Succow Stiftung

MARION DONHOFF WORKING PAPER 2016

Integrating Education for Sustainable Development in the Lower Amudarya State Biosphere Reserve

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December 2016

Imprint

Cite as: Yuldasheva, D., 2016, Integrating Education for Sustainable Development in the Lower Amudarya State Biosphere Reserve, Marion Dönhoff Fellowship Working Paper, Michael Succow Foundation partner in the Greifswald mire Centre (self-published URL: https://www.succow-stiftung.de/fileadmin/Ablage/Projekte/Forschung_Weiterbildung/Dilfuza__Yuldasheva_paper_MD.pdf),

CONTENT

1. Introduction

1.1 Background

Uzbekistan is located in the centre of the Eurasian continent. It has a subtropical extremely continental climate with considerable seasonal and daily fluctuating temperatures: long dry hot summer and cool winter (World Bank 2010). The main climatic zones are deserts and dry steppe, foothills, and mountains (ibid). Desert and semi desert occupy almost 85 percent of the country's territory including the largest desert in Central Asia, the Kyzylkum (ibid).

Karakalpakstan, the province located in western part of the Uzbekistan is mainly a desert; it also contains the lower part of Amudarya River basin. Alongside the river lies a riparian forest called Tugai which provides many ecosystem services to people (Thevs et al. 2008). Ecosystem services that forests in Uzbekistan provide are protecting agricultural lands and settlements from water and wind erosion, sand fixation and soils and riverbank protection (Zerbe 2002; Thevs et al. 2007 in Waible 2013). In addition, non-timber forest products (NTFPs) such as fruit, medicinal plants and fodder are also used by local population. Tugai forests are also a habitat for a vast variety of species like mammals, birds and reptiles (Thevs 2006 in Thevs 2008). Besides, outstanding flagship species like Bukhara deer, endemic species and threatened species are important conservation objects. Nowadays, these forests are highly degraded by direct human activities like clearing land for agriculture, indirectly from changing water regimes

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(Thevs 2008) and deforestation (Waible 2013). Additionally, overstocking of Bukhara deer put pressure on the forest.

Concerted with these degradations and to preserve what has remained in 1971 Baday Tugai State Nature Reserve (Waible 2013) was established in Karakalpakstan which was Zapovednik IUCN Ia category. The main reason of establishing the nature conservation site was to save Tugai forests and fauna (Cabinet of Ministers, 2011) in conditions of regulated drain of the Amudarya River. Its territory made up about 6462 ha (ibid). In 2011 in the area of Baday Tugai State Reserve the Lower Amudarya Biosphere Reserve (LABR) was established in the frame of an UNDP GEF project. Its territory encompasses 68,717.8 ha. From that core zone makes up 11,568 ha, the buffer zone 6,731 ha and economic zone 50,418 ha (ibid).

Figure 1: Amudarya river basin and location of the Lower Amudarynski Biosphere Reserve in Uzbekistan and the Amudarynski Strict Nature Reserve in Turkmenistan; Source of map: http://www.icwc-aral.uz/i/amudarya_basin_large_e.gif From: Communication Strategy for the Conservation of Tugai Habitats at the Amudarya River Basin, Uzbekistan (Kloiber et al. 2015, p. 2)

As the establishment of LABR took place in 2012 this study analysed whether the biosphere reserve's (BR) educational function is put into practice.

Deriving from that the main research questions were: (1) Why implementing Education for Sustainable Development (ESD) is important for LABR? (2) How can ESD be integrated to LABR?

Accordingly, to understand the importance of ESD the following chapter will shortly discuss the concept of BR, the derivation of ESD, and its key elements. The multiple methods help to identify current state of education in LABR and then the possibilities of integrating ESD were discussed. Afterwards, the paper suggests practical ways on incorporating ESD in LABR.

1.2. Biosphere Reserve and Education for Sustainable Development

UNESCO's Man and the Biosphere (MAB) programme was established in 1971 (UNESCO 2015). The aim of the MAB is to combine the natural and social sciences, economics and education in order to improve human wellbeing and to safeguard natural and managed ecosystems (ibid). This could be done by the integration of the conservation of biodiversity with its sustainable use (ibid). Biosphere Reserves (BR) are the protected areas that become model region for sustainable development.

In 1995 the Seville Action Plan developed recommendations for the establishment of BR and defined their functions for sustainable development:

1. Conservation function (preserving biodiversity and landscapes)

2. Development function (fostering human and economic development)

3. Logistic support function (demonstration projects, education, monitoring, research) (UNESCO 1996).

The reason to include education in BR function is because education is an essential tool for achieving sustainability. One can question the necessity of developing new concepts like ESD and integrating it in BRs when the natural science education already takes place at schools. However, natural science education which addresses the observation of natural phenomena lacks the consideration of the social or economic forces that have been influencing ecological relationships (Bowers 2001; Desinger 2001 in Locke et al. 2013). Desinger (2001 in Locke et al. 2013) had mentioned that ecosystem management were historically influenced by societal, economical, and political priorities and it also shapes the emphasis placed in the classroom on resource management, environmental conservation and preservation. To understand another significance of implementing ESD let us first examine how the learning takes place. Much research has been conducted to understand learning, in particular from 1956 to 1972 by scholars like Bloom, Krathwohl and Harrow (Heywood 2000). According to them learning can be broken into three categories which are called domains (Berkmüller 1992). These three main learning domains are:

- cognitive domain (involves the development of mental skills and the acquisition of knowledge)
- affective domain (involves feelings, emotions and attitudes)
- psychomotor domain (skills) (ibid)

The commonly observed phenomenon is that usually traditional education system mostly focuses on cognitive domain whereas affective and psychomotor domains are discarded (Berkmüller 1992). According to Uden and Beaumont "the traditional teaching is characterized as didactic instruction in which information is presented to the students to learn with little consideration how the information is used" (2006, p. 2). Such way of teaching has been criticized by many scholars as they fail to develop them personally and professionally for world after school. The education is most effective when it addresses all three domains (ibid). Applying ESD does not only address all three learning domains but also focuses on sustainable development issues. Moreover, ESD integration is of a high importance in Uzbekistan, where in rural areas traditional type of education dominates.

The development of ESD stems back to Environmental Education (EE) which was included as one of the functions of BR since it is a main component that develops sustainable habits and values. Deriving from Tbilisi Conference (1978), UNESCO highlighted that EE "is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action" (Kulkarni & Ramachandra 2006, p.256). Since the degradation of environment despite the endeavours providing people with EE and with the development of Sustainable Development Goals the concept called ESD on the basis of EE was developed. ESD can be defined as "a learning process (or approach to teaching) based on the ideals and principles that underlie sustainability and is concerned with all levels and types of learning to provide quality education and foster sustainable human development – learning to know, learning to be, learning to live together, learning to do and learning to transform oneself and society" (UNESCO n.d.). It includes key sustainable development issues into teaching and learning like, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption and so on. To communicate such complex issues and develop skills ESD applies learning methods which are (Gille 2013):
- "Interdisciplinary and holistic
- Learner-centred and participatory
- Values-driven, promoting critical thinking & exploring all interested "sides"
- Forward-looking, promoting medium and long-term planning
- Locally-relevant, encouraging multilateral collaborations among schools, local actors and authorities, scientific communities, the private sector and non-governmental organizations (NGOs), etc.
- Revealing global issues and connections as part of everyday life, whether in a small village or a large city" (p. 110).
Main target of using these learning methods is not only to develop learners' cognitive, affective and

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psychomotor learning but to encourage taking responsibilities and actions towards sustainable future by empowering them.

2. Methods

In pursuit of exploring to what extent the education component is executed in LABR, information was obtained using mixed method qualitative research, semi structured expert interviews, LABR materials review and observation in August, 2016. Expert interview was conducted with an employee of LABR who occupies the position of a senior scientist on 17 August, 2016 which in this document is referred as interview I. Through this interview, one could get an overview of whether LABR employees perform educational action with population.

Other target group was four natural science teachers of a secondary school. The interview was conducted on April 11, 2016 and is referred as interview II in this document. The school itself was situated in the neighbouring populated area which is approximately 40 km away from the Visitor center and administrative building. Additionally, for semi-structured interview, the teachers were asked to fill out the form which included close and open ended questions on biosphere reserve. The reason for choosing close and open ended questions and taking notes was to identify the existing knowledge of teachers on the concept and the goals of biosphere reserves.

The materials that were reviewed were the ones created for communication purposes like leaflets and brochures. In addition to that, to understand the potential level of knowledge of people in the area, secondary school curriculum and textbooks were reviewed. Through the textbooks analysis one could identify the extent of natural science education at the schools. Other documents mostly belonging to UNESCO on integration of ESD in BRs helped to examine the opportunities of implementation of ESD in LABR.

Using observation method, the LABR administrative building which is the potential area

for organizing field trips (core and transitions zones) and the materials that are found in the administrative building were examined. Such observations were important in order to identify how existing conditions and materials can be used for educational purposes. The visit took place in August 1 and 2, 2016.

3. Results

3.1. Education at schools and in LABR status quo

The examined curriculum of the secondary school and teachers´ interview revealed that students learn about "desert flora and Tugai forests" in sixth grade in botany classes. Moreover, students get to learn about the concept of protected area, their importance and how active the government is in establishing PAs and conservation of endangered species (Pratov et al. 2009). Nevertheless, as the textbook provides factual information as many school textbooks do, it sometimes lacked some pillars of ESD principles. For instance, each chapter provides information on particular topic and is followed by exercises to check students' comprehension through diverse activities like open ended and discussion questions, categorization, observation, etc. But comprehension check activities mostly activate cognitive domain. In order to diversity and add more ESD principles one could in the chapter of "Desert and Tugai plants" which puts an accent on that Tugai forests that are under threat due to human activities (Pratov et al. 2009) include role play or simulation games to reveal driving factors for people to cut the forest down, like economic and social needs. This would give students a holistic understanding of the issue, interconnectedness of many factors and through role play an endeavour to find long term solution for the problem.

LABR employees are entitled to perform the logistical function which includes educational activities (Cabinet of Ministers 2011). The facilitation of workshops and organization of events at schools that are in and around the territory of biosphere reserve was mentioned by LABR employee (Interview I, 2016) but there is no documented evidence for that. There might be occasional visits organized by nearby schools but due to the absence of documentation, it is hard to predict its efficiency. Also, interview with teachers showed that there is a deficiency of knowledge on understanding of biosphere reserves and their overall goals **(Appendix 1. Teachers notes from interview).** Thus, from the reviewed documents and interviews, it can be concluded that such activities are not yet defined.

From the observations and interviews one could say that there are unfavourable conditions in LABR which also prevent successful integration of educational component. In conclusion, one can say that the absence of educational activities is caused by several factors which can be summarized as:

- Lack of clarity of purpose and vision
- Lack of internal stability in management
- Lack of adequately trained staff
- Lack of resources
- Lack of institutional support

Lack of clarity of purpose and vision: aforementioned, the documents containing specific task, duties and goal and objectives on education were absent. The lack of clearly defined goals and objectives shows that the vision and purpose of education is very lucid if not absent.

Lack of internal stability in management: there is a frequent change in senior staff which might also result in changing management approaches. Such frequent changes pose difficulties for junior staff to adequately perform their duties (Kloiber et al. 2015).

Lack of adequately trained staff: some of the current employees of LABR are without appropriate qualifications and professional background to be able to educational activities (Interview I 2016). The remote location of the LABR and uncompetitive salaries make the positions of LABR unlucrative (ibid).

Lack of resources: LABR staff is responsible for producing and publishing materials like brochures and other handouts (Interview I 2016). There are some such prepared documents but not all of them are in an optimal quality. A few had a more complex and/or scientific content which may discourage the reader. **Appendix 2. Brochure from LABR** is an example where quite scientific information was given, with an abundant text. Perhaps the target audience was natural science students or researchers. Moreover, one can get an impression that the aim of brochure was not clear. Also, it is preferable to improve the visual quality of such materials but there is a deficiency in technical skills (using computer programs) and training in writing such documents for employees. To reach the wanted quality of brochures the involvement of professional designer and communication expert who could help with the content of brochures would have been desirable. From the observation it was revealed that there is the lack of latest technological equipment and the internet in the BR administrative building, which makes it difficult to prepare such documents.

Lack of institutional support: the administrative system in the country historically has been very top down where employees only execute their tasks which are given by superiors. Employees who want to perform activities are required to get the permission from the administration. Bureaucracy and control created physical barrier to implement participation in decision-making activities on one hand. On the other hand, it also demotivates people to take part in decision making processes.

4. Discussion

4.1. Potentials

It is clear that there are number of issues that are present in LABR which impede the overall functionality, especially the sharing of knowledge. This in turn creates difficulties in implementing ESD in LABR. On the other hand, there are possibilities of improving the current situation and factors that may alleviate the improvement. Those

factors are the presence of schools even in remote areas, high literacy rate of citizens and presence of visitors centre at the LABR.

The schools in such remote areas were established in Soviet times to assure everyone has access to free education. Nowadays, as education is not only free but also compulsory, citizens are required to obtain a high school certificate. Besides, the schools are equipped with libraries which make distribution and access to materials easier. The presence of schools in buffer and economic zones and adjacent to biosphere reserve makes communication and education easier among school children and teachers. There is a possibility to establish cooperation between schools and the BR to incorporate education for sustainable development.

Because of the compulsory education and presence of schools, the country's literacy rate is 99.4% (UNICEF 2003) which enables distribution of knowledge through reading materials possible. This means that addressing and working with local people (children and adults) through indirect communication like distribution of information handouts is also possible.

LABR has an administration building where one room was aimed as a visitor centre. There were communication materials like posters, leaflets, stuffed animals, deer antler exhibits and souvenirs to be sold. Such conditions of the visitors centre and possibility to have excursion in the reserve creates opportunities to facilitate the ESD.

Overall, it can be concluded that the presence of schools, equipped with libraries, local people who are literate and LABR with its administrative and Visitor's centre creates favourable conditions to implement ESD in the area.

4.2. Recommendations (ESD programme in LABR)

Deriving from the current state of education in LABR and at schools, and considering the climatic and environmental issues of the area, the

recommendations on how to integrate ESD to LABR was developed. This section of the paper contains information on how an ESD educator (teacher, LABR employee and etc.,) should conduct him/herself while working with a group of learners (students, LABR visitors), advice on planning an educational programme and particularly, ESD activities which could be found in Appendix 3 to 10. The aim of providing the following recommendations is to inform and give basic guidelines on implementing ESD in the LABR and surrounding area to the ESD educator. The aim of giving these samples of activities is to demonstrate to the educators which specific activities can be conducted with the learners that encompass ESD principles.

4.2.1 Educator's competency

One of the main attributes of any educational program is the educator. The lack of appropriate training is found in many studies as one of the most significant obstacles of implementing ESD in general (Volk, 1983; Dorion, 1990; Sebasto & Smith, 1997; UNESCO, 1997 in Gille 2013). Thus, ESD educator should have an in-depth knowledge about natural environment and cultural feathers (Gille 2013). Well planned programme and good preparation for the session is the key for the success.

Nevertheless, there are several things that need to be avoided. An Educator does not know everything. When a participant poses a question to which the educator cannot answer he/she should say that he/she does not know the answer to the question. This will create trust within the group and avoid negativity during the sessions. The sessions should leave a positive impression on participants and this is why it is vital that the educator has a positive attitude. Communication should be maintained in positive level; roles should be properly explained, and the activities that will be done, together with the duration of the session and codes of conduct in the reserve (behavioural safety rules) should be clarified. It is recommended to use ice breaker activities to build a rapport with the participants **(See Appendix 3: Icebreakers).**

An icebreaker is an exercise which helps a group to start the process forming themselves into a team. Icebreakers are usually games to "warm up" the group through assisting group members to get to know each other. They often focus on sharing personal information such as names, hobbies, etc. (Exley & Dennick 2004)

The **content** plays an important role in learners' engagement; content should be:

- Informative
- Relatable to the audience
- Simple

The content of the session or workshop should be informative. The people who come to BR come with expectations of learning something meaningful. The relatable content will activate their emotions which enable them to grasp information better and may lead to altering their attitudes and values. For example, it might be information about why conserving Tugai forests is important for local people.

Awareness & Relatable context

Considering the LABR and adjacent areas, it can be said that people are informed that the Tugai forests are rich in biodiversity and should therefore be saved (Interview II). Thus, the forest appears not to have much relevance and significance in their daily life since they are not sufficiently informed about the **ecosystem services** of the forest which is beneficial to the local people. Among other benefits, there are also primarily, protective and supporting functions like:

Protection of agricultural lands and settlements from water and wind erosion;

Fixation of moving sands;

Provision of NTFPs like fruit, medicinal plants and fodder.

The assumption is that, after understanding personal relevance and importance of the forest, local people's attitudes and values will change to preserving it.

The content should be simple so that it can be well understood by the audience. For that, educators

should also take into account the learners' age group, background etc.

People's mentality

It is vital to take into account people's mentality while conducting educational events. Inherent from Soviet times, the education system has been using Teacher Centred Approach (TCA) by lecturing where a student is a passive receiver of the information. It is a common case that learners do not ask questions for fear of being seen as not clever enough. Thus, when factual information is given it is recommended to use Concept Checking Questions (CCQs) to make sure learners are following the content. CCQs should be simple so that they do not consume much time where learners can give short answers. Example:

After an explanation of the threats for Tugai forests, one can ask: Can you name the main threats to Tugai forests?

The CCQs is better to be addressed to the whole group because it creates a safe atmosphere where learners will not be afraid to give an incorrect answer.

Delivery is a very important tool when it comes to sharing knowledge. It is essential that an educator engages the learners. While working with learners, it is important to take into account the following:

- Do not lecture
- Be active (passive delivery effects the audience)
- Use diverse activities
- Engage everyone

In reality, implementing ESD principles, using participatory approach in the context of LABR may be challenging, because the transition from TCA to learner centred approach (LCA) creates uncertainties for learners as well as educators. There should be an interaction with the visitors where the educator encourages them to actively express their opinion and ask questions. Everyone, including passive participants should be engaged by organizing discussions in pairs and small groups **(see Appendix 4. Random selection).**

4.2.2 Planning, implementing and evaluating

The following text contains advice on planning educational programme. The actual educational programme needs to be developed by involving different stakeholders, taking into account the available resources and conditions in the area. The stakeholders in this case are schools and colleges that would be involved, LABR employees and perhaps other organizations, NGOs, University, State Nature Protection Committee, the "Ecoharakat" party, Kamolot" youth organization?. The planning of education programme would need substantial effort since some factors need to be considered. These factors include school curriculum, student's level of capability and resources (financial, personal, time, and so on).

The initial stage of educational programme is to consider the rationale behind it (Gille 2013). One should consider the purpose of a programme and what issues it needs to address (ibid). Below the typical model of a programme phases is given (Berkmüller 1992).

a. Planning → b. Implementation → c. Evaluation

a. During **planning,** setting the right objectives and subject selection is vital. Setting of objectives and subject selection should include following points:

1) Target group (age, background, interest, the school curricula, content relevancy to their life)
2) Available resources (financial, personal, time)

Considering the state of LABR, the following goals and objectives with regards to integrating ESD were defined by Kloiber et al. (2015 p.12):

- "Build knowledge among school/college teachers and students about the functioning of resilient Tugai ecosystems;
- Build a knowledge about the effects of human activities on the viability of their natural environment as well as human wellbeing;
- Raise understanding for protected area regulations;
- Involve children and youth in environmental activities."

- The ESD recommendations and activities given in this paper endeavour to cover these goals and objectives.

b. In **implementation** phase, the plan is put into action. It is important to choose an appropriate method to involve learners and create an interest. Despite the content of the session, the pedagogical methods that are used while conducting ESD in the LABR determine the success of the session. There are criteria while choosing appropriate methods; they are (Gille 2013):

- The subject and objectives of the programme
- Characteristics of the target-group (age, gender, education level, interests, etc)
- The available resources (available time, space, materials and technical infrastructure)
- The designer's and educator's characteristics (scientific expertise, pedagogic sufficiency, personality and "teaching" style)

There are many activities that could be organized in LABR or schools which was suggested by Kloiber et al. in Communication Strategy for the Conservation of Tugai Habitats at the Amudarya River Basin, Uzbekistan (2015). Competitions or events like drawing/photo actions or theatre performances can be organized (Kloiber et al. 2015,). An artistic event where learners exhibit or demonstrate their talents (musical, painting, poetical etc.) increases the interest and involvement of not only learners but local inhabitants. The event on special days like International Day of Environment, Day of Biodiversity, ecological campaigns (e. g. No plastic day) can be also organized (ibid). Providing certificates to the individual and class would have a sense of acknowledgement and create the positive feeling (ibid).

Field trips and visits
Field trips and visits are common methods in educational programmes. They give a first-hand experience to learners. Additionally, they give them opportunity to get a better understanding of the complex interrelations between the natural, cultural and economic environment which is the important part of ESD (Gille 2013). To conduct a field trip the objectives must be determined: e.g. what is the state of the ecosystem? Its biodiversity? Its relation to the cultural diversity? (ibid) For students these objectives should be related to the school curriculum (ibid). The field activities, educational materials like worksheets should be designed keeping the target-group and objectives in mind (ibid).

Pre-visit
Objectives must be set, and the necessary materials must be prepared before the visit. Educators or BR employees should know about the visiting group (school students), age, grade, what needs to be covered according to the school curriculum, group size, materials needed, person with disabilities etc. The educators should also be prepared to conduct activities.

The learners can be informed beforehand on what will be covered so that they can make their own research prior to the visitation and prepare questions. Additionally, an educator can organize pre-while-post visit lessons accordingly around a particular topic; for an example of such lessons **(see Appendix 6. Waste management).** What learners need to prior is how they should be equipped for field activities (e.g. appropriate clothing, head cover, water, snacks etc.). Apart from general safety and conduct rules, visitors should be informed about how to conduct themselves before visiting the BR, for example, on how to behave when they see the Bukhara deer and how to take caution so as not to damage the vegetation.

During visit
During the visitation, the educator first needs to introduce him/herself and the agenda of the field trip. It is important to present the code of conduct and safety measures at the beginning.

The educator should establish a rapport with the visitors e.g. using ice breakers **(see Appendix 3. Icebreakers).** At this point, educators should conduct planned activities. For some examples of

activities that can be conducted during field trips **(see Appendix 7. Field trip activities).** Recording data in worksheets is advisable because it helps learners to stay on track during the trip.

At the end of the field trip, learners must also be given the opportunity to express their experiences in the field with a planned reflection activity (e.g. orally, in short texts, through games, etc.)

Post field trip

In the classroom, learners have to start several activities which puts into place, what they learnt during the field trips. Post-visit activities may be interpreting results (worksheets), group or individual presentations to the group, a poster composition, writing an article with recommendations, or writing brochures for BR **(see Appendix 10. Writing a brochure)** etc. Consequently, what learners have prepared which may be in the form of brochures, posters, models of the area, etc., can be presented to the LABR which would benefit BR by enriching its Visitors' centre and encouraging learners' participation towards contributing to LABR.

Values

Values play an important role in ESD. One of the definitions to values are: "the principles and fundamental convictions which act as general guides to behaviour, the standards by which particular actions are judged as good or desirable" (Halstead & Taylor 2000 in eds Henderson 2010, p. 279). Thus, it can be said that people's political, economic, social and environmental behavior is defined by values. That is why ESD puts an accent on nurturing sustainable values in learners. By using the right activities, one can nurture sustainable values in learners. These activities can be in the form of discussions, using games and relating the issues to the learners; topics might be environmental and global issues for example, overpopulation, urbanization, water pollution, species extinction, erosion etc. and these can all be addressed through games. Discussions might be in the form of simulation (role pay) games **(see Appendix 6)** or debates **(see Appendix 8).** Role-play technique in teaching is a holistic teaching method and develops critical thinking, instigates

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emotions and moral values, and informs about factual data. Role-playing teaching increases the learning experience efficacy by using real life situations.

An example for a discussion game on the topic of natural resources and population for younger audience could include: separating learners into groups of varying sizes which represents the populations of different countries. Each group is given few candies that represent the amount of resources available in these countries (e.g. food, oil, natural gas). Larger groups will have to share fewer candies, while smaller ones have them in abundance. Observe learners reaction and reflect on that. Reactions range from satisfaction to strong discontent and perhaps loud protest for the inequality. Such games represent geography, economics, consumerism in the developed world and the depletion of resources by developing nations for reasons of survival, etc.

Another method could be using case studies. For an example of a case study, **see Appendix 9** called global thinking. Case studies and organizing study groups of the learners help them to recognize the issues and people/organizations involved, to distinct the perceptions and values (Gille 2013). They will also be better in analyzing environmental, economic and social consequences of each suggested solution. Establishing group research with learners on environmental issues provides them with opportunities to practice data collection from primary and secondary sources, to analyze data, define their own position, create and implement an action plan in order to resolve it (ibid). Often, people believe that governments should take actions to solve environmental problems or that **modern technologies** will resolve all the issues including environmental, social, and economic. Such behavior is a typical example of people shifting responsibilities they have towards environment to an abstract idea. However, through such participatory activities and giving learners the chance to take ownership of their own learning, we nurture the sense of responsibility and empowerment towards actions.

c. In the **evaluation** phase, one can identify as to whether the educational objectives were met or not

and ascertain measures on how to further improve future actions. The evaluation indicates the extent of the achieved goals, the suitability of the used methods and materials, the educator's effectiveness, the learner's performance, the programme's organization, the field's appropriateness, etc. (Gille 2013). The evaluation gives potential to growth and improvement. The evaluation can be on result or/and on process (ibid).

The approach that could be used for evaluation varies. Yet, it is advisable not to use solely questionnaire as this method may not convey the whole range of feedback that learners are willing to express. Instead, using qualitative approach which focuses on gaining information on target group's interpretations, experiences and views is far more effective rather than measuring learners' gained knowledge. This process should not be perceived negatively but rather, it provides a chance to improve.

Reflections made by the organizing bodies, especially, the educators are of a high importance. Through the organized session they can have a review on what worked well and make improvements for future educational activities. The SWOT analysis model (Strengths, Weaknesses, Opportunities, Threats) can be considered for this evaluation **(see Appendix 5, Evaluation 5.1).** This analysis model can be used among learners as well to get their perception and suggestion on the programme.

Getting the feedback from learners is vital since the ESD programme is aiming to inform and educate learners on the relevant issues. Many techniques can be used, which includes: orally asking for feedback or having the feedback written down on a sheet of paper or using worksheets **(see Appendix 5, Evaluation 5.2).**

5. Conclusion

Through the study, it was revealed that there is a lack of educational activity performed in the LABR. There are several reasons why it was not possible to successfully perform this function which includes lack of clear vision, trained staff, resources, institutional support and internal instabilities in management. Nevertheless, educational function in biosphere reserve is one of the main components in order to reach sustainable development. Holistic understanding of ecosystem and active participation of local people in reserve's activities through education would lead to better management within the biosphere reserve and adjacent areas.

Yet, considering the potentials that the area has, the implementation of educational activities could be well put into practice. Such potentials as high literacy rate and presence of schools in very remote areas make it easier to apply education. It was recommended to implement ESD rather than Environmental Education considering the set of knowledge, skills, attitudes and values ESD presents and influences that is necessary for sustainable development. Moreover, the proper implementation of ESD in the area could lead to transformation and enhancement of the existing conditions in the area like prevalence of traditional teaching methods, institutional settings and people's mentality.

Hence, the attempt was made to give recommendations on how to apply ESD considering the area specific factors. There was an endeavour to supply educators with not only theoretical basis but also with practical examples so that they could envisage what ESD activities are. Some of the activities were adapted to the area and present problems that the audience could relate to.

The article is an attempt to encourage integration of ESD in LABR and in the surrounding areas by providing concise recommendations on how to apply ESD which include theoretical aspects and practical activities adapted to LABR. Nonetheless, the extent of application of the ESD in LABR is yet uncertain. One can argue that the lack of

resources for example, financial, personal and institutional support is unfavourable and plausibility of applying ESD is low. However, the authors argument is that ESD could be applied with limited resources but needs the willingness and substantial effort to be invested by responsible bodies.

List of further reading:

Authors	Titles	Publisher	Year	Link
Hélène Gille (coord)	Education for Sustainable Development in Biosphere Reserves and other Designated Areas (A Resource Book for Educators in South-Eastern Europe and the Mediterranean)	UNESCO	2013	http://unesdoc.unesco.org/images/0021/002199/219946e.pdf
Hélène Gille (ed)	Teaching Resource Kit for Dryland Countries	UNESCO	2008	http://unesdoc.unesco.org/images/0016/001632/163264eo.pdf
Klaus Berkmüller	Environmental Education about the Rain Forest	IUCN	1992	
Кашкаров, О.Р.	Ўзбекистонда айрим экологик саналарга бағишланган оммавий тадбирлар ўтказиш бўйича кўлланма (рус ва ўзбек тилида) Handbook of organizing environmental events dedicated to environmental days in Uzbekistan (available in Russian and Uzbek)	UzSPB, dvv international	2011	http://www.uzspb.uz/eco_dates.pdf
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	Бухоро буғуси (Бошланғич синф ўқувчилари учун ўқув кўлланма) Bukhara deer (Primary school; available in Uzbek)	Эремурс, WWF		
UNESCO	Education for Sustainable Development Sourcebook	UNESCO	2012	http://unesdoc.unesco.org/images/0021/002163/216383e.pdf

The list of searching engines

- www.tridantus.uz – news site, where one can find information, articles and essays (реферат) on different topics like new pedagogical technologies (Yangi pedagogik texnologiyalarning ilmiy-uslubiy asoslari), on biology, ecology etc.
- www.multimedia.uz – website where one can find information on pedagogical methodologies
- http://library.ziyonet.uz/uz - where one can download books on various topics including pedagogy.

- http://www.kitob.uz/ - where one can download books and find electronic lesson plans.

Acknowledgements

Abbreviations & Acronyms

BR- Biosphere Reserve

CCQs – Concept Checking Questions

EE - Environmental Education

ESD – Education for Sustainable Development

ICQs – Instruction checking questions

LABR – Lower Amudarya State Biosphere Reserve

LCA – Learner Centred Approach

MAB - Man and the Biosphere

NTFPs - Non-Timber Forest Products

TCA – Teacher Centred Approach

UNESCO - The United Nations Educational Scientific and Cultural Organization

USAID – United States Agency for International Development

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List of figures & illustrations

FIGURES

Fig. 1:Amudarya river basin and location of the Lower Amudarynski Biosphere Reserve in Uzbekistan and the Amudarynski Strict Nature Reserve in Turkmenistan; Source of map: http://www.icwc-aral.uz/i/amudarya_basin_large_e.gif From: Communication Strategy for the Conservation of Tugai Habitats at the Amudarya River Basin, Uzbekistan (Kloiber et al. 2015, p. 2)

Appendix 1. Notes made by teachers during interview

During the interview with 4 school teachers, the following questions were given in a sheet of paper where they put their answers. According to the interviewees' preferences the questions were discussed in a plenary and deriving from the discussion the answers were put down on one sheet of paper. This document is the translation of the notes from Uzbek to English.

Teachers' interview

Question 1: What do you know about biosphere reserves?

Answer: Biosphere reserves are important to save important and degraded natural world, endangered animals, especially to save and expand Tugai forests

Question 2: Do you think that biosphere reserves differ from other protected areas?

Answer: a) no b) yes (in what way?)

Chosen answer: b) From coverage area, biosphere reserves are bigger. For instance, when protected area was transformed into biosphere reserve, small Tugai forests were included to the area.

Question 3: How many zones do the biosphere reserves have?

Answer: There are six zones

Question 4: What was the reason of establishing the biosphere reserve (or protected area)?

Answer: Nature conservation – to save nature for the next generation

**Question 5:** Why is it important to save Tugai forests for local people?

Answer: One of the main significance is that the forests clean the atmosphere, purify the atmosphere and it has special role in preserving people's health.

Question 6: Do school children possess information about biosphere reserve?

**Answer:** School students get informed about protected areas in the 5th and 6th grades. Children are very interested in the topic so they read about it. It is not only connected with biology but also with geography

Appendix 2. Brochure from LABR

Side 1 of brochure on Lower Amudarya's Avifauna State Biosphere reserve
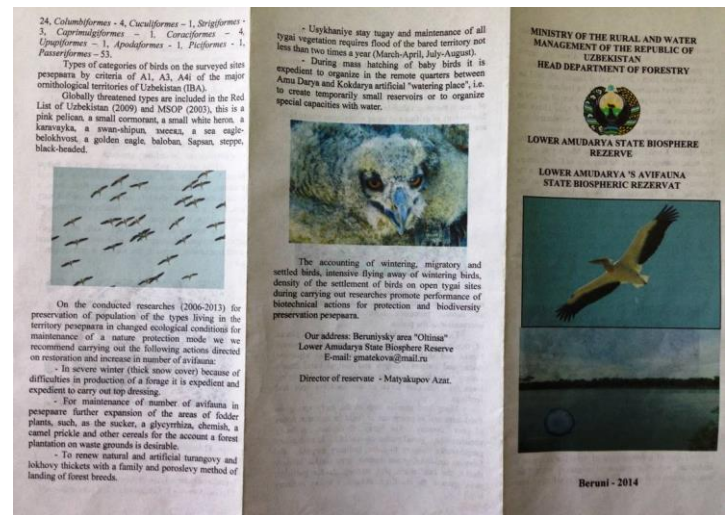
Side 2 of brochure on Lower Amudarya's Avifauna State Biosphere reserve
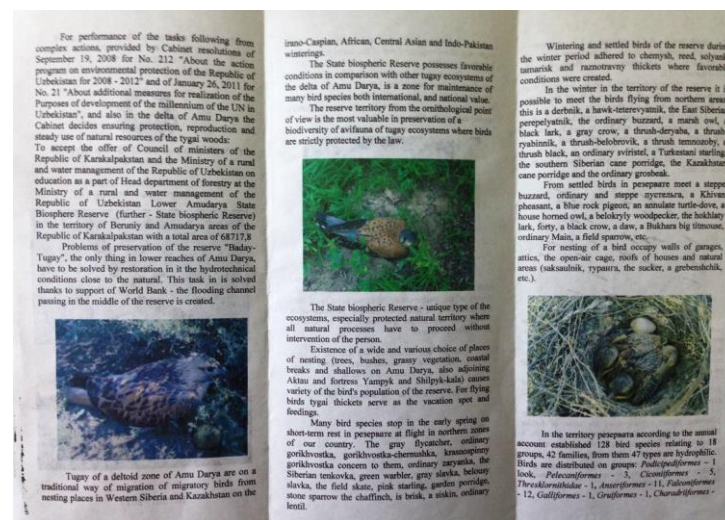
Appendix 3. Icebreakers

Icebreaker 3.1. Get to knowing you

Ask the group to pair up with the person standing/sitting next to them.

Give one handout to each pair of learners with 4-5 questions (sample question given in the list below). After discussion, ask one or two pair to tell what he/she learned about the person.

Sample questions: (Taken from: icebreakers.ws (n.d.))

1. What's your favourite thing to do in the summer?
2. What's the ideal dream job for you?
3. What are your favourite hobbies?
4. If you were an animal, what would you be and why?
5. If you could have an endless supply of any food, what would you get?
6. What is one goal you'd like to accomplish during your lifetime?
7. Who is your hero? (a parent, a celebrity, an influential person in one's life)
8. If you could visit any place in the world, where would you choose to go and why?
9. If you had to describe yourself using three words, it would be…
10. If I could be anybody besides myself, I would be…

Icebreaker 3.2. Unique and Shared (Adapted from: Group-games (n.d.))

Ask participants to form small groups (e.g. 3 or 4 people).

Shared part: Ask them to write a list of as many common traits or qualities that members of the group have in common.

After a spokesperson from each subgroup read/presents their list.

Unique part: Ask the groups to write down traits and qualities that only apply to one person in the group. When groups are ready ask them to share the unique qualities in one of the following ways: have a spokesperson read a quality one at a time, and have the others guess who it was.

Icebreaker 3.3. Have you ever? Adapted from (Ultimate Camp Resource (n.d.))

Everyone sits in a circle. One person should be without a chair. That person says something about him/herself or poses a question. For example, "Have you ever met a celebrity?" or "I have met a movie star." When the answer is yes for other members of the group, those members move then quickly to a new spot in the circle. Whoever is left without a chair will tell something about themselves. The process continues several times depending on the activeness and enthusiasm of the group.

Appendix 4. Random selection (Adapted from: ESD - WWF-India 2015)

After discussions in big or small groups or in pairs, learners need to reflect on what they have discussed. To make sure that not only active and dominant learners would always be presenting, the educator can use random selection method. Random selection gives all the learners a fair chance of being elected and activates the shy and quite learners as well. The choice of presenting person can be done by using a statement like: *the one who has the hair* and the person with shortest hair needs to present.

- This method can be very inventive e.g.:
- The one who has the shortest or longest name
- The one who has the youngest brother or sister
- The one who with smallest index fingers
- The one who has the most number or least of siblings

Appendix 5. Evaluation (Taken from Gilla 2013)

Evaluation 5.1. SWOT analysis

SWOT analysis could be an effective tool while evaluating the programme for the educators or organizers. The cells can be filled individually by factors through brainstorming then discussed among colleagues. This will help to analyze the programme and come up with the strategies to improve it further.

Strength	Weaknesses
Things that have worked well in the ESD programme (e.g. learners acquired comprehensive idea of BR; learners were actively participating in activities; learners' values towards BR or environment changed that they understand the importance and want to take active part in preserving it, etc.)	Things that have not worked that well (e.g. learners were not active; logistic difficulties while organizing the excursion to BR; miscommunication in the team of organizers of ESD, etc.)
Opportunities	**Threats**
Ideas how to overcome weaknesses and build on strengths. (Depending on weaknesses, e.g. organize more meeting with the team to solve existing and potential obstacles; think how to modify the activities to make sure that learners will be more active maybe by organizing more pair or group work, giving handouts	The obstacles that constrain the range of opportunities for change. (Depending on opportunities: e.g. to organize the meeting the choice of location or the availability of participants may be problematic, more pair and groupwork can take more time than initially allocated, which can lead to time management problems for educators, etc.)
where they have to fill out in parts or groups, etc.)	

Evaluation 5.2. The investigated issue: The Ecosystem Approach

What is Ecosystem Approach?
"The Ecosystem Approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Thus, the application of the ecosystem approach will help to reach a balance of the three objectives of the Convention: conservation; sustainable use; and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources." (Secretariat of the Convention on Biological Diversity 2014, p. 6). In 1995 by the Conference of the Parties (COPII) the Ecosystem Approach was adopted within the Convention of Biodiversity in 1995 (ibid).

This tool can be used before and after a programme that focuses on cognitive learning of learners. Throughout the programme, the group refers to it occasionally in their review sessions. It is formed on three columns: a) what we know b) what we want to know, and c) what we have learned.

The steps of the process are:

1. Learner's background

The topic is introduced. Learners can brainstorm in plenary on the facts they know about particular topic and note the ideas down in column 1.

2. Setting targets

They brainstorm what they want to know on the issue by writing key questions in column 2. At the end, learners use column 3 as a reflection and knowledge evaluation tool. It may be filled individually, followed by a session in plenary.

What we know	What we want to know	What we have learned

- This is a principle of sustainable management. - It concerns the integrated management of land, water and living resources. - It equally promotes conservation and sustainable use of an area.	- How is it applied in practice? - Are there cases of successful implementation? - What are the parameters of success?	

Appendix 6. Waste Management

This is set of lessons and activities that focuses on one topic but discusses different aspects of it through using multiple methodological tools. It contains pre/while/post excursion lessons/activities.

Pre Excursion: What is waste? (Adapted from: Alberta Environment 2000)

1. Write the word WASTE on the board. One by one, ask students to give you one word that they associate with the
2. term waste. Write all these words on the board.
3. Ask the class to look at all the new words. Introduce the term biodegradable (i.e. something that is able to break down – rot, decay, decompose – through natural processes e.g. Non-biodegradable: plastic, metal and electronics etc.,) and ask students if they know what it means. Can they find an example of a biodegradable item in the list of words? Or a non-biodegradable item?
4. Ask students to tell you what the three R's represent (i.e., reduce, re-use, recycle)
5. Divide the class into six groups. Assign each group a category from the following list. Ask students to put words from the list on the board that fit within their category. The categories are: • Biodegradable • Non-biodegradable • Recyclable • Re-usable • Reducible • Non-recyclable, non-re-usable, non-reducible
6. Ask each group to read out the words they placed in their category. Which categories had the least number of words in it, which the most? What does this tell us about the waste we produce?
7. Ask the class to examine the words on the board again, and this time to find words which are natural waste. Ask which category they fit in.
8. Ask students whether they witness burning leaves in autumn in their community. What are the consequences of burning leaves? How can households get rid of accumulated leaves in autumn?

Alternative to burning:
One way of getting rid of the leaves will be to turn them into compost by mixing them with nitrogen source, for example, livestock manure.
Another alternative can be to mulch the dry leaves. This will provide many benefits, including weed suppression, moisture conservation and moderation of soil temperature.

During Excursion: Biodegradable waste (Adapted from: Alberta Environment 2000)

Equipment: trash bags, rubber gloves, a rope
Students search and collect garbage from different locations (river shore, on land).
Ask them to categorize the collected garbage according to the waste decay time.
Procedure:
Lay the rope on the ground and explain the learners that the rope represents a decomposition time-line. On one end of the rope place a leaf, indicating that the leaf represents items that will decay the fastest. The other end is for materials that decay the slowest. Ask students to pick an item out of the garbage and place it on the time line. Ask them to try to form different categories of garbage (e.g. hard plastic, plastic wrapper, glass, foil, paper, and wood).
Once learners are finished, review the timeline.
Start discussion on the following questions:
• Approximately how many years will it take before all these garbage decomposes? (after discussion of this question distribute the "Waste biodegradation times" as a handout to each student)
• What changes could be made with these products to make them more compost- friendly and reduce the amount of waste in landfills? Why don't we do it?
• Are any plants or animals going to decompose these materials?
• How does all this waste make you feel?
• What happens to all the waste we currently produce?
• What can we do to cut down on the amount of garbage we produce?
• What can students do personally to make a difference?

Burning leaves is very bad because it does not only pollute environment but also damages human health. Leaves play a very important role in top soil layer formation, nutrition cycle, water, evapotranspiration cycles and macrobiological processes. They also prevent erosion. Repetitive tillage and burning vegetation leads to degradation of soil's microenvironment.
Leaf smog causes health problems e.g. coughing, wheezing, chest pain, shortness of breath and sometimes long-term respiratory problems. Leaf smoke may also contain hazardous chemicals like carbon monoxide, which can bind with haemoglobin in the bloodstream and reduce the amount of oxygen in the blood and lungs. Another noxious chemical commonly present in leaf smoke is benzo(a)pyrene, which causes cancer in animals and is believed to be a major factor in lung cancer caused by cigarette smoke. Breathing leaf smoke can irritate the eyes, nose and throat of healthy adults; it can damage small children, the elderly and people with asthma or other lung or heart diseases.

Waste biodegradation times
Paper: 1-3 months
Wood: 15 years
Plastic bag: 10-20 years
Plastic milk bottle: 50-80 years
Rubber sole: 50-80 years
Tyre: 120 years
Tin can: 50-100 years
Aluminium can: 150-200 years
Plastic bucket: 400 years

Post Excursion (Role play on efficient waste management)

Objective:
• to illustrate the complexity and interconnectedness of issues
• to develop students' argumentation skills and abilities on resolving issues
• to expose students on different viewpoints of different stakeholders
Target age group: high school students, young adults.

Procedure:

After the field trip, to consolidate knowledge learners, take part in a simulation game.

1. First explain the hypothetical situation.

2. Then distribute the roles (elect learners or have them choose the roles). Give out the handout with the description of their role. The rest of the learners represent local people, explain their position to them.

3. Give learners time to brainstorm ideas for their roles.

4. Invite learners to open a town meeting.

5. Each representative introduces him/herself and presents his/her position (5 mins each).

6. After the floor is open for a discussion which focuses on identifying underlying reason of the problem. The next step should be a discussion of possible solutions. At the end, all the actors need to come to a consensus on the measure that would be taken to solve the problem (**possible solutions**: local people should address local authorities requesting to solve such administrative problems; modify waste trucks' schedules; locate more waste containers; provide financial support or/and renew the waste collecting vehicles; organize workshops on the negative effect of burning leaves and how to manage leaf waste, etc.)

Hypothetical situation: The district is negatively affected by rampant burning of leaves and unregulated household waste which is thrown away at undesignated places. There is an accumulation of rubbish in an area which is causing discontent among local people because the neighbouring household suffer from bad smell, unpleasant scenery and insect infestation. Thus, a town meeting is being organized where different actors are meeting to discuss the reasons for such behaviour and how this problem could be solved.

Roles

- Local Governor

You should listen to the different stakeholders and try to understand the underlying reason for the problem by asking questions. Accordingly, at the end, you should decide what local authorities will do to solve this problem and how to support local people or the waste management company (e.g. Maxsus Trans).

- Makhalla chairman

You represent the people who are being accused of throwing the in areas where the rubbish is not collected by the waste management team. Additionally, leaf burning by locals during autumn causes discontent of local authorities. You should tell the authorities the main reasons for such behaviour (e.g. seldom collection of waste by waste collection vehicles, absence of waste containers etc.) Their reasons for burning leaves is that, such methods are used by most people and it is effective and a simple way of getting rid of leaves.

- Waste management team (2 or 3 learners)

The waste management team works according to the schedule that is given by local government. From time to time, due to old vehicles and machinery, the truck need to be repaired. The problem associated with old and obsolete machinery disrupts the timely schedule of the waste management team.

- Local people

You are said to pollute the surrounding by throwing away waste in an uncontrolled manner and burning leaves in autumn. In reality, it is the management company that does not properly execute their tasks particularly they do not regularly collected waste and the time span of collection is too long. They should collect waste more often. Thus, you have to somehow get rid of the waste from your backyard.

Appendix 7. Field trip activities (Taken from: Gille 2013)

Colours

To develop observation and concentration, learners are asked about the number of colours they can see from where they are sitting or standing.

Treasure hunt

This activity helps learners to get familiarized with the area and its natural cycles. Ask learners to pair up and not removing anything from the area, to note down what they see. The activity concludes with the ESD educator asking random questions. Questions may include:

Find something fragile • Find something old • Find something burnt • Find something dead • Find something dehydrated • Find something that is growing with difficulty • Find something that is decomposing • Find something that is influenced by man • Find something that is affected by animals • Find a place where nothing grows.

Alternatives

In order for learners to imagine alternative forms of the area, they must first observe it in a systematic and critical way: "Can you imagine what this place would be like if there was no concrete, no electricity, no aluminum, no roads, no green or no available water?

Interventions

Learners imagine that they can change something in the surroundings in order to satisfy their own needs. Ask them to tell what they would change and why. Encouraging observation skills, expressing needs and critical thinking are additional skills that are cultivated. "What would you add to the surroundings to make it more familiar?", "Is there something you would like to change in this factory, community, neighbourhood, forest? Why?"

Appendix 8. Debate

Background:

There are two sides in a debate, known as the Affirmative (or Government) and the Negative (or Opposition). The reason to divide students only into two groups is to give a chance for all participants to take part in the debate. Ideally, the resolution is announced or known by participants so that they can research on the topic beforehand. The facilitator can be the time keeper or s/he can elect one participant to be timekeeper.

Steps

1. Establish rules and timelines (e.g. to listen each other's argument until the end, do not interrupt the speaker, keep to the allocated time)
2. Divide group into two sub groups.
3. Give time to both sub groups to brainstorm the ideas on the topic and to organize themselves. Make sure both subgroups have separate space so that they cannot hear each other's arguments prior to the start of debate.
4. You should either select or let the subgroups select the presenters (e.g. 4 participants) where each of them will present separate arguments on the topic.
5. In one room or space, the sub groups should sit ideally facing each other.
6. The affirmative group should start first, the first presenter presenting himself and his/her argument for 5 mins. Time keeping is important. Encourage the opposing group to take notes of the arguments. After each presenter from the affirmative group presents their arguments, invite opposing group to do the same.
7. Afterwards, each team can ask conflicting question and rebut the arguments presented by counter group.
8. At the end of the debate, give each subgroup a chance to come up with rebuttal statements and present them.

Post-debate Discussion and Assessment

Conclude the debate by giving feedback (on how they conducted and what the strong arguments were) on each group's performance. Praising the strength or positive points is a strong encouragement for the participants. Most importantly, get learners' feedback on discussed topic, whether they have learnt something new and whether their attitudes on the matter have changed.

Possible Resolutions:

Only the governments are responsible for dealing with climate change.

Endangered species should be protected by the governments.

School uniforms should be compulsory.

Animals deserve to have rights.

Governments must invest more in renewable energy.

Agriculture should be sustainable.

Environmental laws should be stricter.

Measures should be taken to protect the forests.

Humans are to blame for certain animal extinctions.

The water should be privatized so that it is more efficiently used.

Building hydroelectric dams should be restricted as they have detrimental effect on environment.

Appendix 9. Global thinking Activity (Adapted from Berkmüller, 1992)

This is a case study activity which aims to develop learners' critical and global thinking skills and influence their affective learning.

Procedure:

Explain the situation to the learners.

Ask students to read the summary version 1.

Encourage the students to discuss the four given questions in pairs.

Ask one pair to reflect on what they discuss, opening a floor to a whole group discussion.

Ask students to read the second summary version 2.

Ask students the differences between thinking globally and not thinking globally.

Situation:

The national parks and tourism department of a Latin American country hires the foreign consultant, Morgan Swift to investigate problems of the El Ato wildlife refuge. They ask him to state the causes of the problem, possible consequences and to give recommendations.

Summary version 1:

El Ato is one of the locations where the endangered bat-eater can be found in a viable population. The species is extremely sensitive to the disturbance and is now in the most remote forest area.

Local people catch these bats and sell them in the live animal trade for consumption. Consequently, the population of bat-eaters have declined sharply. If this continues, the species could be at a risk of survival and face possible extinction in this area within five years.

Extinction at the El Ato would diminish the recreational value of the reserve because tourists come mainly to see this rare mammal.

The local people are allowed by an informal agreement to collect brushwood and other forest goods in the area where logging takes place. Sections of the refuge which are open to commercial, selective logging are located not far from bat-eater habitat.

Uncontrolled destructions by the locals are the main problem. That is why, it is recommended that the current practice of locals using forest goods should be stopped by prohibiting the entry to the refuge. When needed, the people who fail to obey these instructions should be prosecuted.

Questions:

1. Do you agree with Morgan's summary? Why?
2. What are underlying reasons of why the bat-eater species are under threat?
3. Did Morgan think globally? Why?
4. What would you recommend?

Summary version 2

The commercial logging takes place in the refuge. During this process, heavy machineries are used and logging roads are made. These activities have bad effects.

The main negative effect is that, logging destroys the natural habitat of forest animals, including bat-eaters. In addition, logging roads have opened an access for local people who can now catch bat-eaters easily.

It is recommended that commercial logging is stopped in the refuge. Educational programmes should be established for local people to understand the importance of bat eaters.

Additionally, locals should be legally allowed to use the forest goods in logging zone in exchange of them protecting the bat-eater. Additionally, there should be an international ban on live animal trade which stops putting endangered species in danger.

Not a global thinking	Global thinking
-Takes a narrow view of the problem: reduction of bat eater -Identifies apparent causes: local people -Offers single solutions: law to prohibit local people from refuge	-Takes a differentiated view: habitat reduction -Identifies underlying causes: commercial logging and international trade -Proposes more solutions: stopping commercial logging, cooperation with local people, fighting against animal trading -Put local events into regional, national, international context -It places responsibility where it belongs and identifies the diseases rather than symptoms.

Appendix 10. Writing a brochure

Asking learners to create brochures on LABR could be good way of developing creativity, encouraging participation. Using the brochures created by students in the LABR visit centre as an exhibition or distributary object would give students the feeling of contributing in conservation. This would motivate students to prepare better brochures and encourage participation. Thus, let them know that the brochure prepared by them will be put in LABR visit centre before they start writing it. Ideally, conduct the lesson after students have visited LABR where they have collected LABR brochures.
Step 1. Ask the whole group of students following questions:
1. What do you know about LABR?
2. How did you obtain the information about LABR?

3. What are the ways of getting more information about the biosphere reserves (Mass media: TV, radio, Internet websites, newspaper, brochures/leaflets, word-of-mouth etc.)?

Ask students to look through the brochures that they obtained/or you distributed about LABR. Then ask them to discuss following questions in pairs:
1. What new information have you learnt about the place from the brochure?
2. Can you understand the information that is given on the brochure?
3. Who is the target audience of the brochure (kids, teenagers, adults, scientists etc.)?
4. Do you find the brochure interesting? (why/why not?)
5. Are there any pictures or illustrations that you find interesting?
Afterwards, you can ask a couple of pairs to tell what they have discussed and giving feedback on their discussion, tell the students that they are going to practice writing a brochure.
Step 2. Tell students to choose the topic for brochure from the following:
   1. Flora and fauna in LABR
   2. What is biosphere reserve
   3. Bukhara deer
   4. Ecosystem services
   5. Cultural heritage in the area
Students need to consider and identify the following point before they start writing:
• Topic
• Audience
• Purpose of writing (inform or persuade)
• Include necessary information (name of the place, address, phone number, visiting hours)
• Make the brochure attractive (language should be clear, understandable; tools like asking question to raise interest in the audience; use of picture or drawings)
While students are writing their brochures, make sure that they are in the right path by monitoring what they do. You should interfere only when the student is doing it wrongly. When they finish writing their draft brochures, ask them to compare it with their partners by filling out this form:

In brochure:	Have I done this?	Has my partner done this?	Teacher's comment
use facts			
structure your content clearly and logically			
use an attractive heading			
use a picture or illustration			
split your writing into boxes			
use positive language			
give necessary information: name, address, telephone, e-mail			

Table adapted from: www.leics.gov.uk/information_leaflet_-_ladder.doc

As homework, tell the students to improve and prepare the final version of the brochure for the next lesson. Let them know that they do not have to prepare brochures only by printing them with high quality pictures. Writing them neatly by hand or drawing and painting is actually a very welcomed practice since it shows the authenticity.