learning is student numbers. However, this is not a barrier to blended learning. The limits of traditional teaching methods in physics are complex. Therefore, there is a need to change the traditional practices for expanding educational experiences in the field of physics. Rote learning is not suitable for physics. Imagination is more important, so improving imaginative thinking skills can be considered as one of the strategies for learning physics. One of the most challenging subjects in the field of physics is electrodynamics. However, it is most useful for the future world and by understanding electromagnetism we can predict the nature of the universe. A gifted person can simply approach the subject with the traditional method, but there is still a misconception as to whether that person is able to fully understand electromagnetism. A blended learning approach allows anyone to massively understand electromagnetism. Most students need time to understand the main concepts in electromagnetism. There is also vagueness in the acquisition of concepts because every sentence in the book "Introduction to Electrodynamics" 3rd Edition by David .J. Griffiths gives different meanings. Many strategies can be used using blended learning, such as TPACK, PAC, and course redesign using web lecture, screen casting, pen casts, studio classrooms, etc. The curriculum can include formative assessment, problem solving, guided learning, and multiple choice clicker questions. . The ultimate goal is to make self-study time more efficient. Therefore, this paper aims to study the different strategies that can be used to teach the topic "Electromagnetism" in blended learning mode, hoping that this higher gradation will help students to expand their effectiveness in learning, understanding and applying the concepts.*

### **Introduction**

In the last two years, the entire world, including India, has been facing a major Covid-19 pandemic situation. This impact has hit the field of education the most. For children in grades 7, 8, 9 and 10, the process of acquiring knowledge has slowed down due to this disaster. This may be due to a lack of age-appropriate knowledge. In this age group, brain development will be

limited by inappropriate training. So, a revolution is necessary for this situation to begin. The Fourth Industrial Revolution Joins the Learning Crisis; now is the time to reinvent education and connect it with an extraordinary technological revolution. So, we want to create a fourth industrial revolution as a backup plan for all contingencies. Technology-assisted learning is developing as an essential component of teaching materials in the current educational context. A key part of this development is e-learning or online learning, which has become a vital element of contemporary education as the student becomes increasingly computer literate, computers become more readily available, and the demand for technology-based learning at a time that is convenient for the student increases.

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### **Blended learning**

Learning theories like constructivism, cognitivism, and behaviorism can all be combined in blended learning (Linghong Li, 2017). There are five essential components of the blended learning process: (1) Live Events: Synchronous, instructor-led educational activities in which all students engage simultaneously, (2) Online content: A course that a student completes on their own, at their own pace, and when it suits them. (3) An environment for collaboration in which the student connects with others, (4) Assessment: Amount of student knowledge. Pre-assessments can occur before live or self-paced events to regulate prior knowledge, and post-assessments can occur after scheduled or online learning events to measure transfer of learning. (5) Reference Material: Workplace reference materials that enhance retention and transfer of learning (Carmen, 2005).

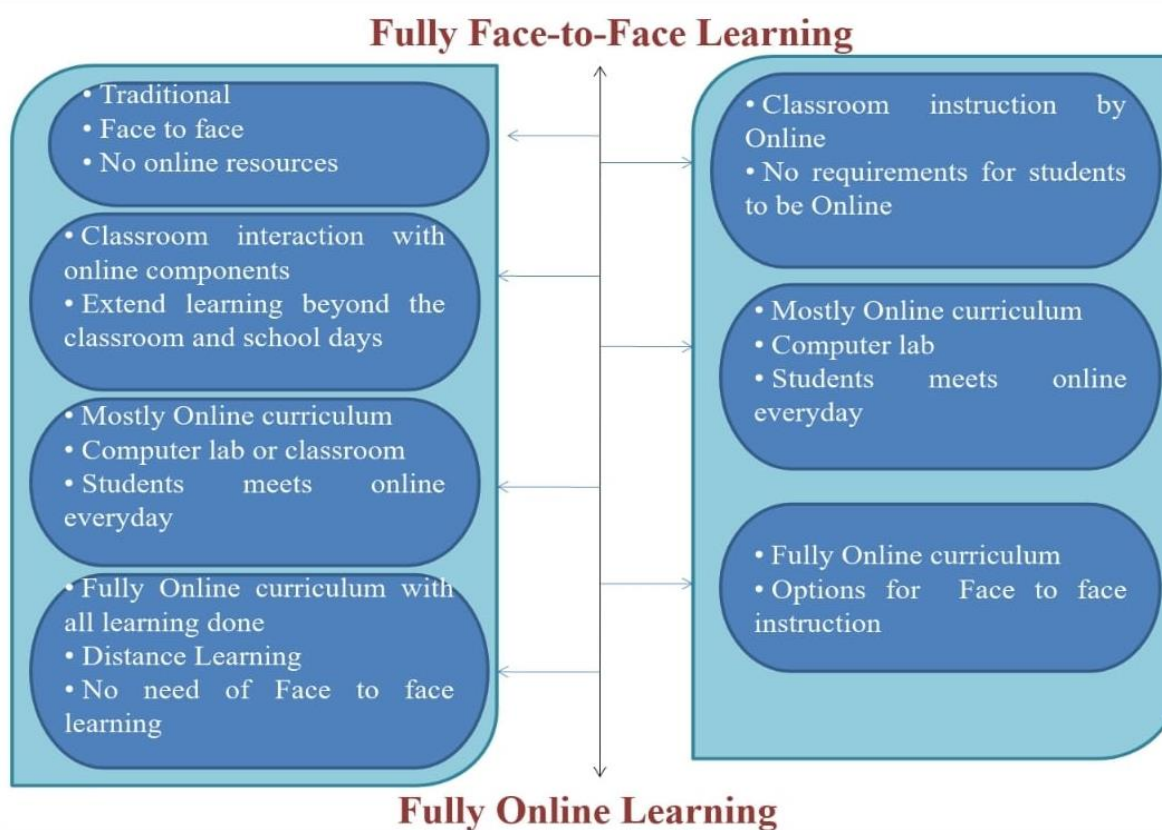
### **Blended Learning of this century**

Greater access to individualised learning from resources and subject matter experts is provided through blended learning. The addition of an online learning component will enable learners to access learning at any time and from any location. Online learning will flourish with self-paced learning, allowing those who learn more quickly to advance while others who study more slowly to do so at their own pace. Online learning also allows the option of learners staying at home without travelling down to the school, especially in a situation such as Covid-19 quarantine. Charles Chew conveyed that blended learning allows greater accommodation for learners' and teachers' diverse backgrounds, interests, and strengths.

Many pieces of research are demonstrated critically towards the methods of the delivery which match the subject matter knowledge and diversity of the students. The researchers are looking for new strategies of blended learning not only in the science subject but also in all other

areas. A Blend of methods and approaches is more likely to produce a richer active learning experience and achieve the anticipated learning outcome (Charles Chew, 2015). Fig 1 shows traditional face-to-face learning to fully online learning (Watson, 2008)

*Fig 1: Blended Learning Continuum (Watson, 2008)*



Physics is one of the most challenging subjects to learn and teach without proper training and practice. It is a systematic study of all natural resources such as light, sound, air, movement of molecules etc. In 9th grade, the basics of mechanism were taught according to the syllabus. The curriculum aims to deepen the basic principle of electricity and magnetism in the practical world and is required in education. Continuation exists in upper grades and colleges, so the foundation is important to the survival of higher education. Electromagnetism is one of the subjects that have characteristics that are quite difficult to learn because it is abstract and comprises elements of mathematics, specific vector coordination in three-dimensional Cartesian, etc. The learning process is still for clarification on the concept of the abstract through lectures and demonstrated through pictures on the blackboard and the viewer. Sometimes the process of learning in the classroom cannot be required to remember the limitation of time (Ali, 2009). Through the Blended Learning approach, we can implement many innovative and creative ideas of different learning methods in the course of electromagnetism. This will motivate students to learn, increase their readiness to take on educational challenges and encourage the practice of self-learning.

### **Different Blended Learning Strategies for Electromagnetism Concept Transaction**

Eindhoven University of Technology conducts research on blended learning and physics courses by integrating blended learning at bachelor's, master's and doctoral level. Levels with

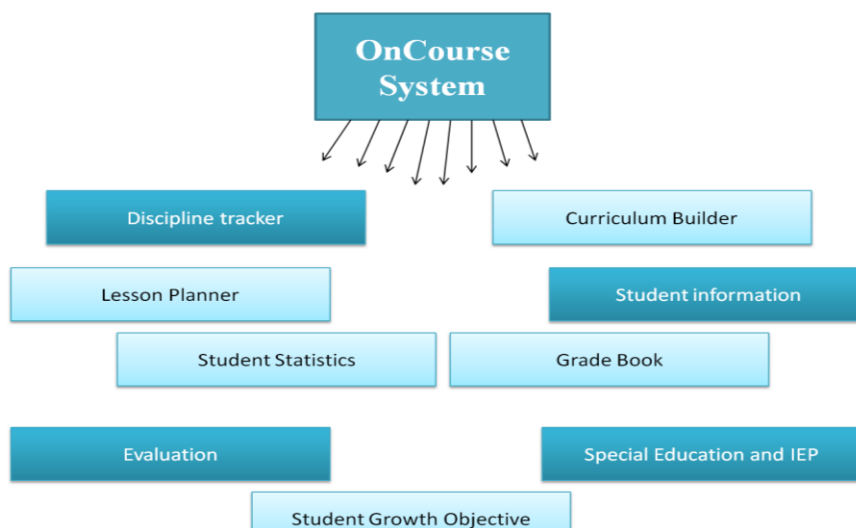
the right educational strategies and led programs for teachers to professionalize them according to these strategies. Some of these strategies are On course, Web lecture, Screencast and Pencast. Execution of the TPACK model, which is a merger of content and pedagogy into an understanding of how particular aspects of subject matter are organized and adapted. Researches show the new ways of Blended learning towards physics learning. They show their practice in the following areas: (1) learning environment design, with the tools EduTools, Blackboard, Desire to Learn, and e-College.com, (2) Classroom Teaching with video as an introduction, a live demonstration from Interactive Demonstration Books, live examples through video clips from the Internet, and i-Clicker Concept Questions Practice from Textbook supplements, (3) online teaching using Blackboard, (4) Learning Assessment with Online Homework System, Writing project: Lab report, and Online Quiz.

**On course**

Oncourse deals with how to create a website for every course offered at the university. With Oncourse, students and teachers can access course syllabus and grades; connect via course email, chat rooms and discussion forums; and access to online quizzes and surveys. So, Oncourse helps bring together all school information and resources for administrators, teachers, parents and students in one web-based tool. It allows users to view, collaborate, and work on all topics related to the school day, such as classes, curriculum, discipline, student information and statistics, grades, teacher evaluations, special education, and student growth goals. Figure 2 shows the nine portals inside the Oncourse system, which is on the home page.

From the David J Griffiths textbook, one of the topics Electromagnetism, electromagnetic induction with Faraday's experiment, as well as Mutual induction and Self-induction was introduced. Using the Oncourse System, we can systematically cover this section by going into the syllabus folder, creating a physics syllabus and submitting all available resources such as books, one of the help books that is similar to Griffiths is Electricity and Magnetism by Edward M Purcell. Purcell's explanation is more flexible compared to Griffith's. This is how we can test more features in the Oncourse System. A teacher can create a lesson plan with a course template that an administrator can review and edit what is required.

*Fig 2: Nine portals of the Oncourse system*



## Web Lecture

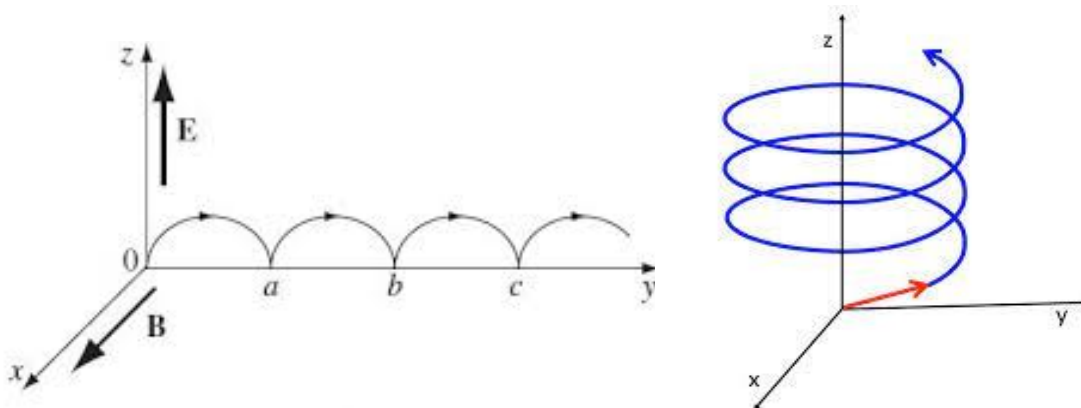
A web lecture is a collection of lectures that can be accessed anytime, anywhere. In the exam, revision is more useful. If you missed a lecture, keep it; if a particular part of the subject was exciting, it can be retrieved again and again. This leads to more interaction about the subject; even a differently abled student can effectively follow the lecture. For teachers, changes can be easily accessed by adding additional resources, comments, questions, and feedback.

A web lecture is a live recording of a lecture. This takes place in a standard lecture space while we take our lecture as normal. It is usually used to support students by allowing them to review the lecture if they did not understand something the first time or were unable to participate. In Electromagnetism, the story of Faraday's discovery of electromagnetic induction can be done through this web lecture. Circuit diagrams can be drawn using drawing applications such as Smart draw, EdrawMax, ETAP, AutoCAD Electrical, etc., and a PowerPoint presentation can be used to give a live lecture or live demonstration of an experiment using a web lecture and can be accessed anytime, anywhere using a link. The rise of the electric field from the magnetic field is quite a problematic part to explain, so the combination of multiple strategies takes place in the form of lectures, demonstrations, presentations, video presentations, etc. can be activated through web lectures.

## Pencast Tool

The topic, Cyclotron Motion and Cycloidal Motion, from Griffiths' Textbook, explains the archetypal motion of a charged particle in a magnetic field is circular, with the magnetic force providing centripetal acceleration. When a positive charge is placed in a magnetic field, the charge jumps and moves in a circular motion due to acceleration. Even though it is a positive charge, it goes counter-clockwise, which looks like a cyclotron motion. If an electric field is added, the effect of the electric field affects the charged particle and is transmitted as a cycloidal motion. Fig 3 shows the motion of a particle in a magnetic and electromagnetic field.

*Fig 3: Cycloid Motion and Cyclotron Motion of a charged particle*



We can explain this Cyclotron motion and cycloid motion using Pencast tools. Electromagnetism is a part full of derivation explanation; we can't explain this like a story. The behaviour of each particle is confirmed through derivation, after that the findings, which we call formulas, tell us the characteristics of the charged particle in the Electric field, Magnetic field, and Electromagnetic field. So, explanation based on the teacher is more time-consuming and

needs more preparation to demonstrate. The solution to this problem can be found through the use of these Pencil tools.

A pencil is a video presentation of handwritten text, formulas or drawings, accompanied by an audio commentary. Pencil is done using a digital pen. There are two types of Pencil: one is A Kahn Style Pencil and the other is Pencil for writing on paper. Kahn Style Pencil is a format that displays a black background with multi-colored lettering and lettering on paper. Pencil is a format that displays handwriting or drawing on a sheet of paper. Using Pencil, we can clarify the above statements. It feels like a lecture on a blackboard, but it is more flexible, it does not damage any page, it is easy to remove writing without fear of dust, it can be anywhere, anytime, and it is not a messy whiteboard. Pencil depends on the combination of hardware and software we choose to use. Some of the Pencil tools are Smooth draw, Krita, Cam Studio open source and Live Scribe. Figure 4 show one of the Pencil tools used in explaining cyclotron motion.

Fig 4: Example of the Pencil in Circular motion

Direction of Force on Charges  
○○○○
Combining Electric and Magnetic Fields  
○○○
Cyclotron Motion  
●○○
The Cyclotron  
○
The Hall Effect  
○○○

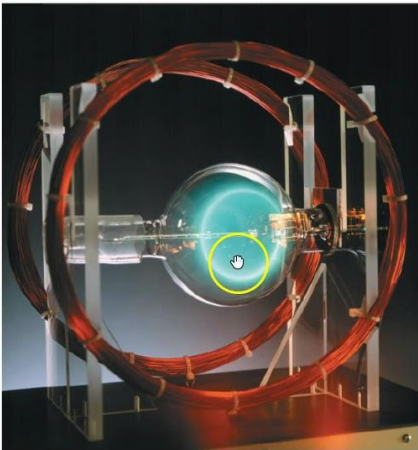
## CIRCULAR MOTION

Newton      UCM

$$F_r = qvB = ma_r = \frac{mv^2}{r}$$

$$r_{cyc} = \frac{mv}{qB}$$

$$f_{cyc} = \frac{qB}{2\pi m} \text{ indep. of } v$$



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### I-Clicker System

Repetition is the most important part of learning electromagnetism. Before that, the teacher has to show and practice each student to find the solution to the problems in the textbook. In a constructivist approach to classroom learning, teaching-learning is a student-centered method, and students are more involved in finding solutions, and the teacher is only a mediator. One of the difficulties of electromagnetic inductance is: When the current  $I_1$  changes in the magnetic field  $B$ , the flux through the circuit  $C_1$  changes, as a result of which an electromotive force is induced. What is the emf equation? How can we denote Flux in terms of current  $I_1$ ? What is the reason for the negative sign? These questions lead to the formula for self-inductance. Knowing without meaning cannot retain this concept in memory. Thus, interaction is another effective way of this learning. For this problem, the iClicker system is used to collect responses from students in the classroom.

iClicker is a wireless radio frequency system. Figure 5 shows the iClicker system used in the Physics Department of New York University. They attend training programs to research i-

Clicker ILDs and examine how well students' basic physics concepts are taught using i-Clicker ILDs strategies and the outcome is more effective.

Fig 5: i-Clicker System in the University of New York(Linghong Li, 2017)



The iClicker system is an easy to learn, easy to use, dependable, and reliable tool which endorses student engagement and peer learning (iClicker.com, 2011)

### Conclusion

The fourth industrial revolution has arrived in our country, which has transformed our education system in many ways, including how we study and teach. In education, M-learning, blended learning, virtual learning, artificial intelligence and gamification have all reformed pedagogy. After conducting research, we find many strategies that are successfully implemented in the field of electromagnetism. Students are also more interested in electromagnetics courses when they use a blended learning strategy, as determined by their attendance, frequency of participation in the learning process, activity in discussions, and capacity to ask questions and answer difficulties. It was also evident that there was a high retention power due to blended learning in electromagnetic topics. By practicing blended learning strategies from the middle grades can lead to interest in the subject of physics without ever becoming a burden on the student, we can increase the diversity of individuals who choose science careers and expand the pool of scientifically literate citizens. This may encourage physics teachers to use blended learning to improve high academic achievement and retention.

### References

- Ali, M. (2009). Analysis of implementation Blended learning model( combination classroom learning and e-learning) in Electromagnetic field Source. *International seminar on the world-class university*, 116-122.
- Archived. (2018, Jan 18). *Archived: What is Oncourse*. Retrieved from University Information technology service:  
<https://kb.iu.edu/d/apqd#:~:text=Oncourse%20offers%20a%20straightforward%20way,access%20online%20quizzes%20and%20surveys>.
- Banditvilai, C. (2016). Enhance Students' language skills through blended learning. *The electronic journal of e-learning*, Vol 14, No. 3, 220-229.

- Carmen, J. M. (2005). *Blended Learning design: Five key ingredients*. Retrieved from <http://www.agilantlearning.com/pdf/Blended%20Learning%20Design.pdf>
- Charles Chew, L. K. (2015). Use of Blended Approach in the Learning of Electromagnetic induction. *Research Gate*, 1-11.
- Griffiths, D. J. (1999). *Introduction to Electrodynamics*. New Jersey: Pearson Prentice Hall.
- iClicker.com. (2011). *I-clicker higher education*. Retrieved from <https://www.iclicker.com/customer/education/highered>
- Kant, A. (2021, June 30). *The Future of learning in India is ed-tech*. Retrieved from The Indian Express: <http://indianexpress.com/article/option/columns/the-future-of-learning-in-India-is-ed-tech-pandemic-online-classes-7381782/>
- Linghong Li, H. T. (2017). Teaching Physics with Blended Learning. *Journal of Modern Education Review*, 231-241.
- P Sivakumar, S. S. ( 2019). Blended Learning Package: Its' Effectiveness On Students' Performance and Retention in Higher Secondary Physics Source. *International Journal of Scientific and Technology Research Vol 8, issue 10*, 1316-1320.
- Pencast. (2022, Feb 14). *Pencasts*. Retrieved from Technology-enhanced teaching and learning: <https://www.utwente.nl/en/telt/solutions/Pencasts/#what-is-a-pencast>
- Puente, S. M. (2015). Integrating blended-learning in physics courses: dealing with diversity in classrooms. *3TU.Center for Engineering Education*, 1-55.
- Watson, J. (2008, Jan 1). *Different types of Blended learning*. Retrieved from <http://sites.google.com/a/idahopd.org/blended-learning/different-types>.