# Green Immersion
A Conceptual Design

Over the last 100 years the world's population has grown from roughly 1.6 billion people to almost 6.6 billion people (Population Reference Bureau 2010). As the population increases there was, and is, an increase in the use of the environment's resources, both renewable and non-renewable. Over the years analyses and studies have provided projections for long-term environmental sustainability. Although some studies were labelled as exaggerating the depletion of environmental resources, all helped to identify a need for change in how to properly manage the world's environmental resources when providing for the demand of growing populations. Yet, exaggerated or not, the problems concerning the longevity of environmental sustainability are serious and need to be remedied with insightful solutions.

What is environmental education (ESD)?

Environmental education for Sustainable Development is the preparing of individuals with the appropriate educational tools so that they become positive participants in current and future environmental problems.

ESD

Sound environmental education

Appropriate educational tools

Individuals of any age
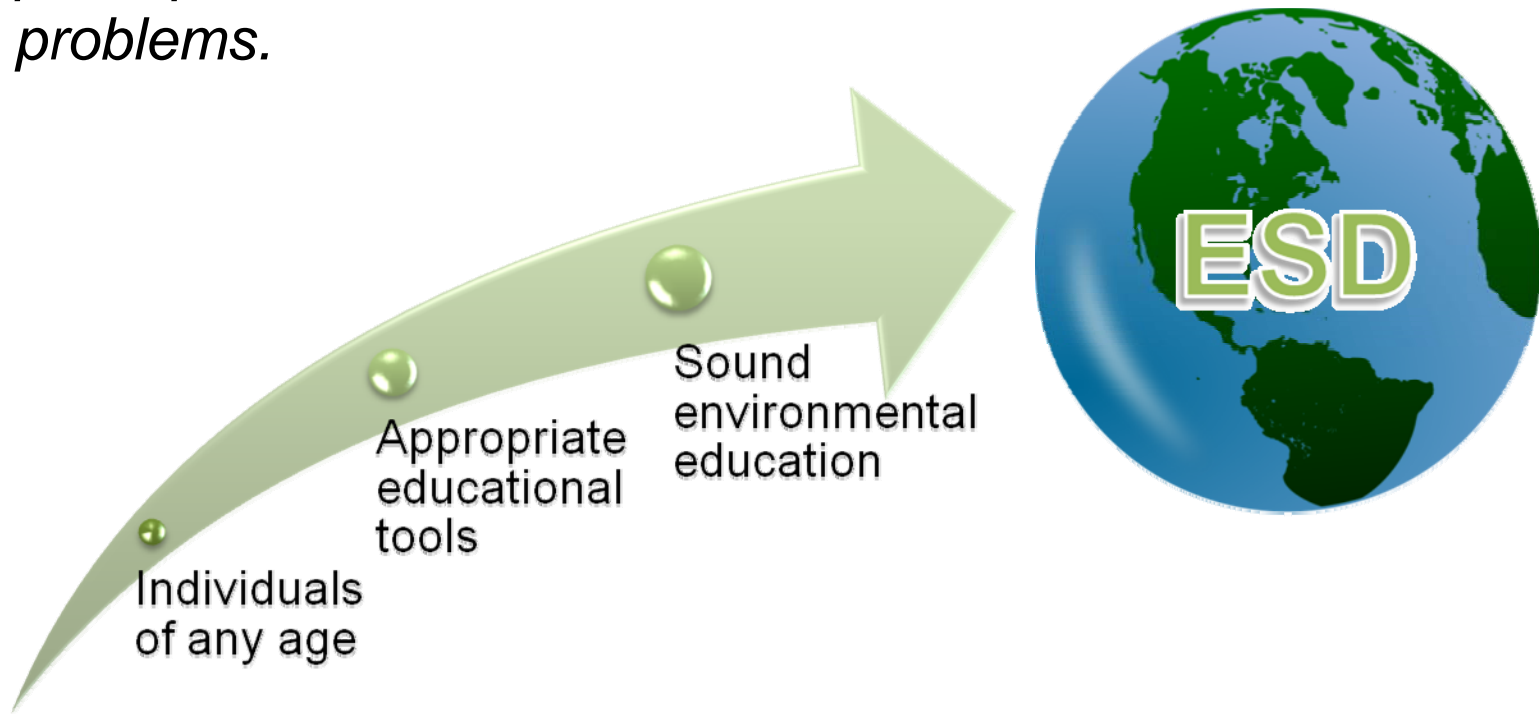
What is ESD?

Education for sustainable development is a multidisciplinary educational approach which accounts for the complexities of the environmental and prepares an individual to positively impact current and future environmental problems (Haan 2009).

In order for ESD to be most effective it should begin in the early stages of childhood, before prejudices have been created, such as "ecophobia". Children are the world's hope for an environmentally sustainable future; therefore, providing scientifically sound ESD can offer children the correct tools to work towards fulfilling that role. As mentioned, ecophobia is a concern and conceivably, it may be the combination of early education and sound ESD which might minimise, or even nullify, the undesirable reaction of ecophobia.

What is ESD?

Why is ESD important?

Ecophobia

...is the "callused or fearful attitude towards nature" resulting from improper environmental education (Haskin 1999).

Accountability

Our actions produce consequences. We must learn how to minimise the negative consequences (Breiting 1999).

Sustainability

With 6.6 billion people in the world and natural resources diminishing, we must learn how to be 'future conscious' (UN Earth Summit Conference 1992).
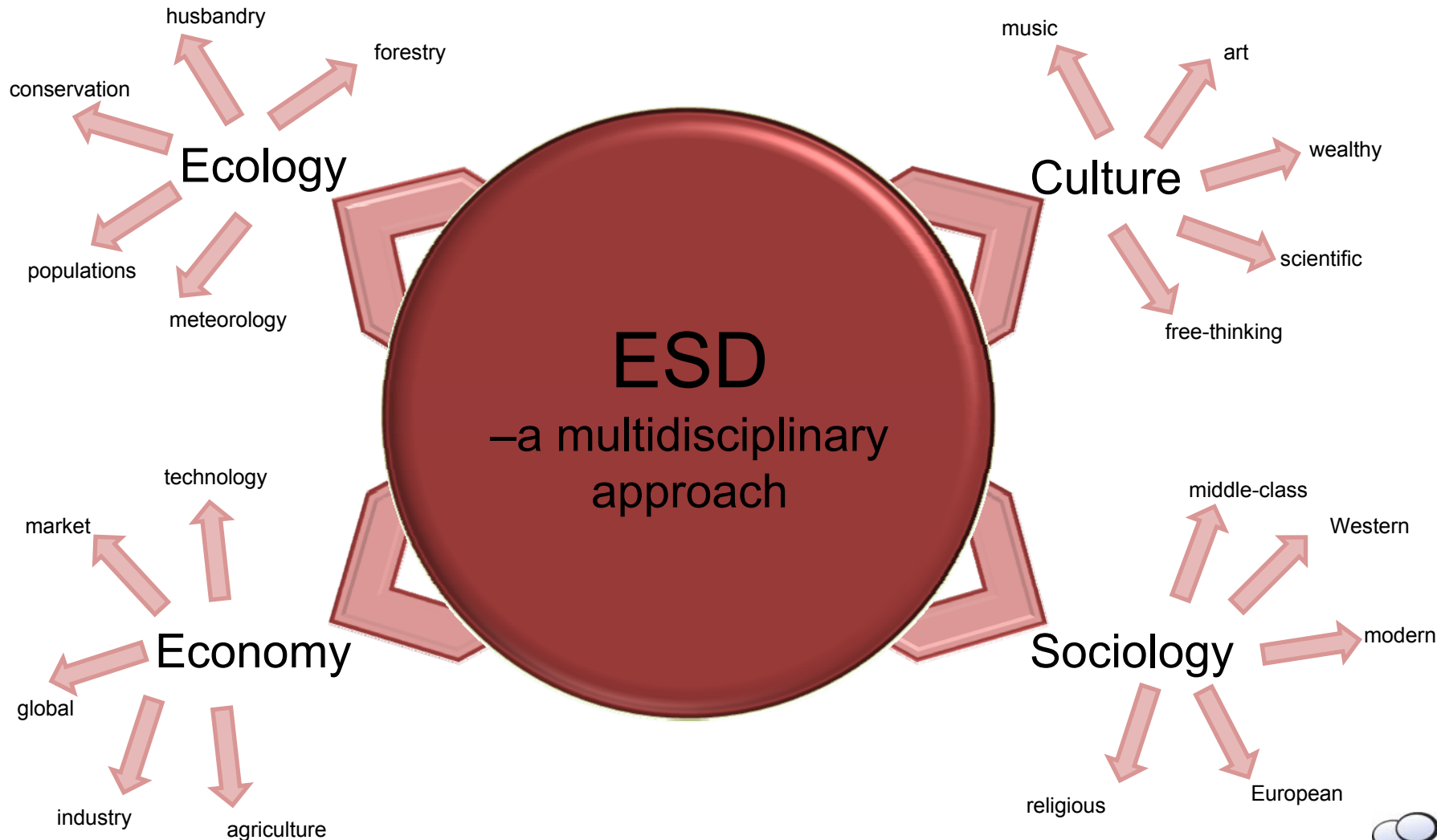
What is ESD?

Important yet complex

Often environmental prejudices are a result of improper education, a lack of knowledge. When sound ESD takes place a child is exposed to environmental topics and can experience the environment in a way which engages the wonder and bypasses the creation of environmental prejudices.

These solutions must take into account the complexity of the environmental relationships, as the analyses and studies have indicated. Ensuring the future of the environment must consider the world's *ecological, societal, economical*, and *cultural* relationships (Earth Summit Conference 1992).

What is ESD?

The complexities of ESD

E·L·I·A·S

husbandry

forestry

conservation

Ecology

populations

meteorology

music

art

Culture

wealthy

scientific

free-thinking

ESD
–a multidisciplinary approach

technology

market

Economy

global

industry

agriculture

middle-class

Western

Sociology

modern

religious

European

Green Immersion – A Conceptual Design

What is ESD?

The goals of ESD

➢ to organise the complexities of ESD into understandable and relevant environmental educational programmes

➢ to emotionally and physically prepare individuals for participation in environmental problems

➢ to ensure the future sustainability of the environment

ESD

Sociology: Western, European, middle-class, religious, modern

Culture: free-thinkers, wealthy, scientific, art, music

Economy: technology, industry, agriculture, market, global

Ecology: conservation, meteorology, population, forestry, husbandry

What is ESD?

Where to find more about ESD

WAZA/EAZA websites

- World Association of Zoos and Aquariums / European Association of Zoos and Aquariums
- online publications
- conservation strategies

UNESCO website

- United Nations Educational, Scientific and Cultural Organization
- governmental conferences
- 41 Recommendations for Tiflis
- UNESCDOC database

ESD
all links are provided in 'references'

UN website

- United Nations
- governmental conferences
- publications on environment and urban issues
- Earth Summit Conference 1992

Research studies

- independent research studies
- governmental research studies
- Haskin 1999, Breiting et al. 1999, etc.

What is Green Immersion?

Green Immersion (GI) is a bilingual environmental education programme; which was developed in the zoo preschool in Magdeburg, Germany, as part of the ELIAS project. It assists children in their understanding of environmental topics, by presenting the children with a weekly, two-part activity, taught all in the children's foreign language (L2), without translation. The environmental education themes GI presents to the children are based on current environmental issues. These broader environmental issues are broken down into child-friendly activities and supported with appropriate educational materials.

What is Green Immersion?

The origins of Green Immersion

➢ with the opening of the Zoo Preschool in Magdeburg, Germany there was a desire to create an educational concept to include foreign language acquisition and environmental education

➢ the title "Green Immersion" was coined by leaders from two of the ELIAS project partners, Dr. Kristin Kersten and Dr. Kai Perret

➢ Green Immersion is bilingual environmental education (using the 'immersion' language method)

➢ the Green Immersion programme began in October 2008 in the Zoo Preschool

➢ a research study, observing child growth and materials effectiveness in the GI programme, ran from October 2008 to May 2010

What is Green Immersion?

The Green Immersion programme

> The weekly activities are two-part sessions; a preparatory session and a practical application session. The first part of the weekly session provides the children with a time to learn the L2 and environmental themes in a familiar, comfortable setting. During this session the preschool educators clarifies the unknown or confusing language and topics of that week's activities. The second part of the weekly session is the practical application of what was covered in the first session. In this part of the session the children explore, hands-on, the environmental themes of that week.

What is Green Immersion?

The Green Immersion programme

Green Immersion (GI) is an environmental education programme that assists children in their understanding of environmental topics, by presenting the children with a weekly, two-part activity, carried out all in English, the children's foreign language.

Monday	Tuesday	Wednesday	Thursday	Friday
with older children: smells in a forest and fire safety	with younger children: what a plant, tree, flower and soil smells like	older children: forest animal – N.A. Porcupine	younger children: forest animal – N.A. porcupine	both groups: free day or trip to the forest for older children

1st sessions = learning   2nd sessions = practical experience   continued GI

What is Green Immersion?

The Green Immersion programme

1st sessions are *LEARNING*

➢ resulting from GI being a bilingual programme with a complex content matter, the first session of the activity is where the children learn the new vocabulary and/or topics

2nd sessions are *PRACTICAL EXPERIENCE*

➢ by introducing the topics in a previous session, the children are able to follow the practical application of the topic with more ease; therefore, more is appreciated by the children

What is Green Immersion?

The Green Immersion programme

As a result of the L2 (English) being the language to communicate the environmental topics, the children in the Zoo Preschool learned the L2 words of the environmental topics/words without knowing the mother-tongue (L1) meaning of those topics/words.

This is not seen as a hindrance or a negative aspect of the bilingual environmental education (on either the L1 or the L2), instead as a positive reinforcement of the children's subject comprehension.

Green Immersion – A Conceptual Design

© Early Language and Intercultural Acquisition Studies

What is Green Immersion?

The Green Immersion programme

The sessions in the programme are tailored to the ages of the children; the programme has two levels of learning.

LEARNING

Level 1
➢ the first level is more of an introductory to the environment and foreign language

Level 2
➢ the second level explores deeper into environmental and language topics

PRACTICAL EXPERIENCE

Both
➢ the practical application experiences, or 'zoo visits', are the same for both groups, because of organisational reasons

What is Green Immersion?

The Green Immersion programme

Since the first sessions are a time for the children to become familiar with the environmental theme and foreign language, the second session is meant for the children to experience the environmental activity through the education method of 'physically' interacting with that week's environmental theme. Through this 'physical' participation the aim / hope of GI is to have the children experience the environment on a deeper level; thereby, hopefully rendering a positive appreciation for that environmental topic.

What is Green Immersion?

The Green Immersion programme

By introducing the topic and L2 before the practical application, a deeper appreciation of the practical experience can be obtained. To elucidate, when a new environmental topic is presented to the children the GI programme has to account for the L2 and unknown environmental themes; therefore, in a hectic, high-stimulus learning environment (such as 'high' season in a zoo) the 'unknowns' of GI become problematic in trying to communicate the intended education theme. To remedy this situation the children are prepared beforehand so that during times of disorder the language and intended teaching topic are known, which removes some of the problems and allows for a deeper understanding of the environmental theme.
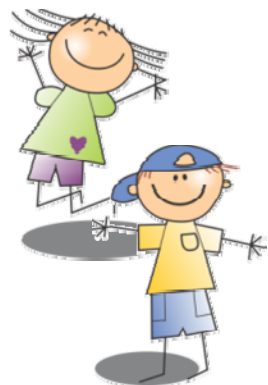
What is Green Immersion?

Topics for Green Immersion

Relevant world environmental issues

- ➤ animal, habitat and plant conservation
- ➤ climate control
- ➤ soil and erosion
- ➤ water as a precious resource
- ➤ desertification and deforestation
- ➤ pollution

Themes the children have interest in

- ➤ animal young
- ➤ experiments/investigations and their results
- ➤ underwater creatures
- ➤ planting/caring for a garden
- ➤ very large animals or very small animals
- ➤ weather

What is Green Immersion?

Where to find the topics

Relevant world environmental issues

➢ WAZA or EAZA handbooks
• available online on the respective websites
➢ UNESCO publications or website
➢ research studies or research organisations
• often scientific papers are available via the internet
➢ school text books

Themes the children have interest in

➢ ask the parents for their input
➢ ask other educators for their input
➢ objects a child interacts with daily
➢ what you find interesting
• when an educator is interested, they pass that enthusiasm on to the children

* see further on in this presentation for website links

Creating GI Sessions

It is important to realise that younger children, specifically toddlers, learn differently than older, and especially more GI-experienced, children. Hence, it is essential for GI education to use topics suitable for the age of the group. For very young groups of children, complex environmental themes should be broken down to the simple basics, but not so simple that the essence of the environmental theme is lost. Often toddlers are not only new to learning the language, but they also might not understand the more basic aspects of the environment. Keeping the sessions simple and beginning with the very basics provides ample opportunity for the building of a solid GI-knowledge foundation. For older children, except for in extreme cases, there is an understanding of the basic environmental themes. In groups of older/GI-experienced children it would be appropriate to begin educating on the connectivity of environmental themes.

Creating GI Sessions

Age appropriate topics

➢ **complex topics** (deforestation, erosion):

• to help children understand complex topics, begin by encouraging appreciation for the topics

➢ **fearful topics** ('creepy-crawly' animals or severe weather)

• ensure the learning environment is safe while leading these kinds of topics and *invite* the children to learn instead of forcing them

➢ **skill-building topics** (fine motor skills or quiet observations)

• while conducting these topics have other similarly-themed activities which the children can change to when they become distracted, eventually returning to the original activity

Creating GI Sessions

Considering group age & size

> ### appropriate topics can depend on age of group
• topics which require independent work can be appropriate for older groups
• topics with guidance can be appropriate for younger groups

> ### large groups of children and few educators
• set up work stations regarding the environmental theme, which the children rotate between
• while the children rotate between the groups encourage in-depth learning, either by guided questions or personal exploration

> ### zoo visits or environmental explorations
• remember to consider the space available within the zoo and the impact a large group of children will have on the animals
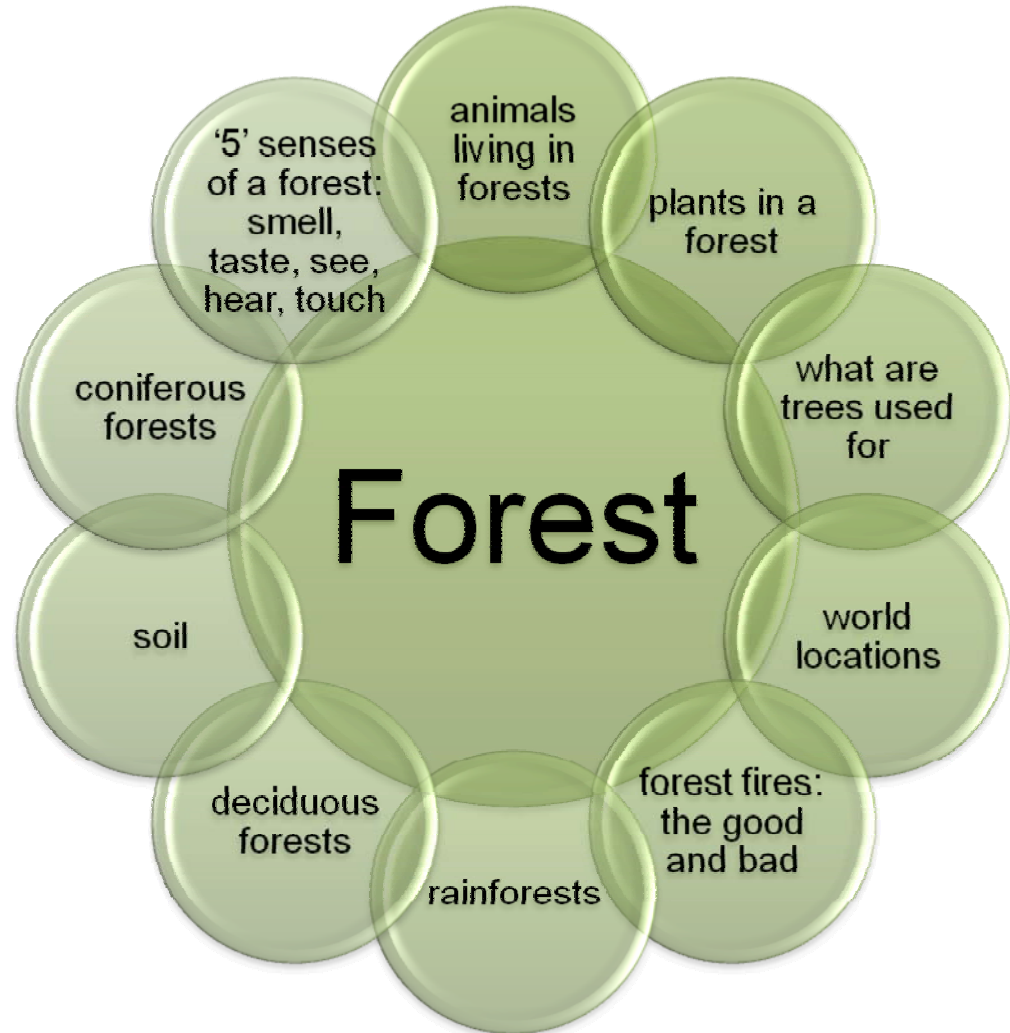
Creating GI Sessions

Choose a topic and brainstorm

➢ keeping in mind the criteria of age and group size, think of as many sub-topics as possible

➢ the sub-topics can be very specific or more general topics

➢ too many sub-topics is better than too few

Forest

- '5' senses of a forest: smell, taste, see, hear, touch
- animals living in forests
- plants in a forest
- what are trees used for
- coniferous forests
- world locations
- soil
- forest fires: the good and bad
- deciduous forests
- rainforests

Creating GI Sessions

Choose one sub-topic and create a lesson plan

(either a single session or a multi-week module)

> ➢ divide the sub-topic into weekly session themes, for both the 'learning' and 'practical'
> ➢ think of the topics within that theme to cover in one weekly session; plan session goals
> ➢ take note of how many 'new' words and environmental topics will be introduced in one session; for toddlers, minimise the 'new' topics or split the week session into two

> ➢ single out all the very new words and complex topics, include in the introduction
> ➢ plan the session to 'build' from the simpler ideas to the more complex: i.e.: to introduce textures, plan to introduce multiple well-known examples of textures (rough/carpet, soft/teddy bear, hard/table, smooth/floor) and then move on to the same textures found in a forest

> ➢ for younger children, plan activities which repeat and re-cast the new words and topics until the children are comfortable with the new words
> ➢ for older children, spend on as much time as needed on introducing the new words and topics, then progress further into the more complex ideas and topics

Creating the tools

Using a combination of materials for the GI programme can prove to be beneficial for the children's acquisition of environmental topics. Within the combination of materials photos, drawings, songs, games, videos, experiments, investigations, stories, real objects and guided observations are examples of engaging materials. When using photos or drawings to assist in educating, the photos and drawings should be clear as to their content as well as accurate, especially regarding the species.

Creating the tools

Creating the tools

The availability and usability of materials depends on a teacher's budget and resource availability. The internet can be a valuable tool for preparing and creating educational materials; however, when using the internet there are a few cautions for an educator to note. A very important caution is the issue of copyright. Often material previously created and posted on the internet has some form of copyright attached to it. To become more familiar with copyright laws, search the internet or library for a country's copyright law or speak with a lawyer. A second caution when using materials from the internet is the accuracy of information. Cross checking information with reputable websites or books is easily done and provides a safe-guard against using inaccurate information.

Creating the tools

The issue of copyright

➢ websites which help clarify copyright issues for educators
- http://www.templetons.com/brad/copymyths.html
- http://home.earthlink.net/~cnew/research.htm#Purpose%20of%20use
- http://www.eucopyright.com/en/copyright-and-related-rights
- http://www.copyright.gov/title17/

➢ if the copyright is not certain, it's better to not use it than be caught in a legal lawsuit

➢ if the material is definitely needed for the GI session, contact the copyright holder and negotiate terms

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Creating the tools

Ideas for tools

Drawings were used as introductory tools for the language and the environmental theme, whereas photos were used to depict the environmental theme when the real object was inaccessible. Songs and games used in the GI programme were intended to exercise the children's language skills instead of a focus of the activity; they were used more for re-enforcement. Experiments and investigations were used to help answer or guide the children's environmental questions. However, teachers should have a thorough knowledge of the experiment in case of hazardous outcomes. Using real environmental objects can be stimulating and engaging for the children, when presented in a safe and calming way. Stories and videos should be age appropriate (no frightening images for very young children) and should maintain the standards of ESD. For ideas on where to find materials please visit the ELIAS website and browse through any of the relevant links.

Creating the tools

Ideas for tools

➢ if there is time to create your own materials (crafts, worksheets, games) please do so
• you know what you want to convey, and can create the materials to fit your requirements

➢ however, most likely there will be very little time to prepare, so the next few slides provide good internet resources and tips on collecting the 'real thing'
• please remember to consider copyright issues

If you would like completed environmental modules, please visit the ELIAS website for a variety of modules and sessions
Link: http://www.elias.bilikita.org/

Creating the tools

Websites

General Information

> **Wikipedia:** http://en.wikipedia.org/wiki/Main_Page
• please cross-check the information for accuracy
> **NASA**: http://www.nasa.gov/
> **Dave's ESL Cafe**: http://www.eslcafe.com/
> **WAZA**: http://www.waza.org/en/site/home
• see also EAZA website
> **UNESCO**: http://www.unesco.org/new/en/unesco/

Animal Information

> **The Animal Files**: http://www.theanimalfiles.com/
> **Defenders of Wildlife**:
• http://www.defenders.org/index.php
> **Animal Diversity Web**:
• http://animaldiversity.ummz.umich.edu/site/index.html
> **ARKive**: http://www.arkive.org/
> **African Wildlife Foundation**: http://www.awf.org/
> **Zoo and Aquarium websites**

Creating the tools

Websites

Crafts / Songs / Games

➢ **DLTK's Craft for Kids**: http://www.dltk-kids.com/
➢ **Enchanted Learning**:
• http://www.enchantedlearning.com/Home.html
➢ **KIDiddles**: http://www.kididdles.com/
➢ **Kids Games**: http://www.gameskidsplay.net/

Reading / Miscellaneous

➢ **Soundboard.com**:
• http://www.soundboard.com/category/Science-Nature.aspx
➢ **Project Gutenburg**:
• http://www.gutenberg.org/wiki/Main_Page
➢ **The Rosetta Project**:
• http://www.childrensbooksonline.org/library.htm
➢ **Science Dictionary**:
• http://www.sciencedictionary.org/

Creating the tools

Websites

Experiments / Investigations	➢ **Home Experiments**: • http://scifun.chem.wisc.edu/HomeExpts/HOMEEXPTS.HTML ➢ **Fun Science Gallery:** • http://www.funsci.com/texts/index_en.htm

Pictures / Drawings	➢ **Open Clip Art**: http://www.openclipart.org/ ➢ **Wikipedia Commons**: • http://commons.wikimedia.org/wiki/Main_Page

Creating the tools

Collecting animals

Insects / Invertebrates

- ➢ insect hotels can be good educational tools
- ➢ ask local zoo regarding animal care
- ➢ prepare the animal's habitat before the animal is collected
- ➢ handle the animal as little as possible to minimise stress
- ➢ ***handle no animals which are poisonous or unknown***
- ➢ allow the animal to enter the habitat on its own accord, instead of catching them by hand
- ➢ most insects are sluggish in cooler places, and more active in warmer places
- ➢ if releasing, release into the same location as found

Plants / Inanimate

- ➢ try and collect plants which have fallen to the ground
- ➢ collecting new samples: cut with sharp scissors, instead of pulling off
- ➢ discuss with the children the importance of not plucking every plant
- ➢ when collecting samples, please ask the owners of the land before taking
- ➢ store various samples in sealed, separate containers

Frogs / Toads / Tadpoles

> before capturing any tadpoles/frogs/toads please check with local authorities first

> frogs and toads are highly susceptible to environmental toxicities and also easily spread diseases to other amphibians; therefore, catching and releasing may cause serious problems

> keeping tadpoles requires a lot of care, be prepared to attend to tadpole needs everyday

> while keeping tadpoles which are intended for release, keep all handling materials exclusively for the tadpoles

> frogs/toads can live for an extended amount of years (40-50)

> literature: please see "Considerations and Recommendations for Raising Live Amphibians in Classrooms" (Mendelson et al. n.d.)

Creating the tools

ELIAS online Materials

➢ each module has a "General Information" section containing animal information, goals, links, etc.

➢ most weekly sessions have a plan for two levels of GI learning and the corresponding "Environmental Exploration"

➢ each session is detailed, useable for those educators whose English is not fluent

➢ each session comes with a corresponding materials download, including flash cards, worksheets and craft layouts

The Lemur Nose
Session 3 Level 2

Materials:
➢ a large world map (*not included*)
➢ a large cut-out of the African continent (*not included*)
  o using the world map, trace the continent onto cardstock or coloured construction paper
➢ all animal flash cards (*F.C. pages 1-9*)
➢ Explorer Hats
➢ a variety of artificial baking extracts (vanilla, almond, lemon, etc.)
➢ small strips of paper ~3" (7.5cm) long
➢ popside sticks
➢ scarf
➢ plastic zipper baggies

Words:
➢ WORLD, AFRICA, CONTINENT, ANIMALS, GOLIATH BEETLE, AFRICAN LION, AFRICAN HORNBILL, RINGTAILED LEMUR, NILE CROCODILE
➢ smell, explore, scent, paper, popside stick, game, play

Activity:
➢ **in preparation for the lesson**
  o an hour or two before the lesson label the small strips of paper with the names of the different baking extracts
  o poke 2 holes through each strip of paper and weave the popside stick through the holes
  o saturate the strips of paper with their baking extracts and place individually in a sealed container (such as the plastic zipper baggies)
➢ **review of the previous continents**
  o bring out the large world map and quickly review world features
➢ **Africa**
  o using the large world map leave one finger on either Australia or Antarctica and with the other hand point out Africa
  o introduce the cut-out of Africa
    ▪ ensure the children again understand the cut-out is a representation of Africa, not a different continent
  o lay the cut-out face up in the middle of the circle
    ▪ they can get a lot of information through one scent marking

Creating the tools

Further educational hints

As with using age appropriate topics to educate with in GI, age appropriate material is also needed for a positive progression through GI education. With any age group, toddlers to seniors, there are certain interests and activities which could help to engage an individual more and assist an individual better in their acquisition of ESD, or GI. Activities of a more simplistic, repetitive nature were engaging for the toddlers, as they could perform the activity and eventually master the activity. On the other hand, the older/GI-experienced children lost interest in those same activities and instead enjoyed more challenging and thought-provoking activities. If there are groups of GI learners which cover a larger age-range, preparing activities for the younger children to do while the older are working with more complex subjects, or providing opportunities for the older children to be leaders during the more simplistic sections of the activity may provide a more learning-rich environment.

Applying GI

Contextualise, contextualise, contextualise!
➢ with each new word or topic use facial expressions, gestures, or other objects to help give reference to the topic

Speak clearly
➢ with new words properly pronounce the word and repeat

Watch the children for understanding
➢ with each new topic or theme, watch the children's eyes and facial expressions for understanding
➢ if the children show confusion, re-cast or re-phrase the word/sentence

Applying GI

Young or new learners

For very young children or for very new GI learners, the first part of the session is highly contextualised. This contextualisation gives the children a point of reference to better facilitate understanding (for more information see Kersten et al. 2010). Young children can have short attention spans and especially if they do not understand the language; therefore, the teacher should be observant of the children's attention. An easy way to identify the attention level of the children is to watch their faces, specifically their eyes; engaged children tend to follow the educational leader with their eyes.

Applying GI

Older or advanced learners

Contextualise, contextualise, contextualise!
➢ with each new word or topic use facial expressions, gestures, or other objects to help give reference to the topic (*with older children contextualisation can be reduced*)
➢ encourage the children to contextualise their responses to ensure understanding

Speak clearly
➢ with new words properly pronounce the word
➢ use the word in a couple of sentences
➢ encourage the learners to use the words or speak about the topic

Watch the children for understanding
➢ with each new topic or theme, watch the children's eyes and facial expressions for understanding
➢ if the children show confusion, re-cast or re-phrase the word/sentence

Applying GI

Older or advanced learners

For older children or more advanced GI learners, high contextualisation is not emphasised, unless the topic and language is complex, instead the teacher uses the L2 to assist in the understanding of the new topics and words; this method is done by re-phrasing or discussion of the new topics and language. Also, having the children be 'teachers' for part of the activity may help to increase a child's interest and participation in the GI activity.

Applying GI

All learning groups

A very important aspect of GI education is to educate using the proper language. Upon entry into a GI programme much is new for the child, language and topic. Thereby, introducing the proper environmental language should prove to be no more difficult than introducing more generalised language; i.e. animal baby names vs. proper animal young names. Also, it is much harder to rectify improper language habits than teaching the proper language.

Applying GI

All learning groups

DiURNaL?   **BabieS?**   **AMPHibiaNS?**

➢ **proper name use of themes/topics**

• juvenile animal names (see "Enchanted Learning" website)

• animal groupings

➢ **honest answers**

• when a question is asked, feel free to say "I don't know" when you don't!

• a great sentence to follow is: "But let's find out together."

➢ **reduce bad language habits**

• Remember that it is easier to begin with proper language, than to try and remedy bad habits!

Applying GI

All learning groups

Finally, if there is a subject such as animal death or reproduction which can be sensitive topics, speaking with the educating team or parents might be helpful in establishing a general education approach. However, whichever approach is chosen, remember to not exclude the basis of the topic or to ignore the topic. Again, it would be easier to teach plainly about such topics than to teach with 'baby talk'. If the decision of the educating team and/or parents is to not discuss the topic during early childhood, consider providing access to a professional who can properly cover such topics.

Children's GI Growth

The GI research project considered various models to help describe a child's learning progression during the GI programme. A model developed by Janßen (1988) described an individual's environmental knowledge growth, but also included the use of language in the various stages. The inclusion of language into a child's environmental growth is of importance when considering the GI programme. Also, Janßen's model depicted a cycling of the entire model; once an individual reached the top level, the process would continue from the beginning as a new environmental topic was introduced, which was also important for the GI programme. The research study adapted Janßen's model slightly, translating the model to English, changing the name of one level and adding a second cycle.
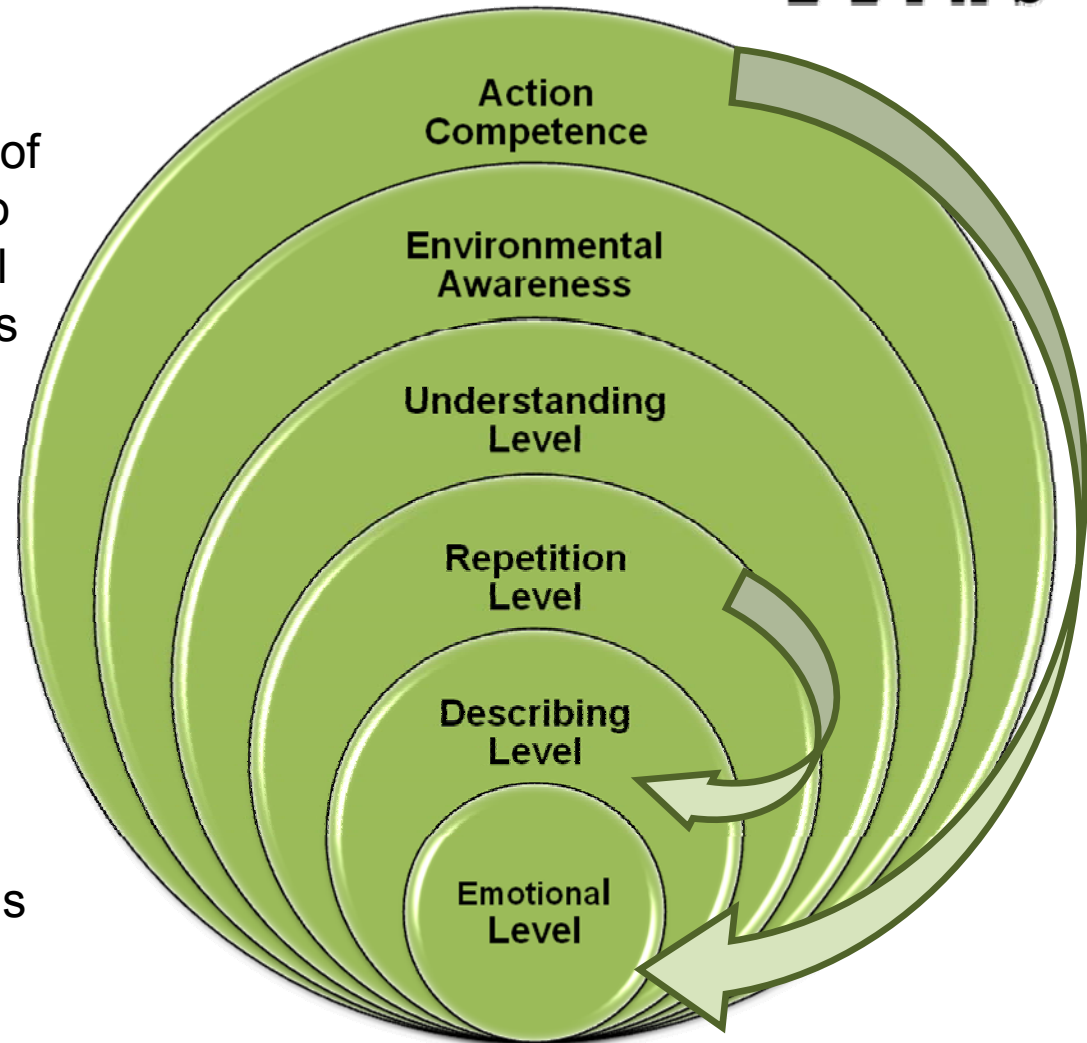
Children's GI Growth

GI Growth

➢ no matter the age of the individual, the beginning level of GI environmental learning is to engage at the Emotional Level (no language is needed for this level)

➢ the Describing Level and Repetition Level are learning and processing factual information (language is needed)

➢ last three levels concern an individual's response to various environmental themes

Action Competence

Environmental Awareness

Understanding Level

Repetition Level

Describing Level

Emotional Level

model is adapted from Janβen (1988) "Encounters with Nature"

Children's GI Growth

GI Levels

The final model used by the GI research study had six levels of learning: *Emotional Level, Describing Level, Repetition Level, Understanding Level, Environmental Awareness* and *Action Competence*. The extra cycle was added between the Understanding Level and the Repetition Level, intended to describe how the children learn and negotiate the foreign language. With the adaptation of Janßen's model the research project was able to fully appreciate the children's acquisition of environmental knowledge.

Children's GI Growth

GI Levels

Emotional Level:
➢ for the children to acknowledge the nature/environment presented to them

Describing Level:
➢ for the children to use their own words to describe what they see presented in the activity

Repetition Level:
➢ to have the children accurately repeat back the new concepts/ideas introduced, preferably in English

Understanding Level:
➢ to begin to understand the connections of environmental topics

Environmental Awareness:
➢ to take those connections and apply them on a personal level

Action Competence:
➢ apply those connections on a "societal" level

Children's GI Growth

Zoo Preschool children

The results obtained from the application of this model indicated that the children in the study progressed through the first three levels at a high percentage. In the latter three levels, Understanding to Action Competence, there is an increased requirement for a child to understand the complexities of the environment. This increase caused the high percentage of children progressing in the first three levels to fall; however, it was very impressive to observe that children were able to progress into the higher levels of GI. Even with using a foreign language to teach the environmental activities, the children were able follow the themes, learn and establish a foundation of environmental appreciation.
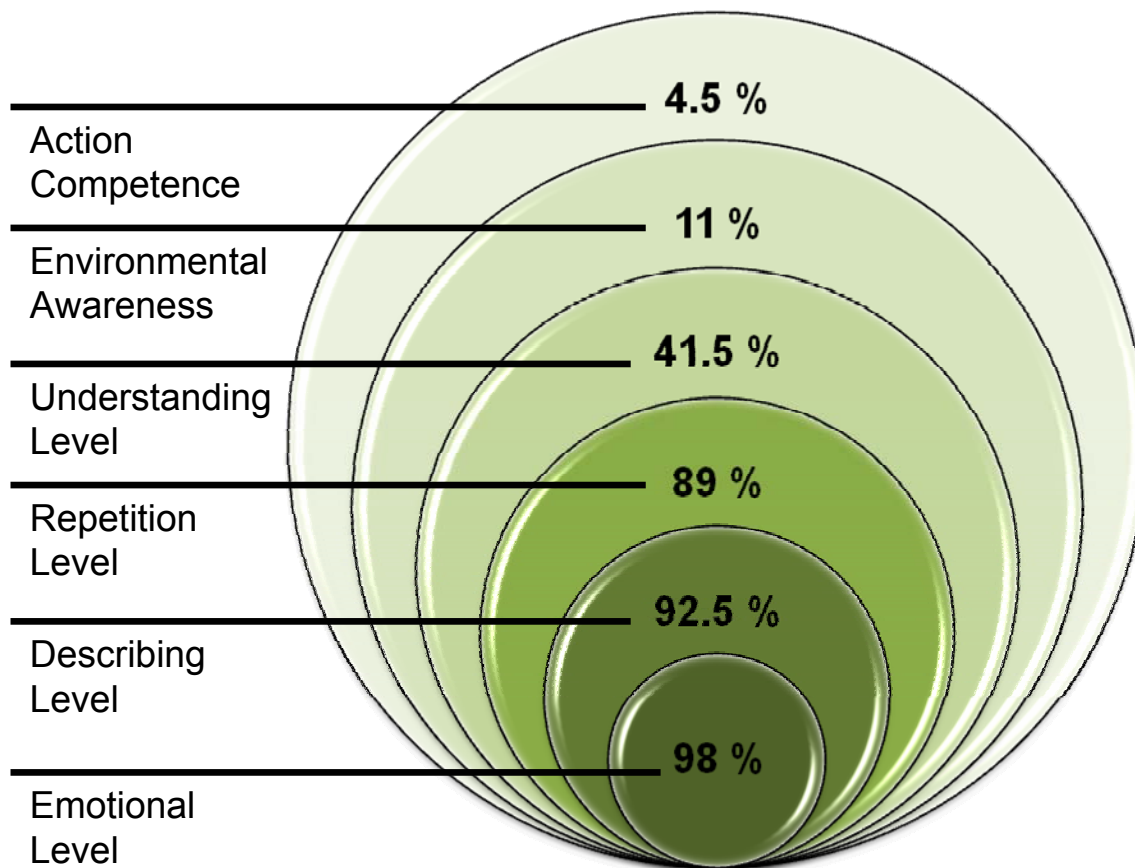
Children's GI Growth

Zoo Preschool children

➢ majority of children progress through the first three levels of GI

➢ the drop between the 3rd and 4th level results from the increase in GI complexity

➢ very positive results to observe that children can progress into the last levels of GI

Level	Percentage
Action Competence	4.5 %
Environmental Awareness	11 %
Understanding Level	41.5 %
Repetition Level	89 %
Describing Level	92.5 %
Emotional Level	98 %

22=group observations
69=individual observations

The Percentage of Children from Zoo Preschool, Magdeburg Who Progressed Through the Levels of GI

Conclusion

For a more in depth look into the research regarding Green Immersion, please see Thomas et al. (2010) "Learning and Development: Vol. I, 'Green Immersion'" and Thomas (2010) "Bilingual Preschool Best Practices: Vol. II, 'Bilingual Education for Sustainable Development: Green Immersion in Bilingual Preschools'". Within these chapters are the results of the observational study as well as a detailed look at environmental education teaching methodology, observed learning trends within the zoo preschool, observed effectiveness of materials and suggestions for GI curriculum implementation.

Conclusion

The research study conducted by the ELIAS project on Green Immersion depicts the positive effects of early childhood ESD, and provides insight into possible 'learner trends' during early GI programmes. This study showed that when children are provided with sound ESD, specifically GI, a child can develop a sensitivity and appreciation for the environment.

ESD can be a daunting subject for any student; meeting the needs of a very complex, interconnected discipline can leave students at any age unmotivated and frightened into inaction. Therefore early ESD, such as the GI programme, provides children with the ability to enter into their formal education with knowledge and confidence, ensuring the children of tomorrow will be prepared and eager for creating an environment of sustainability.

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