



HaritaDhara Research Development and Education Foundation

Building Back Better with Games,
Hands-on Activities for Sustainability
and 2030 Agenda

HLPF July 11, 2022
SIDE EVENT
Virtual

2022

REPORT



THE GLOBAL GOALS

HaritaDhara Research Development and Education Foundation

HIGH-LEVEL POLITICAL FORUM 2022 UNDER THE AUSPICES OF ECOSOC

The meeting of the HLPF in 2022 was held **from Tuesday, 5 July, to Thursday, 7 July, and from Monday, 11 July, to Friday, 15 July 2022**, under the auspices of the Economic and Social Council. This includes the three-day ministerial segment of the forum **from Wednesday, 13 July, to Friday, 15 July 2022**. The high-level segment of the Council concluded with a final day **on Monday, 18 July 2022**. The theme for the 2022 HLPF is “**Building back better from the coronavirus disease (COVID-19) while advancing the full implementation of the 2030 Agenda for Sustainable Development**”.

As the world is struggling to recover from COVID-19 amidst continuing crises, the HLPF reflected on how recovery policies can reverse the negative impacts of the pandemic on the SDGs and move countries on to a path to realize the vision of the 2030 Agenda. The HLPF also reviewed in-depth Sustainable Development Goals 4 on quality education, 5 on gender equality, 14 on life below water, 15 on life on land, and 17 on partnerships for the Goals. It took into account the different impacts of the COVID-19 pandemic across all Sustainable Development Goals and the integrated, indivisible and interlinked nature of the Goals.

Following 44 countries carried out voluntary national reviews (VNRs) of their implementation of the 2030 Agenda for Sustainable Development at the 2022 HLPF:

Andorra, Argentina, Belarus, Botswana, Cameroon, Côte d'Ivoire, Djibouti, Dominica, El Salvador, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Greece, Grenada, Guinea-Bissau, Italy, Jamaica, Jordan, Kazakhstan, Latvia, Lesotho, Liberia, Luxembourg, Malawi, Mali, Montenegro, Netherlands, Pakistan, Philippines, Sao Tome and Principe, Senegal, Somalia, Sri Lanka, Sudan, Suriname, Switzerland, Togo, Tuvalu, United Arab Emirates, Uruguay

For more details, please [click here](#).

Other events, including Side Events, VNR Labs, Special Events, and Exhibition are being organized on the margins of the 2022 HLPF.

Side Events

Side Events provide great opportunities to discuss themes and SDGs under review at the HLPF, deepen the discussion on VNRs, identify new issues, listen to all voices, and help spread greater awareness of the 2030 Agenda and the SDGs in general at all levels.

Side Events will be scheduled on the margins of the 2022 HLPF under the auspices of ECOSOC and sponsored by Member States, the UN system, intergovernmental organizations, the Major Groups and other Stakeholders and accredited Non-governmental Organizations including those with special consultative status.

Proposed side events should be closely related to the work of the High-level Political Forum on Sustainable Development (HLPF) and should have as a main focus the theme for the 2022 meeting under the auspices of ECOSOC “*Building back better from the coronavirus disease (COVID-19) while advancing the full implementation of the 2030 Agenda for Sustainable Development*”. The HLPF in 2022 will also review in-depth SDG 4 on quality education, SDG 5 on gender equality, SDG 14 on life below water, SDG 15 on life on land, and SDG 17 on partnerships for the Goals.

In view of the current situation regarding Covid-19, and due to the lifting of restrictions at UN Headquarters in New York, some Side-events were held in-person. Priority was given to countries presenting their Voluntary National Reviews at the High-level Political Forum on Sustainable Development this year and events with Ministerial participation.

(source: <https://hlpf.un.org/2022>)

Building Back Better with Games, Hands-on Activities for Sustainability and 2030 Agenda

UN HLPF Side Event Online: 11th July, 2022, Monday
07:30 - 09:00 AM (New York Time) / 05:00 - 06:30 PM (New Delhi Time)

UN HLPF 2022

Virtual Side Event

Time


11th July, 2022, Monday
07:30 - 09:00 AM (NY Time)
05:00 - 06:30 PM (IST)

Register

<https://www.hrdef.org/un-hlpf-side-event2022>

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Spread the Word

Join the Dialogue

Let's Join

Why are games important and we develop, study games for learning? How does research into games help us better to design games that help everyone to change our self and things around us for better sustainable development? We know role of games in our life but not able to utilize the power of games for Sustainability, and SDGs.

Thus, discussion on educational games and hands-on activities for SDGs learning, and building sustainable living in the present pandemic time is very crucial for everyone.

HLPF this year theme will address promising developments for accelerating progress towards the SDGs. Building an inclusive and effective path for the achievement of the 2030 Agenda with SDGs 4, 5, 14, 15, and 17 require inclusive, quality education.



Introduction

HLPF this year theme is *Science, technology and innovation for building back better from the coronavirus disease (COVID-19) while advancing the implementation of the 2030 Agenda for Sustainable Development*, which addressed promising developments for accelerating progress towards the SDGs. Building an inclusive and effective path for the achievement of the 2030 Agenda with SDGs 4, 5, 14, 15, and 17 require inclusive, quality education. In this regard, role of STI through learning with games and hands-on activities is very important, and our work showed that students, youth understand, take action for climate change, SDGs.

HaritaDhara Research Development and Education Foundation (HRDEF) is working on educational Games for Learning Sustainability Concepts, Sustainable Development Goals (SDGs) by Youth and Community for couple of years and presented our work at the TECH 2017, 2018 UNESCO MGIEP Global conference, UNESCO ESD 2021, UN STI Forum 2022, Stockholm +50. We designed, developed games, hands-on activities for understanding difficult concepts related to sustainable development in an interactive way. Games are unique with their rules, choices, consequences, constraints, good educational games force players to form theories and develop computational thinking. We discuss use of games in school, and after school program for students and youth in different settings as informal education for building sustainability concepts. Games foster collaboration, problem-solving, behavior change, and computational thinking (21st Century Skills). Our focus on how can games introduce various topics (learning experience - climate change, water cycle, energy, waste management), and improvement in learning through games playing. HRDEF inculcate, motivates students for science, technology, engineering, arts and design, mathematics (STEAM) for 21st Century Sustainable living through intelligent interactive learning systems.

HRDEF committed to establish processes aimed at educating for sustainable development (ESD), management of environment, water, energy, waste, climate change, and transport issues through involving children, youth, and elders using ICT. HRDEF conduct workshops for teachers, students, community members, and after-school program on the above, participants played Board games on water, energy, disasters, Card game on medicinal plants learning (healthy living), technology supported games, Apps on SDGs, COVID-19, hands-on activities, quiz, model making, projects and other creative forms of expressions increased players motivation towards science, SDGs, and sustainability. Thus, through ESD we are providing transforming learning environments, building capacity of educators, and empowering youth on a local level.

Objectives

Why are games important and we develop, study games for learning? How does research into games help us better to design games that help everyone to change our self and things around us for better sustainable

development? We know role of games in our life but not able to utilize the power of games for Sustainability, and SDGs. Thus, discussion on educational games and hands-on activities for SDGs learning, and sustainable living in the present pandemic time is very crucial for everyone. Building back better from the COVID-19, HRDEF is using games, and hands-on approaches for interactive learning. We are addressing issues of quality learning and sustainable development through Information and Communication Technology (ICT) in a curriculum-based way supported by research inputs and driven by a new learning paradigm based on cognitive science, neuroscience, AI, makers approach.

Participation

- UN System, Member States, Government agencies, Academic, and research institutions
- Civil Society Organizations, Social Enterprises, Individuals, Game Designer, Funders

United Nations (UN) - Education for Sustainable Development (ESD)

- Beginning with 21st century the United Nations (UN) started Millennium Development Goals (MDG) and decade of Education for Sustainable Development (ESD) (2005-2014) that highlighted vibrant role of education towards sustainable development for saving our planet as world witnessed extreme events due to climate change. Further, the UN adopted the 17 Sustainable Development Goals (SDGs) in September 2015 to advocates for SDG 4 that provide inclusive, equitable quality education and promotes lifelong learning opportunities for all to build sustainable, inclusive and resilient societies. SDG 4.7 targets that by 2030 all learners acquire the knowledge, skills needed to promote sustainable development, sustainable lifestyles, human rights, gender equality, peace, non-violence, global citizenship, and cultural diversity (UN, SDSN Reports).
- Through education we transfer knowledge, values, and skills across generation to facilitate societies to build the foundation for sustainable future. But many barriers to education access, outcomes, and monitoring of progress are main challenges that need to be addressed for achieving SDG 4.7



HIGH-LEVEL POLITICAL FORUM ON SUSTAINABLE DEVELOPMENT

AGENDA

JULY 11TH, 2022

High Level Political Forum
Side Event 2022

07:30 - 09:00 AM (NEW YORK TIME)/
05:00 - 06:30 PM (NEW DELHI TIME)

Building Back Better with
Games, Hands-on Activities for
Sustainability and 2030 Agenda



7:30 AM - Welcome and Opening Remarks

Dr. Manisha, HaritaDhara

7:35 AM - Building Back Better with Games, Hands-on Activities for 2030 Agenda

Anant Bhaskar Garg, Director, HaritaDhara

7:55 AM - Disaster Resilience, Location, and Project Preparedness through Games

David Schwartz, Director of the School of Interactive Games and Media, RIT

8:15 AM - Creating Impact Through Design + Play

Austin Davis, Head, Skill Development Lab, NID

8:35 AM - Q/A & Polls

8:40 AM - Participants' Opinion & Viewpoint

Guests/Attendees

8:50 AM - Games for 2030 Agenda, Hands-on Session

Anant Bhaskar Garg, Director, HaritaDhara

8:55 AM - Closing Remarks



HaritaDhara Research Development and Education Foundation

High Level Political Forum Side Event 2022

Event Speakers



David Schwartz
Director of the School of
Interactive Games and Media

David I. Schwartz, Ph.D. has been working in the academic field of game design and development since 2001 when he founded the Game Design Initiative at Cornell University. In 2007, Schwartz moved to the Rochester Institute of Technology. He was part of the founding department in 2009, which became the School of Interactive Games and Media in 2011. After receiving tenure in 2011, he became IGM's Director in 2015. His current research focus is on cybersecurity games, geogames, and physically-based animation.



Austin Davis
Head, Skill Development Lab

Austin Davis is Head, Skill Development Lab (Gandhinagar Campus), National Institute of Design (NID). At NID he developed an interest in the area of "Learning through Play" and ever since he has been looking for avenues to explore this idea. He worked on multiple projects like Board games as a tool to teach serious topics, Educational board games and DIY kits for primary school kids and also pursued his interest in illustrations. His interests lie in the domains of Games, Design Thinking through playful tools, Systems Thinking.



Anant Bhaskar Garg
Co-founder, HaritaDhara

Anant Bhaskar Garg, Director, HRDEF, Engineer and Educator with 26 years of exp. in various capacities in academia, industries. Published two books, 71 papers in Intl. Journals, Seminars, 2 chapters in Springer's book, Invited Speaker at 98th ISC, member of Prof. Societies IEE, ACM, CSI, ISCA, IETE, ISTE. Senior Member 2011 of ACM, USA. Climate Reality Leader, #Regional MentorofChange, AIM, NITI Aayog, MIEE.

HaritaDhara Research Development and Education Foundation

Austin Davis from National Institute of Design (NID) talked about Creating Impact through Design + Play. He informed about Toy and Game programs, teaching approach focusing on design, play at the NID and its impact on various areas such as education, health, crafts, special needs, and entertainment. Further, he discussed strengths of design process (development, preferences, needs, engagement, spaces, safety) and elements of play co-exist (challenge, narrative, motivation, learning, medium, age) during toy and game development. Therefore, collaboration between makers, users, and designers is very important for game design and development.

Anant Bhaskar Garg talked about side event objectives, need, and work, activities of the HaritaDhara, especially related to ESD, SDGs, UN STI Forum 2022, HLPF side event 2021, Live Meeting, and SDGs Marketplace Booth during the UNESCO World Conference in 2021. Why we need new paradigm for ESD, SDGs, and Climate Change Education. HRDEF organized workshops, short training, camps, research and consultancy to promote smart sustainable lifestyle. Further, games and hands-on activities are used with children of after school GOAL program and in schools as Learning by Doing, STEAM approach projects mentioned at HundrED to be Future Ready. Thus, games, hands-on activities helped in understanding difficult concepts related to sustainable development, SDGs, climate action in an interactive way. We used problem solving, critical thinking, decision making, collaboration, creativity, innovation, and communication skills in our activities such as water as natural resource. Further, through maker and hands-on way youth learned about best practices such as microgreen, crafts from waste items, eco-bricks, vertical garden from plastic bottles, and polyethene. Youth learned 21st Century skills, about greener education, need for lifestyle for environment sustainability and encourage conservation of water, energy, waste, biodiversity management and tree plantation. HRDEF use games in schools, and after school program for students and youth in different settings as informal education for building sustainability concepts.

Key Messages and Recommendations

1. Educational Games and Hands-on Activities helps in
 - ❖ To teach a specific curriculum topic related to sustainability such as climate change, water cycle, energy increased player's motivation towards science and sustainability.
 - ❖ Youth are able to know different culture, global issues, SDGs, and international development and foster learning habits for sustainable living to become change agents (“Smart Guru”).
 - ❖ Advocate for Teacher capacity development programs for SDGs, STEAM, and 21st century skills linking hands-on, game and problem based approach

- ❖ Establishing learning centers within community to imbibe responsibility, accountability, global citizenship, gender equality, values, and personality development as Life Skills
- 2. Education now needs more participatory, community-oriented accountability to shape Generation Z's future with sustainability in mind to create "Sustainable Consciousness."
- 3. Governments should use ICT as a tool for change, transparency, and data validation.
- 4. Promote partnership so that Young people can be driving forces for sustainability and act as agents of change for responsibility, accountability, global citizenship, gender equality.
- 5. Making as a constructivism, constructionism, DIY processes provides various insights, knowledge about our surroundings, and actively participate in enjoying transformative learning. Playing games, making provide entertaining, fulfilling experience of doing, creating new things, have many advantages for learner, as it makes him/her a decision maker, facts investigator, evaluating strategy, prioritizing their actions and abilities.
- 6. The United Nations, HLPF, Member States, STI Forum is requested to implement interactive and integrated learning in Curriculum with hands-on, project, game based learning crucial for the 21st Century Skills. Innovative Policies, greening education practices for climate action, ESD through games, hands-on activities can build sustainability knowledge for the SDGs and sustainable living.

Join UNESCO's call for ESD so that we can all act for our planet's survival by providing transforming learning environments, building capacity of educators, and empowering youth on a local level. Connect with us, share your views for transforming learning environments with innovative ESD approaches, initiatives, exploring projects for SDGs with quality learning through ICT, Games based, and hands-on activities.

About HaritaDhara Research Development and Education Foundation

ICT

About Us

Climate Change

STEAM

HaritaDhara Research Development and Education Foundation (HRDEF)- A non-profit Social Enterprise for Sustainability, STEAM, and Smart Living-Hub for education, ICT, and SDGs and in Special Consultative status with the United Nations Economic and Social Council (ECOSOC) since 2018.

SDGs Learning

Sustainability

Disasters

Science Communication W

What We Do

Climate, Waste Best Practices IW

We organize **Workshops**, Short Training, Camps, Research, Consultancy for Sustainability, and Smart living that is climate friendly. We inculcate, motivates students for Science, Technology, Engineering, Arts +Design, Mathematics (STEAM) for 21st Century Sustainable living using maker way

Climate SDGs Workshop



Climate Workshop



Carbon Footprints W



SDGs Week



Training, Advocacy



Nature Festival-Policy



Eco Interaction with Columbia University

Teachers, Students, Community on SDGs, 21st Century Life Skills, STEAM, Sustainability

Painting, essay, e-poster, paper, quiz, film show, creative writing, storytelling, games based and hands-on learning, tree plantation, workshops, talks, training, and consultancy

Gyan Basta: Movable Library and Lab. - Knowledge out of the Bag

@GPS, Muzaffarnagar



Design Maker Camp



@CNI Boys, Dehradun



Awards, Fellowships, Publications



Arizona State University, USA Sustainability in Science Centres Fellow, April, 2017
Matre Shakti Manroma Dobriyal Sharma award in 2016 for women, girls empowerment, and digital literacy, Promoted to Gold Category, 2020, 2019-VIPNET Science Clubs (Vigyan Prasara), DST, GoI, Member SDSN-Youth, IUCN CEC, UNEP DHI, The Climate Reality Project, Together 2030, TED-Ed Club, Presented papers in the international conferences and written blogs for SDSN-Youth, Together 2030



#Regional Mentor of Change, AIM, NITI Aayog MIEE - Microsoft Innovative Expert Educator



Methods – Research Game-based, Hands-on, Life Skills Learning



We inculcate, motivates students for Science, Technology, Engineering, Arts +Design, Mathematics (STEAM), 21st Century Life Skills with Sustainable living using maker way.



Our Approach



- Learning through Games: Use games to teach a specific curriculum topic related to sustainability such as climate change, water cycle, energy, biodiversity, and waste management.
- Learning with Games: concepts such as light, volcano, earth structure, plants identification, disaster management, problem solving, communication, electricity, food pyramid, pollution, renewable energy, chemical reaction, zero plastic, decision making using AI to create leaf identification, fitness, and other social good programs.
- These games, hands-on activities made possible difficult concepts to understand by students [4], besides this, they learn about SDGs, ESD, Sustainability, Climate Action, Global Citizenship, and value education. We touch upon Cognitive skills and Consciousness approaches also

HOW IT WORKS: WATER – NATURAL RESOURCE

- ❖ **Problem Solving:** What will happen based on quantity of rainfall?
- ❖ What is drought? | Why Water is very precious for us?
- ❖ Where and how do you get water for your domestic needs? Water exists in various forms in nature,
- ❖ Water borne disease
- ❖ Activities- Movies, Hands on model – Games,
- ❖ Board game- Water cycle, VR, Rain water harvesting,
- ❖ Drama on water conservation: **Collaboration & Communication Skill**
- ❖ Some thoughts: Effect on soil, people, plants and animals living in rivers and ponds. Are water enough for our needs? – **Critical Thinking, Decision Making Skill**



Games Played for Learning Sustainability



Game Name	Subject	Age	Learning outcome	SDGs
Water cycle, Board	Science	9-17	Children learn all steps of water cycle	6
Health Energizers, Card	Life Science	10-19	Understand medicinal plants and their uses and Identified 20 plants	3, 15
Water Saviour, Board	Science	9-18	Knowledge about water uses and conservation	6
DRR Hero 1,2, Board	Geography	9-18	Different types of disaster, causes, prevention, and safety	13
Energy saver Superhero, Board	Science, Math	8-17	Learn energy saving habits	7
Climate Reverse, Card	Geography	10-19	Sustainability Climate Action	13
Food Wheel, Board	Life science	8-15	Knowledge about pulses, native, grown places, calories and images	2
Learn Biodiversity, Card	Life Science	10-19	Understand ecosystem and importance of different animals, plants, insect role	14, 15
SDGs, Card	Science, Geography	10-18	Knowledge about all Goals and importance	All
Sustainability Climate Action	Science, Math	8-17	Calculate Water, Energy, Waste Audit Understand Climate change connect with daily life	4, 13
Eco Challenge	Water Resources Management	14-18	Online learning for river basin water situations	6



Activities for Understanding of SDGs, STEAM+, and Sustainability



Topics	Video	Hands on	Card /Board Game	Role play	Apps /Web	Virtual Reality
Water	Y	Y	Y	Y		Y
Waste	Y	Y		Y		Y
Energy	Y	Y	Y	Y		
Disasters	Y	Y	Y	Y		
Climate Action	Y	Y	Y	Y	Y	
Biodiversity	Y	Y	Y	Y		
Food	Y	Y	Y		Y	
SDGs	Y	Y	Y	Y		
Air	Y	Y		Y		
Light	Y	Y	Y			
Solar System	Y	Y		Y	Y	Y
Eclipse	Y	Y		Y		
Fraction	Y	Y	Y		Y	
Decimals	Y	Y	Y		Y	
Basic Operational +, -, x, /	Y	Y	Y		Y	



Role play for Learning SDGs, Sustainability and STEAM



Topics	Subject	Age	Learning outcome/Impact	SDGs
Water conservation, Drama	Water Management	9-17	Understand importance of saving water and clean water specially hilly area	6
Air pollution, Drama	Pollution	10-19	Knowledge about air pollution, causes, prevention	7, 11
Waste segregation, Drama	Waste Management	9-18	Recycle, Reduce, Reuse, Rethink of Waste	11, 12
Food pyramid, Food web, Food chain, Role play	Biodiversity	11-15	Effects and importance of biodiversity on human	13, 14, 15
Waste cycle, Role play	Waste Management	9-17	Recycle, Reduce, Reuse, Rethink of waste	11, 12
Solar eclipse Day night phenomena, Role play	Astronomy	14-18	Understand phenomena of solar eclipse	13
SDGs, Role Play	Sustainable Development Goals	8-22	Knowledge about all SDGs and link with our daily life	All

Hands-on Activities created by students for Learning Sustainability



Hands-on Activities	Subject	Age	Learning outcome	SDGs
Leaf Identification	Life Science	9-17	Learn leaf structure and identify	15
Windmill, Watermill, Solar cooker, Solar truck, Solar fridge	Physics, Math, Science	10-19	Understand importance of Renewable energy	7
Waste Segregator	Science, Math	14-18	Understand Waste management	3,11
Earthquake, landslides	Geography	9-20	Understand about earthquake and landslides and prevention	13
Climate change	Geography	9-19	Learn link between climate change and disasters and impact	13
Rain water conservation	Science, Math	10-16	Learn how to make mini rain water conservation model	6
Composting bin	Science, Chemistry	11-16	Learn how to make composting from kitchen waste in bottle	11,12
Roof garden, Vertical garden	Science, Math	10-18	Learn local food and use of space	11,15
Water filter	Science, Math	10-18	Learn how to clean dirty water to clean water	6
Eco bricks, Plants in bottle	Science, Waste Management	11-17	Making eco bricks from polythene and bottles to reduce plastic waste	11,12
Paper bag, Paper dustbin	Science, Waste Management	9-20	Learn Reduce, Reuse, Recycle	11,12

To LEARN about PRITHVI (PLANET), Caring through HARITMA (GREEN), and ALANKRIT IT



- ❖ Based on the research of how games and hands on learning are effective tools for integrating, understanding of STEM+, learning of sustainability and their importance in our life.
- ❖ Critical thinking, decision making, problem solving, communication skills, self-awareness, and creative thinking improved Learner's Life Skills
- ❖ This covered many topics from STEM+, SDGs, Climate Change, Solar System, Eclipse, Light, Food chain, Food Web, importance of water, clean water, 3 R, Waste.
- ❖ Sessions of 2 Hrs. each day for a week on above topics, the students used HRDEF toolkits and other contents which include videos, VR, Miniature, presentations, board games, and card games for experiential, hands-on learning.

Education ecosystem stakeholders need transformative, cooperative approach, and a roadmap to tackle climate action, SDG, and sustainability for our sustainable future.

Thus, possible ways forward are:

- **Experiential Learning:** Awareness of Social and Environmental Challenges, their solutions, Sustainable Development Goals (SDGs) to Youth, Educators, and Community
- **Embodied Learning:** How to administer SDGs within education ecosystem especially school and after-school
- **Quality Skillful Education:** Maker, Hands-on, and Games to foster effective learning habits to change our lifestyle for sustainable living
- **Transformation:** By what means youth imbibe sustainability concepts, responsibility, accountability, global citizenship, gender equality, and culture diversity.

Mobile Apps for SDGs, Climate Action, Prevent Disasters

Youth4SDGs:
 Youth4SDGs is an educational app which provides information on Sustainable Development Goals (SDGs) and to learn about them through interactive methods such as quiz, memory game which has pictures to match and crosswords. It has other features like learning about the SDGs, practicing questions and help features. It has simple and easy navigation and you can know about 17 Global Goals. This will help to act for our mother earth. This will further help for Sustainable Future.

Version 1.2

Mobile Apps Development

Activities for Understanding of 21st Century Life Skills, SDGs, STEAM+, and Sustainability

↓

Topics	Video	Hands on	Card /Board Game	Role play	Apps /Web	Virtual Reality
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Games, Role play for Learning Life Skills, Sustainability, SDGs, STEAM


Hands-on Activities created by students for Learning Sustainability, 21st Century Skills

Digital Game


The digital game interface features a main menu with a 'PLAY' button and navigation options for 'ABOUT', 'MISSION', and 'CHARACTORS'. A character named 'Earthian...' is visible. A mission screen provides context: 'Nice to have you here. We're embarking on a great journey to fight local and global problems, also related to SDGs. Choose on a destination to start with and let the game begin. And find the great passcode for a surprise.' The 'CHOOSE YOUR DESTINATION' screen shows a world map with markers for Greenland, Amazon Rainforest, Kenya, India, and Japan, each with a 'Locked' status.

Board and Card Games

WATER SAVIOR



Board Game
 Number of Players: 3, 6
 Time: 30 mint
 Age group: 6-15
 SDG: 6, 11, 12, 15
 Learning:



Let's play game for the importance of water and effect of wastage of water.

Objectives

- ↓ To be able to know Conserve water is very important. Water is precious for our life.
- ↓ To understand the wastage of water is not right
- ↓ To learn about the conserving water
- ↓ To learn and motivate for good act like Turn off the Tap on while Brush your Teeth, Use Bucket for Bathing, Use Reusable Water Bottle

Goal

- ↓ Knowledge about water uses and conservation
- ↓ Understand importance of saving water and clean water, water pollution

Health Energizers: Sustainable Food Game

Card Game
 Number of Players: 2-4
 Time: 1-2 hour
 Age group: 8-80
 SDG: 2, 3, 11, 12, 15
 Learning: health with natural way



Objectives

- ↓ To be able to know the name, properties of medicinal plants this can provide Nature Remedy for different diseases
- ↓ To understand the relationship between food, health, and nature for sustainable healthy living, Sustainable Development Goals – SDG 3, 4, 11, 12
- ↓ To learn about three pillars of sustainability -Economics (Food's cost), Society (Health), and Environment (Plants) and their balance
- ↓ To motivate for healthy diet, good eating habits, Yoga, Exercise, Walk, Skipping for Happiness and Healthy Living

Goal

- ↓ To learn about medicinal plants, their usage in our food and importance for health to achieve sustainable healthy lifestyle

DRR Hero1 and 2: Learn Disasters



Ludo Board Game
 Number of Players: 2-4
 Time: 30mint-1 hour
 Age group: 8-20
 SDG: 13, 11, 12, 15
 Learning:



Disaster is destructive event that occurs suddenly. Disasters are of two types, natural and man-made it is a sudden accident or a natural disaster that causes damage or loss of life.

Objectives

- ↓ To be able to know eight disasters Earthquake, Floods, Landslides, Cloud burst, Drought, Fire, Cyclone, Avalanche
- ↓ To understand the relationship between environment and disasters
- ↓ To learn about the prevention of disasters and emergency kit
- ↓ To motivate for good act like planting, rainwater harvesting

Goal

- ↓ To learn about disasters, their causes, major prevention and safety

TASKS FOR SUSTAINABLE FUTURE AND TO BE EFFECTIVE 'CHANGE MAKER'

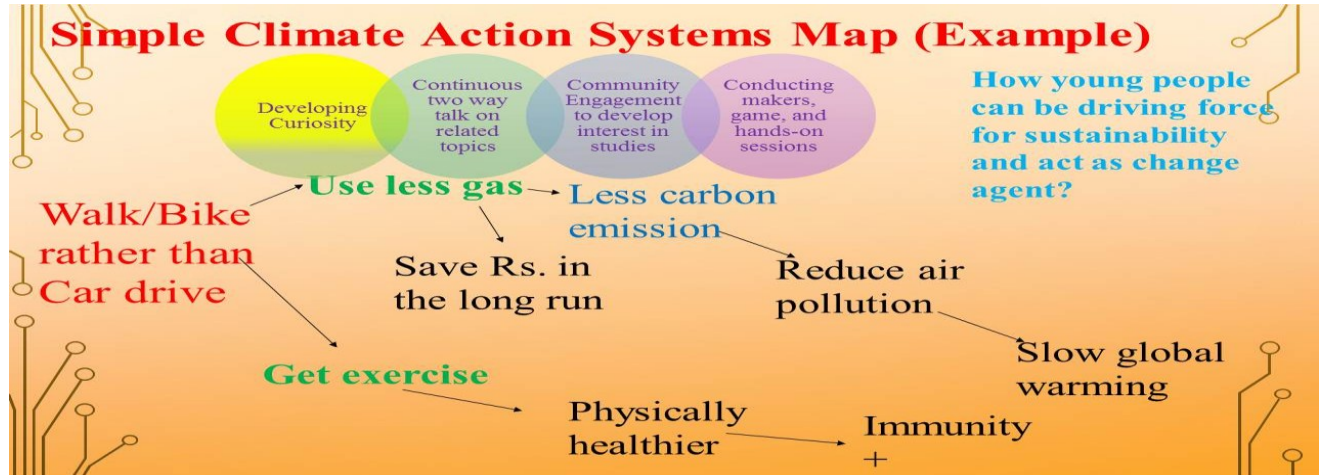
- ❖ Using games, activities to teach a specific topic such as climate change, water cycle, energy increased learners motivation
- ❖ Learners showed interest for English, gender equality, personality development, and improved their communication, leadership skill through project way. Encourage problem solving approach, and develop creativity with hands-on activities, making science card, quiz, and painting to develop 21st Century skills.
- ❖ Youth enjoyed hands-on activities to make paper bag, bin from old newspapers to reduce polythene waste and they showed better understanding of topics, and how to reduce effects of climate change, its link to disasters to become change agents ("Smart Guru").
- ❖ Educators can implement many games that exist, facilitate games to be played for effective Learning

- ❖ Capacity development programs for 21st century life skills, STEAM, and Sustainability through:
- ❖ Teacher development programs designed to develop and teach students for SDGs, climate change, and 21st century life skills
- ❖ Focusing on employability, skill development and entrepreneurship with industry orientation and linkages

Learning for science, technology, engineering, arts, mathematics (STEAM) linking with SDGs with hands-on, game and problem based approach to foster habits for sustainable living

- ❖ Establishing learning centers within community to imbibe responsibility, accountability, global citizenship, gender equality, values

Greening Education – Sustainable School Project



What Is Game-Based Learning?

Games that are planned and designed well will offer enough difficulty to keep it challenging while still being easy enough for the player to win. Game-based learning takes this same concept and applies it to teaching a curriculum. Students work toward a goal, choosing actions and experiencing the consequences of those actions. They actively learn and practice the right way to do things. The result is active learning instead of passive learning.

हरितधारा रिसर्च डेवलपमेंट एंड एजुकेशन फाउंडेशन (HRDEF)

CHAPTER - 2

स्कूलों में पर्यावरणीय गतिविधियाँ, 21वीं सदी के कौशल, सतत विकास, आपदाओं के जोखिम में कमी, छात्रों और शिक्षकों के द्वारा प्रोजेक्ट की सूची

प्रत्येक कक्षा में: पुनर्चक्रण कार्डबोर्ड से पेपरबिन और वेस्टबिन बनाना | कार्डबोर्ड से नोटिस बोर्ड | रीबार के लिए पोस्टर: जल प्रदूषण पर पोस्टर | वायु प्रदूषण पर पोस्टर | स्वच्छता पर पोस्टर | जलवायु परिवर्तन पर पोस्टर | आपदा: भूकंप पर पोस्टर | बाढ़ल फटने पर पोस्टर | भूस्खलन पर पोस्टर | बाढ़ पर पोस्टर | सूखे पर पोस्टर | अन्न्य ऊर्जा और लाभ पर पोस्टर | गैर-नवीकरणीय ऊर्जा और समस्याओं पर पोस्टर | औपचारिक पोष्ठे के उपयोग पर पोस्टर | वायु शोधक पोष्ठे पर पोस्टर | नवीकरणीय ऊर्जा पर पोस्टर | भूकंप की रोकथाम पर पोस्टर | भूस्खलन की रोकथाम पर पोस्टर | बाढ़ की रोकथाम पर पोस्टर | कक्षा के बाहर प्रदर्शित करें: हर्बल गार्डन | सूचना पट्ट | खाद का गट्टा | बारिश के पानी का संग्रहण

हरितधारा रिसर्च डेवलपमेंट एंड एजुकेशन फाउंडेशन (HRDEF)

CHAPTER - 4

हैंड्स-ऑन, गेम, प्रोजेक्ट आधारित लर्निंग फॉर 21 वीं सेंचुरी स्किल्स और सस्टेनेबल स्कूल

Detailed Description of Activities – Hands-on, Game, Project Based Learning for 21st Century Skills and Sustainable School

हरितधारा ने School के Eco-club के सहयोग से बच्चों को पानी, ऊर्जा, अपशिष्ट, जैव विविधता, प्रदूषण, जलवायु परिवर्तन और आपदाओं जैसे विषय के लिए गतिविधियाँ करवायी।

गतिविधियों का विस्तृत विवरण

जलवायु परिवर्तन और आपदाओं
छात्रों को जलवायु परिवर्तन, SDGs, जलवायु प्रभाव के आपदाओं संबंधित से परिचय, के बारे में विस्तार से बताया। मानव गतिविधियों ने जलवायु परिवर्तन में योगदान दिया है। मानव गतिविधियों के कारण वातावरण में ग्रीनहाउस गैसों वृद्धि है। हई कारों और बसों जैसे परिवहन जीएचजी की भारी मात्रा के उत्सर्जन के लिए जिम्मेदार है। जनसंख्या वृद्धि के साथ जलवायु परिवर्तन के प्रभावों का में देश असर पड़ रहा है। औद्योगिक क्रांति की शुरुआत के बाद, मानव गतिविधियों के कारण वातावरण में ग्रीनहाउस गैसों की सांद्रता (जीएचजी) में काफी वृद्धि हुई है। ग्लोबल वार्मिंग और जलवायु से संबंधित आपदाओं के प्रभाव से यह स्थिति खराब हो गयी है। अनुमान है कि जलवायु परिवर्तन भारत में स्वास्थ्य, खाद्य सुरक्षा, पानी की उपलब्धता और जैव विविधता को प्रभावित करेगा।

हरितधारा रिसर्च डेवलपमेंट एंड एजुकेशन फाउंडेशन (HRDEF)

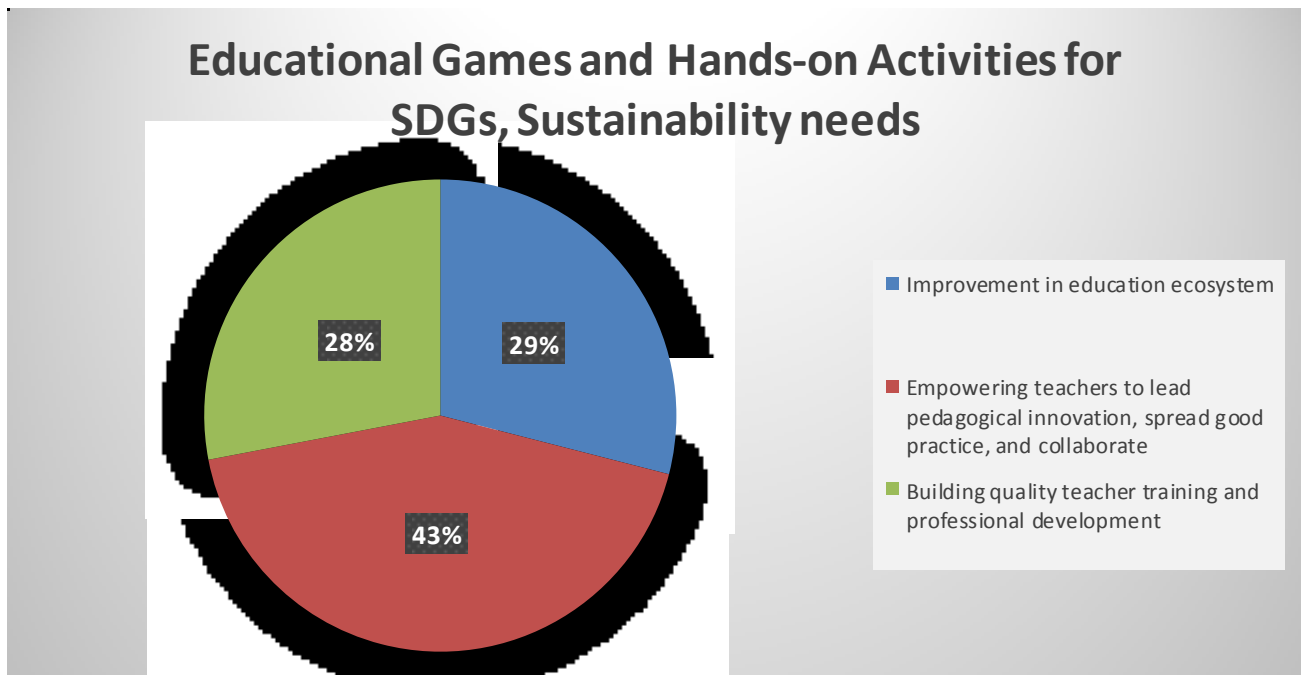
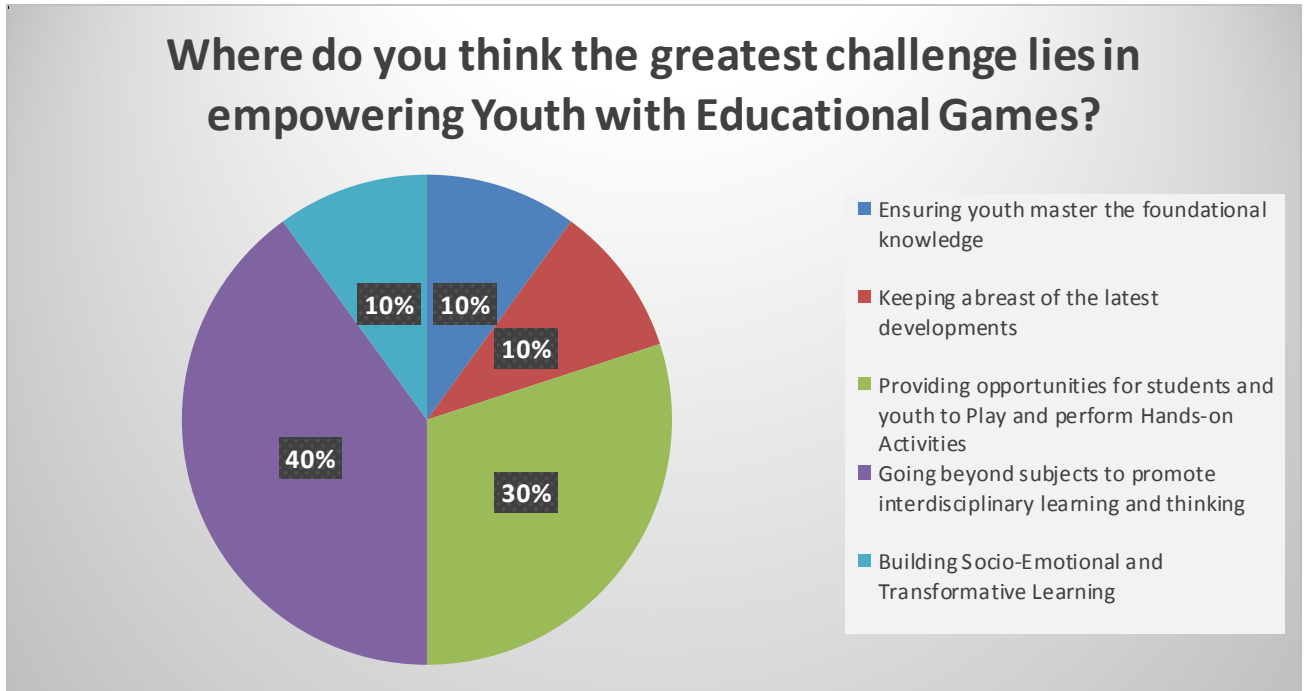
HaritaDhara Research Development and Education Foundation, Dehradun

पर्यावरण संरक्षण हेतु कुछ उपयोगी आवृत्तें जिनका सभी आसानी से पालन कर सकते हैं

1. प्रयोग में न आने वाली लाइट, पंखों या बिजली उपकरणों को बंद करना
2. पानी की बोतल खरीदने की बजाय अपनी बोतल लेकर चलना
3. बाज़ार में हमेशा अपना बैला लेकर जाना एवं दुकानदारों से पॉलिथीन न लेना
4. दन्त मंजन के समय नल बंद करना
5. कागज़ का दोनों तरफ से प्रयोग करना और पुनः उपयोग करना
6. नियमित तौर पर साईकिल चलाना
7. अपने पुराने खिलौने, इलेक्ट्रॉनिक सामान एवं अन्य वस्तुओं का दान करना
8. स्थानीय उत्पादों का प्रयोग और स्थानीय उगने वाली फल-सब्जी का सेवन

आपका एक छोटा-सा कार्य भी हमारे पर्यावरण के संरक्षण के लिए अत्यंत महत्वपूर्ण है
Campaign and support efforts towards Environmental Conservation

Results from polls and survey:



Think critically, Multidimensional, and integrative are most important Competencies and Attitudes required for Educational Games and Hands-on Activities.

HLPF 2022 Side Event Guiding Questions

- Climate Education and Action to drive the SDGs
- Measurable impact for lifestyles for environment sustainability, human rights, gender equality, promotion of a peace, global citizenship, and cultural diversity
- How does research into games help us better to design games that help everyone to change our self and things around us for better sustainable development?
- We know role of games in our life but not able to utilize the power of games for Sustainability, and SDGs.
- Thus, dialogue on educational games and hands-on activities for SDGs learning, and building sustainable living
- Teachers, learners, education level and the impact of using games to promote STEAM, ESD in youth and children

Moderator, Facilitator



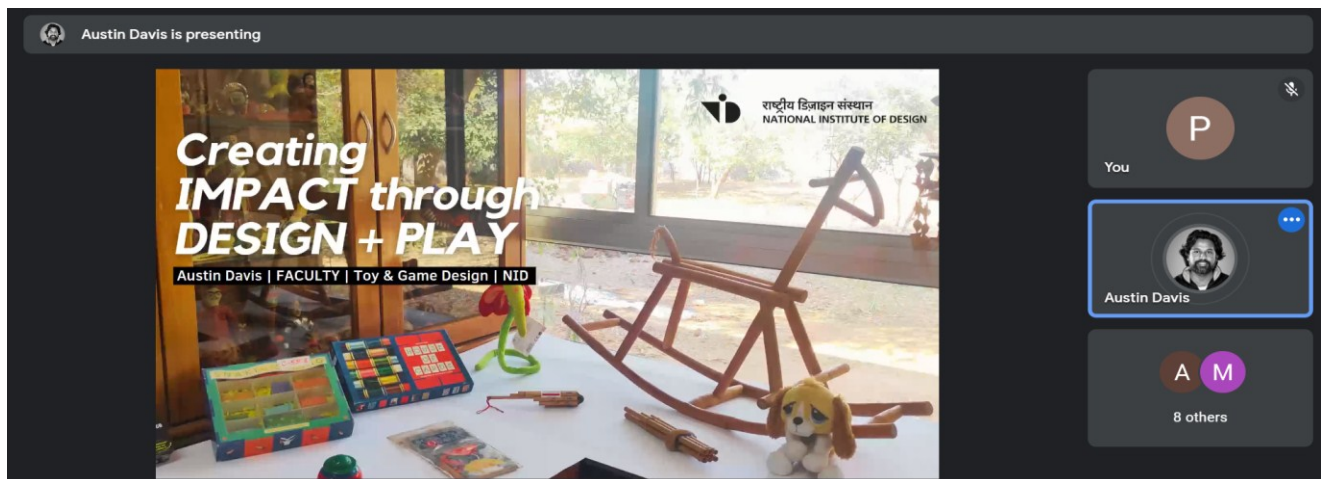
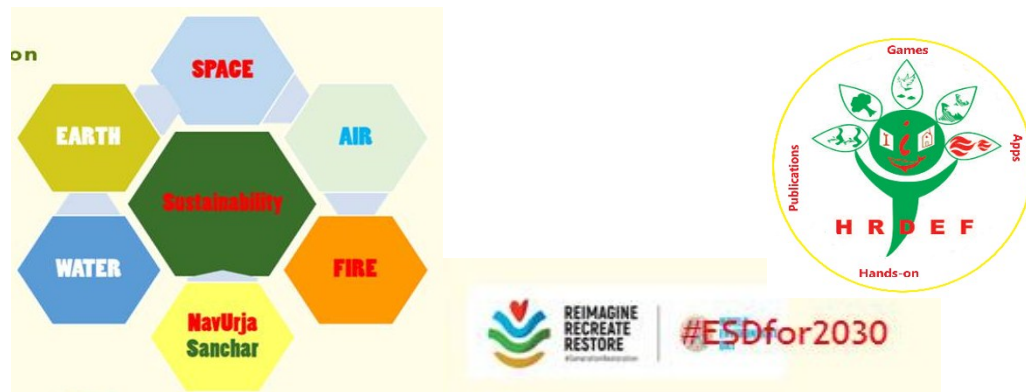
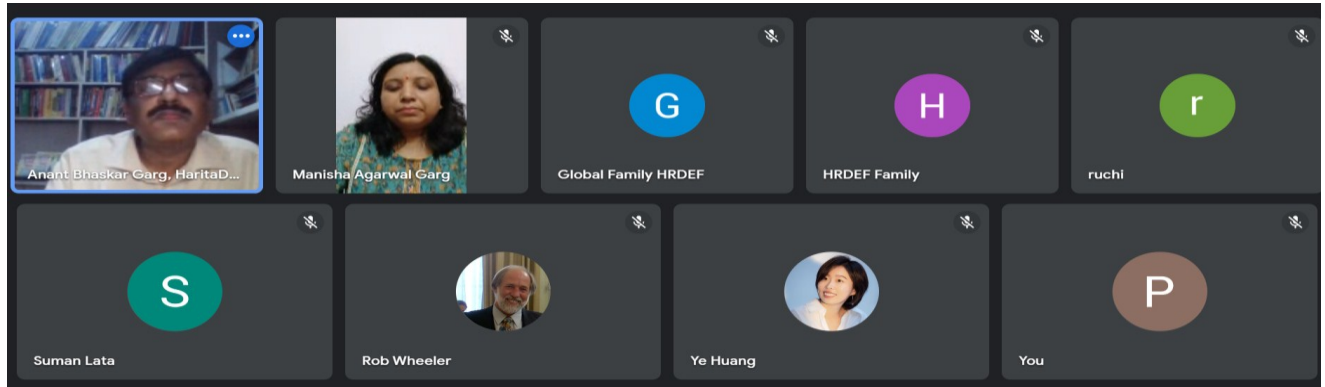
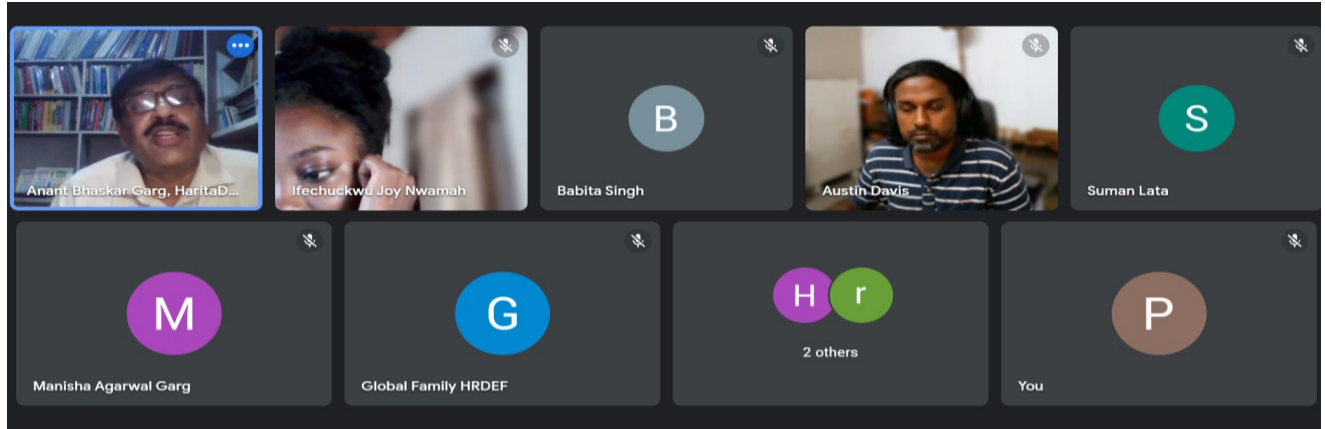
Manisha Agarwal, Director, HRDEF, Coordinator, NavUrja Sanchar, a VIPNET club, Vigyan Prasar, DST, GoI, Educator, PhD from Forest Research Institute University. Involved in environment education, climate action, STEAM teaching, raising awareness and skills development



Prayanshi, Youth Coordinator, She has developed apps on SDGs, Eight Elements of Sustainable Living, Covid information, Youth4SDGs, Climate Change, Prevent Disasters and health.

Anant Bhaskar Garg, Director, HRDEF, Coordinator, Side Event

Glimpses of the Event







Nothing is so pious as knowledge. (Bhagwadgita:4.38)

#LearnForOurPlanet and act for sustainability and commit to #ESDfor2030



Small Steps for Science and Sustainability

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Thank you for your Time

Vote of Thanks

- We are very much thankful to HLPF secretariat and NGO branch to give this opportunity.
- We are very much thankful to our esteemed speakers to give their wonderful talks.
- We would like to express our gratitude to all guests, who have join us online from various countries.
- Thanks to HRDEF team to successful for the event

HLPF 2022 Side Event



THE GLOBAL GOALS

**BUILDING BACK
BETTER WITH
GAMES, HANDS-ON
ACTIVITIES FOR
SUSTAINABILITY
AND 2030 AGENDA**

#ESDfor2030



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