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Art Integrated Learning

Guidelines
for
Secondary Stage

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NCERT

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

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Foreword

Art Integrated Learning is an innovative and constructive pedagogy based on learning 'through the arts' and 'with the arts'. It is a framework of experiential learning where students discover their interests, abilities and learn through their own experiences. The process of art integration naturally engage adolescent learners in active imagination and experimentation to find multiple solutions to the difficulties faced in learning concepts, and experience the joy of creating art works in the learning process. Such art-based experiences not only help learners in forging connections of 'known' with the 'unknown', but also address their diverse learning needs to observe, imagine, explore, create, analyse, recreate, verify and express at their own pace.

The National Education Policy 2020 (NEP 2020) and the National Curriculum Framework for School Education (2023) (NCF-SE 2023) emphasise the importance of art integration for experiential learning and for deeper understanding of subjects, and recommend art integrated education as a standard pedagogy. Art Integrated Learning (AIL) as a cross-curricular, interdisciplinary as well as multidisciplinary pedagogy at the Secondary Stage is envisaged to provide learners with adequate space to deeply connect with Indian and global culture. It also aims to develop 21st century skills including their socio-emotional strengths and extend the opportunities of identifying and unleashing their potential for choosing their academic and/or vocational path. NEP 2020 emphasises the significance of Art Integrated Education by stating 'Art-integration is a cross-curricular pedagogical approach that utilises various aspects and forms of art and culture as the basis for learning of concepts across subjects. As a part of the thrust on experiential learning, art-integrated education will be embedded in classroom transactions not only for creating joyful classrooms, but also for imbibing the Indian ethos through integration of Indian art and culture in the teaching and learning process at every level'. These Guidelines have been developed based on the recommendations of NEP 2020 on art integrated education and the encouraging feedback received from the Secondary Stage teachers on their field testing of the AIL pedagogy. AIL Guidelines for the Elementary stage consisting of Foundational, Preparatory and Middle stages, has already been published in 2019.

The present guidelines entail systematic explanation on all the aspects of Art Integrated Learning pedagogy and helps in creating joyful learning environment for all students, including *Divyang*, at the Secondary Stage of school education. The guidelines provide conceptual clarity and key strategies for its effective implementation. It also contains theme specific exemplars in subjects like Languages, Social Sciences, Sciences and

Mathematics, which are purely suggestive in nature and can handhold facilitators in designing their own learning exercises.

The guidelines is a programme of action for all the stakeholders of school education (State authorities and educational administrators, school principals/HoS, subject teachers including art teachers and health education teachers, and community) for effective implementation of Art Integrated Learning as a pedagogy at the Secondary Stage of school education as per the pedagogical recommendations of the NEP 2020 and the curricular goals recommended by NCF-SE 2023.

Professor Dinesh Prasad Saklani
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National Council of Educational
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New Delhi
May 2023

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The Guidelines on Art Integrated Learning (AIL) for Secondary Stage as a pedagogy of experiential and joyful learning is the successive step in the journey of AIL after the publication of AIL Guidelines for the Elementary Stage, AIL Handbooks for teachers of: Foundational, Preparatory (Classes I–V) and Middle (Classes VI–VIII) Stages of school education and Teacher Training Packages for all the stages of school education. AIL as a process, has witnessed extensive efforts undertaken by subject teachers, including art teachers and educational administrators of schools, who have been promoting and practising this pedagogy for a few years now.

Development of these guidelines would not have been possible without the valuable inputs received from various individuals associated with this programme in one way or the other. Foremost, the Council would like to thank Dinesh Prasad Saklani, *Director*, NCERT and Sridhar Srivastava, *Joint Director*, NCERT, for their timely guidance and support at every step of the development to complete the guidelines successfully.

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The Guidelines will help in extending the outreach of experiential learning as recommended by NEP 2020 in general and will facilitate the teachers of Secondary Stage to implement AIL in the learning-teaching of their subjects specifically.

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3.5 Science

Art-integration is a cross-curricular pedagogical approach that utilises various aspects and forms of art and culture as the basis for learning of concepts across subjects. As a part of the thrust on experiential learning, art-integrated education will be embedded in classroom transactions not only for creating joyful classrooms, but also for imbibing the Indian ethos through integration of Indian art and culture in the teaching and learning process at every level. This art-integrated approach will strengthen the linkages between education and culture.

(NEP 2020)

Joy of Rakhi making linked with Social Sciences and Mathematics

1

Introduction

"It is not necessary that every man should be an artist. It is necessary that every man should have his artistic faculty developed, his taste trained, his sense of beauty and insight into form and colour and that which is expressed in form and colour, made habitually active, correct and sensitive."

Sri Aurobindo

1.1 WHAT IS AIL?

Art Integrated Learning (AIL) is an inventive and constructivist learning pedagogy which is based on learning 'through the arts' and 'with the arts' (using different arts such as dance, drama, music, visual arts, etc.). In this pedagogy, art becomes the medium of learning, a key to understanding concepts within any subject of the curriculum. Here, students engage in the creative process of making or performing arts and connecting it with concepts. The integration is meant not only to make the learning process joyful and deeper, but it also lends itself to imbibing a greater appreciation and understanding of the arts being utilised for the purpose. This resonates with the experiential learning approach.

A learner explores creatively while building connections between different concepts and art forms. Art experiences, both in visual (drawing and painting, clay modelling, pottery, paper crafts, mask and puppet making, heritage crafts, graphics, animations, slides, etc.) and performing arts (music, dance, theatre, puppetry, film making, cinematic arts, etc.) lead to a better understanding of different concepts, making holistic learning possible. Development of cognitive, socio-emotional, behavioural and psychomotor domains can be addressed using AIL pedagogy. Thus, the arts become the primary pathway to learning.

Art integration is well rooted in NEP 2020. The virtues of art as pedagogy are stated as: "Art-integration is a cross-curricular pedagogical approach that utilises various aspects and forms of art and culture as the basis for learning of concepts across subjects. As a part of the thrust on experiential learning, art-integrated education will be embedded in classroom transactions not only for creating joyful classrooms, but also for imbibing the Indian ethos through integration of Indian art and culture in the teaching and learning process at every level. This art-integrated approach will strengthen the linkages between education and culture." (NEP 2020, pp.12).

Students enjoying potter's wheel for exploring Indian pottery

Eminent philosophers and educationists worldwide have recognised arts as a natural tool to make learning organic. In India, Nobel Laureate

Rabindranath Tagore pioneered the idea of relationship between arts and learning. Many of his thoughts are captured in the book titled '*Art— the Basis of Education*' written by his student Devi Prasad (1998). Devi Prasad worked on creating an environment wherein a child can express freely without any constraint.

Nagaland Student constructing a working model of Toy Cart

Mahatma Gandhi conceptualised a curriculum that was activity centred and aimed to prepare the students for the world of work related to vocational education, conduct experiments and engage in research so that they could develop physically, mentally and spiritually and become useful members of the society. He desired all the students to learn handicrafts. He recognised arts and artists according to his own philosophy of life and did not believe in 'art for art's sake'. Parallel to Gandhiji's perspective on education, Sri Aurobindo considered students' participation in music, fine art, dance, drama and craft as vital education and learning by doing as the guiding principle of this education. He also extended an alternative approach to education in which the teacher serves as a guide, showing students how to perfect their instruments of acquiring knowledge, rather than imparting knowledge. Gandhiji's and Tagore's contemporary, Nandalal Bose stated that learning to create art should be placed on the same pedestal as learning to read and write if the goal of our education is entire growth. He recommended that students should be in direct contact with nature as it helps them to grow aesthetically. Aesthetic knowledge of students develops when they get properly acquainted with nature. Another esteemed philosopher, Jiddu Krishnamurti advocated 'skills in action'. He believed that artistry is to be completely awake and therefore to be skillful in action in whole of life. He wrote that "without love there is no art. When artist is playing beautifully, there is no 'me', there is love and beauty and this is art and this is skill in action".

Indian folk dances as learning tools

In the West as well, integration of arts with education has been emphasised by scholars, academics, philosophers and psychologists. Renowned philosopher and educational reformer John Dewey, through his book *Experience and Education* (1938), advocated a curriculum which is hands-on and experiential, endorsing a holistic approach to learning. In his work *Art as Experience* (1934), Dewey described that art enhances how people experience life. He believed that to fully live one's life, individuals must understand and appreciate the art around them in order to enhance their everyday experience. Another renowned philosopher and art historian, Herbert Read recommended the use of artistic expression as the foundation of education. In his work *Education through Arts* (1943), Read stated "…The aim of education is the creation of artists – of people efficient in the various modes of expression". He addressed the possibilities of creative arts as fundamental modes of human development and advocated for a system of aesthetic education. As Leo Tolstoy said about the future of education, "the school of future will, perhaps, not be a school as we understand it– with benches, blackboards, and a teacher's platform– it may be a theatre, a library, a museum, or a conversation". Eminent psychologist Lev Vygotsky promoted discovery learning and pioneered the concept of zone of proximal development (ZPD), in which learners can perform a challenging task with appropriate assistance. Vygotsky (1971) stated that aesthetic emotion is the key to humanity's future and that art allows us to experience things that we would not otherwise be able to experience. A notable art educator and influential personality in the field of art education, Elliot Eisner believed that art is imperative for skill development in students and contended for a curriculum that includes music, dance and art. He advocated the use of arts to enhance learning and educational practice. His seminal work, The Arts and the Creation of Mind (2002) situates the arts in our schools and examines how they aid in the development of mind. He writes that: "The arts enable us to have experience we can have from no other source and through such experience to discover the range and variety of what we are capable of feeling".

Using Drama for creative expression

In addition to aforementioned literature in which various intellectuals and thinkers advocate learning through personal experience with arts, there are different policy documents by various organisations in the field of education, art education and sustainable education, which have reinforced the use of arts in education for the holistic development of individuals. NCF 2005 recommended using different art forms at all stages to enable students to fully appreciate and experience the beauty of the universe and help in their healthy mental development.

UNESCO in World Conference of Arts Education in 2006, outlined the critical role of art education in improving educational quality through capacity building and in meeting the need for creativity and cultural awareness in the 21st Century. Seoul Agenda in the Second World Conference in 2010 charted three goals for the development of arts education for constructive transformation of education system to meet the needs of learners in a rapidly changing world.

Seoul Agenda: Goals for the Development of Arts Education

Seoul Agenda goals for the development of arts education:

1. Ensure that arts education is accessible as a fundamental and sustainable component of a high quality renewal of education.
2. Assure that arts education activities and programmes are of a high quality in conception and delivery.
3. Apply arts education principles and practices to contribute to resolving the social and cultural challenges facing today's world.

Arts as a vehicle can also be used to empower students to achieve the United Nations' 17 Sustainable Development Goals (SDGs) adopted in 2015. These goals are interconnected to balance the social, economic, and environmental sustainability. Progress towards one goal makes it easier to achieve others. In this process, art integration can be used effectively to achieve these goals.

United Nations Sustainable Development Goals (SDGs)

The above discussion summarises the importance of an art integrated curriculum as vital for students to make them think, create and learn beyond the syllabus and textbooks. NEP 2020 recognises the importance of integrating arts in the curriculum as it endorses a pedagogy which engages students in deeper and experiential learning. NEP 2020 recommends the


Experimenting with self made electronic toys

pedagogy "to make space for critical thinking and more holistic, inquiry-based, discovery-based, discussion-based, and analysis-based learning". It emphasises, "Teaching and learning will be conducted in a more interactive manner; questions will be encouraged, and classroom sessions will regularly contain more fun, creative, collaborative, and exploratory activities for students for deeper and more experiential learning" (pp.12).

1.2 OBJECTIVES OF AIL (SECONDARY STAGE)

NEP 2020 has changed the curricular and pedagogical structure and the curricular framework for school education. It states that "the Secondary Stage will comprise of four years of multidisciplinary study, building on the subject-oriented pedagogical and curricular style of the Middle Stage, but with greater depth, greater critical thinking, greater attention to life aspirations, and greater flexibility and student choice of subjects." (pp. 11–12).

1.2.1 Structural Changes

The Secondary Stage comprises Classes IX–XII. As per NEP 2020, the Secondary Stage has been divided into two phases—Classes IX–X and Classes XI–XII. It recommends more choices of art subjects to be offered at this stage. It states that, "students will be given increased flexibility and choice of subjects to study, particularly in secondary school—including subjects in physical education, the arts and crafts, and vocational skills—so that they can design their own paths of study and life plans" (pp.13). Further it states, "There will be no hard separation among 'curricular', 'extracurricular', or 'co-curricular', among 'arts', 'humanities',

Creating architectural structures

and 'sciences', or between 'vocational' or 'academic' streams. Subjects such as physical education, the arts and crafts, and vocational skills, in addition to science, humanities, and mathematics, will be incorporated throughout the school curriculum, with a consideration for what is interesting and safe at each age" (pp.13).

1.2.2 Learning Objectives at Secondary Stage

Learning through arts can take place at all levels of schooling. AIL is experiential in nature and makes all the students respond with their imagination and emotional strengths. This pedagogy enhances the cognitive, psycho-motor and socio-emotional/ affective domains of the learner. The needs of students will vary with age, social contexts and ability. Phase-wise objectives at Secondary stage for engaging students in art integrated learning are as follows:

Holistic experience through painting

Classes IX and X (Phase 1)

Students of these classes are in the age group of 14–16 years. The focus of AIL should be on developing clarity of concepts through different forms of art. It also aims to give an introduction of the selected art being used as an educational tool.

The objectives of AIL during this phase of secondary stage are:

- To understand multiple perspectives of different concepts (teaching-learning is not limited to any one art form, thus providing a pluralistic approach to construct knowledge and appreciate different possibilities).
- To promote teamwork for building mutual respect, understanding and appreciation for one another.
- To nurture inclusive practices such as respect, care, empathy, tolerance, compassion, etc.
- To cultivate the 21st century skills like communication, creativity, collaboration and critical thinking.
- To develop an understanding of a wide range of contemporary societal, environmental and cultural issues through traditional and contemporary art experiences.
- To create awareness about the rich heritage and cultural diversity of India in the global context.
- To understand and regulate their emotions at adolescent stage.
- To make the understanding and internalising of the content in all areas of the curriculum, easier and natural.

- To appreciate/acknowledge the possibilities of interdisciplinary connections across the curriculum.
- To enhance and explore design thinking capabilities.
- To help learners become self-aware.

Classes XI and XII (Phase 2)

Students in this phase of secondary stage are in the age group of 16–18 years. Students of these classes are in a transitional phase from adolescence to youth, where among other things, they also have to take important decisions concerning their future studies and career by choosing particular streams and courses.

Building sculpture for understanding the concepts of Mathematics and Science

The objectives of AIL during the phase of secondary stage are:

- To provide the opportunities of identifying and unleashing their potential, by finding their own modes of expression after experimenting with different performing and visual arts.
- To facilitate in-depth research studies on diverse topics that are interesting to students.
- To provide students with clarity on their vocational and professional interest.
- To construct knowledge, and acquire necessary skills individually and collaboratively, reflecting and evaluating personal work and the work of others.
- To build socio-emotional empowerment to choose and take decisions responsibly.
- To build sensitivity and responsiveness towards societal and environmental concerns.
- To inculcate awareness, respect and appreciation for Indian artistic and cultural heritage.
- To foster values such as respect for different identities and multiple perspectives by practising constitutional values in actual sense.
- To build sensitivity and responsiveness towards Sustainable Development Goals (SDGs).
- To expand multi-cultural dimensions through art experiences and increase intercultural mobility of students to foster global citizenship.
- To enhance and explore complex design thinking capabilities.

1.3 WHY AIL AT SECONDARY STAGE?

Arts integration is far reaching than any other approach or activity. Learners involved in AIL pedagogy are able to internalise the process, thereby making their learning personal and meaningful. It helps them to deeply understand their own selves and connects them with the wider world through an understanding of Indian arts and their own culture. NEP 2020 states that "the key overall thrust of curriculum and pedagogy reform across all stages will be to move the education system towards real understanding and towards learning how to learn—and away from the culture of rote learning as is largely present today. The aim of education will not only be cognitive development, but also building character and creating holistic and well-rounded individuals equipped with the key 21st century skills" (pp.12).

In AIL at Secondary Stage (similarly to previous stages); students go beyond the initial step of learning and recalling the information. They construct their knowledge by collating the information, processing it and analysing it to find the connections and underlying patterns, thereby creating deeper meaning and understanding. When they are involved in art integration, their learning is evident in their creative process, such as their involvement in dance, painting, dramatisation or any other art form. Through AIL at Secondary Stage, students are able to connect their day-to-day experiences with the learning of new concepts. AIL as pedagogy, is directly a part of the 4Cs of learning at this stage: critical thinking, collaboration, creativity and communication. Teachers are able to see whether the students have developed clarity and internalised the concept.

Regional crafts for experiential learning

What Does Research Say?

A study conducted in USA, 'Review of Evidence: Arts Integration Research through the Lens of the Every Student Succeeds Act', Ludwig, Boyle and Lindsay (2017) presented findings from a meta-analysis of 27 well-designed studies of arts integration interventions. The meta-analysis found that the overall average effect of arts integration on student outcomes was positive and statistically significant.

1.3.1 Constructivist Aspects Found in an AIL Practice

- Building on learners' previous experience and knowledge.
- Active hands-on learning where students are given freedom to solve real life problems in divergent ways.
- Enriching students' understanding by creating opportunities to learn from each other.

- Engaging students to reflect on what they have learnt, how they learn, and what it means to them.
- Opportunities for self-evaluation, revisit and improve their work and share it with others.
- Peer assessment as a part of the learning experience.
- Creating a positive learning environment, encouraging and supporting students to take risks and explore possibilities.
- Building a social and cooperative learning community.
- Natural and deeper connection with the environment.
- Exposure to Indian arts and culture as social fabric of the country.

What Does Research Say?

Sikkema et al. (2021) in response to the COVID-19 pandemic in their study 'How the Arts Can Unlock a Closed Curriculum' argued that the arts can create more open and equitable models for teaching and learning where youth can be positioned as knowledgeable instructional partners, and communities can be reframed as learning spaces and resources. The study discusses two classrooms of US from the CAPE After-School programme that particularly centered openness in their projects. One class was from North-Grand High School, with focus on music. The other class was from New Sullivan Elementary School, with a focus on digital media. They describe how CAPE's open and inquiry-oriented approach to arts-based pedagogy enabled them to rethink teaching and learning in ways that changed the relationship between teachers and students, and gave students more ownership of their learning.

The study 'Practical Implication of Art Integration in a CBSE School: A Qualitative Study' conducted by Prince (2020) is based on a qualitative study conducted in a CBSE school in Assam using ethnographic methodology to analyse and appreciate the practical implication of art integration at primary and secondary education levels. The study used focused group discussions to collect the opinions of teachers, students and parents, and general discussion based on the available literature. The study found that art integration created students' interest in studies and made them active participants in the learning process. It also enhanced better parental appreciation and led teachers to adopt student-oriented education methods and pedagogy.

In a qualitative pilot study, 'Art Integration and Cognitive Development', the focus was to examine and describe how the arts are integrated with curriculum concepts to promote cognitive development. Curriculum concepts were taught through experiential methods and hands-on projects. The study concluded that, art-based instruction produces better cognitive and intellectual abilities. The study further explains that through art integration, use of context and culture can be incorporated across instructional units to promote cognitive variables related to intellectual development (Baker, 2013).

Nobori (2012) was amazed at 'how the arts unlock pathways to learning'. The process of integrating arts may seem like conducting art projects in classroom settings, but it is actually a teaching strategy that seamlessly merges art experiences with the core curriculum to build connections in engaging learning contexts. For instance, students choreographed a dance using

locomotor and non-locomotor movements to demonstrate their understanding of the solar system.

A study by Benegal (2010) stated that arts lead to dramatic changes in the brain such as strengthening the 'attention network'. Brain areas involved in music are also active in processing language, auditory perception, attention, memory and motor control. Art education is a much-needed way of promoting balanced mental development in today's knowledge-based world.

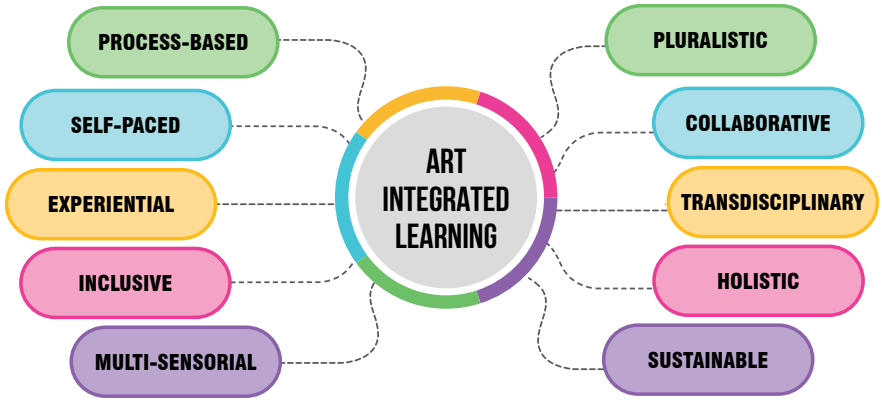
Catterall, Chapleau and Iwanaga (1999), in their longitudinal study 'Involvement in the arts and human development: General involvement and intensive involvement in music and theatre arts', followed more than 25,000 students in middle and high schools for ten years. The first phase of the study examined students' involvement in arts across all the disciplines, whereas the second phase examined the potential importance of sustained involvement in a single discipline (here using instrumental music and the theatre arts). The first analysis investigated the hypothesis that higher involvement in the arts would result in greater academic performance. Depth of involvement in a single art discipline was explored in the second analysis. The researchers performed two separate inquiries to examine the depth of experience in the arts. The first effort examined the connections between involvement in music and cognitive development specifically with regards to mathematics achievement. The second effort examined intensive involvement in theatre arts. The findings were: (1) Positive developments for students engaged in the arts were seen at each step and comparative gains for arts-involved students became more pronounced over time; (2) Students who reported consistent high levels of involvement in instrumental music over the middle and high school years showed significantly higher levels of mathematics proficiency by Class XII; (3) Sustained student involvement in theatre arts (acting in plays and musicals, participating in drama clubs, and taking acting lessons) were associated with a variety of developments for youth: gains in reading proficiency, gains in self-concept and motivation, and higher levels of empathy and tolerance for others.

A study by Caterall (1998) on 'Involvement in the Arts and Success in Secondary School' found considerable advantages for arts-rich youth when compared to arts-poor students. Students maintaining high levels of activity in music, chorus, drama and visual arts had better academic performance, increased standardised test scores, more community service tendency, and lower drop-out rates. The author, with 25,000 students sample, demonstrated that these cognitive and developmental benefits were reaped by students regardless of their socio-economic status.

1.3.2 Life Skills That Get Enhanced While Learning Through Arts

- Problem solving attitude
- Critical thinking
- Lateral thinking
- Creative and innovative thinking
- Effective communication skills
- Reflective thinking

- Active enquiry skills
- Knowledge of oneself and self esteem
- Ability to see multidisciplinary links between subjects/topics and real life
- Time management and stress management skills
- Memory
- Imagination
- Logical thinking/reasoning
- Analytical thinking
- Multicultural perspective and appreciation for peers/others, etc.
- Leadership and followership skills for teamwork



What Does Research Say?

Corbett (2019) in the study 'Influence of a drama based education program on the development of empathy in year 10, Western Australian students' tried to understand which elements of the drama processes are most conducive to increasing empathy in adolescents. The study took the form of a ten-week drama-based programme intervention (The Empathy Programme) conducted at a secondary school in the Perth metropolitan area with a group of Year 10 (Class X) students. A constructivist, mixed methods approach was utilised to frame the study. Data was collected through structured self-response surveys for students in both experimental and control groups, as well as semi-structured written reflections completed by students in the experimental group after each week of the intervention. Findings of this research showed a significant increase in participants' empathy, which highlights the potential for drama to improve student empathy. The results also detailed six key elements that were effective in the development of empathy amongst participants, including explicit instruction and the importance of imagination and role play. This research reflected the important role that drama can have in the social and emotional development of young people and recommends strategies for inclusion in current drama pedagogical practices.

Hardiman (2016) in 'Education and the Arts: Educating Every Child in the Spirit of Inquiry and Joy' explored the political and social forces that have led to the well-documented narrowing of the curriculum, squeezing

out arts programming in schools. This work highlights important findings that correlate arts learning with biological changes as well as cognitive and academic advantages. Further, it explores how the arts may be the key to promote twenty-first century skills of creative thinking and problem solving. The review also hopes to influence educational practices and policies on considering arts education and art integrated learning.

Harland et al. (2000) in their large scale study 'Arts Education in Secondary Schools: Effects and Effectiveness' examined the effects of secondary school arts education (in visual arts, drama, dance, or music) in England and Wales. The data was derived from four sources: (1) case studies of five secondary schools, (2) secondary data analysis of information from the National Foundation for Educational Research's (NFER) Quantitative Analysis for Self-Evaluation (QUASE) project, (3) a survey of Year 11 (Class XI) students and schools, and (4) interviews with employers and employees in the work sector. Results demonstrated positive effects of arts education in several areas including students' intrinsic enjoyment, art form knowledge and skills, social and cultural knowledge, creativity and thinking skills, communication and expressive skills, personal and social development, effects that transfer to other contexts (e.g., learning in other subjects, work-related benefits such as teamwork), culture of the school, and benefits to the local community.

1.3.3 Addressing the Adolescents

Adolescence is a time when students begin to seek meaning in life and set life goals. Students at the Secondary Stage are adolescents, going through a period of rapid physical growth and psychological development. They are self-conscious, assertive, identity-conscious and have strong preferences and choices. They demand to be heard and respected. Students at this stage develop a nature where they are sensitive to criticism and like to take control of their situations. They want to improve on their own. They listen to themselves and their peers. Unlike the younger learners who are more protected by their families, these students have exposure to the real world with both its well-designed as well as its flawed systems, processes and products. Introducing Design Thinking projects as a part of AIL will help these students understand the thinking processes involved in designing creative solutions to complex real world challenges. The same thinking processes will stand them in good stead when they progress to higher education and even beyond that when they take their place as contributing members of society. According to Diket (2003), adolescents approach learning as a whole much more seriously when the arts are a part of the core curriculum. Learning through art experience gives them autonomy and satisfaction of learning— to learn and share with each other.

Moreover, at the Secondary Stage, students are capable of taking the art experiences seriously. The art experiences help them in shaping their individual personality. They can get deeply involved in arts and evolve professional skills. They can make clear connections and relate art experiences with abstract concepts. The objective at this stage is to make art experiences challenging and interesting for them.

At the Preparatory and Middle Stages, art is used as a tool to make learning concrete, but at the Secondary Stage, learning is related to personal experiences of the student. Art at this stage acts as a foundation of sustainable learning, where students are using various arts as a tool for solving issues related to social and cultural problems, and not simply to learn the subject matter in their syllabus. Adolescents, who are in the process of discovering themselves, tend to question the prevailing notions, say, regarding etiquette in the society. They often ask numerous questions and indulge in risk taking behaviour. The arts provide a rich medium to deal with such situations and help students solve complex issues related to their well-being and future.

Let us also remember that students currently in school have experienced the COVID-19 pandemic, which caused trauma at a mass level. Many students may be dealing with personal experiences of loss and suffering. Apart from the pandemic, the realities of life, natural and man-made disasters often cause emotional turmoil that can disturb a student's school life. AIL pedagogy provides a flexible format allowing the teachers/facilitators to give them individual attention. Also, engagement with arts has been seen to offer healing opportunities in such situations.

Theatre as a tool for socio-emotional development

Participating in performing arts during adolescence has been linked to positive school outcomes such as attainment of important learning dispositions (Heath and Roach, 1999) and higher academic performance when compared to non-art peers (Caterall, Chapleau and Iwanaga, 1999; Elpus, 2013). The visual arts have been found to provide adolescents with a context for abstract thinking about the ideas of personal significance and are important for them to make meaning and communicate their ideas (Graham, 2003).

What Does Research Say?

Radomskaya, Boyakova and Sitnikov (2020), in their study 'Potential of Art Classes in Preparing Adolescents and Youth to Participation in Festivals', found that children and youth prefer to engage in art and desire to share one's creativity and achievements with their peers and others. The study also found that art festivals have a positive effect on personality development, improve empathy and present a unique opportunity for the participants to communicate with each other in the language of art and share the results of their artistic activity.

In the study 'Arts Education and Positive Youth Development: Cognitive, Behavioural, and Social Outcomes of Adolescents who Study the Arts', Elpus (2013) examined the value and positive impact of the arts by analysing the

cognitive, behavioural, and social outcomes of adolescents who study the arts in comparison with their non-arts peers using data from the National Longitudinal Study of Adolescent Health. The data was collected from two major longitudinal studies of 12,250 students and statistical analysis were performed in order to investigate the differences between arts and non-arts students throughout adolescence and into adulthood. It was found that arts participation had a wide range and long lasting positive effects. Most notable findings were: (1) arts students were more likely, than their non-arts peers, to find school engaging, to attain good scores on a standardised test of vocabulary, to attend a post secondary school, and to earn a four-year college degree; (2) arts students had more positive behaviour than their non-arts peers including the likelihood of being suspended and optimism about college attendance; (3) arts students had positive personal outcomes and behaviours than their non-arts peers for alcohol consumption and illicit substance abuse, delinquent behaviours, and involvement with the criminal justice system.

A report by Caterall (2012) on 'The Arts and Achievement in At-Risk Youth: Findings from Four Longitudinal Studies' examined arts-related variables from four large datasets — three maintained by the U.S. Department of Education and one by the Department of Labour — to understand the relationship between arts engagement and positive academic and social outcomes in children and young adults of low socio-economic status (SES). The study concluded: (1) socially and economically disadvantaged children and teenagers who have high levels of arts engagement or arts learning showed more positive outcomes in a variety of areas than their low-arts-engaged peers; (2) At-risk teenagers or young adults with a history of intensive arts experiences show achievement levels closer to, and in some cases, exceeding the levels shown by the general population studied; (3) Most of the positive relationships between arts involvement and academic outcomes apply only to at-risk populations (low SES). But positive relationships between arts and civic engagement are noted in high SES groups as well.

1.3.4 Lifelong Effect of Art Exposure

At Secondary Stage, students are on the threshold of joining society as independent citizens with both rights and responsibilities. They are either preparing to enter higher education or planning to enter a career. Art as a tool can make their path easier and meaningful.

(A) Healthier Outlook on Society

Arts provide adolescents with the opportunity to contribute constructively to the society beyond the self. One pervading feature of observing and practising the arts is that it enhances the level of sensitivity, responsibility, self-reliance, design thinking and industriousness in an individual. Therefore, students exposed to the arts develop these qualities which are essential for living a balanced and healthy adult life. "Arts not only help young people to understand themselves and their surroundings but foster a sense of belonging and provide an insight into the deeper meaning of their culture" (Diket, 2003).

Clay model for non-verbal expression

While at every stage of school education, the focus of AIL is more on exploration of regional arts near the location of the school, it is also important to expose secondary school students to a wider perspective. This can help them understand multiple cultures and develop global outlook, and arts play an integral role in evolving this global culture. Therefore, apart from the existing curriculum, where students are studying local/regional folk art, an exposure to international arts (traditional and contemporary) would help in enhancing students' appreciation and understanding of multicultural and pluralistic expressions found across the globe.

(B) Vocational Opportunities

The flexibility of AIL pedagogy helps teachers to improve their methods of facilitating and provide necessary inputs according to the needs of the students. NEP 2020 states, "In particular students would continue to have the option of exiting after Grade 10 and re-entering in the next phase to pursue vocational or any other courses available in Grades 11–12, including at a more specialised school, if so desired" (pp.11–12).

The wide variety of additional skills and topics of which students get a glimpse when studying a subject through AIL pedagogy widens their perspective with respect to their future paths. Some may discover their fine mechanical skills and opt for a career that calls for such talents. Apart from conventional professions like Engineering and Surgery, these talents could be used in a wide variety of art related streams. Such streams could include jewellery designing and making, ornaments designing for Indian dance and theatre forms, theatre related technology including lights, sound, set design and execution. In addition, students may be interested in handicraft and textile-related professions which India possesses in infinite variety. Other such professions include instrument making and repair, sound recording and amplification technology, event management, etc.

Many of the vocational courses currently being offered at the Secondary Stage could be aligned with students' interest in the above mentioned streams. The courses being offered also prepare students for office-based jobs. Regardless of the vocational stream chosen, all students would benefit from the application of AIL pedagogy for the obvious reason—AIL is organic to learning and development in every field.

(C) Professional Artists

If a teacher finds that a particular student has a special interest and unique talent in arts and would like to pursue art as a profession, they can be provided career guidance for taking well informed decisions. Help from local artists, artist(s)-in-residence and art teachers, to all such students can equip them best for the field.

Intense involvement in creating sculptures

What Does Research Say?

Bisalla and Joseph (2022) in the article 'The Role of Art in Sustaining Technical and Vocational Education in Nigeria' concluded that art is a panacea for sustaining technical and vocational education. It plays a significant role in the development of polytechnic curriculum to confirm the effective execution of technical and vocational education for essential manpower development, industrial development and human capacity building, and also to promote sustainability and self-reliance. Art facilitates the development of knowledge in other disciplines, opens up new ways of thinking and offers a basis for inter-disciplinary approaches to advance, as well as intricate problem-solving.

In their article 'Arts-based learning in vocational education: Using arts-based approaches to enrich vocational pedagogy and didactics and to enhance professional competence and identity', Meltzer and Schwencke (2020) found that arts-based learning approaches, by combining art, rationality and environment, enabled the participants to discover new aspects of themselves, developed their professional competencies and the courage to create and find alternatives. They experienced how they developed new knowledge, both professional and personal, through being observant, and sensing their bodies, thoughts and feelings. It enabled them to see the connection between their working life, everyday life and personal development. The authors further found that different types of arts-based learning methods in vocational studies and vocational teacher education strengthened the link among working life, professional identity, personal development and character. The arts-based learning approaches enhanced professional and personal competencies and the ability to see oneself in relation to others and society as a whole.

Malin (2015), in the study 'Arts Participation as a Context for Youth Purpose', explored how purpose emerges and develops among young people as they participate in the arts using a cross-sequential design to examine how their purpose changes over the course of adolescence. Qualitative methods were used to determine the purpose for each participant and to examine how and why their purpose changed over the 2-year interval. Two analyses were conducted with arts-involved youth. Analysis 1 examined data at a specific time period to learn about the motivations that drive young people to participate in the arts and find purpose in their artistic involvements. Analysis 2 looked at the changes that occurred over a 2-year interval to see what happened to artistic purpose over the course of adolescence. Out of a sample of 270 individuals, 53 participants were identified who were meaningfully involved in the arts. These were the participants who responded that participation in some art form was one of the most important things in their life. Two years later, 146 of the original 270 participants were interviewed again. Of these, 29 were meaningfully involved in the arts at the time of the interview. The study found that the arts are meaningful to young people for building relationships, for understanding others and being understood, and for connecting with and building a community. Artists participating in the relational aesthetic movement see themselves as contributing to culture and society by promoting connections and shared perspectives among individuals. The young artists in this study demonstrated their desire to strengthen and transform their culture by seeking not only to connect, but also to create new connections for and with their audience. They desired not only to relate, but also to produce deeper and mutually meaningful relationships through shared understanding. They wanted not simply to express themselves, but to change the minds and lives of others through their self-expression.

1.4 Journey of AIL in India

Art Integrated Learning (AIL) originated as an initiative of NCERT following the recommendations made in the *National Curriculum Framework 2005*. In the Position Paper on Music, Arts, Dance and Theatre of *NCF 2005*, the process of education through arts was described as: 'education through the arts, where learning takes place using different art forms as tools in the teaching-learning process'.

The development of AIL as a model was a result of systematic research and field testing. It was designed to promote experiential learning where every learner is provided opportunities to go through the art experience (in visual and performing arts) to understand and learn different concepts. The sequence in which AIL commenced its journey is as follows:

Need Analysis

Interactive sessions and Focus Group Discussions (FGDs) with different stakeholders were organised to identify the need of the system and to design ways to form a capacity building programme to implement AIL. The stakeholders comprised teachers and heads of schools with faculty members from SCERTs, DIETs and Departments of Education of different States (Bihar, Haryana, Maharashtra, Gujarat, Meghalaya, Karnataka, Delhi, etc.). The data was collected in the form of interactions and discussions with stakeholders, which led to many issues and concerns which needed immediate attention.

Designing of Training Modules

Based on the frequently raised questions, issues and the difficulties faced by different stakeholders, it was decided to develop seven training modules with appropriate audio-video content for the capacity building of teachers, HoS and teacher educators on AIL in the year 2010.

The seven modules package in two volumes included written exercises on: (i) ice-breakers, (ii) art in everyday school activities, (iii) methods and materials, (iv) art and art education, (v) integration of arts with other subjects, (vi) role of museums in education, and (vii) evaluation.

Field Testing of the Training Module

Before finalisation of the package, it was field tested in the Municipal Corporation Primary Schools of West District of Delhi in collaboration with the District Institute of Education and Training (DIET), Rajinder Nagar, SCERT, Delhi and Deputy Director (Education, MCD) of West District, New Delhi. It was also tested in government schools of Bihar, Maharashtra and Haryana. The finalised package was then used for the capacity building of selected teachers in Delhi schools and other States.

Capacity Building of the Schools

The capacity building programme conducted in Delhi involved the orientation of educational administrators, including the Directorate of District Education (DDE), Assistant Education Officers (AEO), SIs and Principals of the selected schools. Teachers underwent a 10 day intensive training which included hands-on experience of the AIL practice. The capacity building design also covered the provision of monthly handholding sessions for three consecutive months.

Field Study

After one year of AIL implementation in these schools, a comprehensive study, titled 'Art Integrated Learning: An Impact Study' was conducted by Ashok Arora, *Principal*, DIET; and Lovely Puri, *Head* PSTE, DIET Rajinder Nagar, SCERT, Delhi, in collaboration with Jamia Millia Islamia (JMI). It was a comparative study of AIL trained and non-trained schools with a sample size of 34 schools (17 AIL and 17 non-AIL). The findings indicated empirical inferences as heavily inclined towards the teachers and principals who were trained in the AIL pedagogy as compared to non-AIL trained teachers and principals. The perception of AIL trained stakeholders was positive in terms of curriculum transaction, learner centred classroom, coverage of textbook content, and overall personality development of the child. Almost all AIL trained respondents saw a visible improvement in terms of teaching-learning effectiveness as well as observed a difference in children's participation in curricular activities and in the school environment.

National Seminar

A National Seminar on AIL was held in December 2012 by NCERT with an objective to provide a platform to AIL practitioners (teachers and teacher educators) to share their classroom experiences, case studies, and the impact of AIL on the lives of students and practitioners both. It also provided a platform for educational leaders from DIETs and SCERTs to meet AIL practitioners face-to-face, with a clear focus on advocacy of AIL for its scaling up in different regions of the country.

Promotion of AIL as Experiential Pedagogy by NCERT

By 2017, NCERT had conducted AIL capacity building programmes in 15 States and Union Territories. AIL had successfully been introduced as the pedagogy of experiential and joyful learning in its ongoing initiative of block level research in five regions in collaboration with the Regional Institutes of Education (RIEs).

To make the learning process in classrooms holistic, enjoyable and engaging, NEP 2020 envisioned education at all stages to be experiential through AIL. NEP 2020 stated in clear terms that 'In all stages, experiential learning will be adopted, including hands-on learning, arts-integrated

and sports-integrated education, story-telling-based pedagogy, among others, as standard pedagogy within each subject, and with explorations of relations among different subjects' (pp.12).

By following the recommendations of NEP 2020, AIL was included as a module of generic pedagogy in *NISHTHA (National Initiative for School Heads' and Teachers' Holistic Advancement)*, for implementing AIL for experiential learning at Preparatory, Middle and Secondary stage of school education.

The NEP 2020 based 'Guidelines for 50 Hours of Continuous Professional Development (CPD) for Teachers, Head Teachers and Teacher Educators' was published in the year 2022. It recommended educating teachers to use art as a pedagogy to enhance creativity and innovation among students and strengthening their personal-social qualities for their holistic development.

[1]NCERT Publications

- A package of 7 training modules titled 'Training Package on Art Education for Primary Teachers' in two volumes (2015), along with a DVD including audio/video contents
- Hindi version of the training packages (2018)
- 'Art Integrated Learning — Guidelines' for elementary level in both English and Hindi (2019)
- 'Handbook on Art Integrated Learning for Teachers Teaching Classes I–V' (2023)
- 'Handbook on Art Integrated Learning for Teachers Teaching Classes VI–VIII' (2023)
- Eight Films/Videos on Art Integrated Learning

1.5 FEEDBACK FROM THE FIELD

Some teachers have used AIL at secondary stage as a matter of practice, and they shared their success stories with us. A few expressions of this kind are shared hereby.

1 *The details are given at the end of the document with QR codes.*

कला समेकित अधिगम ने दिखाया नया रास्ता

जब मैंने अपने नवीनतम उच्चतर माध्यमिक विद्यालय में पढ़ाना शुरू किया, तो मेरे सामने सबसे बड़ी चुनौती थी किशोर विद्यार्थियों से जुड़ाव को स्थापित करना। साथ ही मुझे अपने नए विद्यार्थियों के स्तर की जाँच भी करनी थी ताकि उनकी आवश्यकताओं के अनुरूप अपने शिक्षण को समायोजित कर सकूँ। इसके लिए मैंने 'कला समेकित अधिगम' को माध्यम बनाने का निर्णय लिया।

कक्षा 10 में मुझे हिंदी का 'रस' विषय पढ़ना था। रस नौ होते हैं। (इनकी संख्या भक्ति और वात्सल्य को मिलाकर ग्यारह तक पहुँच जाती है) इसके लिए मैंने अभिनय विधा का प्रयोग किया। विद्यार्थियों को रस के अनुसार अभिनय करने के लिए प्रेरित किया। एक विद्यार्थी किसी एक रस का अभिनय करता, बाकी विद्यार्थी अभिनय देखकर अंदाज़ा लगाते कि अभिनेता विद्यार्थी कौन-से रस का अभिनय कर रहा है। इससे उन्हें रसों को समझने में अभूतपूर्व सफलता प्राप्त हुई। अभिनय विधा का उपयोग मैंने एकांकियों के शिक्षण-अधिगम में भी किया। इसके लिए मैंने कक्षा-अभिनय (Classroom Drama) विधि का प्रयोग किया जहाँ विद्यार्थी अपने स्थान पर खड़े-खड़े अपने संवाद बोलते हैं।

भाषा शिक्षण में अभिव्यक्ति का सबसे अधिक महत्व है। भाषा के चारों कौशल (सुनना, बोलना, पढ़ना, लिखना) का विकास कला के उपयोग से प्रभावशाली रूप से हो जाता है। इसके अतिरिक्त आत्मविश्वास, कल्पना, तर्क, सहयोग आदि अनेक मानसिक और सामाजिक गुणों का विकास कला समेकित अधिगम से संभव हो जाता है जो विद्यार्थी को एक अधिक कुशल और अपने पैरों पर खड़े समर्थ व्यक्ति के रूप में निखारने में सहायता करते हैं। एक कक्षा-शिक्षक के रूप में ही नहीं, बल्कि एक मेंटर शिक्षक के रूप में भी कला-समेकित अधिगम ने मुझे अपने कर्तव्यों को कुशलतापूर्वक निभाने में काफी सहायता की। मेंटर टीचर के रूप में मुझे कुछ विद्यालयों में जाकर वहाँ के शिक्षकों के शिक्षण में आने वाली चुनौतियों को समझना और उनके समाधान के रास्ते सुझाना होता था। साथ ही विभिन्न मंचों पर शिक्षण-प्रशिक्षण के कार्यक्रमों के द्वारा भी उन्हें बेहतर शिक्षण के लिए सुझाव देने के अवसर मिलते थे। मैंने इन सभी कार्यों में कला समेकित अधिगम को एक प्रमुख रणनीति और शिक्षण विधि के रूप में प्रस्तुत किया। अनेक शिक्षक साथियों ने अपनी कक्षाओं में इसे आज़माया और इसकी सफलता के किस्से मेरे साथ समय-समय पर साझा किए। मुझे हर्ष और संतोष है कि कला समेकित अधिगम के माध्यम से मैं सैकड़ों बच्चों और शिक्षकों की शिक्षण-अधिगम प्रक्रिया के सफल और यादगार सफर का भागीदार बन सका।

अक्षय कुमार दीक्षित
टी.जी.टी. हिंदी और मेंटर शिक्षक
राजकीय उच्चतर माध्यमिक विद्यालय,
जी ब्लॉक, साकेत, नई दिल्ली

I have been using Art Integrated Learning and pedagogy in my classroom since last 6 years almost. Though I started teaching in the Government school 8 years back, I was posted in a rural area school. I used to teach my students with many other activities, but had not realised the potential of art-based work in students' learning. I still remember the first time when I and my students prepared a script for performing Mathematics Skit. This idea came out as I was realising that my students of Class IX are not taking interest in Mathematics and they feel that Mathematics is a very dull subject, specifically Geometry. That time we created a script and all of my students performed a Mathematics Skit on 'Akriti Gaon' ('The Village of Shapes'). The skit performance made my students so happy and enthusiastic towards learning Mathematics that two girls, who were thinking to drop the school after Class IX, continued their studies. From that day, I try to incorporate art-based learning with the topics which students find difficult. Story-telling and Story creation is one of the important parts of my teaching. I feel that students take more interest and feel more connected when such kind of art integration is there in Mathematics Class. Art integration has also encouraged the mathematical processes in my class. For example: for developing problem solving attitude, I encourage them to draw the problem or the strategies. Further, using thread art for creating conic sections and other curves has helped in developing the creativity and curiosity among my students.

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SCERT Haryana
Gurugram

My approach to the AIL pedagogy changed when I attended 5 days' workshop at the NCERT campus. Having been in the field of teaching for more than 27 years, I was extremely apprehensive about the results of AIL at school level, but, after the enriching workshop, my whole perspective changed immensely.

When I applied the pedagogy in teaching of Social Sciences in Classes IX and X, I could experience a remarkable expression of confidence and clarity of concepts among the learners. AIL has benefited the students' participation in learning, which has led to an effective and conducive teaching-learning process. It is because of the AIL pedagogy, that my students have started observing and learning things minutely, which has become instrumental in discovering their covert talents, creativity and potentials. While performing tasks, each student participates enthusiastically in creating new things and accomplishing various activities. It is evident and worth mentioning that the students have started cooperating and helping each other in the group activities, which has bridged the barriers of students belonging to various domains of intellectual level. Since AIL involves the entire class, hence, the students who are not very active participants in the class discussions also get a chance to display their talent, thereby instilling a sense of confidence in them and making them all the more receptive for learning and participating.

AIL has been very successful in making me, as a teacher, achieve learning outcomes of the topic without much effort. The evident change in the students' behaviour is that they have begun to wait for the class with an expectation to learn topics in a way which is far beyond the realms of monotonous traditional teaching methodologies. Interest in the subject has increased manifold that they have even started suggesting innovative activities to teach the lesson. As a teacher, even I feel very accomplished and content that my students are building the lesson themselves with very little hand-holding. Student-friendly assessment and teaching criteria has overcome the fear of the subject among students.

AIL has been exceptionally successful in making the teaching-learning process more student-centred.

Sunita Chitral
TGT, Social Sciences
Bhavan Vidyalaya, Panchkula

It has been five years since the implementation of AIL in our school at Foundational and Preparatory Stage. After attending brainstorming 5 days offline workshop and 3 days online workshop, it showed an impact on my thinking process towards teaching Secondary stage through AIL pedagogy for Science and Mathematics subjects from Class IX to XII.

I applied Art Integration learning technique for teaching the concept of 'Hybridisation' (Chemistry) in Class XI and witnessed a remarkable expression of confidence and clarity of concepts among the students. The impact started reflecting in the behaviour of students, of teachers, in teacher-student relationship, making students more confident, interactive and responsible. Thus, impressed by the outcomes of my AIL classroom, other teachers also started applying the pedagogy in their classes. Gradually, it made everyone believe that art activities provide students with freedom of expression and much needed socio-emotional development, which in turn can make them motivated and active learners.

In my class, AIL has given students the opportunity to think freely. When they participate in different art activities, they become more enthusiastic, their curiosity increases and they start to explore and create new things. They cooperate and help each other willingly. AIL has helped them achieve learning outcomes of Mathematics and Sciences without much effort. In fact teaching-learning process has become student centric in reality through AIL.

Kummari Srinivas
PGT, Chemistry
Delhi Public School, Nacharam,
Secunderabad, Telangana

Students engaged in an AIL group project

2

Strategies for the Implementation of AIL

AIL provides a unique opportunity to the students to explore themes and concepts. For example: for the theme of water, a discussion can be started with monsoon season for connecting their experiences joyfully. 'It is a common observation that during monsoon, most parts of the country get flooded resulting in the loss of material and human resources. We all know that water is a precious resource and is a scarce commodity'. The teacher may ask students to analyse the ways to conserve water scientifically. The teacher facilitates the students to explore the theme through different mediums like newspapers, documentaries (digital media), books, literature, folk songs, etc., and share their findings with peers. In this process of exploration and experimentation, learning becomes joyful and experiential. However, to make this process more effective, we need teachers who understand and have the skills of connecting and integrating day-to-day experiences with learning new concepts. And therefore, there is a need of guidelines for teacher preparation. The potential of AIL is best realised by capacity building and the readiness of all the stakeholders.

Hence, the steps listed hereby are recommended for effective implementation of AIL.

- Capacity building of all the stakeholders (Teacher educators, Educational administrators, Teachers and Supervising staff)
- Skill of designing activities
- Planning of time and resources
- Classroom management and Display of students' artwork
- Museum corner in school/class
- Visits for educational exposure followed by performances and presentation
- Teaming up with local artists and artisans in the community
- Teaming up of subject teachers and art teachers for multidisciplinary learning
- Use of bagless days for AIL projects
- Documentation of best AIL practices
- Acknowledgement of those who are engaged in AIL practices effectively
- Research and Development (R&D) in AIL
- Awareness and Orientation of parents on AIL
- Assessment through AIL
- Understanding roles and responsibilities

2.1 Capacity Building of All Stakeholders

Although research has proved the efficacy of AIL at all the levels of school education, the stakeholders need to put efforts to internalise the concept for its effective implementation. For this, it is imperative to reorient not only the school system but also the stakeholders in the use of AIL as a pedagogical tool. This necessitates the organisation of capacity building programmes to bring about a paradigm shift in the teaching-learning process. Efforts need to be made not only to improve the understanding of AIL as a pedagogy but also to simultaneously help educators acquire necessary skills and create a conducive environment for its proper implementation.

2.1.1 Orientation of State Authorities and Educational Administrators Including School Principals/HoS

The AIL programme at secondary level will not remain mere rhetoric if it gets the confidence and support of school principals and educational authorities. For this, need-based orientation programmes should be undertaken to explain its relevance and importance in making the entire teaching-learning process more experiential and joyful. *Guidelines for 50 Hours of CPD (Continuous Professional Development) for Teachers, Head Teachers and Teacher Educators*, a document based on NEP 2020, states: "*School Principals and school complex leaders will have similar*

modular leadership/management workshops and online development opportunities and platforms to continuously improve their own leadership and management skills, and so that they too may share best practices with each other. Such leaders will also be expected to participate in 50 hours or more of CPD modules per year, covering leadership and management, as well as content and pedagogy with a focus on preparing and implementing pedagogical plans based on competency-based education". The focus of the training programmes should be to give confidence to the principals and educational authorities that AIL as pedagogy will enrich learning experiences of the students and will help in bringing a positive qualitative shift in the entire learning process. This will eventually help in creating a suitable learning environment and will act as a catalyst for teachers to feel motivated to take such programmes with zest and zeal.

Capacity Building of Teachers and HoS on AIL

A research conducted by Sudhir (2021) at NCERT titled 'Case Study of Learning environment in primary schools practising Art Integrated Learning' proved that the schools that—(a) had more than one AIL trained teachers, (b) were a part of 10 day face-to-face training, followed up by periodic hand-holding, and (c) where the Heads of School were oriented on AIL pedagogy—were able to implement the AIL approach effectively and performed significantly better than other schools. These schools had the students who demonstrated an excellent participation in day-to-day organisation of AIL activities and exhibited a greater sense of responsibility in school events, such as morning assemblies, *Bal Sabha*, Science and Art fairs, etc., as compared to other schools.

2.1.2 Training of Teachers on AIL Pedagogy

Guidelines for 50 Hours of CPD (Continuous Professional Development) for Teachers, Head Teachers and Teacher Educators', a document based on NEP 2020, states: "each teacher will be expected to participate in at least 50 hours of CPD opportunities every year for their own professional development, driven by their own interests. CPD opportunities will, in particular, systematically cover the latest pedagogies...competency-

based learning, and related pedagogies, such as experiential learning, arts-integrated, sports-integrated, and storytelling-based approaches, etc." For the effective implementation of AIL pedagogy, we need to ensure internalisation of the concept by teachers.

For them to be confident, the training programmes need to cover the following aspects:

- Idea/Concept of AIL as a pedagogy, specifically clarifying the difference between 'art as an activity' and 'art as a pedagogical tool'
- Scientific basis of showcasing how AIL pedagogy makes learning deeper, relatable, engaging, experiential and joyful
- Establishing the feasibility for AIL programmes in different subjects by sharing the practical experiences and success stories of those who have implemented it
- Hands-on practice of different AIL techniques
- Introduction to methods and materials used in different art forms
- Methods for collaborating with teachers of different disciplines including art education, health and physical education
- Resource mapping and classroom management for conducting AIL-based sessions and projects
- Exploring the available resources and generating cost effective and local-specific resources
- Developing inclusive classrooms for AIL
- Using AIL as an assessment tool for 'assessment as learning', 'assessment for learning' and 'assessment of learning'
- Developing skill and capacity of designing AIL-based session plans
- Enhancing the socio-emotional skills such as self-image, leadership qualities, connecting with people, willingness to explore and innovate through the use of theatre games and exercises (a medium in which all the different art forms are included).

Teachers enjoying hands-on experience of AIL under CPD

2.1.3 Sensitisation of the Community

The community plays an integral role in the learning and development of its students. Most of the educationists have realised that community participation is one of the ways to improve educational access and quality. NEP 2020 has also recommended that "efforts will be made to involve community and alumni in volunteer efforts for enhancing learning at schools… (pp. 11)". Therefore, a clear understanding of AIL as a pedagogy by the community will go a long way in its effective implementation. In view of this, the schools should acknowledge and organise a brief session for the immediate community (parents/guardians) on its role and responsibility towards the implementation of AIL for the holistic education of their wards.

The orientation programme planned for the parents/guardians should focus on the concerns of their wards, as students will either enter the workforce or go for higher education after graduating from the school. For the success of AIL pedagogy, it is imperative that parents/guardians are assured of the helpfulness of AIL in deeper understanding of concepts and skill development to meet the challenges of industry, as well as their words' entry into higher education.

Orientation/sensitisation sessions for parents/guardians should include the importance of AIL pedagogy in the learning and development of their wards. For example:

1. In-depth knowledge of the subjects which can further help them choose suitable career options
2. Balanced personality development, including:
   - Stress management
   - Cooperation
   - Positive attitude
   - Leadership and followership qualities
   - Compassion and empathy
   - Problem solving and design thinking
   - Awareness of their own well-being

2.2 Designing Activities

Planning and designing AIL activities require a clear understanding of the concepts and seamless merging of art experience with it. All the activities should be planned keeping this in mind and while implementing these activities, care should be taken to make them interesting, engaging, experiential and joyful. Themes or hard spots should be identified for the meaningful use of AIL pedagogy. It is important to note that not every topic needs to be explored using a conventional art activity. AIL is after all a creative pedagogy and creativity is not bound by any one structured art

form. Thus, some topics can be covered with the help of simple discussion and one art activity could be utilised to explore more than one topic.

Creation from waste metal using welding technique

A design thinking AIL project is an example of the activity which encourages students to use the concepts learned in one or more core subjects to explore real world challenges and devise new ways to solve them. For example, at the end of a Physics chapter on sound, the learners in Class IX may have been introduced to concepts like echo or reverberation through the reflection of sound waves on surfaces with specific curvature and sound reflecting properties. The students may also learn about sound insulation using specific materials that absorb sound. A simple group AIL design thinking project might encourage learners to sketch an innovative design for a building whose occupants may have specific acoustic requirements, for example: a movie theatre, a hospital, a school or a concert hall. The students will first understand the requirements of the occupants of such a building; next they will research on the existing designs for such buildings, best practices and challenges. Then they can ideate, discuss and explore their own unique design solutions. They will then present their ideas in the class to other groups and receive peer feedback and critique, before they go back to iterate and improve their design. The project submission may include research, concept sketches, feedback received and iterations with a final labeled sketch and possibly even a paper prototype showing how the design challenges were addressed. We may require a block period for such an activity or it could be carried out in two separate periods.

In another instance, students of Economics might design a new banking process or students of Biology might design a board game to teach evolutionary concepts for middle school students. AIL design thinking projects would help the students develop important skills that can be used in their future for critical thinking, research, iterative design, collaborative decision making, giving and receiving constructive feedback and gathering the ideas together and putting them on paper.

Discussion with subject teachers, including the art teachers, can bring about cross curricular linkages. Team teaching should be encouraged for better results. Keeping the assessment in mind right from the planning stage, will help the learners map their progress. Maintaining reflective diary (reflective journal) by students and teachers can go a long way in enabling holistic learning.

2.2.1 AIL Focus Areas at Secondary Stage—Phase 1 (Classes IX and X)

While planning for this phase, teachers can keep following points in mind:

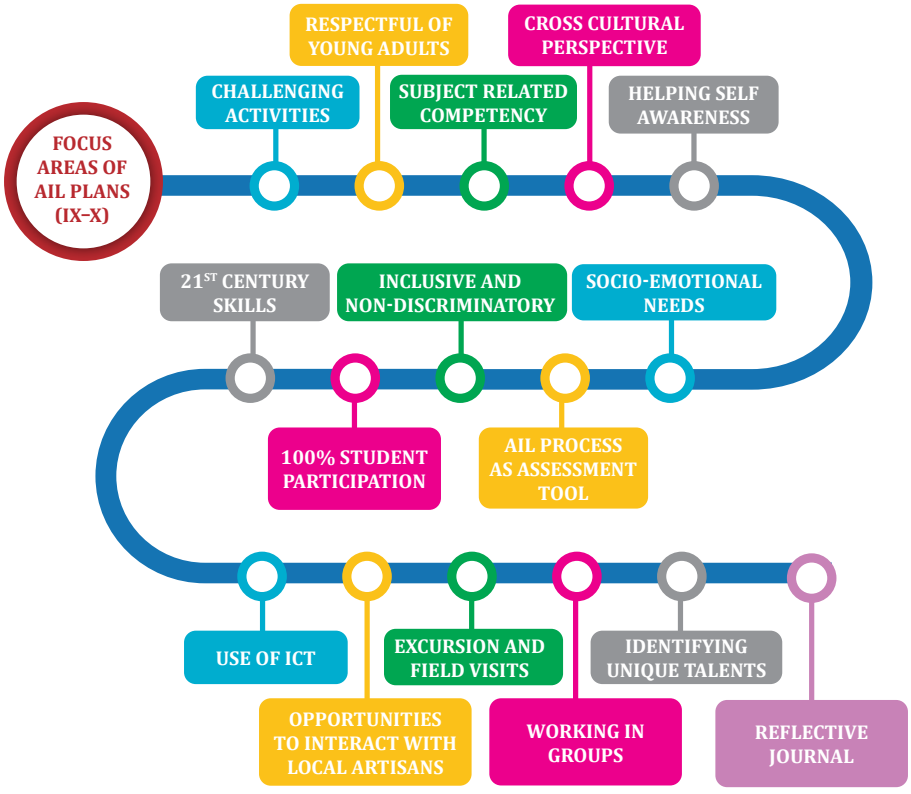
- The activities should offer learners adequate intellectual and skill based challenges to engage them actively. Their abilities need to be respected as youngsters entering adulthood.
- Attain clarity of concepts, achieving competency-based learning outcomes and not only the skill of particular art forms
- Activities should be designed with a cross curricular perspective connecting multiple subjects and themes.
- Activities designed should help students understand their abilities, aptitude and interests.
- Tasks designed should also cater to the socio-emotional needs of the students and build their aesthetic sense.
- Assessment can be woven into art experiences. For example: holding periodic displays, organising events, presentations, exhibitions, fairs, performances, etc.
- Activities chosen should not lead to any discrimination on the lines of social prejudice and gender stereotypes. Students can be grouped in ways that promote inclusivity in the classroom (including disadvantaged groups and CWSN [*Divyang*], various genders, etc.)
- Activities should be designed in a way so that every student gets an opportunity to present/perform.
- The focus should be to prepare the students for 21st century skills besides developing the clarity of concepts. Activities planned should facilitate skills and values such as communication, collaboration, cooperation, creative problem solving, critical thinking, divergent thinking, reflection, respect for diversity and appreciation for multiple perspectives, and empathy.

UNESCO's 21st century skills

- Students should be encouraged to maintain a reflective diary (reflective journal) in which they can record and reflect on their experiences, strengths and weaknesses on a daily basis. Care should be taken that all students understand that the privacy of their journals will be respected. At the same time, selected anecdotes can be shared by the journal owners on a voluntary basis. Observing the students maintaining these journals will help in formulating the holistic report cards.
- Use of ICT as an exploratory and documentation tool should be encouraged, as students of this stage will be using coding to create apps; programs and other software and create videos, animations, etc., to communicate effectively.
- Activities designed should give ample opportunities to students to interact with local and regional artisans to help them appreciate art and aesthetics of their native region. Students should also be encouraged

to explore cultural diversity and Indian knowledge, traditions and practices to learn who they are.

- Regular field visits to museums, galleries, historical monuments, concerts and performances, plays and exhibitions, book fairs, etc., to find linkages with the subjects they are learning.
- Working in groups should be encouraged for developing team-spirit, collaborative practices and respect for multiple perspectives.
- Learners with unique talent can be identified and provided additional support for nurturing their abilities.

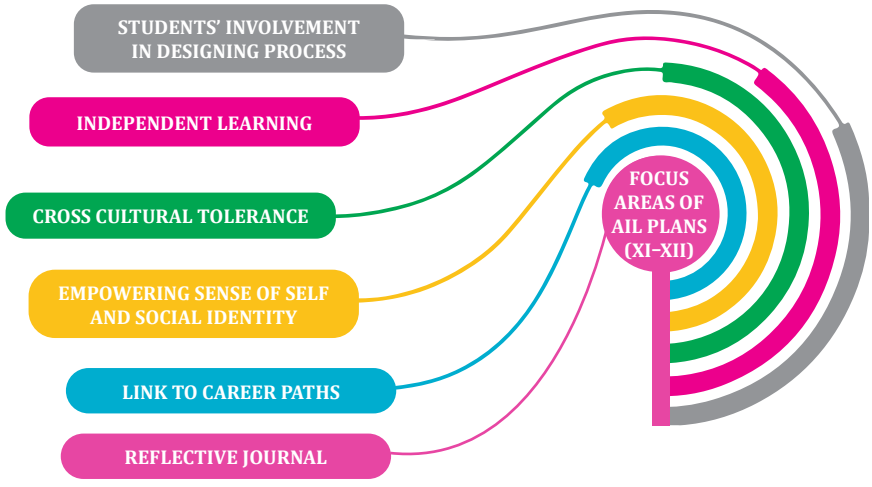


2.2.2 AIL Focus Areas At Secondary Stage—Phase 2 (Classes XI and XII)

Apart from the points recommended for phase 1, teachers planning for phase 2 can keep the following additional points in mind:

- Involve students in the designing process of activities.
- The AIL activities should promote independent learning among students and help them apply it in real-life situations.
- The AIL activities should help learners understand and appreciate different cultures and develop cross cultural tolerance.

- The AIL activities should be planned with a clear view to empower students to enhance the sense of self along with their social identity.
- Planning should encourage students to link their learning with their future plans. (For example: the skills that students discover during the course might lead them to select which higher education or professional course to pursue).



2.2.3 Suggested Format to Plan AIL Activity/Session

AIL by nature is a quite flexible pedagogy which may change as the learning situations vary. So there cannot be a fixed format to the AIL session. Teachers can design their own plans keeping in view the needs of the students, school situation, nature of the subject, art activity chosen and availability of resources. The format given below is purely suggestive in nature and can be used or modified for AIL activities by the facilitators.

Theme/Topic

AIL activities can be designed based on the themes, concepts and topic to be learnt. This will help in developing cross-curricular perspective covering multiple subjects and gaining holistic knowledge. From the syllabus point of view, it helps in covering a wide range of concepts and skills.

Art form(s) being Used

The teacher may specify the art form selected for integration. Integration of traditional knowledge, traditions and practices in arts and culture of the region can be given preference over other forms. Use of the latest technology (ICT) for this purpose is recommended.

Resources

The resources proposed to be utilised for the AIL activities should be cost effective, local specific, readily available and environment friendly. The resources should be explored, generated or procured with the help of students and the community.

Time Required

Time required for AIL activities is flexible and not prescriptive. While planning the time for the activities, provision should be made for covering the pace of all kinds of learners including those with special needs.

Learning Outcomes

The AIL activities designed should be aligned with the targeted learning outcomes. The activities must have a clear focus on achieving competencies planned and their application in daily life.

Step-Wise Planning of Art Experiences/Activities

The teacher can design activities as per the need of the specific session. Activities can be introduced at any stage depending on the flow of learning. While selecting art experiences, art based ice-breakers can be used for introducing the theme or retaining the attention and interest of the learners whenever required. Inclusive approach to involve all the students and inbuilt assessment to measure the learning outcomes should be a part of each session.

Projects

These activities allow maximum freedom to the learners to research their topic at their own pace and design the flow of their work. Projects can be designed as a group or individual activity. A project may be intended to solve a particular problem or to create an object, such as an art work or an article of use, by utilising the learnings from the core subject(s). Each group or individual presents the project work before the class, giving all members the opportunity to present.

Follow-up Exercise(s)

This is undertaken to complete the activity at hand. This can be achieved by organising questions and answers round, brainstorming, presentation/ performance, etc. (For more details, you can refer to the exemplars given in Chapter 3 of this document).

Assessment

AIL as pedagogy provides adequate spaces for 'assessment as learning', 'assessment for learning' and 'assessment of learning'. In AIL, the assessment is done to find 'what the students already know' and 'what they can do' by using different art activities. (For more details, please refer to section 2.9 on 'Assessment in AIL').

2.3 PLANNING OF TIME

Time management at the secondary stage is very crucial and challenging because the focus of students, teachers, parents and educational authorities is often on the final results rather than the process. This ultimately compromises on the creation of a joyful and an experiential learning environment. Because of the pressure of time, teachers may think

they need to focus on the academic outcomes and results. However, if planned effectively, AIL can make learning much easier, interesting and gives a promising final outcome. If learning is concrete and inclusive, time devoted to remediation gets reduced. AIL ensures holistic learning and application of knowledge. There are some interesting time slots available in formal school setups such as the morning assembly, celebrations, festivals, special assemblies and excursions, which can be utilised for collective art experiences besides multidisciplinary projects and can be linked to the subject content and concepts. Teachers need to innovatively utilise these opportunities to use AIL in furthering the learning outcomes.

2.3.1 Planning the Annual Calendar

The school team, while planning the annual calendar, should look at the following time slots available.

Morning Assembly

At every school, a day starts with the morning assembly. The morning assemblies are said to be the mirrors of the culture of the school. This can be used as the most productive time of the day by making it very engaging and interesting for the students. Teachers can select wide ranging themes and make them relevant for the learners. The assembly time can become an effective learning tool for all students if planned with focus on curricular needs. For example, if the theme of the session/class is natural resources, all students along with their teacher can plan a performance on the topic. One theme/topic can continue for a week or two, which will allow an exploration of different aspects under one theme. This can provide teachers and students with increased learning time on one hand and quality socio-cultural environment on the other. Care should be taken that the theme for the assembly is in sync with the topics being covered in the regular classes. Team teaching can also be advantageous.

Zero Periods

This is a time slot of 15 to 20 minutes either before the first period or after the last period before the school closes. This time can be utilised to revisit the concepts or introduce a concept. Techniques like ice-breakers can be used for this. (For more details on ice-breakers, you can refer to *Training Package*, Volume I (https://ncert.nic.in/deaa/pdf/tpaev101.pdf).

Special Events and Celebrations

There are many special days and celebrations in the annual calendar, for example: Children's Day, Teacher's Day and Environment Day; national festivals like Republic Day, Independence Day and Gandhi Jayanti; festivals such as *Holi, Diwali, Eid, Christmas, Baisakhi, Basant Utsav, Guru-Purab, Onam,* etc., which can be connected to the subject content and promote appreciation of the traditional knowledge systems embedded in Indian culture. This can provide opportunities for experience and expression through different art forms. Creating art experiences suitable for curricular

needs require thoughtful and proper planning. These activities can also help schools preserve and conserve their cultural heritage.

School cultural events as a part of AIL pedagogy

Bagless Days

Bagless Days can be meaningfully utilised to promote art integration and art *mela*/fairs, organising concerts and exhibitions. They can be made more useful by inviting local experts, artistes and artisans, etc. Students can also visit their workplaces for educational exposure (For more details, please refer to Section 2.7 Visits for Educational Exposure). Workshops conducted by artists/artisans can also be organised. Additionally, internship/apprenticeship opportunities may be arranged depending on the interests and needs of students. NEP 2020 recommends that *"...Similar internship opportunities to learn vocational subjects may be made available to students throughout Grades 6–12, including holiday periods. Vocational courses through online mode will also be made available. Bagless days will be encouraged throughout the year for various types of enrichment activities involving arts, quizzes, sports, and vocatio*nal crafts" (pp. 16).

Note

Apprenticeship and internship opportunities may be selected from locally available professionals and cottage industries, such as:

Instrument making/repair; toy making; weaving and *dari* making; pickle and *papad* making and food preservation including herbs and spices; costume designing; agricultural activities; indigenous crafts such as pottery, sculpture; gardening (house plants, outdoor plants, flowers, fruits and vegetables, growing herbs and spices); mask and folk artefact making; etc.

School Magazine

Magazines in printed or in electronic form provide ample space for students to exhibit their creative expressions. Content such as poems, stories, event reports, anecdotes, narratives, photographs, paintings, illustrations, cartoons and comic strips, etc., can provide unlimited opportunities for developing documentation and effective communication skills, which can be linked with the curricular themes. School e-newspapers and websites can also be effectively used to showcase art integration.

Short Duration Events

Inter-school competitions, inter-house competitions, activities, etc., can also be planned on similar lines.

2.3.2 Planning Timetable

Enjoying collaborative teaching through AIL

While planning class/subject-wise timetables at the secondary level, there should be a provision for club/block periods to conduct AIL. Club/block periods combine more than one period together to ensure uninterrupted learning. Team teaching approach can be applied by clubbing different subjects at least once a month, so that two or more teachers have an opportunity to work together as a team. At Secondary stage, different teachers teach different subjects. Hence, team teaching is a better option at this stage. However, if they want to take it individually, teachers can plan art integration activities keeping in mind specifications for their particular subject as well.

Teamwork and Collective Teaching-Learning
AIL at the secondary stage is more beneficial if done in a team. Teaming up among subject teachers (including arts and crafts teachers) will lead to a seamless transition from one subject to another and to better comprehension among students. It has been observed in classroom situations that this practice has helped teachers gain confidence and adds to their own socio-emotional growth as well.

2.4 RESOURCE PLANNING

AIL using agricultural waste

Resource planning means proper mapping of the available and potential resources (both human and material), for the successful implementation of AIL in any school. Effective planning of resources adds novelty to the art integrated experience. Regular research and extensive groundwork are the critical components that can help teachers to create a rich repository of resources, which include regional/local resources. At the same time, teachers should be flexible in the choice of resources which shape their own planning and result in maximising the learning. Online and digital resources can be equally beneficial. The following criteria can be useful for selection of resources. The resources should be:

(a) curriculum and pedagogy appropriate,

(b) local specific and readily available,

(c) biodegradable/environment friendly and used frequently (reusable and recyclable for a variety of topics),

(d) innovative and user friendly.

2.4.1 Types of Resources

Material Resources

Classroom resources are key tools to improve the learning process. It is recommended to use local specific and culture specific resources as materials. The following can be taken into consideration: minimisation of wastage, utilisation of used materials, appropriate storage and management of the materials and products made.

Suggested material as resources:

- Paper and cardboard from old magazines and newspapers, old and new notebooks, used packaging materials, invitation cards, etc.
- Used personal household objects
- Strings, threads, beads, *sutli*, etc.

Creation with packing waste

- Coconut shells, pistachio shells, walnut/almond shells, etc.
- Pebbles, bark, feathers, sand, bamboos, etc.
- Old toys, dolls, balloons, sports items, etc.
- Household materials like hangers, sponges, hair clips, buttons, lids, broomsticks, bottle caps and old cartons/boxes, etc.
- Agricultural waste

Digital Resources

The digital resources include infrastructure such as; laptops, printers, scanners, software programs, apps, data projectors and interactive

teaching boxes. It also includes software/apps and internet to explore and avail content for AIL at this level, and easy access and approachability to audio-visual medium.

Community Resources (Human Resources)

Ways and forums to involve the local community meaningfully must be devised to develop a healthy and proactive community-school partnership. NEP 2020 puts a special emphasis that "*efforts will be made to involve community and alumni in volunteer efforts for enhancing learning by providing at schools: one-on-one tutoring; the teaching of literacy and holding of extra-help sessions; teaching support and guidance for educators; career guidance and mentoring to students; etc. In this regard, the support of active and healthy senior citizens, school alumni and local community members will be suitably garnered*" (pp.11). Opportunities to interact with community members (local/regional artists and artisans) helps students get inspired, sensitised and learn more about the indigenous cultural heritage. As appropriate to the subject matter of the syllabus, school authorities may invite local experts, artists and artisans, different service providers and professionals on voluntary or payment basis, so that students may have an intimate engagement with them. Families of the students may also be involved in a positive manner with the school to support the learning of their wards. Students' family members that are skilled in indigenous crafts and trades (including but not limited to terracotta sculpture, iron/bronze work, weaving, etc.) can be identified as special invitees in this context. Inviting family members of a student is likely to have a two fold advantage — raising the self-esteem of the student as well as making a valuable human resource available to the school conveniently from within the community.

Space

Space refers to a physical setting for learning environment, that is, a place where learning occurs. Learning spaces should be able to motivate learners and promote experiential learning as an activity, support innovative as well as conventional practices, provide a personalised and inclusive environment and be flexible in the face of changing needs. It has been observed that in the traditional set up, learning is very often confined to specific areas, whereas AIL enables the utilisation of unused spaces in a school. Such spaces provide students with an opportunity to explore, experiment, create and express themselves more freely. Such spaces give teachers an opportunity to move around and work closely with the students and facilitate them. The building walls, staircase, school stage, school rooftop, fields, playgrounds and garden areas, etc., can be utilised as effective learning spaces.

Note

While exploring different spaces/places, special attention is to be paid towards the inclusive participation of students with special needs (*Divyang*).

2.5 AIL AND CLASSROOM MANAGEMENT

Classrooms are the most dynamic grounds to create productive individuals for the nation. Given below are some suggestions for effective classroom management:

- Flexible and innovative seating arrangement as per the requirement of the selected activity, which provides space to every student/group for executing the activity and should have scope for free movement of students and teachers. For better efficacy of AIL, it is recommended that the traditional seating arrangement (rows and columns) be discouraged and arrangements such as sitting in U-shape, semi-circle, clusters, etc., be encouraged to create space for activities, performances and presentations.
- Teachers/facilitators should move across the classroom space while interacting with the students. This will help the teacher reach the student and provide individualised guidance.
- AIL pedagogy recommends that students work in groups for active engagement and collective learning. At secondary stage, students can group themselves based on the requirement of a particular activity and not be bound by a fixed sitting pattern. This will help them display better group dynamics in understanding concepts.

Managing space for AIL

- The configuration of groups can keep changing, which will facilitate students in knowing each other better, appreciate each other's strengths and abilities to enhance socio-emotional skills.
- Inclusion and diversity are encouraged in the AIL setting.
- Display of students' work in the classroom will enhance motivation.
- The classroom resources should be easily accessible to both — students and teachers.
- Performance area in the classroom is to be adequately used for showcasing students' potential.

Such classrooms where students enjoy freedom of movement and work helps to develop a sense of ownership, hence making them responsible individuals who respect diversity of thoughts.

2.6 DISPLAY OF ARTWORK

A dedicated display space for the students' artwork helps ignite the interest and eagerness to do more and learn more. It also helps them analyse

Use of Installations for exploring Science and Technology

and appreciate their own work and also of others. Some suggestions for a meaningful display are given hereby.

- The original unedited artwork of all students should be displayed. The artwork should bear the name of the creator.
- Some students due to their pace or workload might not be able to complete their work. They should be encouraged to display their incomplete work.
- Classroom walls, corridor walls, bulletin, notice boards, etc., can be used as display surfaces. Unused spaces and corners can be used for installations. Innovation can be encouraged to find/ suggest new display spaces.
- Every student should be appreciated for their participation in the process and engagement in the creation of an artwork and not only for the final product.
- The display should be periodic in nature and can be frequently changed.
- Students should be encouraged to take charge of the displays and find ways to bring novelty to the display.
- Apart from the students' work, they can also keep the work of great artists, which can help students understand the nuances of particular art forms and refine their own aesthetic sensibilities.
- Digital display of artworks can also be prepared by students. It can be done either individually or in groups. A website or page can be created online where students can share pictures, videos, animations, games, comics and other audio-visual materials created by them.

2.7 VISITS FOR EDUCATIONAL EXPOSURE

AIL suggests that students are taken on field trips and excursions regularly. Possible destinations could include: historical monuments, heritage sites,

stock exchange, factories, textile units, business houses, art galleries, planetariums, biosphere reserves, sanctuaries, career fairs, newspaper units, educational institutes/university, museums, studios/workshops/ workplaces of artists (visual and performing) and artisans, auditoriums, etc. Such trips help learners get familiar with their local resources and gather experiences. This applies to rural, tribal as well as urban areas to make students well versed with the social dynamics of their region and cultural roots. As given in NEP 2020, "Children will be given periodic exposure to activities outside school through visits to places/monuments of historical, cultural and tourist importance, meeting local artists and craftsmen and visits higher educational institutions in their village/Tehsil/ District/State" (pp.16).

These visits should be planned very carefully as per the needs of learners to make them interesting and effective for students of this stage. For example: students can be encouraged to think of research projects which they can explore in teams/groups. After the excursion, teams can pool the information gathered through these research projects. Teachers can also conduct these excursions in teams so that learning is connected to different subject areas. Different types of documentation methods like sketching and using audio visual devices (phone recorder, cameras, tablets, etc.) can be encouraged. Students can also prepare a documentary of the visits integrating the inputs of different teams. This documentary could be later used for a variety of purposes.

However, in case the visits are not possible, then videos, films, slides and presentations available can be explored for virtual learning. The idea is to devise ways for a guided exposure to students about places around them and link the experience with new learning.

2.8 Museum Corner in School/Class

Students/learners should be encouraged to collect objects from various excursions and to observe the traditional everyday objects found at home. These may include crafted/carved objects or utensils in brass and other metals, wood and other materials, as well as knitted, woven or embroidered textiles, etc. Other suggested household items can include: old coins, woven bags, footwear, old costumes, old watches and wall clocks, old radio sets, old television sets, old handmade craft items and the like. Bringing their attention to such products in their immediate environment helps to encourage pride in their local heritage and an understanding of aesthetics. This collection can be exhibited in the class/school periodically and used as a starting point for introducing a wide variety of subjects.

Beyond the immediate environment, institutions like National Museum, National Gallery of Modern Art (and their branches nationwide), as well as other bodies which house displays (such as dolls museum, railway museum, science museum, photography museum, etc.), do have schemes to help schools develop their museum corners by providing them with aids

such as replicas of the famous artifacts and posters relevant to school education. They could be approached to foster interaction that would benefit both staff and students. The collections can then be displayed under the name — 'School/Class Museum'.

Collectibles can act as an active tool of delivering academic content across different disciplines using a variety of activities by the teacher/facilitator. This will help in achieving learning outcomes and enhance their life skills, while sustaining interest in the learning process. This collection can be used for storytelling also. Apart from being a part of the learning process, the collection of artifacts can encourage students/learners to move from the relatively simpler approach of 'search' (observing the artwork) to the complexities of 'researching on that artwork'.

2.9 Assessment in AIL

Assessment in AIL is a continuous process of gathering information/data of each student to improve the teaching-learning process and it is not only about testing and grading students. Since everyone possesses different types of intelligences, not all students are able to answer conventional test questions, even though they may already possess the knowledge to give correct answers! AIL provides a vast range of opportunities beyond the usual pen-paper methods, to assess students' learning. This helps the teacher to further the process of teaching-learning.

NEP 2020 states "The aim of assessment in the culture of our schooling system will shift from one that is summative and primarily tests rote memorization skills to one that is more regular and formative, is more competency-based, promotes learning and development for our students, and tests higher-order skills, such as analysis, critical thinking, and conceptual clarity… This will be the underlying principle for assessment at all levels of education" (pp.17). Assessment through AIL helps to deepen the facilitator's knowledge about the competency gained by students. When observing students engaged in an artwork, the teacher is able to paint a fuller picture of their personality. For example, a student who is boisterous and disruptive might surprise the teacher by writing a sensitive love poem; students whom the teacher thinks are distracted might come up with a project of complex design showing that in fact they are capable of out-of-the-box thinking. In these examples, the teacher not only finds out more about the students but also develops an understanding of planning the next activities. Integration of arts helps to democratise the process of assessment, which is non-judgemental and non-threatening. Hence, it becomes an effective tool for both joyful learning and holistic assessment.

NEP 2020 recommends that "to close the gap in achievement of learning outcomes, classroom transactions will shift, towards competency-based learning and education. The assessment tools (including assessment 'as', 'of", and 'for' learning will also be aligned with the learning outcomes, capabilities, and dispositions" (pp. 12). It further recommends that "the

progress card will be a holistic, 360-degree, multidimensional report that reflects in great detail the progress as well as the uniqueness of each learner in the cognitive, affective, and psychomotor domains. It will include self-assessment and peer assessment, and progress of the child in project-based and inquiry-based learning, quizzes, role plays, group work, portfolios, etc., along with teacher assessment" (pp. 18). Art integrated learning efficaciously fulfils the above given recommendations of NEP as it weaves in all three stages of assessment ('as', 'of', and 'for' learning) with learning seamlessly.

360° Assessment using AIL

It is a cross-curricular pedagogical approach, where the focus shifts from simply gathering information to competency-based learning. While engaging with the arts, learners go through different stages, such as observing, thinking, imagining, exploring, experimenting, deducing, creating, expressing and applying. These stages help in engaging all the three: cognitive, psychomotor and affective domains of the learners. Hence, it is experiential in nature and leads to competency-based learning.

In order to follow AIL based assessment, facilitators need to keep the following points in mind:

1. Assessment in AIL is an ongoing cyclical process that begins with the identification of clear learning outcomes and can occur at various points within the teaching-learning process.
2. AIL assessment is incomplete without feedback, which can be spoken, written or even gestural (non-verbal). The purpose of feedback is to improve students' performance and therefore, it cannot be given only in the form of marks and grades. Good feedback is descriptive, solution-oriented, timely, positively worded and targets the task rather than the student.
3. AIL-based assessment is a unique platform where both individual and group activities can be assessed for competency-based

learning outcomes.

4. The facilitators can assess both verbal and non-verbal responses of the student. Verbal responses comprise mainly different forms of oral communication like speeches, presentations, announcements, singing, poetry recitation, acting/play performance, storytelling, as well as casual conversations between friends. Non-verbal ones are the visual cues, which include gestures, facial expressions, body language, dance, mime and any other way to communicate without speaking.
5. AIL-based assessment allows the facilitator to go beyond the knowledge domain and assess the various competencies such as creative thinking, critical thinking, communication, decision making, empathy, coping with stress, coping with emotions, interpersonal relationships, self-awareness and problem-solving.
6. The facilitator can conduct the assessment even in multi-grade settings (a teacher dealing with vertical age groups), which are prevalent in many schools.
7. It is an opportunity for the facilitators to practise an inclusive and fair practice of assessing students, keeping in mind the cultural, socio-economical contexts, gender concerns and students with special needs.
8. AIL-based assessment often requires collaboration between the subject teacher and the art teacher. Multidisciplinary assessment requires even more collaborative efforts and deeper planning as it involves the teachers of multiple subjects.
9. It is a good idea to embed reflective routines into assessment. Reflection helps both— the facilitators and the students— to better understand their strengths and areas of improvement, and plan the way forward.
10. Assessment should be periodically shared with students and guardians in the form of a holistic report card which should include the competencies of cognitive, psychomotor and socio-emotional domains. Some students demonstrate a high degree of life skills, such as empathy, cooperation, compassion, tolerance for multiple viewpoints, appreciation and respect for others and concern for environment, etc. Such behaviour should be noted in observational records and highlighted in the holistic report card.
11. Assessment is—
    (a) Non-judgmental: The facilitator should not reflect biases or allow attitude to pervade the interactions with the students.
    (b) Non-comparative: The facilitator must assess students on their own merit and not compare students with one another.
    (c) Non-competitive: The AIL-based assessment should be a joyful activity, where every student gets equal opportunity to participate and get acknowledged without competing with one another.

(d) Non-threatening: The AIL-based assessment is a non-threatening activity where students perform without any fear of failure or being judged.

(e) Differentiated: It must cater to the individual learning pattern and respect the pace of each student.

(f) Holistic: It refers to assessing the three domains— cognitive, psychomotor and socio-emotional.

2.9.1 Tools and Techniques for AIL-based Assessment

AIL-based assessment empowers the teacher/facilitator with a variety of tools and techniques of assessment. It promotes task-based learning and helps in assessing various competencies of students.

Teachers can use the following tools and techniques for assessment:

- Curricular projects
- Performances and presentations
- Observation records (including teacher diaries/journal and personal notes regarding students' individual qualities like taking initiative and responsibility during special events; subject specific learnings; inclination and special talents, challenges, etc.)
- Interviews (informal chat with provoking, competency-based questions)
- Checklists and rating scales
- Rubrics created in collaboration with the students
- Portfolios with the samples of finished artwork; even unfinished artwork may be recorded and assessed.
- Anecdotal records capturing the overall progress of a student's cognitive, socio-emotional and creative development.
- Questionnaires and quizzes
- Students' reflective diary (reflective journals) and learning logs.

Some examples of how students demonstrate their learnings
Sculptures, Models, Puppet shows devised by students; Dance, Musical and/or Dramatic performances; Discussions/Debates, Demonstrations, Story-making and Storytelling; Innovative games and quizzes; Animation/Cartoon strip, Book Reviews, Bulletin Boards, Collages, Mind Maps, Essays, Flowcharts, Journals, Diary, Letters, Magazines, Newspapers, Short films, Pamphlets, Photographs, Portfolios, Questionnaires, Computer software, Scrapbooks, Brochures, Travelogues, PowerPoint presentations; Displays/ exhibits in classrooms and corridors, Individual/Team projects, Installations; Exhibiting special qualities like sense of responsibility, compassion and care; Initiatives during special occasions/contingencies; Group projects, Individual projects, etc.

2.9.2 Self and Peer assessment (Assessment as Learning) in AIL

The ultimate aim of AIL assessment is to enable the students to reflect on their performance and be motivated to work towards achieving the learning outcomes. When students are given ample opportunities to criticise/ analyse their own work, they go on to become autonomous learners. Peer

assessment or peer review provides students an opportunity to analyse and provide effective feedback to each other. It helps students to learn from each other and also helps them to self-assess and improve their own work.

Role of Facilitator in Self and Peer Assessment

- Model and teach how to do self and peer assessment
- Guide students to identify the learning outcomes and map their progress towards them
- Provide exemplars to students of quality work and good practice
- Work with students to make them understand and develop assessment criteria, ensuring that assessments adhere with the learning outcomes and competencies applicable to a particular activity
- Help students develop effective and positive feedback mechanisms, whether they are directed towards self or peers.
- Provide regular opportunities for self and peer assessment and closely monitor those processes.
- Create an environment where students feel comfortable to speak up and are not scared of committing mistakes.

2.9.3 Dos and Don'ts in Assessment

Dos

- Plan the art experiences meticulously so that the learning outcome(s), instructional strategies and assessment are aligned and reinforce each other.
- Ensure that students clearly understand the learning outcomes and the assessment criteria.
- Involve students in the assessment plan. This makes assessment transparent and gives them ownership of their learning.
- Provide constructive feedback. Specific and descriptive comments are always more effective than marks/grades.
- Appreciate every student and recognise their efforts. Give encouraging remarks.
- Focus more on the process than the end result. Research has shown that this leads to excellence, growth, and ultimately, better performance both in sports as well as education.
- Guide students through self and peer assessment.
- Give equal opportunity to all students including those with special needs (*Divyang*).

AIL as organic for inclusive setup

- Respect the pace of the learner and be flexible with the timing to help those who are still in the process of completing the activity.
- Ask open ended questions that give students the opportunities to process the learning and show in different ways, what they know and can do.
- Display original, unedited artwork of every student (even if the teacher does not find the work aesthetically pleasing).
- Refer to classroom displays during the teaching-learning process.
- Compare students' progress to their earlier individual performances and not with other students' performances.

Don'ts

- Do not comment on the artistic quality of the presentation.
- Do not compare the work of one student with another.
- Do not go to the classroom with preconceived notions.
- Do not turn the feedback into criticism. Feedback should be motivating and worded positively.
- Do not be afraid of arranging students into groups. Even though group work can be messy, the advantage of group work is that it promotes various 21st century skills and students can learn the concepts more effectively.

Note

Any activity that has some art form linked to it may not serve the required learning outcome of a particular lesson. For example, Mathematics formulae written using *Rangoli* might be too simplistic to assess students' ability to apply the formulae. For effective implementation of art integration, the art form should be selected keeping in mind that it can be used to demonstrate students' understanding of a concept in a core subject, along with the related competencies and outcomes. (For details, please refer to the section on Exemplars).

2.10 Roles and Responsibilities

AIL is a collaborative exercise that demands the interest, support and cooperation of all the stakeholders. For a smooth and hassle free implementation, it is important that all the stakeholders are aware of their roles and responsibilities. Some suggestions for fulfilling the roles are given below:

2.10.1 Roles and Responsibilities of HoS

The Head of school (HoS) has a crucial role in the implementation of this pedagogy. The HoS will lead the planning and designing of the pedagogy, encourage the team in its implementation, conduct follow-ups and handholding. For fulfilling these roles, the HoS needs to:

Experiencing Teamwork through AIL under CPD

- Acquire a clear understanding of AIL pedagogy and attend Continuous Professional Development (CPD) programmes as recommended by NEP 2020.
- Create a conducive environment for the proper implementation of AIL pedagogy.
- Be flexible and open to the new tools of teaching-learning and innovative use of school spaces.
- Encourage and guide the team to map and mobilise community resources with the help of students.
- Help in development of the annual calendar for implementing AIL in the school.
- Depute all teachers for periodic capacity building on AIL.
- Organise short orientation programmes/discussions for teachers and parents for better clarity on the concepts and benefits of AIL.
- Conduct frequent handholding for smooth implementation of the pedagogy.
- Acknowledge and appreciate the best practices of teachers and AIL classrooms in the school.
- Encourage flexible timetables for club/block periods and team teaching.

2.10.2 Roles and Responsibilities of Teachers

Teachers are the most important link in the implementation of any pedagogy. In AIL pedagogy, a teacher plays multiple roles—of a strategist, a mentor and a facilitator, to make the learning productive and joyful. The teacher needs to:

Teacher engaged in AIL planning

- Hold a clear vision and goal for planning and executing AIL activities in the classroom.
- Be flexible and open to new ideas and respect the perspectives of HoS, colleagues as well as students and community while implementing it.
- Design AIL activities individually as well as with the team of teachers keeping in view the school timetable and annual calendar.
- Keep experimenting and exploring diverse art forms, methods and materials.
- Work for one's professional development individually as well as institutionally by participating in Continuous Professional Development (CPD) programmes.
- Understand the role of AIL in 360 degree assessment and practice it for holistic learning.

- Organise hands-on practice workshops for multidisciplinary exploration of the themes and in-depth learning.
- Plan field visits well in advance and motivate students for presentation of reports in front of larger audience in formal settings.
- Actively participate in mapping and mobilising resources with the help of students, fellow teachers, HoS and parents.
- Encourage students to maintain a reflective diary (reflective journal).
- Organise thematic morning assemblies related to the curricular content, and allow opportunities to students to share anecdotes/thoughts from their reflective journal on voluntary basis periodically.

2.10.3 Roles and Responsibilities of an Art Teacher

AIL has been planned keeping subject teachers at the forefront, but art teachers have an important role— of providing a common platform to make it happen. Art teachers, apart from teaching the arts (as a subject), would also participate in the planning of AIL activities for different subjects in team with the subject teachers. The art teacher (visual and performing) needs to:

- Be able to differentiate between 'art as a subject' and 'art as pedagogy';
- Understand the use of AIL as a pedagogy;
- Be an important part of the AIL team teaching;
- Facilitate different subject teachers in exploring and selecting appropriate art forms. This would include offering one's expertise in providing parallels between the practices found in the area of one's art from and the concepts being taught in various subject areas. For example: Geometry with Origami/weaving motifs/architectural designs; or Chemistry with clay glazes/*kalamkari* colours; Psychology/Sociology with drama/theatre and storytelling; Mathematical concepts with musical rhythms and dance, etc.
- Provide necessary support for the artwork display and for the performance of students.
- Develop their own professional horizon to understand and facilitate students in AIL.
- Help in planning and organising art camps, workshops and interactions with artists and artisans.
- Mentoring students as well as teachers of other subjects on different art forms periodically.
- Identify students with particular interest in art as a subject, and to offer mentoring, nurturing of talent and career guidance to students.

Note
The 'out-of-the-box thinking' inherent in creating art makes art teachers ideal and vital partners in implementing the AIL pedagogy.

3

Art Integrated Learning

Exemplars

Note for the Teachers and other Stakeholders

All the given exemplars in this chapter are theme based and suggestive in nature. These exemplars have been designed by the AIL practising subject teachers as per their pedagogical needs in the given situation. Teachers referring to these guidelines can design their own art experiences and/or adapt the same as per their choice. For a successful experience of the AIL session, it's advised to plan and arrange the resources well in advance with the active involvement of students. The material used for art experiences should preferably be local specific, easily available and biodegradable in nature. Let's remember that art experience integrated in the learning process here is for experiential learning, hence, it is a well planned pedagogical exercise and not 'Art for Art's sake'. It is important to read the first two chapters before designing or conducting the AIL sessions for your learners.

3.1 HINDI

ACTIVITY 1

विषय	हिंदी
कक्षा	IX – XII
पाठ्यवस्तु / विधा	पद्य (कबीर की साखियाँ और सबद)
प्रयोग में लाई गई कला	दृश्य एवं प्रदर्शन कला

अधिगम प्रतिफल

सत्र के अंत तक, शिक्षार्थी —

- पाठ्यपुस्तक के अतिरिक्त नई रचनाओं के बारे में जानने या समझने को उत्सुक हैं और उन्हें पढ़ते हैं।
- अपनी पसंद की अथवा किसी सुनी हुई रचना को पुस्तकालय या अन्य स्थान से ढूँढ़कर पढ़ने की कोशिश करते हैं।
- समाचारपत्र, रेडियो और टेलीविजन पर प्रसारित होने वाले विभिन्न कार्यक्रमों, खेल, फिल्म तथा साहित्य-संबंधी समीक्षाओं, रिपोर्टों को देखते, सुनते और पढ़ते हैं।
- देखी-सुनी, सुनी-समझी, पढ़ी और लिखी घटनाओं/रचनाओं पर स्पष्टता मौखिक एवं लिखित अभिव्यक्ति करते हैं।
- दूसरों द्वारा कही जा रही बातों को धैर्य से सुनकर उन्हें समझते हुए अपनी स्पष्ट राय व्यक्त करते हैं।
- अपने अनुभवों, भावों और दूसरों की राय एवं विचारों को लिखने की कोशिश करते हैं।
- पाठ्यपुस्तकों में शामिल रचनाओं के अतिरिक्त, कविता, कहानी, एकांकी और गद्य-पद्य की अन्य विधाओं को पढ़ते-लिखते हैं तथा कविता की ध्वनि और लय पर ध्यान देते हैं।
- भाषा-साहित्य की बारीकियों पर चर्चा करते हैं, जैसे — विशिष्ट शब्द-भंडार, वाक्य-संरचना, शैली-संरचना, मौलिकता आदि।
- जाति, धर्म, रीति-रिवाज़, जेंडर आदि मुद्दों पर प्रश्न करते हैं।
- अपने परिवेश की समस्याओं पर प्रश्न तथा साथियों से बातचीत या चर्चा करते हैं।
- सभी विद्यार्थी अपनी भाषाओं की संरचना से हिंदी की समानता और अंतर को समझते हैं।
- नई रचनाएँ पढ़कर उन पर परिवार एवं साथियों से बातचीत करते हैं।
- कविता या कहानी की पुनर्रचना कर पाते हैं।
- विभिन्न साहित्यिक विधाओं को पढ़ते हुए व्याकरणिक संरचनाओं पर चर्चा/टिप्पणी करते हैं।
- प्राकृतिक, सामाजिक एवं सांस्कृतिक मुद्दों और घटनाओं के प्रति अपनी प्रतिक्रिया को बोलकर लिखकर व्यक्त करते हैं।
- सामाजिक, शारीरिक एवं मानसिक रूप से चुनौती प्राप्त समूहों के प्रति संवेदनशीलता एवं समानुभूति लिखकर एवं बोलकर अभिव्यक्त करते हैं।

सामग्री

नियमित कक्षा के लिए — कक्षा के डेस्क या कुर्सियाँ, कागज़ की कुछ पर्चियाँ, आदि।
ऑनलाइन कक्षा के लिए — इंटरनेट कनैक्शन, टैब, मोबाइल फोन, लेपटॉप आदि।
वैकल्पिक सामग्री — वाद्य यंत्र जैसे — ढोलक, हारमोनियम, माइक, स्पीकर आदि।

योजना का सामान्य परिचय

'कबीर की साखियाँ और सबद' जैसा कि नाम से ही स्पष्ट है, प्रसिद्ध संत कवि कबीरदास जी की रचनाओं से संबंधित पाठ है। कबीर जुलाहे का कार्य करते थे और कपास बुनते-बुनते साखियाँ और सबद भी बुनते जाते थे। कबीर की रचनाओं को कक्षा 6 से 12 तक अनेक कक्षाओं की हिंदी पाठ्यपुस्तकों में स्थान दिया जाता है। उनकी रचनाओं में बहुत सरल भाषा का प्रयोग करते हुए दैनिक जीवन के उदाहरणों की सहायता से जीवन और भक्ति की गूढ़ बातों को समझा दिया जाता है। यदि उनकी रचनाओं को संगीतबद्ध रूप से सुना जाए या गाया जाए तो वे और भी अधिक सरल बन जाती हैं और उन्हें समझना और भी आसान हो जाता है।

प्रस्तुत योजना में विद्यार्थी कबीर की रचनाओं को पढ़ेंगे, सुनेंगे और गाएँगे। इसके लिए वे कक्षा में एक गायन कार्यक्रम का आयोजन करेंगे। इस प्रक्रिया में वे पाठ से अच्छी तरह परिचित हो जाएँगे क्योंकि इस कार्यक्रम के आयोजन के लिए वे कबीर की उन रचनाओं को भी पढ़ेंगे और गाएँगे जो उनकी पाठ्यपुस्तक में दी गई हैं। इस योजना में वे मंचीय प्रदर्शन की तैयारी हेतु व्यक्तिगत रूप से और समूहों में कार्य करेंगे। इन कार्यों को करते हुए वे भाषा और पाठ की विषय-वस्तु के साथ सक्रिय रूप से लेन-देन करेंगे और इस प्रकार भाषा और विषय-वस्तु पर अपनी पकड़ मज़बूत करेंगे।

आप इस योजना को अपनी कक्षा के विद्यार्थियों की रुचि और आवश्यकताओं के अनुसार संशोधित या परिवर्तित कर सकते हैं।

कबीर एवं कबीर पाठ की विषय-वस्तु से संबंधित लिंक्स संदर्भ के लिए नीचे दिए गए हैं।

वीडियो लिंक्स

- https://www.youtube.com/watch?v=GAZxF8qDzns
- https://www.youtube.com/watch?v=FAob8_B6hMg
- https://www.youtube.com/watch?v=yq7gznVrQtc&list=PL9vL8QnJ37pKVdC2yP1qoiZCc6uleJDZR

आकलन

इस थीम के लिए आकलन निम्नलिखित के आधार पर किया जाएगा—

1. विद्यार्थियों द्वारा प्रस्तुति और चर्चाओं का अवलोकन
2. सीखने के प्रतिफल आधारित जाँच-सूची और रुब्रिक्स
3. शिक्षार्थियों की मौखिक और लिखित अभिव्यक्ति

तैयारी— पाठ को अच्छी तरह पढ़ लें। यदि ऑनलाइन माध्यम का प्रयोग किया जा रहा है तो इंटरनेट कनैक्शन, उपकरण आदि की व्यवस्था की जाँच पहले से कर लें। विद्यार्थियों को भी पहले से सूचित कर दें—

- समय
- तिथि
- क्या तैयारी की जानी है
- किस माध्यम द्वारा कक्षा आयोजित की जाएगी आदि

चरण 1 (आइस-ब्रेकर — दूसरी पंक्ति जोड़ो)

प्रसन्नचित्त भाव से कक्षा या ऑनलाइन माध्यम या प्लेटफॉर्म में प्रवेश करें। विद्यार्थियों से कहें— मैं आपको एक पंक्ति सुनाऊँगा या सुनाऊँगी। आपको अपने मन से उसके लिए दूसरी पंक्ति बोलनी है। ध्यान यह रखना है कि पंक्ति सुनकर ऐसा लगे कि कविता बन गई है या जो बात कही जा रही है, वह पूरी हो गई है।

वैकल्पिक गतिविधि

विद्यार्थियों को तुकबन्दी द्वारा एक शब्द से अनेक शब्दों को जोड़ने के लिए कहें, जैसे — एक विद्यार्थी ने कहा लाठी तो दूसरा विद्यार्थी माटी, काठी आदि बोलकर उसे आगे बढ़ा सकता है।

इस गतिविधि का उद्देश्य विद्यार्थियों में कही जा रही बातों पर ध्यान देने के कौशल और सृजनात्मकता का विकास करना; साथ ही कविता के विशिष्ट रूप— दो पंक्तियों की कविता की ओर उनका ध्यान दिलाना है। इस पाठ में इन कौशल का बड़े स्तर पर प्रयोग किया जाना है। गतिविधि करवाने से पहले विद्यार्थियों के प्रश्नों को आमंत्रित करें।

इसके बाद विद्यार्थियों को उदाहरण के तौर पर किसी कविता की एक पंक्ति या कोई शब्द लिखकर उस कविता को आगे बढ़ाने के लिए कहें। सभी विद्यार्थी इस पंक्ति को अपने अनुसार आगे बढ़ाएँ। इस प्रकार बनी रचना की विधा पर परिचर्चा करते हुए विभिन्न प्रकार के पद्यों को बताएँ, जैसे—

चाँद और सूरज आसमान की दो आँखें हैं

इसके बाद बच्चों को इस पंक्ति को पूरा करती निम्नलिखित पंक्तियाँ सुनाएँ ताकि वे समझ जाएँ कि दी गई पंक्ति को पूरा करने के अनेक तरीके हो सकते हैं।

चाँद और सूरज आसमान की दो आँखें हैं
दो आँखों से चुपके-चुपके वह झाँके है
आँखों से वह जाने किस-किसको ताके है
गुस्से और प्यास में डूबी वे आँखें हैं आदि।

जब वे गतिविधि को समझ जाएँ तो उन्हें अपने मन से एक-एक करके पंक्तियाँ दें या आप निम्नलिखित पंक्तियों का प्रयोग भी कर सकते हैं—

माँ कहती थी जल्दी से तू बड़ा/बड़ी हो जा
नेकी का रास्ता देखा तो पड़े थे उसपर भारी पत्थर
मेरे काम आई सच्चाई
मुझे उठाते उठाते झुक गए पापा

कविताएँ पूरी करते समय विद्यार्थियों के प्रयासों की सराहना करें और उनका उत्साहवर्धन करें। यदि विद्यार्थियों में से कोई अपनी लिखी कविता सुनाना चाहे तो उसका स्वागत तालियों के साथ करें।

गतिविधि पूरी होने के बाद कहें —

हम सभी ने आज कुछ कविताएँ गढ़ी हैं। कविता कोई भी लिख सकता है यदि उसके भीतर कुछ कहने की इच्छा और भाव हैं। कविता लिखने के लिए किसी को बहुत पढ़ा-लिखा होना ज़रूरी नहीं है। कविता लिखने के लिए सारे काम-काज छोड़ना ज़रूरी नहीं है। केवल कुछ नया कहने या नए तरीके से कहने की काबिलियत होनी चाहिए। ऐसे ही एक कवि थे कबीर। वे बहुत पढ़े-लिखे नहीं थे, जुलाहे थे। उन्होंने किसी से कविता कहना सीखा नहीं था। फिर भी उनकी लिखी कविताएँ इतनी सुंदर हैं कि आज भी हम उन्हें पढ़ते-सुनते हैं।

गतिविधि

विद्यार्थियों से उनके द्वारा पढ़ी-सुनी कविताओं और कवियों के बारे में बातचीत करें। उन्हें अपनी मनपसंद कविताओं और कवियों के बारे में बताएँ। उनसे पूछें कि आपने किन-किन कवियों की कविताएँ पढ़ी हैं? किस कविता को पढ़कर सबसे अच्छा लगा? और क्यों? किसे पढ़ना अच्छा नहीं लगा? और क्यों? क्या आपने कोई कवि सम्मेलन देखा है? किसी कवि को कविता सुनाते देखा-सुना है? और कब? आदि। इसके बाद उन्हें कबीर के जीवन पर आधारित निम्नलिखित कार्यक्रम सुनाएँ –

वीडियो लिंक

- https://www.youtube.com/watch?v=FGMEpPJJQmk

इसके बाद विद्यार्थियों से कहें — कल या परसों या अगले सप्ताह हम अपनी कक्षा में कबीर की रचनाओं को एक-दूसरे को सुनाएँगे। इसके लिए आपको समूह में मिलकर कार्य करना है। आपको कबीर की अपनी मनपसंद कविता चुनकर उसे सुनाना है। कैसे सुनाएँगे, गाकर, संगीत के साथ या बिना संगीत के, कौन-सी धुन में, यह सब आपको ही तय करना है।

समूह बनाने के लिए किसी भी तरीके का उपयोग किया जा सकता है, जैसे — रंगों के आधार पर, गिनती करवाकर या कक्षा की पंक्तियों के अनुसार समूह बनाए जा सकते हैं।

इसके बाद समूहों को अपनी पसंद की रचनाएँ खोजने और चुनने के लिए पर्याप्त समय दें। उन्हें रचनाएँ खोजने के लिए मार्गदर्शन दें, जैसे — पुस्तकालय में उपलब्ध पुस्तकों की सूची, इंटरनेट पर विश्वसनीय स्थान। यदि वे चाहें, तो रचनाओं के अर्थ समझने में भी उनकी सहायता करें। विद्यार्थियों को पिछली कक्षाओं में पढ़ी और वर्तमान कक्षा की पाठ्यपुस्तक में दी गई कबीर की रचनाएँ चुनने के लिए भी प्रेरित किया जा सकता है। आप विद्यार्थियों को निम्नलिखित कार्यक्रम देखने के लिए भी सुझाव दे सकते हैं—

वीडियो लिंक्स — कबीर के पद

- https://www.youtube.com/watch?v=ngF88zXnfQ0
- https://www.youtube.com/watch?v=JhWy6BYvosU
- https://www.youtube.com/watch?v=UNEIIugmwV0
- https://www.youtube.com/watch?v=gnU7w-RHhyU

- https://www.youtube.com/watch?v=UQA8DdnqiYg
- https://www.youtube.com/watch?v=tPwfdEnD1kA
- https://www.youtube.com/watch?v=3QsynIvp62Y
- https://www.youtube.com/watch?v=1HnPubuP8VE
- https://www.youtube.com/watch?v=SQdTd7X1GLY

विद्यार्थियों को इस प्रस्तुति का एक आकर्षक और उपयुक्त नाम सोचने के लिए भी प्रेरित करें, उदाहरण के लिए कबीर संध्या, कबीर दिवस, कहत कबीर सुनो भाई साधो आदि।

विद्यार्थियों को इस प्रस्तुति के लिए एक आकर्षक पोस्टर बनाने के लिए भी प्रेरित करें। यदि पोस्टर न बन सके, तो कक्षा के श्यामपट या प्रोजेक्टर का उपयोग करके उपयुक्त माहौल तैयार किया जा सकता है। (प्रोजेक्टर द्वारा कबीर का चित्र या अन्य संबंधित चित्र पृष्ठभूमि में प्रदर्शित किए जा सकते हैं)

इस गतिविधि के लिए पर्चियाँ पहले से तैयार कर लें। कक्षा में जितने समूह हैं या पंक्तियाँ हैं, कम से कम उतनी पर्चियाँ होनी चाहिए। पर्चियों को एक पात्र में रख लें। कक्षा में मौजूद किसी भी वस्तु (जैसे कोई थैला, टोकरी, डिब्बा, ज्योमेट्री बॉक्स आदि) का प्रयोग पात्र के रूप में किया जा सकता है। पर्चियों पर समूहों के नाम या संख्या लिखी होगी, जैसे — समूह एक (या कोई भी नाम जो समूह ने मिलकर तय किया हो) स्पष्ट कर दें कि एक-एक करके पर्ची निकाली जाएगी और उसके अनुसार ही समूह सामने आकर अपनी प्रस्तुति देंगे। प्रस्तुति के दौरान प्रत्येक सदस्य कुछ न कुछ बोलेगा।

प्रस्तुति के दौरान प्रयास करें कि कक्षा का वातावरण वास्तविक कवि-दरबार जैसा रहे। आप चाहें तो अन्य शिक्षकों या विद्यालय-प्रमुख को भी कक्षा में आमंत्रित कर सकते हैं। एक विद्यार्थी को सूत्रधार की भूमिका निभाने के लिए कहें या स्वयं सूत्रधार बन जाएँ। अब पर्ची निकालकर प्रत्येक समूह को बारी-बारी से प्रस्तुति के लिए आमंत्रित किया जाएगा। विद्यार्थी पारंपरिक या अपनी स्वयं की धुन में कबीर की रचनाओं की प्रस्तुति देंगे। बच्चों को अलग-अलग तरीकों से कविता-पाठ के लिए प्रेरित करें। इसके लिए विद्यालय में उपलब्ध वाद्य-यंत्रों का उपयोग किया जा सकता है। यदि कोई वाद्य-यंत्र उपलब्ध न हो तो डेस्क, ताली, चुटकी आदि का प्रयोग किया जा सकता है।

यदि विद्यार्थी पहली बार इस प्रकार की स्वतंत्रता का अनुभव कर रहे हैं तो शायद वे लीक से हटकर सोचने के आत्मविश्वास का प्रदर्शन नहीं कर सकेंगे लेकिन यदि कक्षा में इस प्रकार का उन्मुक्त वातावरण बने हुए कुछ अरसा हो गया है तो विद्यार्थी इतनी कुशलता से अभिनय कर सकेंगे कि आप भी आश्चर्यचकित रह जाएँगे। अत: कक्षा में जितना जल्दी हो सके, स्वतंत्र रूप से सोचने और बोलने का परिवेश बनाना आवश्यक है। स्वतंत्रता के साथ उत्तरदायित्व की भावना का जन्म अपने-आप हो जाता है अत: इस बात से चिंतित न हों कि ऐसी स्वतंत्रता से कक्षा का वातावरण सीखने-सिखाने लायक नहीं रहेगा।

आकलन के बिंदु

- रचनाओं को चुनने में सहभागिता और पहल करना
- रचनाओं की प्रस्तुति में सहभागिता, उत्साह और सहयोग

उदाहरण के रूप में जाँच-सूची —

प्रतिफल	हाँ	नहीं
पाठ्यपुस्तक के अतिरिक्त नई रचनाओं के बारे में जानने/समझने को उत्सुक हैं और उन्हें पढ़ते हैं।	✓	
अपनी पसंद की अथवा किसी सुनी हुई रचना को पुस्तकालय या अन्य स्थान से ढूँढ़कर पढ़ने की कोशिश करते हैं।		✓
समाचारपत्र, रेडियो और टेलीविजन पर प्रसारित होने वाले विभिन्न कार्यक्रमों, खेल, फिल्म, साहित्य-संबंधी समीक्षाओं, रिपोर्टों को देखते, सुनते और पढ़ते हैं।		
देखी-सुनी, सुनी-समझी, पढ़ी और लिखी घटनाओं/रचनाओं पर स्पष्टतया मौखिक एवं लिखित अभिव्यक्ति करते हैं।		
पाठ्यपुस्तकों में शामिल रचनाओं के अतिरिक्त, कविता, कहानी, एकांकी, गद्य-पद्य की अन्य विधाओं को पढ़ते-लिखते हैं और कविता की ध्वनि और लय पर ध्यान देते हैं।		

विकल्प

- समय बचाने के लिए विद्यार्थी जिन पंक्तियों में बैठे हैं, उन्हें ही एक समूह मानकर इस गतिविधि को करवाया जा सकता है लेकिन समूह बनाने के अन्य तरीकों का प्रयोग भी किया जा सकता है।
- शिक्षक स्वयं भी एक प्रस्तुति दे सकते हैं।
- समूह बनाकर करवाने के स्थान पर इस गतिविधि को व्यक्तिगत रूप में भी करवाया जा सकता है।
- इस गतिविधि को प्रतियोगिता का रूप भी दिया जा सकता है जिसमें एक समूह जो कविता सुनाएगा, उससे अगला समूह उसी भाव की कोई अन्य कविता अगले सप्ताह सुनाएगा, जो किसी अन्य कवि की या स्व-रचित भी हो सकती है। इसके लिए आप निम्नलिखित कार्यक्रमों का उपयोग भी कर सकते हैं—
  वीडियो लिंक्स — कबीर, रहीम, तुलसी (दोहे)
  - https://www.youtube.com/watch?v=A5v38R3VwaE
  - https://ciet.nic.in/pages.php?id=kshitij-i&ln=en

चरण 2

अब विद्यार्थियों से बातचीत करें और गतिविधि के बारे में उनके अनुभव पूछें। विद्यार्थियों को बताएँ कि अब सब मिलकर जिस पाठ को पढ़ेंगे, वह कबीर की रचनाओं का ही पाठ है।

विद्यार्थियों को भावों और उचित विराम आदि के साथ कबीर की रचनाएँ पढ़कर सुनाएँ। चूँकि बच्चे कबीर की रचनाओं की प्रस्तुति स्वयं कर चुके हैं, इसलिए संभावना है कि वे इन सभी या इनमें से कुछ रचनाओं से परिचित होंगे। अब विद्यार्थियों से इन रचनाओं के अर्थ साझा करने के लिए कहें, जैसे— "इस साखी का आपके अनुसार क्या मतलब हो सकता है?" या, "यहाँ कबीर क्या कह रहे हैं, अनुमान लगाकर बताइए।" हो सकता है कि वे बिल्कुल सटीक अर्थ न बता सकें, लेकिन यदि वे अनुमान के आधार पर भी अर्थ बताते हैं या प्रयास करते हैं, तो भी यह महत्वपूर्ण है।

प्रत्येक अनुमान के बाद कुछ संकेत देकर या नए शब्दों के अर्थ बताकर विद्यार्थियों को उनके अनुमान संशोधित करने के लिए कहें। "अब बताइए, क्या कबीर की साखी पहले से कुछ अधिक स्पष्ट हो रही है?" या "अब आपको इस शब्द का अर्थ भी पता चल गया है। क्या आप अपने पिछले उत्तर में कुछ बदलाव करना चाहेंगे?"

बारी-बारी से विद्यार्थियों को रचनाएँ पढ़कर सुनाने के लिए आमंत्रित करें। ध्यान रखें कि इस कार्य के लिए उन विद्यार्थियों को अवश्य आमंत्रित किया जाए जिन्हें अब तक कुछ साझा करने का अवसर नहीं मिल सका है।

पाठ पर चर्चा द्वारा इसके अर्थ को विद्यार्थियों से प्राप्त करने का प्रयास करें। इसके लिए रचनाओं से जुड़े कुछ प्रश्नों का प्रयोग भी किया जा सकता है जैसे—

- आपके अनुसार ऊँचा कुल किसे कहेंगे? और क्यों?
- क्या कबीर के समय में भी ऐसे कुल को ही ऊँचा कुल माना जाता होगा?
- मोटा चून यानी आटा मैदा कैसे बन जाता है? इस उदाहरण का प्रयोग और किन-किन बातों के लिए किया जा सकता है?
- यहाँ कई शब्दों को अलग तरह से दिया गया है, जैसे — 'ज्ञान' को 'ग्यान' लिखा गया है। आपको क्या लगता है, ऐसा क्यों है? आदि।
- अब तक आपने कबीर और अन्य जिन कवियों को पढ़ा, उनकी रचनाओं में आपको कौन-कौन से अंतर या समानताएँ दिखाई दे रही हैं?
- साखी शब्द किन शब्दों से मिलता-जुलता लग रहा है? साखी शब्द का क्या अर्थ हो सकता है?

प्रयास करें कि आप स्वयं उत्तर न दें और कक्षा में विद्यार्थी ही आपस में बातचीत करें, आप केवल उसे दिशा देने तक सीमित रहें। अपेक्षा यह है कि विद्यार्थी एक-दूसरे से खुलकर प्रश्न करें, तर्क करें, अपने विचार रखें, अपने अनुभव साझा करें। आप चाहें तो विद्यार्थियों की तरह ही एक प्रतिभागी की तरह चर्चा में भाग ले सकते हैं।

इस चर्चा का उद्देश्य विद्यार्थियों को रचनाओं के गहरे अर्थों की ओर ले जाना है। प्रत्येक विद्यार्थी की प्रतिक्रिया का सम्मान करें। ध्यान रखें कि आपके भाव या शब्द विद्यार्थियों को किसी प्रतिकिया को सही या गलत की श्रेणी में डालने का संकेत न कर दें। इन प्रश्नों के एक से अधिक उत्तर सही हो सकते हैं और ये मुद्दे ऐसे हैं जिनका उत्तर खोजने की प्रक्रिया इनके उत्तरों से अधिक महत्वपूर्ण है क्योंकि प्रक्रिया ही विद्यार्थियों के भावों को आंदोलित करके उनके विचार गढ़ने का कार्य करेगी, उनके मन में संवेदनशीलता का विकास करेगी। अत: यदि उन्हें कोई आदर्श उत्तर बता दिया जाएगा तो उस उत्तर का कोई लाभ नहीं होगा। जब विद्यार्थी प्रतिक्रिया दे रहे होंगे तो उन्हें आपस में चर्चा करने, सवाल पूछने और एक-दूसरे की बातों को तर्कों से काटने की पूरी आज़ादी होनी चाहिए। इसी दौरान उनकी अभिव्यक्ति और भाषा का आकलन अवलोकन द्वारा किया जा सकता है।

चरण 3

प्रत्येक विद्यार्थी या समूह को कबीर की किसी एक रचना (साखी/सबद) का अभिनय करने के लिए कहें। अभिनय द्वारा उन्हें उससे संबंधित एक जीवंत-चित्र बनाना है। बाकी बच्चे अंदाज़ा लगाएँगे कि किस रचना को प्रस्तुत किया जा रहा है। जीवंत चित्र का अर्थ है कि विद्यार्थी किसी दृश्य को अपनी स्थिर-मुद्राओं द्वारा प्रदर्शित करेंगे।

उदाहरण के लिए—

हस्ती चढ़िए ज्ञान कौ, सहज दुलीचा डारि।
स्वान रूप संसार है, भूँकन दे झख मारि।

इसके लिए एक विद्यार्थी कोई कपड़ा अपने ऊपर डालकर हाथी का अभिनय कर सकता है (व्यक्तिगत रूप) या अनेक विद्यार्थी मिलकर एक हाथी की आकृति बना सकते हैं (सामूहिक रूप)।

इस गतिविधि के दौरान एक-दूसरे को सुनने, एक-दूसरे से सीखने, धैर्य आदि कौशलों का विकास होगा। साथ ही ध्यानपूर्वक सुनने और समझने के कौशल का भी विकास होगा। इस प्रक्रिया में विद्यार्थी स्वयं संवाद गढ़ेंगे, पढ़ेंगे और उस पर प्रतिक्रिया करेंगे।

चरण 4

विद्यार्थियों से जो बातचीत की गई है, उसके आधार पर चर्चा के बिंदुओं को प्रश्न-उत्तर के रूप में लिखवाया जा सकता है। चूँकि प्रत्येक विद्यार्थी को प्रत्येक प्रश्न का उत्तर पता है; उसने अपना उत्तर स्वयं खोजा है, इसलिए वे स्वयं उन्हें लिख सकेंगे। जिन विद्यार्थियों को लिखने में दिक्कत है, उनकी सहायता उनके साथी या आप भी कर सकते हैं।

इसके अतिरिक्त विद्यार्थियों को आज के समाज की समस्याओं और कबीर के समय की समस्याओं की तुलना करने के लिए परिचर्चा करने और परिचर्चा के आधार पर लेखन का कार्य भी करवाया जा सकता है।

कबीर की रचनाओं के कुछ शब्द आजकल अलग तरह से लिखे-बोले जाते हैं। ऐसे शब्दों और उनके वर्तमान रूपों की सूची बनवाई जा सकती है। कबीर की रचनाओं के अनेक शब्द आज भी अनेक प्रदेशों में दैनिक जीवन में बोले जाते हैं। अनेक विद्यार्थी अपने घरों में स्वयं या उनके परिवार के सदस्य भी उन शब्दों का प्रयोग करते होंगे। उनसे ऐसे शब्दों को पहचानने के लिए भी कहा जा सकता है।

कबीर की रचनाओं को पढ़कर-सुनकर क्या कोई अन्य रचना याद आ रही है? उसे साझा करवाया जा सकता है या विद्यार्थियों से स्वयं कोई रचना करने के लिए कहा जा सकता है। दोहों की रचना कैसे की जाती है, दोहों की मात्रा और मात्राओं की गणना करने के संबंध में चर्चा की जा सकती है।

आकलन

इस पूरी योजना में प्रत्येक चरण के साथ-साथ आकलन जारी रहेगा। आकलन मुख्य रूप से अवलोकन और विद्यार्थियों के साथ बातचीत द्वारा किया जाएगा। आकलन में विद्यार्थियों की अभिव्यक्ति और श्रवण कौशलों के साथ-साथ उनके आत्मविश्वास, तर्क, चिन्तन आदि पहलुओं को ध्यान में रखा जाएगा। चूँकि हिंदी भाषा का एक प्रमुख पक्ष लेखन भी है, अत: लिखित कार्य द्वारा विद्यार्थियों के लेखन कौशल का आकलन भी अपेक्षित है। लेखन और मौखिक कौशलों के आकलन का सबसे प्रमुख पक्ष अभिव्यक्ति की मौलिकता है। अत: यांत्रिक पक्षों के स्थान पर आकलन में मौलिकता, कल्पनाशीलता और भाषा के सौंदर्य पर अधिक बल दिया जाए।

अन्य विषयों से संबंध

कला समेकित अधिगम की इस योजना द्वारा विद्यार्थी विविध तरीकों से आपस में संप्रेषण और भाषा का सार्थक संदर्भों में प्रयोग करेंगे। इसके द्वारा पाठ्यपुस्तक के पाठ को समझने, दोहराने और उन पर प्रतिक्रिया करने में सहायता मिलेगी। किसी अन्य कविता को लेकर भी इस प्रकार की गतिविधि कक्षा में नवीनता और ऊर्जा को भर देगी। इनके द्वारा किसी अवधारणा से संबंधित शब्दावली का विकास भी संभव है, उदाहरण के लिए 'आँधी' से संबंधित शब्द और वाक्य (आई ज्ञान की आँधी रे)।

इस पाठ के दौरान जिन कौशल को मज़बूती मिलेगी, वे प्रत्येक विषय के अध्ययन में अत्यधिक उपयोगी होंगे, जैसे— तर्क करना, अनुमान लगाना, निष्कर्ष निकालना, अनुभवों के बीच समानता और अंतर की पहचान करना, व्याख्या करना आदि। यद्यपि आप अपने विद्यालय में उपयोग में लाई जा रही पाठ्यपुस्तकों से इस थीम को सरलता से जोड़ते हुए शिक्षण-अधिगम कर या करवा सकते हैं। उदाहरण के लिए, रा.शै.अ.प्र.प. की पाठ्यपुस्तकों से इस थीम को निम्नलिखित तरीकों से जोड़ा जा सकता है—

भाषा

हिंदी पाठ्यपुस्तक क्षितिज भाग 2 (कक्षा 10) के पाठ 'बालगोबिन भगत' में भी कबीर का उल्लेख स्पष्ट रूप से आता है इसलिए इस पाठ को समझने के लिए भी कबीर की रचनाएँ काफी उपयोगी हैं।

कश्मीरी कवयित्री 'ललद्यद' के वाख भी कबीर की साखियों जैसे ही हैं। उन्हें पढ़ाते हुए भी कबीर की रचनाओं का उपयोग किया जा सकता है।

1. सामाजिक विज्ञान — सामाजिक अध्ययन के कुछ पाठ सीधे तौर पर कबीर से जुड़े हैं—

भारतीय इतिहास के कुछ विषय, भाग 2, कक्षा 12, पाठ 'भक्ति सूफी परंपराएँ'

इन पाठों को समझने में कबीर की रचनाओं से विशेष रूप से सहायता मिलेगी। विभिन्न विषयों को समेकित रूप से पढ़ाने का एक लाभ यह भी है कि इससे दोहराव से बचाव होता है और बचे समय को विद्यार्थियों द्वारा अन्य उपयोगी कार्यों में लगाया जा सकता है।

2. कला शिक्षा — गायन की गतिविधि के लिए कला शिक्षा या कार्यानुभव के कालांश का उपयोग किया जा सकता है। संगीत शिक्षक के सहयोग से कबीर की चुनी हुई रचनाओं पर विद्यार्थियों से प्रार्थना सभा (Assembly) में प्रस्तुति करवाएँ। समूह गान (Chorus) भी करवा सकते हैं।

विस्तार के लिए कुछ रुचिकर सुझाव

1. विद्यार्थियों से उनकी अपनी कविताओं को लिखने के लिए कहा जा सकता है।
2. कबीर की रचनाओं के आधार पर विद्यार्थियों को स्वयं कविता आदि लिखने के लिए प्रेरित किया जा सकता है।
3. कबीर की रचनाओं में आए नए शब्दों को विद्यार्थियों के घर की भाषा-बोली में बदलवाया जा सकता है।

इस योजना में बताए गए सभी चरणों को करवाना अनिवार्य नहीं है। अपने विद्यालय की परिस्थितियों और अपनी कक्षा की आवश्यकताओं के अनुसार आप किसी चरण को चाहें तो छोड़ सकते हैं या उसमें बदलाव कर सकते हैं। इस योजना के आधार पर आप अपनी नई योजना भी बना सकते हैं।

पाठ्यसामग्री

- https://ncert.nic.in/textbook/pdf/ihks109.pdf
- https://ncert.nic.in/textbook/pdf/jhsp101.pdf
- https://ncert.nic.in/textbook/pdf/khar111.pdf
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3.2 English

Activity 1

Subject	English
Class	XII
Theme	Prose (Journey to the End of the Earth)
Form of the Art Activity	Visual and Performing Arts

Target Learning Outcomes

By the end of this session, the learner:

- Reads longer texts with implicit meaning and describes inferring from multidisciplinary contexts, phonological cues, etc., with clarity.
- Reads silently with comprehension and identify the complexity of ideas in an argumentative text, relates personal and social experiences in writing and speech, reflects on the multicultural and multilingual aspects of social life and demonstrates respect for it in writing, speech, and behaviour.
- Reads and understands literature depicting geographical contexts, speaks on scientific facts in simple words using examples from everyday life.
- Identifies two or more themes or central ideas in a text and analyse by focusing on specific details objectively and summarise with examples.
- Determines the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; the use and impact of specific word choices on the meaning, tone, and mood, including words with multiple meanings.
- Integrates and evaluates multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia, etc.) to address a question or solve a problem.
- Demonstrates creativity in composing a poem, story, play, artwork, cartoon, in response to a text, author, theme, or personal experience; demonstrates knowledge and understanding of a variety of techniques and genres. Explains connections between the original and the created work with clarity.
- Writes narratives on real-life experiences or events by using well-chosen details, and well-structured event sequences, using appropriate multilingual vocabulary, proverbs, grammar, sense, and feelings.
- Conducts research work, survey; executes interdisciplinary projects stating the purpose and plan; frames interview questions for collecting

data, resources, and findings; draws maps for analysing information and preparing reports.

- Demonstrates an appreciation for arts and aesthetics, literary and sensory language by composing songs, poems, paintings, and drawings using English and other familiar languages on nature.
- Initiates and participates effectively in a range of collaborative discussions on academic and social topics, textbooks, and current issues; expresses ideas clearly and persuasively, and reciprocates with understanding.
- Works with peers to set norms for discussions and decision making, establish clear goals, deadlines, and individual roles.
- Demonstrates sensitivity towards people, issues, and profess the skill of sharing jokes, brief accounts with humorous wit, and satire with peers without hurting the sentiments.
- Consults general and specialised reference materials (e.g., dictionaries, glossaries, thesauruses, etc.) to find the pronunciation of a word and to determine or clarify its precise meaning, its part of speech and standard usage.
- Participates constructively in classroom discussions and is motivated to meet targets within the timeline.
- Identifies and uses appropriate, safe and authentic online sources; browses and takes note of online sources, reads books, watches films, etc., for understanding the historical and scientific facts.

Material Required
Drawing sheets, chart papers, colour pens

Day 1

Task 1: Ice-breaking Activity

Students are divided into five groups, wherein they engage in a brainstorming session on 'Impact of human activities on environment, and come up with five points on how human activities impact the environment. This is followed by the activity of group sketching/drawing based on the points ascertained in the brainstorming session. Next, students pin up their sketch/drawing and give a group presentation of their work. Lastly,

Pictures of sketch making

Presentation of the sketch by the group members and one representative of the group writing keywords on the board

teacher concludes the presentation where teacher appreciates the efforts of the group and pose relevant questions to discuss and find out the possible impact of human activities on Earth and specifically on Antarctica.

Task 2: Virtual Tour of Life in Antarctica

After discussion, teacher invites students to go on a virtual tour of life in Antarctica. Teacher can make use of easily available existing relevant content (text/video) for giving students a virtual tour of life in Antarctica. After the completion of the virtual tour (10 minutes approximately), each group gives a presentation on the virtual tour. Teacher makes note of key points for further discussion.

YouTube video being played and presentation by the groups on life in Antarctica

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise portfolio, observation, checklist and presentation for evaluating this segment for completing rubrics.

Teacher appreciates the efforts of the students and explains that life in Antarctica is very difficult, but this continent is the one which is responsible for basic changes in the atmosphere across the globe. So, as youth, it becomes their prime responsibility to take care of the Earth by putting little efforts so that the beauty and sanctity of this continent is preserved.

Introduction of the Lesson

Teacher gives a brief introduction of the lesson while showing a visual or video of Antarctica from verified sources and students can write a description of the same.

The contents of lesson can be allotted in groups as suggested below:

- Group 1— Song presentation on 'Life in Antarctica'.
- Group 2— Interview of 'Virtual Visitors to Antarctica'.
- Group 3— Story weaving [Hint: History of formation of Antarctica]
- Group 4— Picture Interpretation [Hint: Flora and fauna found in Antarctica like phytoplankton, seals, penguins, etc.]
- Group 5— Street Play on 'Changing Environment and its Impact on Antarctica'

Assignment

Encourage the groups to explore the assigned areas from different sources and prepare their presentations.

DAY 2

Teacher starts the session with warm up questions such as:

- In which hemisphere is Antarctica situated?
- Presence of _____ makes the ecosphere of Antarctica.
- Name the sea routes taken to reach Antarctica.
- Name the various modes of transport which one can take to reach this 'frigid continent'.

Then the teacher can invite students as per their allocated groups for their respective presentations.

Group 1: Song Presentation on Life in Antarctica

After this presentation, teacher can facilitate linking of their art experience with the various time zones that one needs to pass in order to reach Antarctica. Teacher also describes about the vessel Akademik Shokalskiy on which the author boarded to head towards the coldest, driest, windiest continent in the world: Antarctica.

Group 2: Interview of 'Virtual Visitors to Antarctica'

For this activity, students divide themselves into two groups. The first group plays the role of those who have visited Antarctica and the second group interviews the first group.

Teacher can help students to develop interview questions and conduct an interview. The following processes may be adopted for preparing and conducting an interview.

- Read about the topic/theme around which the interview revolves and know about the person who is to be interviewed.
- Develop draft questions which may be modified as the person is interviewed.
- The questions can be both generic about the idea and specific to the aspects of the themes and the work of the person being interviewed.
- Follow the language and general etiquettes required for a conversation (in this context, an interview) like turn taking, being polite while interrupting, submitting, refusing, etc.
- Once the interview is done, learners write an introduction of the interview for publishing in newspaper, magazine or in digital form. This requires writing about the theme, why the interview is done and a brief profile of the interviewee.

Source: Department of Education in Languages (DEL), NCERT

After this presentation, teacher can facilitate linking of students' experiences with 'Students on Ice Programme' headed by Canadian Geoff Green, who used to take celebrities and retired, rich, curiosity-seekers to Antarctica initially, but has now started taking students, whom he believes, are the changemakers of the future.

Group 3: Story Weaving (Hint: History of Formation of Antarctica)

Teacher can help students weave the story on the basis of the following steps:

For developing a story, one needs to have ideas and think of characters. Once we have imagined the ideas and characters, let us ask some questions.

Step One: Ask some questions for the story to move on. The questions may be like:

1. Who is the main protagonist of the story?
   - i. How old is he/she? What would be her name?
   - ii. Is it a human being or objects like mountain, river, etc.?
   - iii. How can I describe the person?
   - iv. His/Her appearance, language, etc.
2. What is the idea/theme?
   - i. Is there a conflict or situation in the story?
   - ii. What role does each character play in the idea/theme/conflict?
   - iii. How will I take it forward?

3. Weaving the story:
   i. Who does what and with whom?
4. Language of the story:
   i. What language will I use?
   ii. Situating the language of the region and people.

Step Two: Answering the questions asked in Step one

This is not prescriptive. When a writer starts writing, she/he knows how to go ahead with the story. Attempting to answer the above questions would help the writer to shape the story well.

Step Three: Making multiple drafts in order to make the story more interesting and authentic.

Source: Department of Education in Languages (DEL), NCERT

Based on the outcomes of the presentation and answers given by students to the questions, teacher can link the knowledge to Antarctica. Teacher can conclude by talking about Gondwana as a super continent that drifted apart millions of years ago to become what we all call Antarctica today.

Group 4: Picture Interpretation (Hint: Flora and Fauna Found in Antarctica like Phytoplankton, Seals, Penguins, etc.)

Teacher can pick up 2–3 pictures related to Antarctica and show them on the projector. It's important that teachers use the pictures from genuine sources for picture interpretation activity. In this activity, the pictures of different flora and fauna of Antarctica are shown and students are asked to interpret the pictures and list down 30 points from the pictures such as what kind of eatables, houses, transportation, communication, apparel, shoes, animals, etc., are available in Antarctica.



After this activity, teacher can conclude the discussion on flora and fauna found in Antarctica that range from microscopic to the mighty organisms.

Group 5: Street Play on 'Changing Environment and its Impact on Antarctica'

After the performance, teacher may encourage a discussion and conclude how all the atmospheric changes happening on the planet affect the life

on Antarctica directly or indirectly. Teacher focuses on the concluding statement given by the narrator, 'If we want to study and examine the



Earth's past, present and future, Antarctica is the place to go.'

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise interview schedule, observation schedule, checklist, interpretation, presentation and performance, and portfolio, for evaluating this segment for completing rubrics.

Teacher appreciates all the five groups for their elaborated presentations and invite them to read the lesson for detailed explanation for the subsequent language-learning exercises.

Multidisciplinary Aspects

- Geography: Project on geographical aspects of Antarctica
- Mathematics: Calculating the distance of Antarctica from different countries
- Science: Draw and elaborate on the possible food chain in the region of Antarctica
- Visual Art: Making landscape of Antarctica
- ICT: PPT making and presentation on life in Antarctica
- Music: Composing and performing songs and rap on the theme of Antarctica

Suggested Activities

- Imagine you are Tishani Doshi. Write a travelogue of her journey to Antarctica.
- Prepare a pen portrait/bio-sketch of Geoff Green.
- Imagine the flora and fauna found in Antarctica acting as human beings. Write a conversation taking place among them in the form of dialogues.
- Imagine yourself as a researcher at Dakshin Gangotri Space Station in Antarctica. Write a factual description about a day in Antarctica.

3.3 SOCIAL SCIENCE

ACTIVITY 1

SUBJECT	SOCIAL SCIENCE
CLASS	IX
THEME	FRENCH REVOLUTION
FORM OF THE ART ACTIVITY	VISUAL AND PERFORMING ARTS

TARGET LEARNING OUTCOMES

By the end of this session, the learner:

- Recalls the names, places, years of some important socio-political and economic events that changed India and the world such as French Revolution and the Freedom Struggle of India.
- Locates the places of historical importance on maps.
- Describes the political terms and concepts associated with democracy and dictatorship such as: free and fair elections, freedom of expression, independent judiciary, accountability, rule of law, etc.
- Compares the course of events leading to important revolutions in the world such as French Revolution.
- Explains the causes and effects of various revolutions.
- Interprets the texts and symbols which stand for liberty, equality, and fraternity; understands and explains the cartoons, photographs, posters, newspaper clippings related to socio-political issues, etc.
- Identifies the assumptions, biases, prejudices and stereotypes about various aspects, for example — texts, news items, visuals, political analysis.
- Demonstrates inquisitiveness and enquiry, by posing questions related to— legacy of French Revolution in India and the world.
- Constructs views, arguments, and ideas on the basis of collected or given information, for example — oral and written accounts of living historical legends.

Material Required
Paper, flash cards, PPT, videos, charts, colours, props, old newspapers

DAY 1

Task 1: Ice-breaking Activity

Students are divided into four groups. Each group is asked to organise a play on one out of the four ideals of Indian Constitution — Liberty, Equality, Fraternity and Democracy. Time given to each group would be 10 minutes to discuss and portray the concept of these ideals using the theatre technique of still/frozen images/frames. Further, each group will be given 1 minute to explain their views on these ideals.

Concluding this activity, teacher will link it with the concept of 'The French Revolution'. The teachers say — 'Do you know how these ideals have become a part of our constitution? These ideals have been taken from the first nation-state of France which evolved through a long struggle against its socio-political system.

Teacher explains the concept of 'The French Revolution' with the help of content from the curriculum, syllabus, and textbooks of Secondary stage and other verified sources.

Task 2: Video

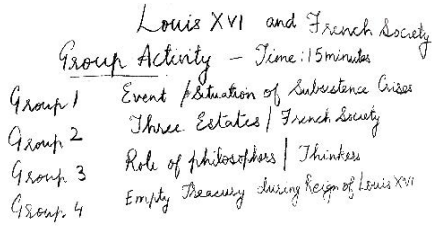
Teacher and students can study the facts related to the events/situations which took place before 1789. Teacher describes the socio-political system of the Old Regime, when France was under the rule of Monarch King Louis XVI. Teacher further explains the various factors and causes which brought a revolution in France in 1789. Teacher shows the following video regarding the Old Regime of France.

Video Link of the Comic Book

https://diksha.gov.in/app/play/collection/do_31322468970070835214 16?contentType=TextBook

Teacher encourages students to share their understanding of the content shown in the video and initiates a discussion on it.

- Students analyse and evaluate the factors of the outbreak of French Revolution and correlate it with the Indian socio-political system.
- Teacher gives examples from the history of India, like revolt of 1857, *Satyagraha* Movement of Gandhiji, etc.



- The students describe different events that happened between 1723–1789.

After the discussion, the teacher explains to the students by writing different events on the chalkboard along with the related vocabulary and initiates an activity on it.

Task 3: Making of Visual/Flash Cards

Each group explores/studies the existing resources (print as well as digital) to make visual/flash cards to portray the events/topics assigned to them.

Group 1

- Visual/Flash cards on System of three estates in a French Society.

- Mind map of the Old Regime French Society of 18th century.

Group 2

- Visual/Flash cards on the reign of Monarch Louis XVI and the causes of empty treasury during 1774.

Group 3

- Visual/Flash cards to collate the causes of subsistence crisis.

Group 4

- Visual/Flash cards depicting the ideas of thinkers and philosophers for bringing awareness about the democratic rights of French People.

Teacher encourages students to share their understanding from the above activity through presentation and initiates a discussion on it. After group presentation, the teacher can explain by writing important points of the causes of French Revolution on the blackboard.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise checklist for evaluating this segment for completing rubrics.

Assignment

How this revolution gets reflected in the contemporary art forms, paintings, sculptures, literature, etc.?

DAY 2

Teacher recapitulates the topic learnt on the previous day by asking the following questions:

- What was the most important event that led the people of France revolt against the monarch?
- Mention the causes of French Revolution.

After taking up recapitulatory questions, teacher will progress further with the topic — 'France becomes a Constitutional Monarchy'.

Teacher narrates different events which led to the transfer of sovereignty from Monarchy to the French citizens.

Events:

- Outbreak of Revolution—Storming of the Bastille (1789)
- The Tennis Court Oath by the 3rd Estate
- Formation of National Assembly
- Making of Constitution (1791)
- Declaration of the Democratic Rights

Teacher initiates discussion about the events that led to making of Constitutional Monarchy and further assigns groups with the research based activities. Each group will be given 15 minutes for preparation followed by presentation.

Group 1: Role Play/PPT— Storming of the Bastille

Through a Role Play or PPT, students perform on the event of Storming of the 'Bastille'. The PPT prepared by the students is given below for reference.

PPT Link

https://www.canva.com/design/DAFZyE1K_mA/fOpg6OA6pB2nJ9Eevl07cg/edit?utm_content=DAFZyE1K_mA&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton.

Group 2 Song/Narrative video/PPT—Tennis Court Oath

The students write lyrics on the events of Tennis Court Oath and then present it in the form of a song.

Audio Link of the Song

https://drive.google.com/file/d/11dnFS3E9-5mKVX-Wf3OYOu62B6p_vcLM/view

In 1789, France was ruled by Louis XVI. He and his wife Antoinette were not too kind.

King had to increase taxes
So he called for the Estates General
That Day in the history of France
was too much incredible
The first and the second estate
Sent representatives 300 each
The third representative sent 600
Who gave a demanding speech
The king continued with the system of
One-One vote to each estate,
But the third estate appealed that

This system needed an update
They said everyone should vote separately
But not as whole in the estate
But Louis said follow the old rules
and he had no time to debate
The people of the third estate
Just moved out in the frustration
They knew it's the right time
To bring upon a transformation
They broke into an Indoor Tennis Court
And declared themselves as National Assembly
They thought of making a constitution
And decrease the powers of monarch immensely
This was known as the Tennis Court Oath
and was a very great happening
Who thought this could have happened
As a result of tiny gathering

PPT Link—Tennis Court Oath
https://docs.google.com/presentation/d/1Po971QnY6bX7Alx0TQhh7eADFQAxjiKW/edit?rtpof=true&sd=true

Narration Video Link
https://drive.google.com/file/d/1tup3B7Y3RrgDSuXjCmzlQVz9qGfP-kCD/view

Group 3: Designing and Presentation on Democratic Constitution

Group 4: Making a Presentation of Visual Cards

Students make and present visual cards on the topic—'Declaration of Rights' and political symbols.

The students present their visual cards and the teacher writes the important points on the board.

> **Note for the Teacher**
> This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise portfolio, observation schedule or checklist for evaluating this segment for completing rubrics.

DAY 3

The teacher recapitulates the topic learnt on the previous day by asking the following questions:

1. Which event marked the beginning of French Revolution (1789)?
2. Who were active and passive citizens according to the Constitution of 1791?
3. Name any two democratic rights given by the Declaration of Rights for men and citizens.

After taking up recapitulatory questions, teacher will progress with the topic — 'France becomes a Republic'.

Teacher narrates different events which led to the fall of monarchy and France becoming a Republic.

Events:

- France abolishes monarchy and the role of Jacobian club—Maximillian Robespierre
- Formation of Directory
- Impact of French Revolution on the life of women (https://epathshala.nic.in/QR/books/9India_Contemparary/Participation_of_Women_French_revolution.pdf)
- Rise and fall of the dictator — Napoleon Bonaparte

The teacher initiates discussion about the events that led to France becoming the Republic and further assigns groups with research-based art activities. Each group will be given 15 minutes for preparation followed by their presentations.

Group 1: Role Play/PPT on the Topic 'France Abolishes Monarchy' and 'Role of Jacobian Club — Maximillian Robespierre'

Students are instructed to make placards on the given topic and do a role play on the contribution of Jacobian club.

PPT Link

https://www.canva.com/design/DAFZyCI6n9w/6wnVrEgNiuaBZO3-yedboA/view?utm_content=DAFZyCI6n9w&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton

Group 2: Role Play/PPT

Role play on the events leading to instability of the Directory.

PPT Link

https://drive.google.com/file/d/1kn_bCUbeNmhhBRmxEpkmQLLMrsfNcZ3n/view

Group 3: Role Play/PPT on the Topic 'Impact of French Revolution on the Life of Women'

Students enact the changes that were brought by the French Revolution among the French citizens.

PPT Link

https://docs.google.com/presentation/d/1ur1ZjYti315gBRu8lrjTIZaIbYF3RRLa/edit#slide=id.p1

Group 4: Role Play/Song/PPT on 'Rise and Fall of the Dictator—Napoleon Bonaparte'

Students are asked to create lyrics on the rise and fall of Napoleon and present it in the form of a song as well as PPT.

Song on Napoleon Bonaparte

Directory didn't work work work (fading)
It had a great fall fall fall
Probably it was a call call call
For Napoleon
Born on the island of Corsica,
Napoleon rapidly rose
Through the ranks of the military
till the emperor he goes
Kicking of the unstable directory
He took the power in his hands
He got a good image in the people
Conquering the enemy lands
Yeah, people had started to think
That Napoleon was not gonna sink
Yeah, he brought some modern laws
Thinking he was the boss
Like decimal and protection of property
Which were new at that time
But still those odd decisions
turned out to be prime
People started to consider him a moderniser
They thought he would act as a fertiliser
To their sapling named liberty
But his ideas were a bit dirty
He wasn't up to give the people freedom sparks
He was just busy extending his territory arcs
And definitely Napoleon,

became a terror for the rest of monarchs
Poor him didn't actually realise
What his neighbours were gonna do
They were thinking to defeat him
In a battle at Waterloo
So that happened on June 1815
Napoleon's army got defeated
From the name of the French emperors
His name had got deleted.

Audio Link of the Song
https://drive.google.com/file/d/1J-0Tlhsb2SWWYX9YxbB5QTGUygpEm-Op/view

PPT Link
https://docs.google.com/presentation/d/1Z6PHPahwdfctngRavnfcsgqHuCSMfy-b/edit#slide=id.p1

Note for the Teacher
This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise portfolio, observation schedule or checklist for evaluating this segment for completing rubrics.

Multidisciplinary Aspects

- English: Paragraph writing, report writing, dialogue composition and slogan writing
- Visual Arts: Caricature making
- ICT: Comic strip, PPT making and presentation
- Music: Song composition and lyrics writing

Suggested Activities

- Collage making
- Quiz competition
- Street play
- Timeline making
- Patriotic song competition

ACTIVITY 2

SUBJECT	SOCIOLOGY AND PSYCHOLOGY
CLASS	XI
THEME	CULTURE AND ITS IMPACT ON HUMAN BEHAVIOUR
FORM OF THE ART ACTIVITY	VISUAL AND PERFORMING ARTS

TARGET LEARNING OUTCOMES

By the end of this session, the learner:

Sociology

- Recognises, understands, interconnects and analyses the concept of social groups and society, different types of groups, social stratification, role stereotyping, society and social control.
- Recognises, understands, interconnects and analyses the concept of social institutions, family as a social institution and how families are linked to other social institutions, marriage and forms of marriage, norms of marriage and kinship.
- Recognises, understands, interconnects and analyses the culture and socialisation, diverse settings, different cultures and dimensions of culture.

Psychology

- Illustrates the evolutionary nature of human behaviour.
- Describes the biological and socio-cultural roots of behaviour.
- Differentiates the concept of culture and acculturation in the processes of socialisation.

Material Required
Chart paper, colours, smart board for playing videos

DAY 1

Sociology

Task 1: Ice-Breaking Activity—Brainstorming

Teacher begins with the brainstorming session on cultural celebrations all over the country. This session can take up to 15 minutes and students should be given the opportunity for deeply exploring the concept of cultural celebrations all over the country. With the help of any one of the students, teacher prepares a list of celebrations on the blackboard and concludes the activity with a round of applause for the outcomes of the session.

Task 2: Group Activity—Making Creatives of Cultural Celebrations

The students are free to choose any one from the list of cultural celebrations and make creatives on it with the help of drawings/visuals. A period of 15–20 minutes can be provided to complete the activity. Students should be encouraged to detail the themes of their chosen celebrations through as many drawings/visuals as possible.

Task 3: Group Activity—Presentation based on Creatives

Once the groups are finished making their creatives, then within 2 minutes, each of them has to make a presentation based on the creatives while focusing on the values related to that particular cultural celebration. After the presentation, teacher appreciates each group on their efforts for deeper exploration.

After completion of the presentation, teacher concludes and explains the meaning of 'Culture'. Teacher explains that 'Culture' is a way of life of a group of people—the behaviours, beliefs, values, and symbols that they accept, generally without thinking about them, and that are passed along by communication and imitation from one generation to the next. Teacher further explains the different aspects of culture such as language, ornaments, food, clothing/costumes, agricultural practices, animals, belief systems, religious practices, cuisines, greetings and welcoming guests, ceremonies, music and musical instruments, songs, drama, dance, storytelling, puppetry, social norms and practices, etc.

Teacher will explain the concept of 'Culture' from the curriculum, syllabus, and textbooks of secondary stage and other verified sources.

Video Links and Text Resources

- https://www.youtube.com/watch?v=e1o-V-YJtWg&ab_channel=NCERTOFFICIAL
- https://www.youtube.com/watch?v=4ROjA4ue-B8&ab_channel=NCERTOFFICIAL

Teacher can further explore more sources on DIKSHA Portal, SWAYAM Portal and PM e-Vidya.

(This document explains culture and its basic elements)

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise portfolio and observation of presentation for evaluating this segment for completing rubrics.

Assignment

Prepare a theme-based newspaper on each aspect of the culture. A group with 3–4 students can work on one aspect of culture. The students can decide together on which aspect their team will work. This is to be followed by team presentation.

Based on the above three activities (brainstorming, making creatives of cultural celebrations and presentation on creatives), Psychology teacher need not repeat it for the psychology class and may conduct a follow-up activity. Psychology teacher can hold a group discussion on how the same cultural celebrations are perceived differently by different student groups.

DAY 2

Psychology

Teacher connects students with the theme of culture covered under Sociology the other day and opens a discussion on 'how culture impacts human behaviour'. Teacher appreciates responses given by the students.

Task 1: Drama Game

Teacher initiates a game with students. Teacher says 'Let's play a game through drama wherein students would play as the members of a joint family and they have to welcome different guests on a particular occasion (such as wedding, festival, etc.)'. Teacher lists down the actions shown by the students in receiving and welcoming different guests with the help of a student volunteer on the blackboard. Teacher will ask students to act as different guests such as elderly guests, relatives, distant relatives, neighbours, teachers, friends of same age, etc. All the students will receive a chance to take turns to be guests.

Teacher then discusses with students the reasons for behaving differently with different guests. Based on the discussion, teacher explains the role of culture in shaping our behaviour and concludes the concept of cultural tradition and its impact on human behaviour, which is expressed in the day-to-day practices. Teacher will explain the concept of 'Impact of human behaviour' from curriculum, syllabus, textbooks of secondary stage and other verified sources.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise checklist, observations, presentation and narration for evaluating this segment for completing rubrics.

Assignments

- Students can narrate/write the effects of their own culture on their day-to-day behaviour. (Individual Assignment)
- Different groups can make a small video of interviews from relatives/ community on any one of the cultural celebrations and how it affects their behaviour. (Group Assignment)

The same art experience can be extended to learn the concept of 'Acculturation'.

3.4 Mathematics

Activity 1

Subject	Mathematics
Class	IX
Theme	Quadrilaterals
Form of the Art Activity	Visual and Performing Arts

Target Learning Outcomes

By the end of this session, the learner:

- Identifies the similarities and differences among different geometrical shapes such as triangles and quadrilaterals.
- Derives the proofs of mathematical statements particularly related to geometrical concepts, like parallel lines, triangles, quadrilaterals, etc., by applying axiomatic approach and solves problems using them.
- Constructs different geometrical shapes like bisectors of line segments, angles and triangles under given conditions and provides reasons for the processes of such constructions.
- Solves problems that are not a part of the familiar context of the child using above learning. These problems should include the situations to which the child is not exposed earlier.

Material Required
Colour pencils, drawing sheet/chart/colour paper, ruler, graph paper, glue, agricultural waste, *rangoli* colours, chalk, newspaper, old calendars/invitation cards

Day 1

Quadrilaterals

Task 1: Ice-Breaking Activity

Teacher asks students to identify different geometrical shapes in their surroundings. Students will give examples of various shapes seen around them in daily life. The teacher introduces some regional heritage/ monuments and explains how different kinds of quadrilaterals are used in its architecture. Students understand that quadrilateral is a four-sided closed figure.

Teacher divides the class into subgroups of five students. Each group is given a task to form different quadrilaterals using an elastic loop.

Task 2

Students will explore the agricultural waste (stems of trees, straws, thick grass, etc.) from their surroundings and create a structure of quadrilaterals of different sizes to make a wall hanging.

Questions for Quick Revision

- Name a few structures/monuments in your vicinity in which you can identify quadrilaterals.
- How do you define quadrilaterals by observing different kinds of open and closed figures/images?

Types of Quadrilaterals

Teacher explains the types of quadrilaterals and their properties through the use of videos and relevant textual material.

Video Links

- https://www.youtube.com/watch?v=KChlI6Ek8-o
- https://www.youtube.com/watch?v=VkXZIgmObKg

Assignments

- Identify the quadrilaterals in your home and surroundings and make a list of it.
- Construct any one type of quadrilateral of your choice and write its properties.
- Create a design for curtain, handkerchief, school bag or file cover, using quadrilaterals of different sizes and measure its angles to find out the sum total of the angles of each quadrilateral.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise craft works, drawings and question answers session for evaluating this segment for completing rubrics.

DAY 2

Warm up Question

All of you have created beautiful designs using different sizes of quadrilaterals. You also have measured the sum total of all angles of the different types of quadrilaterals. What is the sum of interior angles of different quadrilaterals?

Angle Sum Property of Quadrilaterals and Properties of Parallelogram

Teacher will do the recapitulation of the topics learnt on the previous day and announces the topic 'Angle sum property of quadrilaterals' and 'Properties of parallelogram' before starting the further activities.

Teacher can refer to the specific part of the videos shown on day 1 for explaining the concept.

Task

Students in groups will create *Rangoli* on the floor/chart using different sizes of parallelogram with the specification to divide each parallelogram into two equal parts using diagonal lines. After appreciating their efforts and participation, teacher will ask them to measure the angles of any two triangles created using parallelogram and record the measurement of angles of these two triangles.

Questions for Quick Revision

- What is the relation between the two triangles formed when you joined one diagonal?
- What is the measure of the opposite sides and angles and what can you conclude from this?
- Mark the intersection point of two diagonals and measure each part, what do you conclude?

Based on the responses given by the students, the teacher concludes:

(a) A quadrilateral is a parallelogram if a pair of opposite sides is equal and parallel.

(b) A diagonal of a parallelogram divides it into two congruent triangles.

(c) In a parallelogram opposite sides and angles are equal.

(d) In a parallelogram diagonals bisect each other.

Extending the activity further, teacher can encourage students to create an action song based on their learning of quadrilaterals so far.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation records, question answers session, art activity and portfolios for evaluating this segment for completing rubrics.

DAY 3

Midpoint Theorem

Teacher can use the following videos to clarify the concept of Midpoint theorem.

Video Links

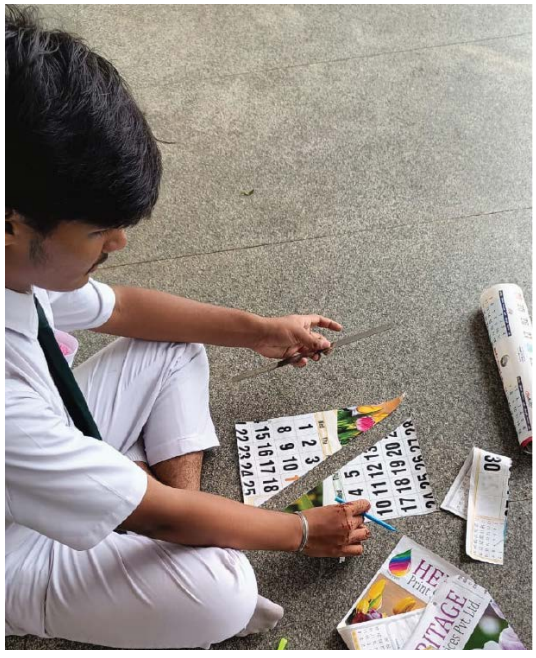
- https://www.youtube.com/watch?v=bHhi3olM5Ls&ab_channel=NCERTOFFICIAL
- https://www.youtube.com/watch?v=rnGsWJE5g4c&ab_channel=NCERTOFFICIAL

Teacher clears the concept with the help of videos and relevant textual material of midpoint theorem before giving the art activity.

Midpoint Theorem: "The line segment joining the midpoints of two sides of a triangle is parallel to the third side and is half of it".

Task

Teacher will facilitate the students to use one-sided used papers, old calendars, invitation cards for the activity to find out and verify the midpoint of a triangle. Then these triangles can be coloured and arranged in a geometrical pattern to create a decorative design.



Teacher applauds the creativity of all the students and poses quick questions for the reinforcement of learning.

- Measure the lengths of the third side and the middle line of the triangle chosen.
- What is the relation between the middle line and the third side of the triangle?

Teacher proves the midpoint theorem theoretically using congruency of triangles on the board.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation records, assignments, art activity and portfolios for evaluating this segment for completing rubrics.

ACTIVITY 2

SUBJECT	MATHEMATICS
CLASS	X
THEME	TRIGONOMETRY
FORM OF THE ART ACTIVITY	VISUAL AND PERFORMING ARTS

TARGET LEARNING OUTCOMES

By the end of this session, the learner:

- Derives formulae to establish relations for geometrical shapes in the context of a coordinate plane, such as, finding the distance between two given points, determining the coordinates of a point between any two given points, finding the area of a triangle, etc.
- Determines all trigonometric ratios with respect to a given acute angle (of a right triangle) and uses them in solving problems in daily life contexts like finding heights of different structures or distance between two places.
- Constructs a triangle similar to a given triangle as per a given scale factor.
- Examines the steps of geometrical constructions and reason out each step.
- Determines the probability of an event and applies the concept in solving daily life problems.

Material Required

Colour paper, colour pencils, broom sticks, glue, cardboard, empty *agarbati* packets (cylindrical)/small piece of an old pipe, protractor, thread, heavy metal screw/similar material, scissors, equipment like lawn roller

DAY 1

Origin and History of Trigonometry

Task 1: Ice-breaking Activity

Teacher can use videos from the verified sources and relevant textual material for introducing the concept of trigonometry, and the history and development of trigonometry. Teacher divides the class into heterogenous groups and motivates each group to create 'comic strips' depicting the origin of Trigonometry.

During recapitulation, teacher appreciates the students and asks the group members to display the comic strips created by them and asks specific questions for deeper interaction.

Task 2: Role Play

On the basis of experience of students on the previous day, a theme for role play is identified—'Life of Aryabhata'. All groups are given the opportunity to perform their role play on Aryabhata and his disciples, wherein the ancient guru explains them about 'ardha-jya' and 'kotijya'. Referring to this chapter from the textbook, students can explain these terms in their role play.

Reference Material (NCERT)

The first use of the idea of **'sine'** in the way we use it today was in the work *Aryabhatiyam* by Aryabhata, in A.D. 500. Aryabhata used the word ***ardha-jya*** for the half-chord, which was shortened to ***jya*** or ***jiva*** in due course. When the Aryabhatiyam was translated into Arabic, the word ***jiva*** was retained as it is. The word ***jiva*** was translated into ***sinus,*** which means curve, when the Arabic version was translated into Latin. Soon the word ***sinus,*** also used as ***sine,*** became common in mathematical texts throughout Europe. An English Professor of astronomy Edmund Gunter (1581-1626), first used the abbreviated notation ***'sin'.***

Aryabhata
C.E. 476-550

The origin of the terms ***'cosine'*** and ***'tangent'*** was much later. The cosine function arose from the need to compute the sine of the complementary angle. Aryabhatta called it ***kotijya.*** The name ***cosinus*** originated with Edmund Gunter. In 1674, the English Mathematician Sir Jonas Moore first used the abbreviated notation 'cos'.

Teacher appreciates the active participation of students.

Questions for Quick Revision

- Name the Indian Mathematician who contributed to the topic of trigonometry.
- Mention any other significant contribution of Aryabhata to Mathematics.
- Name the two trigonometrical ratios introduced by Aryabhata.

DAY 2

Right Angled Triangles in Trigonometry

Teacher initiates discussion on triangles, especially about right-angled triangles and make students understand the perpendicular, base and hypotenuse of the triangle. Teacher can show the following videos for a detailed conceptual understanding.

Video Link

https://www.youtube.com/watch?v=f22r8EUjyME

Teacher explains that the mathematical concept of trigonometry is based on right angled triangles and it can be used to find the unknown heights and distances, provided the angle is known and vice versa.

Task

The activity is to relate the length of the base and perpendicular of a right-angled triangle with the acute angle of the triangle. Teacher has to inform the students a day before to bring chart paper, broom sticks, scissors and glue for the activity.

Teacher divides the class into heterogeneous groups and facilitates each group in making many similar triangles with a common base and common hypotenuse but different altitudes.

Students are encouraged and appreciated to use the art materials such as coloured chalks/coloured papers to construct rectangles and triangles for better understanding. Students can also convert them into stick puppets by using these shapes as puppet heads.

Questions for Quick Revision

- How many similar triangles did you find in your model?
- Do you feel that you need to measure the sides to construct similar triangles? Justify.
- Did you find an acute angle which is common in all the triangles?
- Tabulate the variations in the length of the base and perpendicular and the value of the acute angle selected for each similar right triangle.

Teacher appreciates the participation of all the students and concludes that for a given acute angle, the length of the base and perpendicular may vary.

Note for the Teacher
This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation records, presentation, group work, portfolios and question answers for evaluating this segment for completing rubrics.

DAY 3

Trigonometric Ratios

After recapitulation of the topics learnt on the previous day, teacher defines the six different trigonometric ratios and values of different ratios for specific angles of 0°, 30°, 45°, 60° and 90° using blackboard/PPT. Teacher takes specific reference from the videos shown on Day 2 for explaining the concept of trigonometric ratios.

Teacher also justifies that the value of a given trigonometric ratio will depend only on the acute angle referred to and not on the length of the sides of the triangle (Reference: Activity on Day 2).

Teacher shares a popular mnemonic to remember the formulae of six trigonometric functions.

Pandit **B**adri **P**rasad, **H**ar **H**ar **B**ole, **S**ona **C**handi **T**ole

Pandit	**B**adri	**P**rasad	P = Perpendicular
Har	**H**ar	**B**ole	H = Hypotenuse
Sona	**C**handi	**T**ole	B = Base
Sin=P/H	**Cos=B/H**	**Tan=P/B**	T = Tan, S = Sin, C = Cos

Task

Teacher divides the class into heterogenic groups and engages them in writing lyrics, composing tunes and presentation of a song using trigonometric ratios and formulaes. Students synchronise it with the rhythm of a regional folk song. (Students can create folk songs in their own regional languages).

The same activity can be extended for learning the values of trigonometric ratios of specific angles.

Lyrics of the Song

sin cos tan cot
sin cos tan cot
Sin is equal to opp by hyp
Cosec is equal to reciprocal of sin
Aaaaaaaaaaaaaaaaaaaa
Cos is adj by hyp
Sec is equal to reciprocal of cos

tan equal to sin by cos
Aaaaaaaaaaaaaaaaaaaa
Tan is equal to opp by adj
cot is equal to cos by sinu
Cot is also equal to reciprocal of tan
aaaaaaaaaaaaaaaaaaaa

Questions for Quick Revision

- Mention the relation between sinθ, cosθ and tanθ.
- Make a trigonometric table mentioning the values of different trigonometric ratios for specific angles.

Assignments

- Write the six different trigonometric ratios and the respective formulae.
- Compare and contrast the trigonometric ratios of Sine and Cosine.

DAY 4

Teacher divides the students into heterogeneous groups and tries to explore the amalgamation of trigonometry with other disciplines through an activity.

Task

Once students reach the school ground, they are asked to pull a lawn roller to level the ground. Students would enjoy the activity and level the ground in a short period of time.

Teacher interacts with the students and asks them the following questions:

- In which direction did you apply the force? (Horizontally/Vertically/Inclined)
- In which direction did the roller move? (Horizontally/Vertically/Inclined)

Teacher establishes the link between trigonometric ratios and the components of force. The horizontal component of an inclined force F is F cosθ and the vertical component is F sinθ, where θ is the angle made by the force with the horizontal. Teacher encourages the students to explore and find out more such applications of trigonometry in other disciplines and daily life.

Assignments

- Which trigonometric ratios are involved in defining the components of force?

- Find the components of a force of 5N which is inclined at an angle of 30° to the horizontal.
- Explain the application of trigonometry in defining the work done by a force.
- Explore the different disciplines (like Architecture, Cartography, Astronomy, etc.) where trigonometry is used and make a collage.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation records, question answers and observe active participation of students in the activity for evaluating this segment for completing rubrics.

DAY 5

Making a Clinometer and finding the height of the school building using the Clinometer

Task

Teacher can inform the students a day before to bring cardboard, empty *agarbati* holder (cylindrical), glue, scissors, protractor, thread, heavy metallic screw, and old newspapers to make a clinometer for the next day's activity.

After recapitulation of the concepts learnt in the previous days, teacher explains how trigonometry can be linked with measuring heights/distances in many situations around them. Students can be encouraged to explore different materials (videos and/or textual) from verified sources for making the clinometer.

Teacher divides the class into heterogeneous groups and facilitates the making of a clinometer. Later, teacher accompanies the students to the ground and encourages them to stand at a point 'P' on the ground. The distance to the point 'P' from the school building is measured using a

tape. Teacher explains and facilitates the use of clinometer to measure the angle made by the line of sight to the top of the school building with the horizontal. Students hence select an appropriate trigonometric ratio to calculate the height of their school building and compare it with its actual height.

Questions for Quick Revision

- What is the use of a clinometer?
- Draw an illustrative figure connecting the angle measured using clinometer and height of the school.
- Which trigonometric ratio can be used to find the height of the school?
- What is the height of the school and is it similar to its actual height?

Assignments

- Complete the activity of measuring the height of your school building using a clinometer, draw appropriate figures and justify your answer.
- The height of Qutub Minar is 73m. Find the distance at which a person should stand to see the highest point in the Minar if the angle at which he views the monument is 30°.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation records, question answers session and observe active participation of students in the activity, group work and portfolios for evaluating this segment for completing rubrics.

ACTIVITY 3

SUBJECT	MATHEMATICS
CLASS	XI
THEME	LIMITS
FORM OF THE ART ACTIVITY	VISUAL AND PERFORMING ARTS

TARGET LEARNING OUTCOMES

By the end of this session, the learner:

- Relates the earlier learnt concept of trigonometric ratios to functions and evolves the idea of trigonometric functions.
- Develops the strategies of locating a point in three dimensions based on the concepts of two-dimensional coordinate geometry.
- Evolves the concepts of limit and derivative of a function by analysing the behaviour of functions when the corresponding variable approaches a certain value.
- Relates deductive reasoning with the mathematical statements studied so far.

Material Required
Measuring tape, colours, chart papers, pins, thread, scale, protractor, chalk powder, circular ring/bangle, *rangoli* colours

DAY 1

Limits

Task 1: Exploratory Assignment on Budget

Teacher divides the students in heterogeneous groups and gives them the theme of drama a day before which they will present.

Teacher gives assignment to the students to present budget for different kinds of families where the income is constant and their savings vary. Students create and enact situations on the theme 'When expenditure approaches income—what would be the impact on savings?'. Teacher explains that some families would have more expenditure and their savings would be less, some would have less expenditure and savings would be more, some will have expenditure which equals their income and saving is zero, so on and so forth.

Each group of students depicts and enacts different situations and are allocated the time of 2-3 minutes for their presentation.

- Group 1— where expenditure is nil and total savings
- Group 2— where expenditure is less than income and more savings
- Group 3— where expenditure is moderate and little savings
- Group 4— where expenditure is more and very little savings
- Group 5— where expenditure is equal to the income and no savings

Task 2: Graphical Representation of Budget

Teacher appreciates the efforts and active participation of all the students in presentation. Based on five drama presentations, teacher explains the graphical representation and mathematical expression of each presentation. Teacher concludes that as expenditure approaches income, the savings continues to get reduced and eventually becomes zero. Teacher guides the students in writing the same situation in terms of limits:

$$\lim_{\text{Expenditure} \to \text{Income}} \text{Savings} = 0$$

Teacher further explains that the above mathematical expression to be read as:

'When Expenditure approaches/goes/tends/very close/very near to Income, savings approaches/goes/tends/very close/very near to Zero.'

Teacher can use the relevant textual material and following video for an elaborated understanding of the concept.

Video Link

https://www.youtube.com/watch?v=YWRV2To5SZ4&t=182s&ab_channel=NCERTOFFICIAL

Questions for Quick Revision

Students write the following situations in terms of limits in their notebooks. Teacher may guide the students if they are unable to formulate them.

- When no income is spent, what happens to the savings?

$$\lim_{\text{Expenditure}\to 0} \text{Savings}=\text{Income}$$

- How much is Saving when expenditure is close to ₹ 10,000 (*given that income is ₹100,000*)?

$$\lim_{\text{Expenditure}\to ₹10000} \text{Savings}=90000$$

Assignments

- Formulate the following questions in terms of limits:
  - When expenditure goes to ₹5000, where does saving go to (given that income is ₹1,00,000)?
  - Where do savings go when expenditure approaches to ₹10,000 more than the income (given that income is ₹1,00,000)?
- Choose your favourite subject and explain any concept of it through limits.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise question answers, observation records, group work and observe active participation of students for evaluating this segment for completing rubrics.

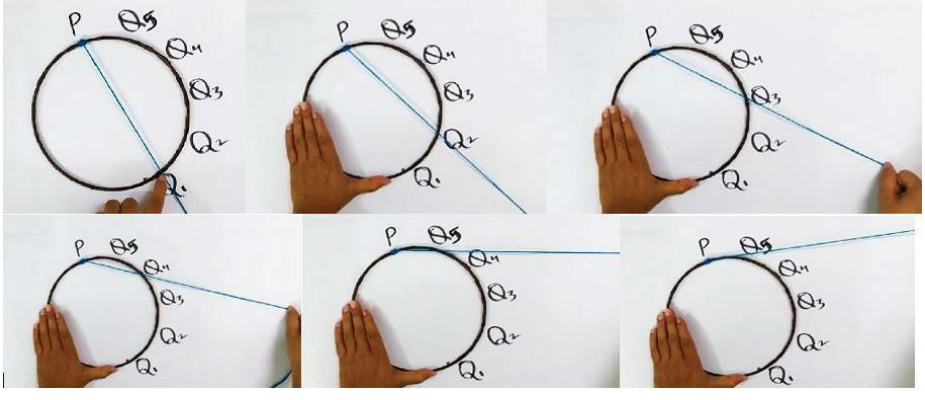
The theme of Limits is multidisciplinary and can be explored through different subjects for understanding the relevance of day-to-day situations of those subjects.

DAY 2

Exploration of Limits through Geometry

Task 1: Limits through Bangle and Thread

Teacher divides the students in pairs to perform the activity. Teacher guides students to tie a knot in thread at some point (say P) on the bangle and stretch the thread touching some other point (say Q) on the bangle. Keeping the thread stretched, the students have to move the thread in such a way that point Q goes closer and closer to point P.



Teacher appreciates the efforts of the students in doing the activity. Teacher facilitates and helps the students to formulate through limits.

Questions for Quick Revision

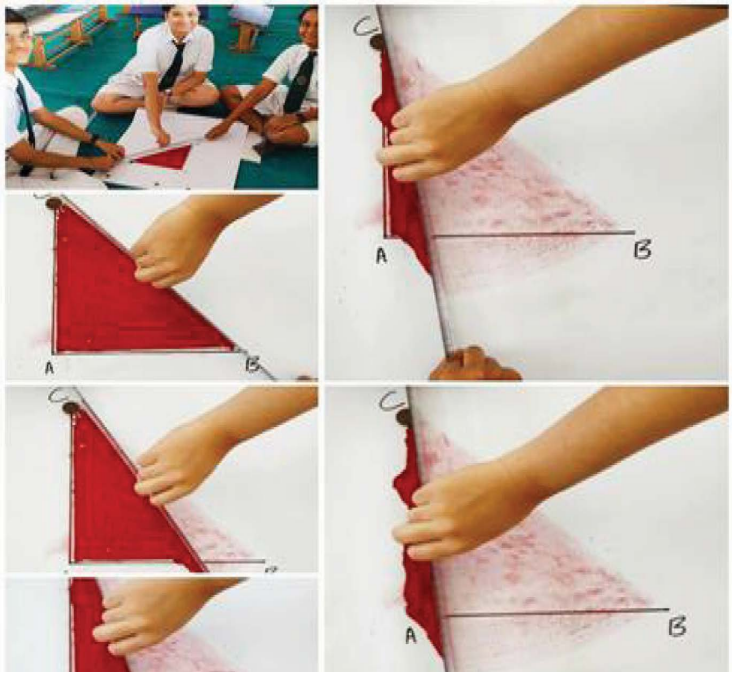
- Evaluate and elaborate the following limits:
  - $\lim_{\text{point Q}\to\text{point P}}$ Chord PQ=?
    (Answer: Zero)
  - $\lim_{\text{point Q}\to\text{point P}}$ Secant through PQ=?
    (Answer: Tangent at point P)

Assignments

- Evaluate and elaborate the following limits:
  - $\lim_{\text{Distance from centre to chord}\to 0}$ Chord=?
- Give two examples from geometry/real life situations, which can be formulated through limits.

Task 2

The Teacher guides students to draw a Vertical line AC and Horizontal line AB. One end of the scale is fixed at point C and the other end touches point B. Also, *Rangoli* colours are put inside the triangle ABC. Now, the scale at B is moved towards point A in such a way that the area of *Rangoli* colours gets reduced. Students record the observations and formulate the limits of trigonometric functions.



Teacher appreciates the active participation of students and asks them to observe and record the changes.

Questions for Quick Revision

- $lim_{\text{point B}\to\text{point A}}$ AB=?
- $lim_{\text{point B}\to\text{point A}}$ BC=?
- $lim_{\text{point B}\to\text{point A}} \frac{AC}{BC}$=?
- $lim_{\text{point B}\to\text{point A}} \frac{AB}{BC}$=?
- $lim_{\text{point B}\to\text{point A}} \frac{AC}{AB}$=?

Assignments

- Define limit of a function at a point on the number line.
- Find limits of any 5 functions of your choice at $x = 2$.
- Evaluate the limits for the following trigonometric functions:
  - $lim_{\angle B\to 90^\circ}$ sin B=? and $lim_{\angle C\to 0^\circ}$ sin C=?
  - $lim_{\angle B\to 90^\circ}$ cos B=? and $lim_{\angle C\to 0^\circ}$ cos C=?
  - $lim_{\angle B\to 90^\circ}$ tan B=? and $lim_{\angle C\to 0^\circ}$ tan C=?

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise question answers round, observe active participation of students in the activities, observation schedule and assignments for evaluating this segment for completing rubrics.

DAY 3

Limit of Real-valued Functions

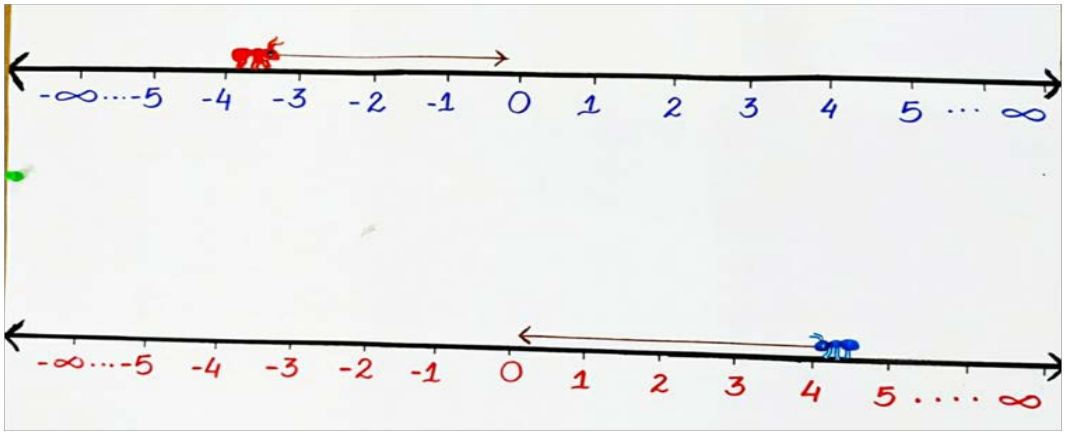
Task

After recapitulation of the topics learnt on the previous day, teacher starts the discussion by asking this question — 'if an ant is resting at any arbitrary point on the cartesian coordinate/plane and want to reach origin O, then from how many directions can it reach the point zero?' Teacher appreciates the answers given by students and elaborates them.

Now, teacher asks another question — 'If an ant is resting at any arbitrary point on the real number line and want to reach origin O, then from how many directions can it reach the point zero?' Teacher appreciates the answers given by students and elaborates them further.

Students naturally understand that on a real number line, the ant can reach the origin from two directions (from left of the origin and from right of the origin).

Teacher takes the specific reference from the video shown on Day 1 for elaborating the concept of limits of real valued functions and explains the importance of Left and Right hand limit for the existence of limit for real valued functions.



[Limit is said to exist at point 'a', if LHL=RHL, where LHL = $lim_{x \to a^-} f(x)$ and RHL= $lim_{x \to a^+} f(x)$.]

Questions for Quick Revision

- Where does $f(x)=x^3-3x+4$ approach, as 'x' approaches to '4'? Formulate in terms of limit and check whether limit exists or not.
- Let $f(x)=\begin{cases} x, & x<0 \\ x+2, & x\geq 0 \end{cases}$ be a function, then where does $f(x)$ approach,
  - as 'x' approaches to zero from left of zero on number line.
  - as 'x' approaches to zero from right of zero on number line.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise question answers round, assignments, participation in the process of learning and observation records for evaluating this segment for completing rubrics.

3.5 SCIENCE

ACTIVITY 1

SUBJECT	SCIENCE
CLASS	IX
THEME	SOUND
FORM OF THE ART ACTIVITY	VISUAL AND PERFORMING ARTS

TARGET LEARNING OUTCOMES

By the end of this session, the learner:

- Relates processes and phenomena with causes and effects, such as, production of sound with vibrations of source.
- Calculates the speed of sound using the data given, such as, distance, velocity, frequency, etc.
- Draws labelled diagrams, flow charts, concept maps, graphs, such as, sound waves, frequency, echo, oscillations, amplifications, etc.
- Analyses and interprets graphs and figures such as, sound waves, frequency, echo, oscillations, amplifications, etc.
- Applies scientific concepts for solving problems in daily life such as, noise pollution, modulation of voice, building structures for acoustic effects, etc.
- Designs models using eco-friendly resources, such as, sound producing 3D models, etc.
- Exhibits the values of honesty, objectivity, rational thinking, freedom from myths and superstitious beliefs while taking decisions, respect for life, etc.
- Communicates the findings and conclusions effectively, such as, those derived from experiments, activities, and projects both in oral and written form using appropriate figures, tables, graphs, digital forms, etc.

Material required
Musical instruments, steel plate, glasses, spoon, table, bowl/tub of water, colour paper, colour pencil and colour pens

PREPARATORY ACTIVITY

The theme of 'Sound' is covered in Class VIII and students should be given home assignment to watch videos related to this topic and write 100 words on their understanding of the theme 'sound'. The given video links can be used.

Video Links

- https://www.youtube.com/watch?v=KWphn8yDbqs&ab_channel=NCERTOFFICIAL
- https://www.youtube.com/watch?v=BomDW7voTJ0&ab_channel=NCERTOFFICIAL

(This preparatory task can be assigned one day prior to the classroom activity.)

DAY 1

Warm Up Questions

- How did you like the two videos on sound?
- How many types of sound producing instruments were shown in the video?
- Have you ever played any of the musical instruments?

The above questions are just brainstorming questions, and therefore, teacher should encourage more and more response/participation from the students.

Task 1

Students will be divided into six groups for making musical instruments with locally available material.

- Group 1 and Group 2: Percussive (ghan and avanaddh) Instruments (all kind of drums, ghungroos, etc.)
- Group 3 and Group 4: String (Tat and Vitat) Instruments (Ektara, Sitar, Guitar, etc.)
- Group 5 and Group 6: Windblown (Sushir) Instruments (Mouth organ, flute, whistle, etc.)

Task 2

Each group presents their musical instrument(s) and explains the working of the instruments that they have created. Teacher can also ask simple questions related to sound, such as:

- What could be the source of sound in a particular instrument?
- Does sound depend on the nature and size of the instrument?
- Which part of your instrument creates vibrations and how?

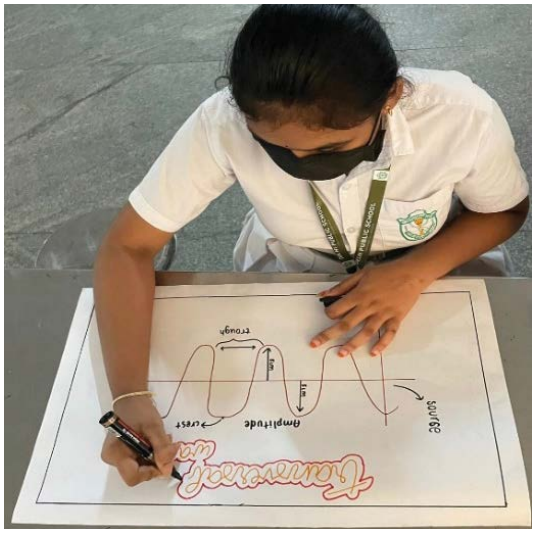
Teacher will appreciate the efforts of students in making and presenting their musical instruments. Teacher will conclude the presentations and introduce the concept of different types of sound waves.

Task 3

Teacher explains the types of sound waves on the basis of the vibrations created in the medium by the activity of using a tuning fork and a bob/ small metallic ball to understand that sound travels faster through solids than the other media. Also showcase the video to understand how sound reaches our ear. Teacher discusses how the oscillations are made and the direction of the propagation of the waves.



Students are then encouraged to draw the different types of waves.



Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation schedule, presentation and performance and portfolio for evaluating this segment for completing rubrics.

Assignments

Teacher can conclude with the following questions:

- How does the sound produced by a vibrating body reach your ear?
- Draw and label the parts of longitudinal wave.
- In which of the media does the sound travel fastest?

DAY 2

Brainstorming Situation

A situation will be given to students: on a heavy traffic running road, a person is playing '*Ektara*' or any string instrument and singing a song. There is the noise of vehicles along with occasional honking. Which of the sounds will be clearly heard by the person sitting on the other side of the road and why?

Teacher will appreciate the responses and participation of all the students. Teacher will play the following videos for the elaborated and comprehensive understanding of the concept of sound waves, characteristics of sound waves, speed of sound and medium of sound.

Video Links

- https://www.youtube.com/watch?v=XtkX0APtfR8&ab_channel=NCERTOFFICIAL
- https://www.youtube.com/watch?v=WkgmQ1uv3Ao&ab_channel=NCERTOFFICIAL

After watching the videos, teacher explains the concepts through activities and exercises given in the textbooks. The activities based on different concepts will continue for the third day as follows.

DAY 3

Characteristics of Sound Waves

Task 1

After recapitulation of the theme explored on the second day, the teacher introduces the next topic of the characteristics of sound waves and the units used for measuring them.

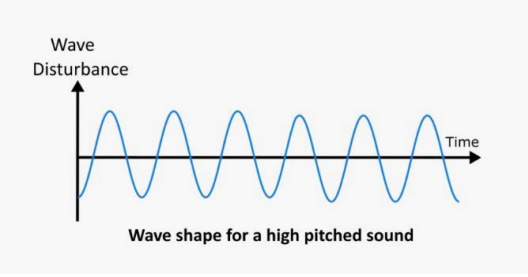
Teacher divides the class into three groups and assigns simple tasks to students such as vibrating a ruler and water at different levels in different bowls or glasses, playing musical instruments available in school and experimenting with the instruments created by students at different volumes simultaneously.

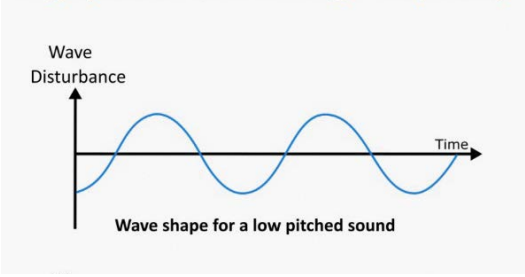


After appreciating the activity, teacher may encourage students to write the characteristics of sound waves in 50 words as Home Assignment.

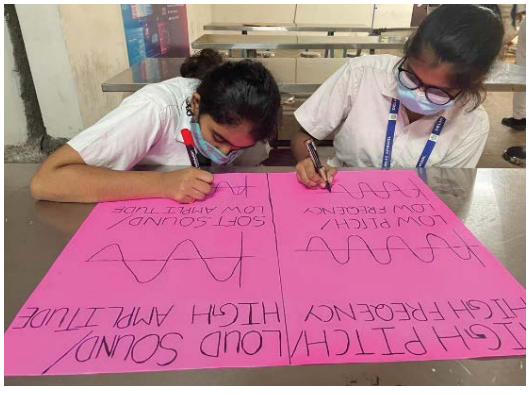
Task 2

Teacher engages students in group discussion on the nature of waves created in rivers, oceans or ponds and explains the concept of drawing different graphs.





Teacher appreciates students for their interest in making a graphical representation of different sound waves on a chart paper or floor using labels.



Teacher narrates a story to describe the various characteristics of sound such as loudness, pitch and quality of sound.

Task 3

Teacher takes the topic further by introducing the relation between time period, frequency, wavelength and velocity of sound waves. Teacher introduces the relation between a few terms like time period, frequency and wavelength, and helps students in solving a few sample numericals.

Teacher gives a scenario/situation of a boy/girl sitting in a park or any place listening to a tone of 200Hz at a distance of 400m from the source of the sound and motivates the students to calculate the time interval between successive compressions from the source.

Teacher appreciates students for solving the given numerical using the relation between time period, frequency and wavelength.

Note for the Teacher
This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise checklist, observation schedule, portfolio, question answers round and participation in group discussion for evaluating this segment for completing rubrics.

Assignments

- Play music using any musical instrument or any resource available at your house and represent the sound produced in the form of a graph.
- What will be the frequency of a wave if seven complete vibrations are produced in one second?

On a similar pattern, teacher can continue the exercises and experiments on the concepts of — echo, reflection of sound, speed of sound in case of echo, application of reflection of sound, etc.

Some more video links for reference on Sound

- https://www.youtube.com/watch?v=FhckXZMDpLc&ab_channel=NCERTOFFICIAL
- https://www.youtube.com/watch?v=6yg1NACQKE0&ab_channel=NCERTOFFICIAL
- https://www.youtube.com/watch?v=8OFD6XVZjPs&ab_channel=NCERTOFFICIAL
- https://www.youtube.com/watch?v=R6P0i410dac&ab_channel=NCERTOFFICIAL

Suggested Activities

Characteristics of Sound: Making a simple model using straws to identify the characteristics of sound simply by blowing air into different sized straws.

Model making for building dome shaped structures: Teacher facilitates students in making of dome shaped structures using clay or any locally available material.

Law of Reflection of Sound: Teacher motivates students to observe the laws of reflection of sound and verify the laws using a simple experiment with the resources available. Students try to verify the laws of reflection of sound using the available appropriate resources and represent the same in the form of a drawing.

Teacher gives a scenario/situation of a boy/girl, who clapped his/her hands near a small hill and heard the echo after 2s. Ask students to find the distance of the cliff from the person if the speed of sound is 340m/s. Teacher values the time taken by the students in solving the numerical.

Application of Reflection of Sound: Teacher encourages students to form groups and create models of cone shaped objects to discuss how sound gets reflected into different directions by using various devices. Teacher applauds the creativity of the students for making a simple trumpet/ horn model. Students discusses various other devices made on the same principle of reflection of sound like stethoscope, sound boards, etc.

Activity 2

Subject	Science
Class	X
Theme	Carbon and Its Compounds
Form of the Art Activity	Visual and Performing Arts

Target Learning Outcomes

By the end of this session, the learner:

- Differentiates materials, objects, and processes on the basis of properties and characteristics, such as, sources of carbon, homologous series, and various types of reactions.
- Classifies materials, objects and processes, based on properties and characteristics of carbon and its compounds on the basis of their physical and chemical properties.
- Plans and conducts investigations and experiments to arrive at facts and verify them, or to seek answers to queries on their own related to carbon and its compounds.
- Relates and explains the processes related to carbon and its compounds.
- Draws labelled diagrams and makes 3D models such as, structures of hydrocarbons, homologous series and nomenclature.
- Draws conclusions, such as, properties of elements vary periodically along the groups and periods in the periodic table of carbon and its compounds.
- Exhibits creativity in designing models of diamond and graphite using eco-friendly resources.
- Exhibits the values of honesty, objectivity, rational thinking, and freedom from myth and superstitious beliefs while taking decisions, respect for life, etc.
- Communicates the findings and conclusions effectively, such as, those derived from experiments, activities, and projects orally and in written form using appropriate figures, tables, graphs, and digital forms, etc.

Material Required

Paper/cardboard, sticks, pebbles, bangles, colours, brushes, *rangoli* colours, pens/markers/pencils, coloured beads/coloured leaves/coloured stones, flowers, coloured clay, string/thread

DAY 1

It is assumed that the students are familiar with electronic configuration of the first twenty elements in the periodic table as this is the underlying concept to understand the bonding of elements.

Task 1: Ice-Breaking Activity — Carbon Song/Riddle

Teacher engages students in creating songs/riddles to learn and understand the types of bonds found in carbon.

Riddle (Who am I?)

Teacher with the help of students can create riddles incorporating the following suggestive points:

- Atomic mass 12 and atomic number 6
- 4 unpaired electrons

Carbon Song

You have got four valence electrons in your outer shell
You can form covalent compounds very well
But carbon most of all I love your bucky balls
As an element you're found as diamonds in the rough
Or as lubricating graphite that's slippery stuff
But carbon most of all I love your bucky balls
Plants and animals depend organically on you
Burn them and you will get water and carbon dioxide.

Teacher appreciates the active participation of students in creating and singing the song.

Link Question/Situation

- What properties of Carbon appear in the song?

Teacher will encourage active participation of all the students.

Task 2: Describe Versatile Nature of Carbon and Explain Covalent Bonding

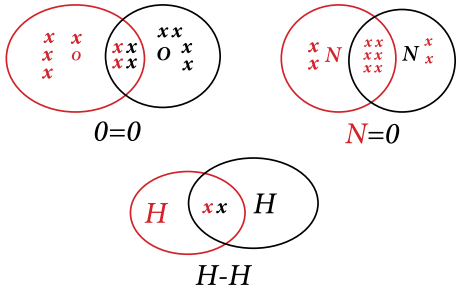
Teacher can show the following video for explaining Covalent Bonding.

Video Link

https://www.youtube.com/watch?v=T8dVM5Ttrqw&ab_channel=NCERTOFFICIAL (Carbon and Compounds)

Let's Bond

- Teacher relates to the previously known concept of electronic configuration to make students understand the type of bond that Carbon can form.
- Teacher recalls the tendency of carbon to share electrons and designs the versatile nature of carbon.



- Teacher explains the concept of covalent bonding with the help of videos and relevant textual material.

The teacher encourages students to develop a card game to understand the concept of bond formation. The cards will have C, H, O, Cl, S, Br, etc., as atoms. The students, as players, would ask questions in the form of riddles from their fellow players to guess the elements and form covalent chemical bonds. The creativity here is in asking questions and then partnering to form the correct molecule of the Carbon compound.

Further, students develop an interest to depict various compounds using models made from environment friendly indigenous materials, for example: toothpicks, twigs, clay balls, berries, beads, etc.

Quick Reinforcement

- Draw covalent bond for O_2 and NH_3.
- Draw the ionic structures of Na_2O and $MgCl_2$.
- What factors contribute to the versatile nature of carbon?

Note for the Teacher
This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise presentation and performance, diagrams, model making and presentation for evaluating this segment for completing rubrics.

Assignments

- In nature where do we see covalent bonds? Write a small report on it. (Individual Assignment)
- What would be the electron dot structure of a molecule of sulphur which is made up of eight atoms of sulphur? (Individual Assignment)
- Create an online quiz related to the topic learnt. (Group Assignment)

DAY 2

Allotropes

Teacher explains the scientific concept of allotropes with the help of videos and activities.

Video Link

https://www.youtube.com/watch?v=juOtm3KZ1Ig&ab_channel=NCERTOFFICIAL (Carbon and Compounds Part-I)

Task: We Brothers are Similar, Not Identical

Teacher encourages students to design allotropes of carbon by using toothpicks, wooden earbuds and matchsticks to represent the model of diamond or graphite using domestic and environment-friendly materials and appreciates them.

Quick Reinforcement (Group Activity)

What are allotropes and their applications?

Note for Teachers
This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise model making and group work for evaluating this segment for completing rubrics.

Assignment

Diamond and graphite are different from each other. Justify by creating a collage to depict the same.

DAY 3

Hydrocarbons — Alkanes, Alkenes and Alkynes

Teacher explains the concept of hydrocarbon with the general formula and discusses the classification of hydrocarbons as saturated and unsaturated hydrocarbons. Teacher explains the concept based on the following videos and relevant textual material.

Video Links

- https://www.youtube.com/watch?v=_3QzkxQ2HGE&ab_channel=NCERTOFFICIAL (Carbon and its Compounds-2)
- https://www.youtube.com/watch?v=LDjtHkUrMdc&ab_channel=NCERTOFFICIAL (Carbon and its Compounds-3)

Task: A Colourful World

Teacher encourages students to draw the structures of hydrocarbons using native Rangoli art and colourful 3D models/structures with the help of clay and biodegradable materials and check the type of bonding between them (single, double and triple bonds).

Teacher appreciates the active participation of students in model making.

Quick Reinforcement (Group Activity)

Classify the saturated and unsaturated hydrocarbons with two examples.

> **Note for the Teacher**
> This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation, checklist and model making for evaluating this segment for completing rubrics.

DAY 4

Homologous Series and Nomenclature

Homologous Series

Teacher explains the homologous series with the help of videos and relevant textual material.

Video Link

https://www.youtube.com/watch?v=5bB-4oeSJN8&ab_channel=NCERTOFFICIAL (Carbon and its Compounds-4)

Task 1: I have a Name and a Family

Students will be divided into groups and each group will depict a homologous series wherein every student will act as a member of the homologous series. They will use specific colours and characteristics of the homologous series for the role play. The teacher then explains the rules for the formation of homologous series and its member compounds.

Link Question

What would be the general formulae of the various homologous series?

Nomenclature: The teacher would explain the rules for naming of the hydrocarbons and would facilitate their learning by the following activity.

Task 2

Teacher provides students with two bowls of chits—one containing the names of the compounds and the other the structures. Students are encouraged to pick one chit from each bowl and either draw (2D) or create 3D models using clay and colourful biodegradable materials of the structure for the given compound respectively.

Quick Reinforcement

Give two or three examples of homologous series.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise assignments, portfolios, models, presentation and performances for evaluating this segment for completing rubrics.

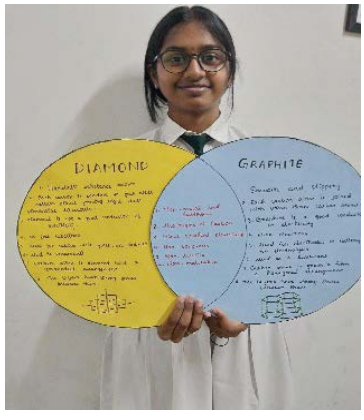
Suggested Activities

Connect with Nature

Teacher initiates a walk with students around the campus and asks them to collect various things of their interest. Students then burn these various things one by one and observe the residue left in each case. The students would observe that in most of the cases a black residue is left behind. The students would make a list of the substances that left the black residue. Teacher can ask a linking question to students as to what is this black residue that is left behind by most of the things found in nature.

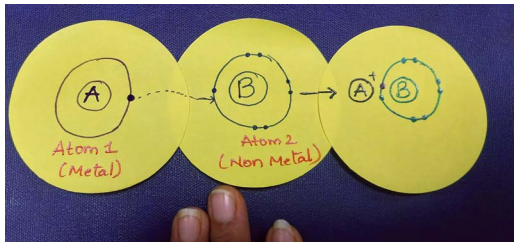
Allotropes of Carbon

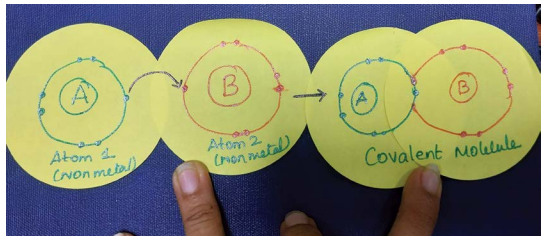
Teacher guides the students to draw a Venn diagram to depict the similarities and differences between diamond and graphite. (Students integrate Mathematics with Science using Venn diagram).



Versatile Nature (How am I different?)

Students differentiate between ionic compounds and covalent compounds through enactment or verbal discussions.





Saturated/Unsaturated Hydrocarbons

Students use domestic material like beads, balls or pebbles to make saturated/unsaturated hydrocarbons as pieces of jewellery.

Activity 3

Subject	Chemistry
Class	XI
Theme	Hybridisation
Form of the Art Activity	Visual and Performing Arts

Target Learning Outcomes

By the end of this session, the learner:

- Classifies materials/phenomena/processes on the basis of their properties and characteristics, such as, s, p, d, f blocks.
- Plans and conducts investigations, experiments and projects to arrive at and verify the facts, principles and phenomena or to seek answers to queries on their own such as regarding creating hybrid orbitals.
- Relates the processes and phenomena with causes and effects related to hybridisation.
- Draws diagrams, flow charts, concept maps and graphs related to hybridisation.
- Analyses and interprets graphs and figures related to hybridisation.
- Applies scientific concepts in daily life and in solving problems.
- Exhibits creativity in designing models using eco-friendly resources and out-of-box thinking in solving problems.
- Exhibits the values of honesty, objectivity, rational thinking and freedom from myth and superstitious beliefs while taking decisions, respect for life, etc.

Material Required

Colours (white, red, green and yellow), water, soap solution, leaves of peepal tree, volleyball, basketball, cricket ball or any other ball, dumbbell, table, cycle tyre, white paper, coloured pencil/pen, ball, sticks, mud, sticks of ear buds

Day 1

Shapes of Atomic Orbitals

Teacher introduces the concept of shapes of atomic orbitals and hybrid atomic orbitals.

Task

Teacher explains the shapes of atomic orbitals on the board followed by the activity as mentioned below.

Teacher guides the students to identify the shapes of different atomic orbitals (s, p, d and f) by showing the objects such as volleyball/cricket ball/basketball, dumbbell/cycle tyre/specs to relate to the shapes. Students involve in identifying atomic orbitals according to their shapes.





Quick Reinforcement

Find out any two examples of the shapes of s-orbitals from your environment and community.

DAY 2

Shapes of *p*, *d* and *f* Orbitals

After recapitulation of the topics taught on the previous day, the teacher introduces the next atomic orbitals.

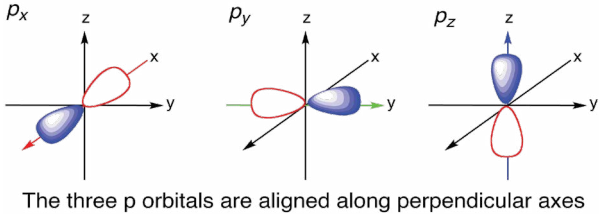
Teacher explains the shapes of *p*, *d* and *f* orbitals with the help of PPT or blackboards along with their significance.

Video Link

https://www.youtube.com/watch?v=RhiDeoQYHR0&ab_channel=NCERTOFFICIAL (Structure of Atom: Shapes of Orbitals)

Task 1: Making the shape of *p*-orbital

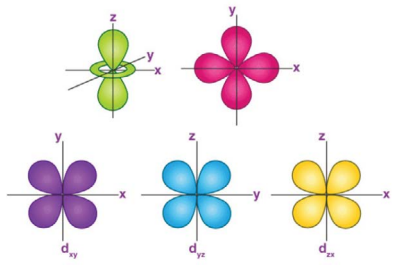
The teacher encourages students to create the shapes of *p*-orbitals in different axes (p_x, p_y and p_z) with the help of two leaves of peepal tree preferably (peepal leaves are very similar to the shape of orbitals).

The three p orbitals are aligned along perpendicular axes

The teacher explains the scientific concept of the activity and tells students to draw the orbital structures in their notebooks.

Task 2: Making Rangoli of the shapes of d-orbitals



Teacher encourages students to create shapes of d-orbitals in different axes (d_{xy}, d_{yz}, d_{zx}, d_{x2}-$_{y2}$ and d_{z2}) using a Rangoli design. Teacher appreciates the active participation of students in identifying the shape of d-orbitals.

The teacher explains the scientific concept of the activity and tells students to draw the orbital structure in their notebook. Teacher can use videos and/or relevant textual material to explain the concept in detail.

Quick Reinforcement

- Give any two examples of the shapes of p and d orbitals from our surroundings.
- Select your favourite sport and relate the shapes of orbitals with it.

Teacher explains the shape of f-orbitals through videos and relevant textual material.

Note for the Teacher

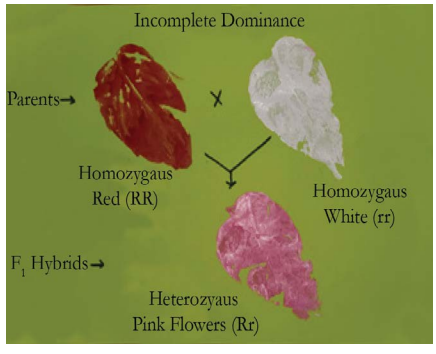
This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation, creating designs and question answers round for evaluating this segment for completing rubrics.

DAY 3

Hybridisation

Task 1: Ice-breaking Activity

The teacher can engage students in creating 'hybrid colour'. The hybrid colour or mix-colour is created by mixing any two colours. These two colours can be mixed in the ratio of 1:1 or 1:2 or 1:3 to get three different types of shades of the hybrid colour. The colour imprints of the two original colours and the three shades of the hybrid colour could be made as leaf print or block print.



Discussion Round

The students will infer through discussion that mixing of colours gives rise to 'hybrid colour' and that mixing in different ratios gives different shades of the hybrid colour.

Linking Statement

The teacher will link the hybrid colour with hybrid orbitals.

sp Hybridisation

Teacher introduces the concept of hybrid orbitals and different types of hybridisation — *sp*, sp^2, sp^3.

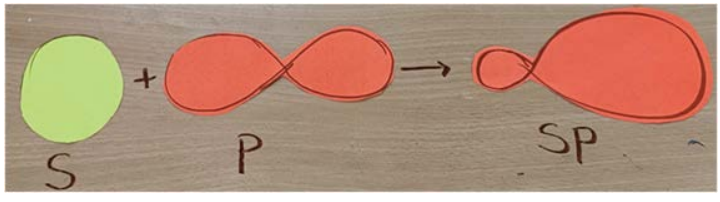
Teacher can show the following videos for an elaborate understanding of the concepts. Art Integrated Learning activity will follow for the reinforcement of *sp*, sp^2, sp^3.

Video Links

- https://www.youtube.com/watch?v=LIB7rayARyg
- https://www.youtube.com/watch?v=MfOm8d_kmOc
- https://www.youtube.com/watch?v=Pnl9j_wgyqE

Task 2

Students are encouraged to cut the chart paper into *s* and *p* atomic orbitals of same or almost same energy level and mixing of *s*-orbital and *p*-orbital to give hybrid atomic orbital (*sp*) and check the lobe size.



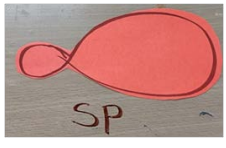
Quick Assignment

Draw the orbitals structure in your notebook.

Task 3: Creating *sp* Hybrid atomic orbitals

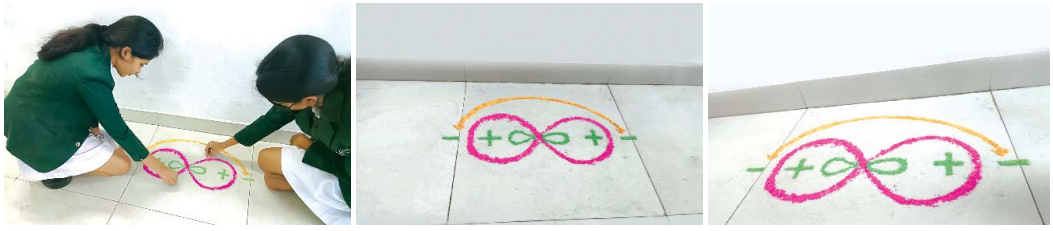
Teacher provides with one old cycle tyre with which students like to play around. Teacher will ask students to explore it by twisting to create a shape similar to *sp* hybridised orbital.

Similar to



Task 4

Teacher facilitates students to create the shapes of SP hybridised atomic orbitals using Rangoli design (or by drawing the hybrid orbitals in the notebook) and check bond angle between the lobes.



Teacher appreciates the active participation of students in identifying the *sp* hybridised orbitals and bond angle.

Questions for Quick Reinforcement

- Is *sp* hybridisation called diagonal hybridisation?
- What is the bond angle of *sp*?
- Is *sp* hybridised carbon divalent?

Assignments

- How many hybrid orbitals are in *sp*?
- How do you calculate *sp* hybridised?
- What does *sp* mean in hybrid orbitals?
- Give four examples of molecules having *sp* hybridisation.

Note for the Teacher
This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation records, question answers round, students' involvement in the art activities, group work and portfolios for evaluating this segment for completing rubrics.

DAY 4

sp^2 Hybridisation

Teacher will do the recapitulation of the topics learnt on the previous day and announces the topic — sp^2 hybridisation. Teacher explains the sp^2 hybridisation, its shape and bond angle on the blackboard with the help of the videos shown on day 3 and relevant textual material before starting further activities.

Task 1: Art Activity

Students in groups create shapes of sp^2 hybridised atomic orbitals using Rangoli art and check bond angle between the lobes.


Teacher appreciates the active participation of students in identifying the sp^2 hybridised orbitals and bond angle.

sp^3 Hybridisation

Teacher explains the topic of sp^3 hybridisation by using blackboard/PPT on the basis of the videos shown on day 3 and relevant textual material before starting the art activity.

Task 2: Another Art Activity

Teacher encourages students to create 3D shapes of sp^3 hybridised atomic orbitals using balls (made of mud) and sticks of ear buds shape to show tetrahedral geometry and check the bond angle.

Teacher appreciates the active participation of students in identifying the geometry and bond angle in tetrahedral geometry.

Questions for Quick Revision

- What is the bond angle of sp^2 and sp^3 hybridised atomic orbital?
- What is the difference between sp^3, sp^2 and sp?

Assignments

- To form Trigonal planar by joining the corners of any three districts on the map of your State or any three States on the map of India.
- Find out two examples of Trigonal planar and tetrahedral geometry from your surroundings.
- Perform the activity of mixing two colors (Turmeric and Indigo) in different proportions and observe 4 to 5 proportion. Analyse the concept of hybridisation (sp=50:50%, sp^2=33.33:66.66%, sp^3=25:75%).

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise anecdotes, portfolios, observation records, pictures of students doing art activities, question answers round and assignments for evaluating this segment for completing rubrics.

ACTIVITY 4

SUBJECT	BIOLOGY
CLASS	XI
THEME	ASCENT OF SAP
FORM OF THE ART ACTIVITY	VISUAL ARTS

TARGET LEARNING OUTCOMES

By the end of this session, the learner:

- Relates the processes and phenomena with causes and effects, such as, transpiration pull is related with the absorption of water by roots of plants.
- Makes linkages at the interface of Biology with other disciplines by relating various interdisciplinary concepts such as geometric growth rates in plants and organisms.
- Handles laboratory tools and apparatuses, instruments and devices properly for performing activities, experiments and investigations such as: uses foldscope/microscope for observing the internal structure of transverse section of roots, stems and leaves, intricacies of chloroplasts, stomata, etc.
- Draws conclusion on the basis of data collected in activities, experiments and investigatory projects conducted by them, such as, transpiration, osmosis, plasmolysis and diffusion.
- Applies scientific terminology for organisms and processes such as, systematic technical description of flowers.
- Draws labelled diagrams, flow charts, concept maps, and floral diagrams, such as, floral diagrams of given flowers and parts of flowers.
- Communicates the findings and conclusions effectively, such as, those derived from experiments, activities, and projects both in oral and written form.
- Exhibits creativity in designing models using eco-friendly resources, and in preparing charts, paintings, sketches, etc.
- Exhibits ethics and values of honesty, objectivity, rational thinking and freedom from myth and superstitious beliefs while taking decisions.
- Makes efforts to conserve environment realising the inter-dependency and inter-relationship in the biotic and abiotic factors of environment.
- Applies learning to hypothetical situations.

Material Required
Flowers with stems gathered from home or school garden (cut flowers of white and other colours with stems of varying thickness), paint/ink of various colours, 2–3 potatoes, half tea cup of table salt, knife, poster colours or acrylic paints, chart paper, scissors, thick thread, sketch pens, music player (if not available, can create music by clapping).

DAY 1

Transpiration

Objective: To enable students to understand the process of transpiration and how it is affected by variations in the flower stalk.

Concept: Transpiration is the process through which water travels up the stem of the plant through capillary action and is lost as water vapour through the stomata.

Teacher can take the help of the following video for elaborated understanding of the concept.

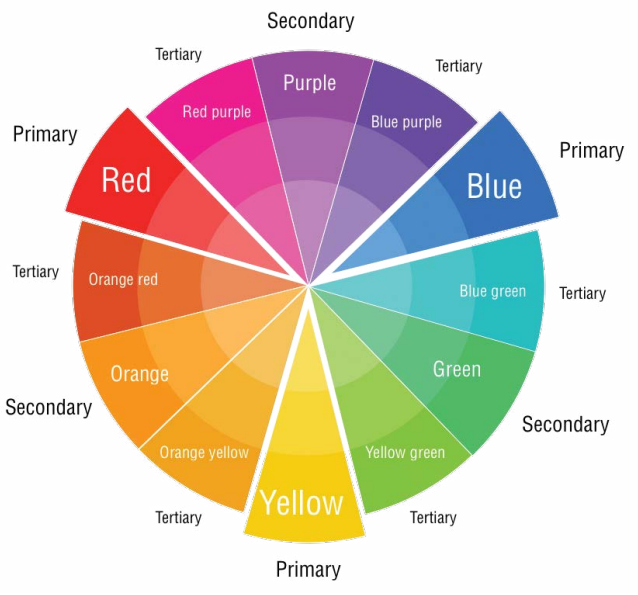
Video Link
https://www.youtube.com/watch?v=Q0CFq6-Trls&ab_channel=NCERTOFFICIAL (Long Distance of Water in Plants)

Task
In this art activity, students will explore the process through which water travels up the flower stalk, by gathering flowers with stalks of varying thicknesses and lengths. These are placed in coloured water. As the water rises up the stem, at varying rates, the students will discover and understand how the variations in flower stalks affect the rate of water uptake. For example, a tubular fleshy stalk would allow quicker uptake of water than a narrow woody stalk.

Experiment
The facilitator along with students makes three to five coloured solutions by mixing ink/water colours with water. They take a sample of each type of flower and immerse the stem partially in the coloured water. Students notice that the colour travels up the stem and colours the flower— a white flower becomes coloured as that of the ink, a coloured flower may lose its own colour but does not become coloured as that of the ink— it turns into a third colour. Students make notes of observations. Students notice that some stems that are too thick and not tubular enough, don't allow the colour to travel up effectively. The facilitator explains the concept of transpiration based on this experiment.

Art Activity
Now that students know how transpiration works, the facilitator divides them into groups and let them decide which colours they want to work with, maybe warm colour (colours of fire— red, yellow, orange) or cool

colours (colours of water—blues, greens, purples) or maybe a mix of warm and cool colours. They will be encouraged to quickly create their own colour wheel of primary, secondary and tertiary colours. They will now select/identify the flowers of different colours and gives the changed colour of those flowers after immersing them in the colour of their choice. Then they will draw/paint the same. This activity can be further extended where students make a bouquet of flowers and click a photograph of the flower bouquets. Further, they can also prepare a presentation documenting the process of changing colour of the flowers.



Teacher/facilitator will observe carefully as students carry out the flower bouquet part of the activity. They should be able to articulate their decisions on the choice of flowers including the thickness and length of their stems.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise presentation, observation, checklist and portfolio for evaluating this segment for completing rubrics.

DAY 2

Osmosis and Plasmolysis

Objective: The objective of this activity is to help students understand the role that water potential plays in the processes of osmosis and plasmolysis.

Concept: This activity explores the phenomena of osmosis and plasmolysis. When a potato slice is placed in a very dilute salt solution, it will take up water and become swollen with water. This process is known as osmosis, where water travels from a place of higher concentration outside the potato through the potato membrane to a place of lower concentration inside the potato, thus causing the potato to swell up. The print taken of this potato slice will have a certain size and shape.

When a similar potato slice is placed in a highly concentrated salt solution, it will lose water and shrivel up. This process is known as plasmolysis, where water travels from a place of higher concentration inside

the potato through the potato membrane to a place of lower concentration outside the potato, thus causing the potato to shrink. The print of this shriveled up potato slice will be very different in size and shape than the previous potato slice. By varying the salt concentration in which the potato slice is submerged, students will observe the changes in the potato slice and record these changes by taking its print. This will help students to understand the role that water potential plays in the processes of osmosis and plasmolysis.

Teacher can take the help of the following video for elaborated understanding of the concept.

Video Link

https://www.youtube.com/watch?v=DVgnuKJbE04&ab_channel=NCERTOFFICIAL

Task

First the students will carry out the traditional block printing activity that they used to do in lower grades. They can carve a potato slice into a design and then dip it in the paint and press firmly and quickly on paper to make a print. Students will enjoy this familiar art activity. The facilitator will then move on to making variations in the potato design using scientific concepts.

Experiment

The facilitator cuts a potato in half and dips the cut surface in a small plate with poster paint and makes a print on paper by pressing it down. The potato makes a nice rounded print. Now, the student will add a teaspoon of salt to half a cup of water. The facilitator calls a student to take out the potato at regular intervals and use it to make a print by dipping in paint. Students watch as the potato shrivels and shrinks because the higher saturation of salt solution outside will make the potato shrivelled. Now make more prints and see the potato shape.

Art Activity

The facilitator encourages the groups of students to carry out the same experiment and use the potato at various stages of dehydration as blocks to dip in coloured paint and make interesting prints on the sheets of newspaper to make beautiful gift-wrapping paper. The students are encouraged to choose the paint colours and use a variety of potato shapes created by dehydrating to add visual interest to the notebook wrappers.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation, checklist and group work for evaluating this segment for completing rubrics.

DAY 3

Uniport, Antiport and Symport

Objective: To enable students to deduce the function of the gatekeeper of channel protein. This will further enable them to clearly understand the different kinds of facilitated diffusion.

Concept: Facilitated diffusion takes place through special channel proteins embedded in the cell membrane. There are three kinds of channel proteins:

Uniport: allows one kind of molecule to pass through

Symport: allows two kinds of molecules to pass through in the same direction

Antiport: allows two types of molecules to pass through in two different directions

Teacher can take the help of the following video for elaborated understanding of the concept.

Video Link

https://www.youtube.com/watch?v=Zj9aQdQj4gQ&ab_channel=NCERTOFFICIAL (Transport in Plants)

Task

Teacher starts the game, wherein some students play the roles of two different molecules (denoted by designs of circles and triangles) and some students play the roles of gatekeepers who are the three kinds of channel proteins. By observing the kind of molecule passing through the gates and the direction of passage, students will deduce the function of the gatekeeper of channel protein. This will further enable them to clearly understand the different kinds of facilitated diffusion.

Game combined with some art making

Students will pick chits which will identify them as molecule A or molecule B or Gatekeeper Uniport, Gatekeeper Symport or Gatekeeper Antiport. There will be only two chits to represent each type of gatekeeper resulting in a total of not more than six gatekeepers. It is important at this stage that those who are the gatekeepers do not reveal which type of gatekeeper they are.

Each student will make a simple costume as per one's role. Each student will cut two sheets of chart paper of about A4 size. They will make a hole at the top corners and join the papers to each other with a string that's long enough that the student can put one's head through the gap created by the string with one paper on their chest and the other paper on their back. Now the students who act as molecule A are encouraged to fill their sheets with any pattern using only triangles. Students who act as molecule B are encouraged to fill their sheets with any pattern using

only circles. The gatekeepers may decorate their costumes using any one colour each.

Facilitator will remind students of the game they used to play as small children called musical chairs. The two gatekeepers of each type stand in pairs with their arms diagonal and clasped forming the gate. As long as music is playing, they should keep their arms lowered but still joined to prevent the students from passing. Facilitator starts the music and molecule students move on both sides of the gatekeeper. When the music stops, the molecule students must try to pass through a gate nearest to them. Each pair of the gatekeepers know if they should allow the molecule through or not and if they do, the molecule may pass back or not. The music begins again and molecule students move about again. When it stops, they again try to pass. After a few rounds, all students can write down which type of gatekeeper is represented by the student wearing a specific colour. They can discuss the reasoning for their deductions.

Facilitator will again discuss the concept with reference to the game. The teacher/facilitator observes if the game goes smoothly and if most of the students were able to guess which type of gatekeeper each one was. If they identify the gatekeepers accurately on the basis of their ability to allow the right shapes of molecules through, the concept has been clearly understood.

Note for the Teacher

This is a crucial point of assessment of learning and assessment for further learning. Teacher can utilise observation, group work and presentation for evaluating this segment for completing rubrics.

ABBREVIATIONS

AIL	Art Integrated Learning
CBSE	Central Board of Secondary Education
CPD	Continuing Professional Development
DIET	District Institute of Education and Training
DIKSHA	Digital Infrastructure for Knowledge Sharing
ICT	Information and Communication Technology
NCERT	National Council of Educational Research and Training
NCF	National Curriculum Framework
NCF-SE	National Curriculum Framework for School Education
NEP	National Education Policy
NISHTHA	National Initiative for School Heads' and Teachers' Holistic Advancement
RIE	Regional Institute of Education
SCERT	State Council of Educational Research and Training
SDGs	Sustainable Development Goals
SWAYAM	Study Webs of Active-Learning for Young Aspiring Minds
UNESCO	United Nations Educational, Scientific and Cultural Organization

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Training Package on Art Education for Primary Teachers Volume I (English)

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Training Package on Art Education for Primary Teachers Volume I (Hindi)

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Art Integrated Learning — Guidelines (English)

6. https://ncert.nic.in/deaa/pdf/AIL-Guidelines-Hindi.pdf 
Art Integrated Learning — Guidelines (Hindi)

7. 
https://ncert.nic.in/deaa/pdf/ArtIntegratedLearning-Handbook-Classes%20I-V.pdf
Handbook on Art Integrated Learning for Teachers Teaching Classes I–V

8. https://ncert.nic.in/deaa/pdf/ArtIntegratedLearning-Handbook-Classes%20VI-VIII.pdf 
Handbook on Art Integrated Learning for Teachers Teaching Classes VI–VIII

List of Films/Videos on Art Integrated Learning

1. 

https://www.youtube.com/watch?v=ZFIemHo61sA

Art — A Brain Developer

2. https://www.youtube.com/watch?v=SJlm0tZyMNs

Art — A Brain Developer with Hindi Dubbing

3. 

https://www.youtube.com/watch?v=t_y_PHImdKk

Kala-Shiksha ki Buniyad with Hindi Subtitling

4. https://www.youtube.com/watch?v=d1z3bCVQplk

Har Diwas Kala Diwas

5. 

https://www.youtube.com/watch?v=n6hcZWOJq0o

Yeh Sambhav Hai

6. https://www.youtube.com/watch?v=MZnelGfPQis

Billi Ka Panja

7. 

https://www.youtube.com/watch?v=gcvqrlwuFqA

No Grass in the Sky

8. https://www.youtube.com/watch?v=FHt8lcqsmDY

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Notes

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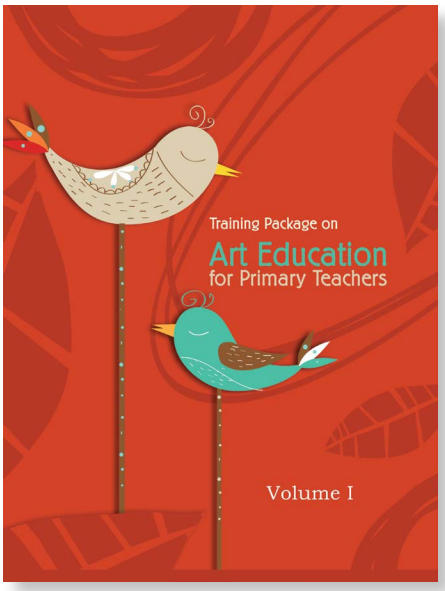

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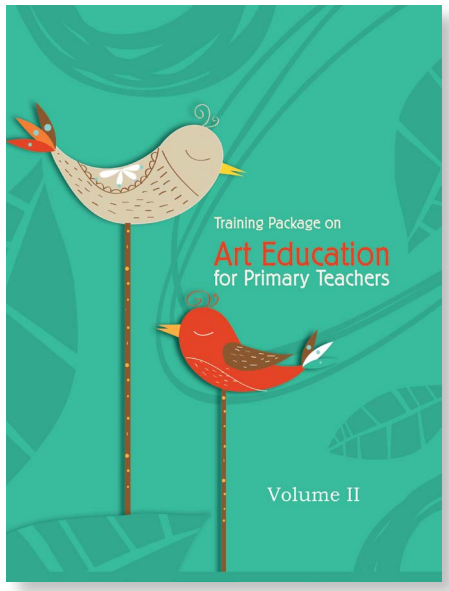

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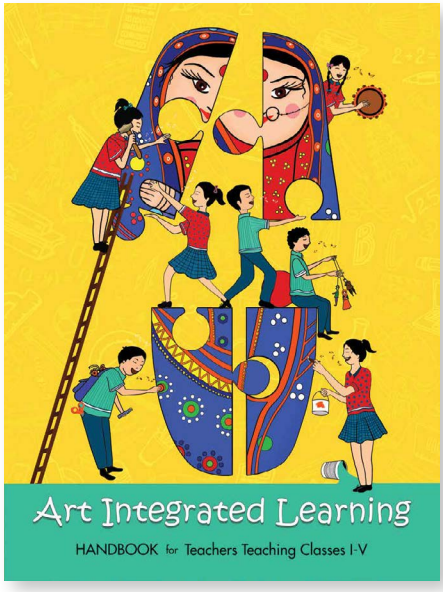

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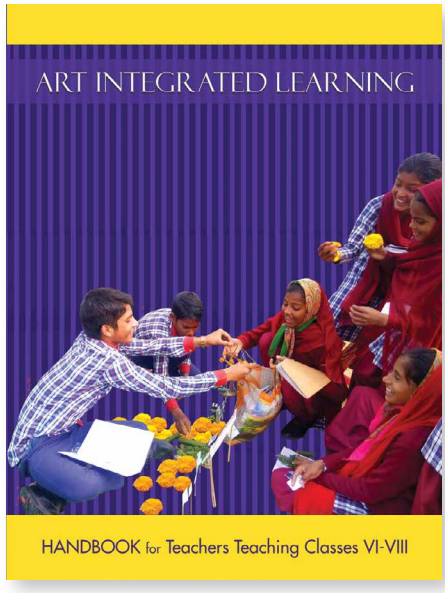

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