Evaluating the effectiveness of Long-Term Integrated Research and Conservation Education Program, Azerbaijan

By Yelena Gambarova

NATIONAL STRATEGY
of the Republic of Azerbaijan on Conservation and Sustainable Use of Biodiversity for 2017-2020

Order

of the President of the Republic of Azerbaijan

on Approval of "National Strategy of the Republic of Azerbaijan on Conservation and Sustainable Use of Biodiversity for 2017-2020"

Following item 32 of Article 109 of the Constitution of the Republic of Azerbaijan, and according to Article 6 of UN Convention "On Biodiversity",
I hereby decide:

1. To approve the "National Strategy of the Republic of Azerbaijan on Conservation and Sustainable Use of Biodiversity for 2017-2020" (attached).

2. To appoint the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan as a coordinating authority for the implementation of the National Strategy approved by the 1st part of this Order.

3. The Ministry of Ecology and Natural Resources of the Republic of Azerbaijan should inform the President of the Republic of Azerbaijan on the activities performed for the implementation of the National Strategy not less than once per year.

4. The Cabinet of Ministers of the Republic matters arisen from this Order.

Ilham Aliyev
President of the Republic of Azerbaijan
Baku City, 3 October, 2016

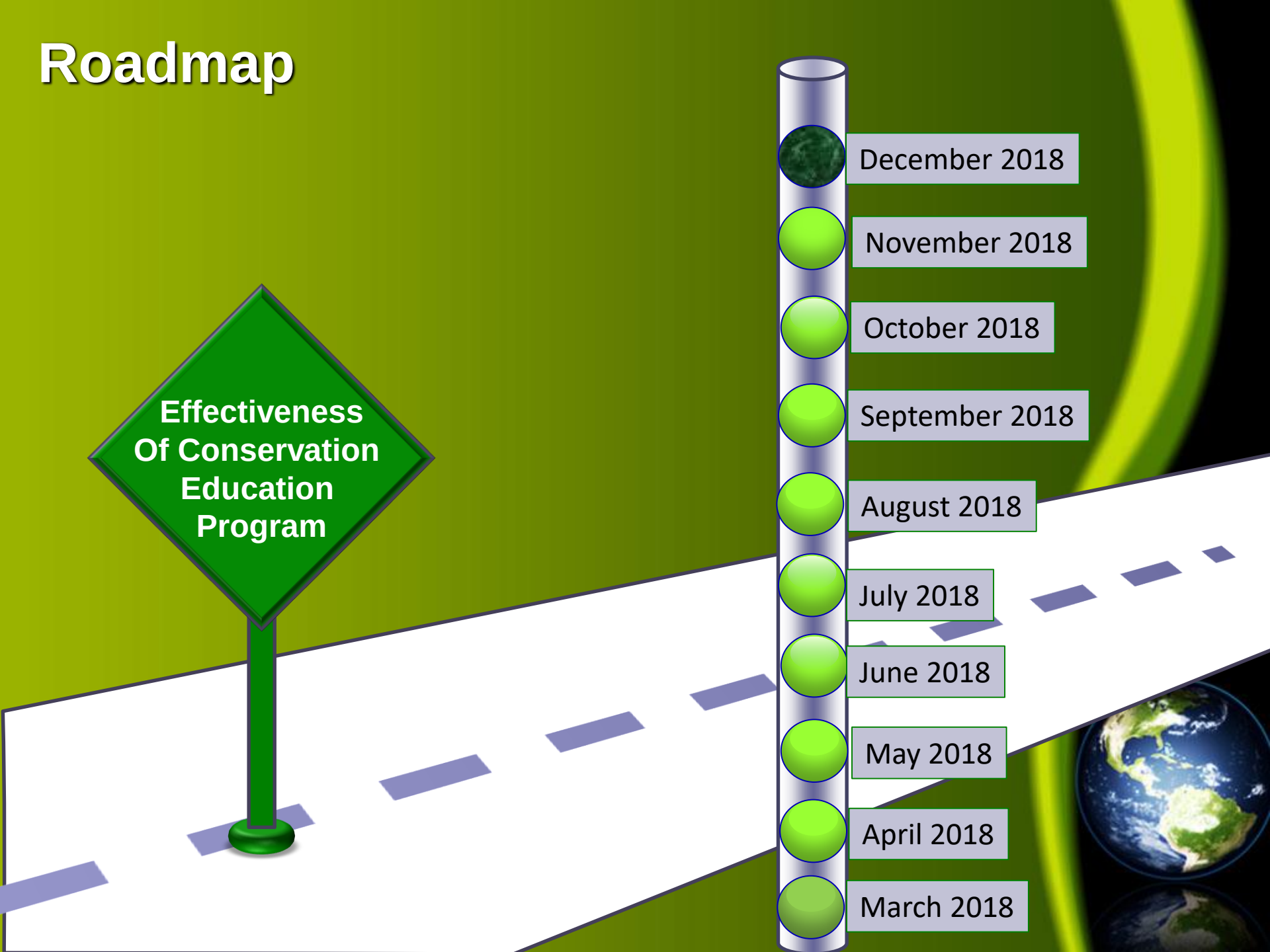
6. Action Plan of the Republic of Azerbaijan on Conservation and Sustainable Use of Biodiversity

No.	Activities	Outcomes	Implementing organizations	Implementation period (per year)
1	2	3	4	5
6.1. Ensuring broad extension of environmental education in the society for improving awareness of population on biological diversity and ecosystem services				
6.1.1. By 2020 reflection of the issues related to biodiversity and ecosystem services at all levels of education, mobilization of the required resources and increasing the knowledge of the relevant staff.				
6.1.1.1.	Increasing number of issues related to environmental protection, biodiversity conservation and ecosystem services at different levels of education.	knowledge of the students on the protection of environment, conservation of biodiversity and ecosystem services will increase	MEdu, MENR	2017-2020
6.1.1.2.	Providing detailed information on biodiversity and environment in the textbooks	detailed information on biodiversity and environment will be provided in the textbooks	MEdu, MENR	2017-2020
6.1.1.3.	Supporting environmental education centers in order to increase knowledge and education of school children on ecology.	the efficiency of the environmental education centers will increase	MEdu, MENR	2017-2020
6.1.1.4.	Establishing of information, resources and training centers on conservation of biodiversity and strengthening technical potential to increase capacity and skills of human resources	the level of knowledge and skills of personnel working in the fields related to environment will increase	MEdu, MENR, MAgr	2017-2020
6.1.2. By 2020 strengthening the actions for increasing the capacity of existing eco-tourism and use of the potential in the country				
6.1.2.1.	Developing of public awareness and promotional materials about biodiversity, and particularly about the national parks of the Republic of Azerbaijan	components of national parks and biodiversity will be promoted, promotional information will be disseminated	MENR, MNS, MEdu	2017-2020
6.1.2.2.	Expanding the database on tourism potential of specially protected areas.	database on different ecotourism opportunities aiming at the development of tourism of the republic	MENR, MNS,	2017-2019

Project name:

Evaluating the effectiveness of Long-Term Integrated Research and Conservation Education Program, Azerbaijan

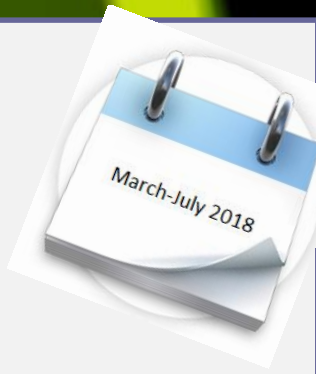
Roadmap


Effectiveness Of Conservation Education Program
December 2018
November 2018
October 2018
September 2018
August 2018
July 2018
June 2018
May 2018
April 2018
March 2018

Agenda Points

Information to Interested Audiences	Nov
Final Data analysis Assessment Results Evaluation	October
Data processing and quantitative data analysis	Sept
Preparation to analyzing the data	August
Identify of steps of evaluation process Adaptation of Donald Kirkpatrick evaluation model	July
Exam implementation 2	June
Exam implementation 1	May
Development of Lesson plan, Exam Application Form and post- tests and topics list	April
Development of Project Management plan and Road map. Development of Metric for monitoring project progress	March
	Dec

Monthly Plan



Mar

- Development of Project Management plan and Road map
- Development of Metric for monitoring project progress

1

- Development of Lesson plan, Exam Application Form, etc
- Development of Examination Exercises
- Development of post- tests and topics list.

Apr

2

- Exam implementation
- Field Survey

May

3

- Creation of Evaluation Team
- Identify of steps of evaluation process
- Select of Evaluation Model

June

4

- Adaptation of Donald Kirkpatrick evaluation model
- Creation of tools at every Evaluation Level

July

5

Your logo

Monthly Plan

Measure Project Progress

Preparation to analyzing the data

Aug

6

Data processing and quantitative data analysis

Interim Report to RSG

Sept

7

Final Data analysis

Assessment Results Evaluation

Download this awesome diagram.

Oct

8

Information to Interested Audiences

Download this awesome diagram.

Nov

9

Feedback from Interested Audiences

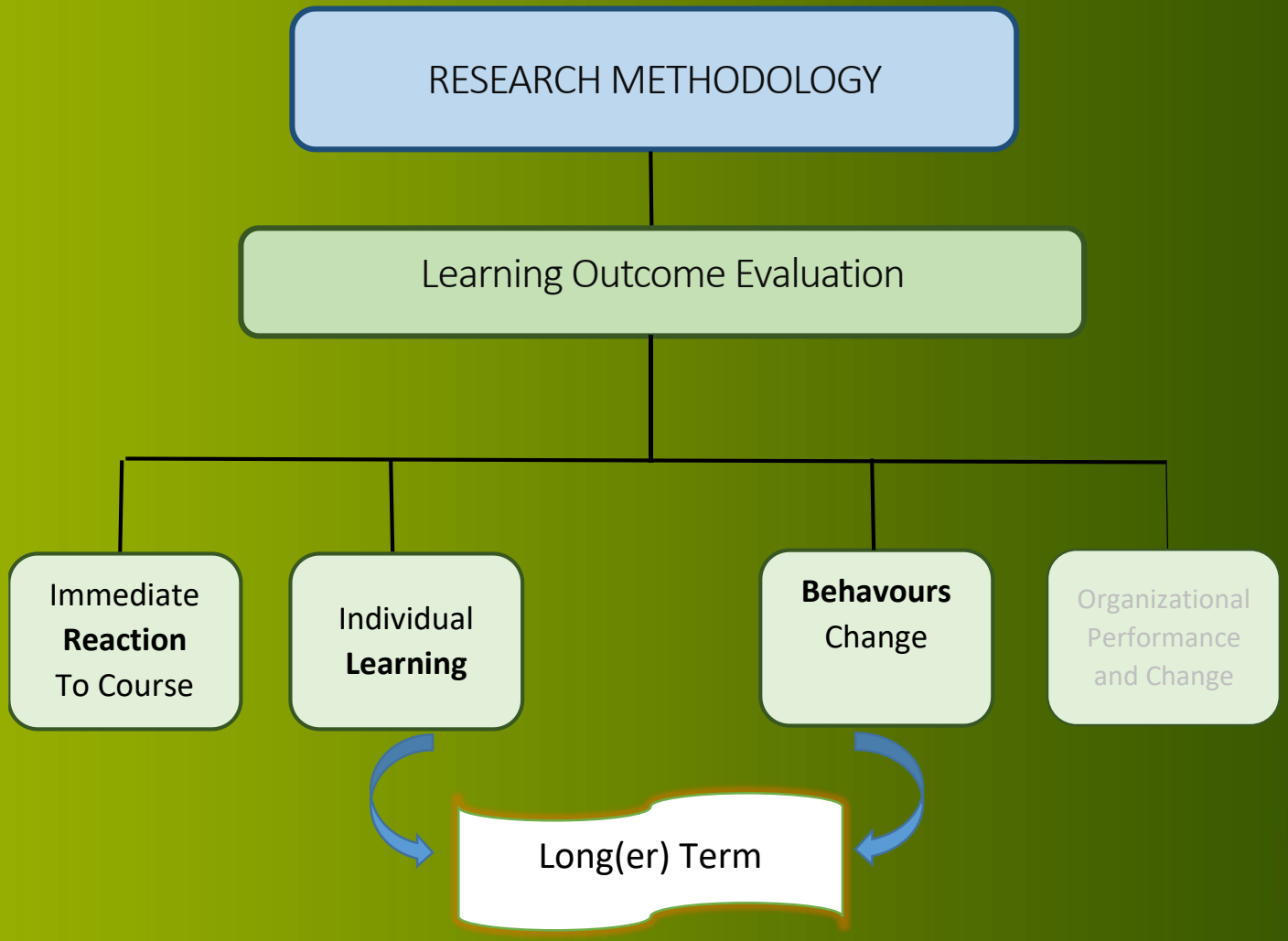
Final Report Presentation to RSG

Dec

10

Your logo

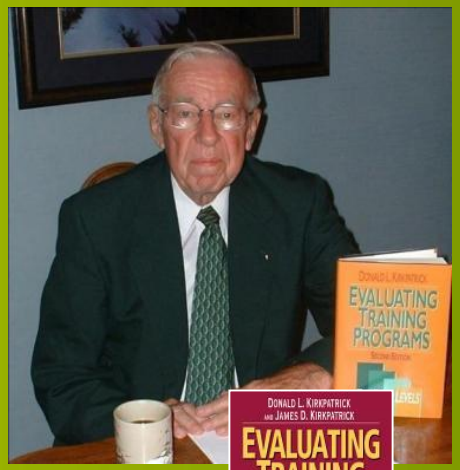
Research Methodology



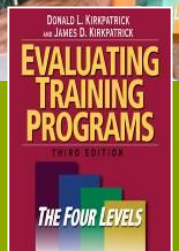
Presentation of Evaluation Method

Don Kirkpatrick Model

- Level 4: Results
- Level 3: Behavior
- Level 2: Learning
- Level 1: Reaction



Dr. Don Kirkpatrick



Presentation of Evaluation Model

Development of exam documentation

Lesson Plan

Assess the effectiveness of conservation education workshops on Azerbaijani students' knowledge about rare vegetation distribution and skills on monitoring of threats to rare vegetation within the "buffer zones" in Gobustan National Park

Lesson Plan

Lesson Plan

Course name: Assess the effectiveness of conservation education workshops on Azerbaijani students' knowledge about rare vegetation distribution and skills on monitoring of threats to rare vegetation within the "buffer zones"

Select Level >>
Beginner
Intermediate
Advanced

Lesson Objectives:

Exam implementation (2-3 days)

The first day will focus on Students' knowledge about and attitudes towards rare vegetation and its threats in Azerbaijan based on the "Rare Vegetation Knowledge Test". The last two days will focus on Students' skills on rare vegetation identification in areas clearly marked by examiners based on the "Special Topic Questionnaire" and "Remote Sensing Exercises".

Lesson Structure:

Rare Vegetation Knowledge Test		
Session Contents	Description	Lesson /Exam Type
Rare Vegetation Knowledge Test	12-15 multiple-choice items with three-four options. These tests assesses biodiversity conservation knowledge and will asked respondents to identify rare plant species. The threats to Rare vegetation; Rare vegetation monitoring; Buffer zones; Vegetation response to Industrial development	Practical

Development of exam documentation

Measurement instrument/ Outcome Indicator

Questionnaires
Respondents list behaviours that they began after the program.

Observations
Observer tests for the presence or absence of a number of behavioural criteria

The student questionnaire which designed to measure the intended outcomes of the conservation education program grouped into four categories:

Category: 1 Environmental Attitudes
Category: 2 Rare Vegetation Knowledge Test (Competency test used in writing to test principles, facts and other knowledge-based objectives)

Category: 3 GIS and Remote Sensing Test / Geographic Information Systems (GIS): Knowledge Base - Remote Sensing Exercises (Demonstrations of skills are particularly useful for evaluating technical skills.

Category: 4 Environmental Behaviours. Measuring Behaviour Changes (1.5 year after the training)

Development of exam documentation

Environmental Attitudes

Environmental knowledge, environmental attitudes and environmental behaviors (Tests/ Questionnaires)

Part 1: Environmental Attitudes

This part of the survey is designed to determine environmental attitudes. There are no right or wrong answers, only differences of opinion. CIRCLE the letter that reflects your true feelings.

Participant responses were rated according to the following scale:

A = Strongly Agree
B = Agree
C = Neutral
D = Disagree
E = Strongly Disagree

1	If a rare plant is of no use to humans, then we do not need to waste our time trying to protect it.				
	A	B	C	D	E
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2	If I had to choose between protecting rare vegetation and creating homes for humans, I would choose to protect the plants.				
	A	B	C	D	E
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
3	Industries should have to pay for any pollution they cause				
	A	B	C	D	E
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4	There is no point in getting involved in environmental issues (including protecting rare vegetation), since governments and industries have all the power and can do whatever they want to.				
	A	B	C	D	E
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	I am interested in spending time working to help the environment, even though I realize this will cut into my free time.				
	A	B	C	D	E
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

Development of exam documentation

Part 2: Environmental Behaviors

This section of the survey is designed to find out what things you do about the environment. There are no right or wrong answers, so don't worry if you have never done any these things, and don't worry if all your tick marks end up in the 'N' column. We ask only that you be truthful as you answer these questions.

Mark the answer that is closest to the right answer for you:

N - stands for never or no
R – stands for rarely (three or four times a year
S – stands for sometimes (three or four times a month)
U – stands for usually, or yes (most of the time you have the chance)

	N	R	S	U
I read literature on flora and fauna in Azerbaijan, which is endangered by industrial waste, only in my spare time and for fun				
I talk with friends and colleagues about helping rare vegetation in Gobustan				
I am a member of an environmental club or group				
I appeal to responsible persons and politicians with questions about protection of rare types of vegetation in our country				
I'm involved in projects to improve the environment				

Questionnaire No.	Total	Yes	No	Difficult to answer
A. Implementation at my workplace practices resulting from the course				
B. I am continuing work on the three problems that were presented during the previous course				
- Definition of rare vegetation types in Gobustan				
- Identification of threats of rare types of vegetation in situ using GIS and Remote Sensing technologies				
- Public relations with stakeholders on conservation of rare vegetation types				
C. I am involved in the work on projects that contribute to improving the environmental situation in our country				
Overall				

Development of exam documentation

Competency tests used in writing to test principles, facts and other knowledge-based objectives

Rare Vegetation Knowledge Test

Demonstrations of skills are particularly useful for evaluating physical (technical) skills. It is a type of observation conducted in a controlled environment, as similar to the real work situation as possible.

GIS and Remote Sensing Test

Development of Exam Exercises

Rare Vegetation Knowledge Test

Environmental knowledge, environmental attitudes and environmental behaviors (Tests/ Questionnaires)

Rare Vegetation Knowledge Test		
Session Contents	Description	Lesson /Exam Type
Rare Vegetation Knowledge Test	10-12 multiple-choice items with three-four options. These tests assesses biodiversity conservation knowledge and will asked respondents to identify rare plant species. The threats to Rare vegetation; Rare vegetation monitoring; Buffer zones; Vegetation response to Industrial development	Practical

ASSESSMENT

Rare Vegetation Knowledge Test Pre/Post Test Answer		

This multi-alternative test consists of 10 multiple-choice questions about the distribution of rare vegetation types common in the Gobustan National Park.
Each question has four answers. Please select the answer that you think is correct.

Q1 *In your opinion, which of the following definitions of the region is correct?*

- ☐ South-Eastern part of the Republic of Azerbaijan
- ☐ South-Western part of the Republic of Azerbaijan
- ☐ Southern part of the Republic of Azerbaijan
- ☐ Eastern part of the Republic of Azerbaijan

Q2 *In your opinion, what type of habitat for rare species of vegetation is presented for monitoring?*

- ☐ Desert
- ☐ Shrubland
- ☐ Desert\Semi-desert
- ☐ Grassland

Q3 *In your opinion, which of the rare types of vegetation communities to monitor?*

- ☐ Tamarix
- ☐ Suaeda dendroides/Salsola dendroides
- ☐ Salsola Nodulosa/Artemisia Lerchiana
- ☐ Alhagi pseudoalhagi

Development of Exam Exercises

Geographic Information Systems (GIS): Knowledge Base - Remote Sensing Exercises

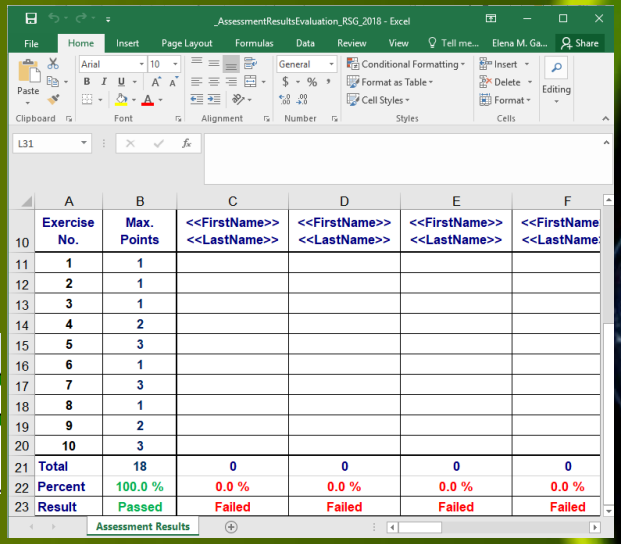
Geographical Data Base design and creation of Specialized GIS Environment
Raster Georeferencing
Establish control points
Input the known geographic coordinates of these control points
Choose the coordinate system and other projection parameters: Projected Coordinate System: WGS_1984_UTM_Zone_39N Projection: Transverse_Mercator

Field Study and Data Recording
Buttons & Pages in your GPS
Getting to know the basic GPS terms
Set Up
Entering a grid reference

Rare Vegetation Classification
Creating training and test signatures from imagery
Maximum likelihood classification
Classification accuracy assessment

Change detection
Comparison of NDVI values within "buffers zones"
Comparison of NDVI values on North-West-East-South parts of the Study area as a single whole

GIS_Remote Sensing – Test



_AssessmentResultsEvaluation_RSG_2018 - Excel

	A	B	C	D	E	F
10	Exercise No.	Max. Points	<<FirstName>> <<LastName>>	<<FirstName>> <<LastName>>	<<FirstName>> <<LastName>>	<<FirstName <<LastName
11	1	1				
12	2	1				
13	3	1				
14	4	2				
15	5	3				
16	6	1				
17	7	3				
18	8	1				
19	9	2				
20	10	3				
21	Total	18	0	0	0	0
22	Percent	100.0 %	0.0 %	0.0 %	0.0 %	0.0 %
23	Result	Passed	Failed	Failed	Failed	Failed

Assessment Results

Monitoring Project Progress

Development of training documentation

Progress Bar

Development of Project Management plan, Road map, Lesson plan, Exam Application Form, etc (100% ready)

Development of Examination Exercises (90% ready)

Adaptation of Donald Kirkpatrick evaluation model (80% ready)

Creation of tools at every Evaluation Level

(90% ready)

Monitoring Project Progress

Development of training documentation	Progress Bar
Development of Project Management plan, Road map, Lesson plan, Exam Application Form, etc (100% ready)	
Development of Examination Exercises (100% ready)	
Adaptation of Donald Kirkpatrick evaluation model (100% ready)	
Creation of tools at every Evaluation Level (100% ready)	

Kirkpatrick Model

Level 1: REACTION

Presentation of Evaluation Method

Exam implementation

Training results

Exam implementation

Kirkpatrick Model
Level 2: LEARNING

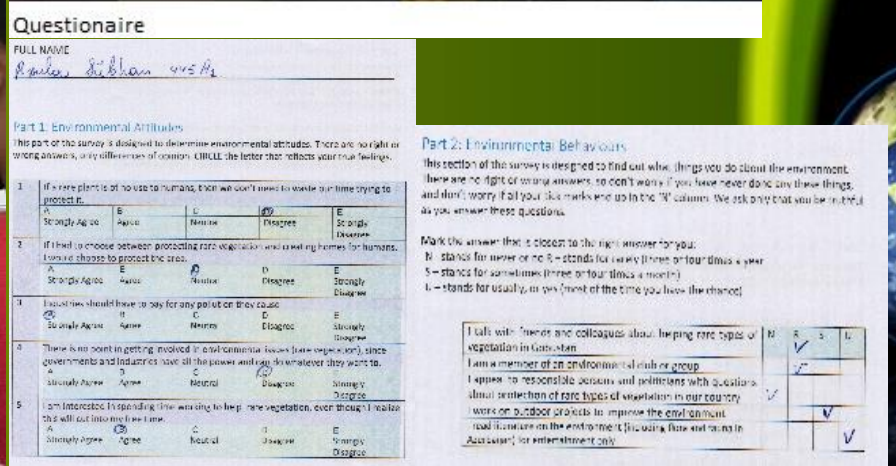
Rare Vegetation Knowledge Test

GIS_Remote Sensing – Test

Exam implementation

Kirkpatrick Model

Level 3: BEHAVIOR



Questionaire

FULL NAME

Part 1: Environmental Attitudes

This part of the survey is designed to determine environmental attitudes. There are no right or wrong answers, only differences of opinion. CIRCLE the letter that reflects your true feelings.

1	If a rare plant is of no use to humans, then we don't need to waste our time trying to protect it.				
	A Strongly Agree	B Agree	C Neutral	D Disagree	E Strongly Disagree
2	If I had to choose between protecting rare vegetation and creating homes for humans, I would choose to protect the area.				
	A Strongly Agree	B Agree	C Neutral	D Disagree	E Strongly Disagree
3	Industries should have to pay for any pollution they cause				
	A Strongly Agree	B Agree	C Neutral	D Disagree	E Strongly Disagree
4	There is no point in getting involved in environmental issues (rare vegetation), since governments and industries have all the power and can do whatever they want to.				
	A Strongly Agree	B Agree	C Neutral	D Disagree	E Strongly Disagree
5	I am interested in spending time working to help rare vegetation, even though I realize this will cut into my free time.				
	A Strongly Agree	B Agree	C Neutral	D Disagree	E Strongly Disagree

Part 2: Environmental Behaviours

This section of the survey is designed to find out what things you do about the environment. There are no right or wrong answers, so don't worry if you have never done any these things, and don't worry if all your tick marks end up in the "N" column. We ask only that you be truthful as you answer these questions.

Mark the answer that is closest to the right answer for you:

N – stands for never or no R – stands for rarely (three or four times a year

S – stands for sometimes (three or four times a month)

U – stands for usually, or yes (most of the time you have the chance)

	N	R	S	U
I talk with friends and colleagues about helping rare types of vegetation in Gobustan		✓		
I am a member of an environmental club or group		✓		
I appeal to responsible persons and politicians with questions about protection of rare types of vegetation in our country	✓			
I work on outdoor projects to improve the environment			✓	
I read literature on the environment (including flora and fauna in Azerbaijan) for entertainment only				✓

Monitoring Project Progress

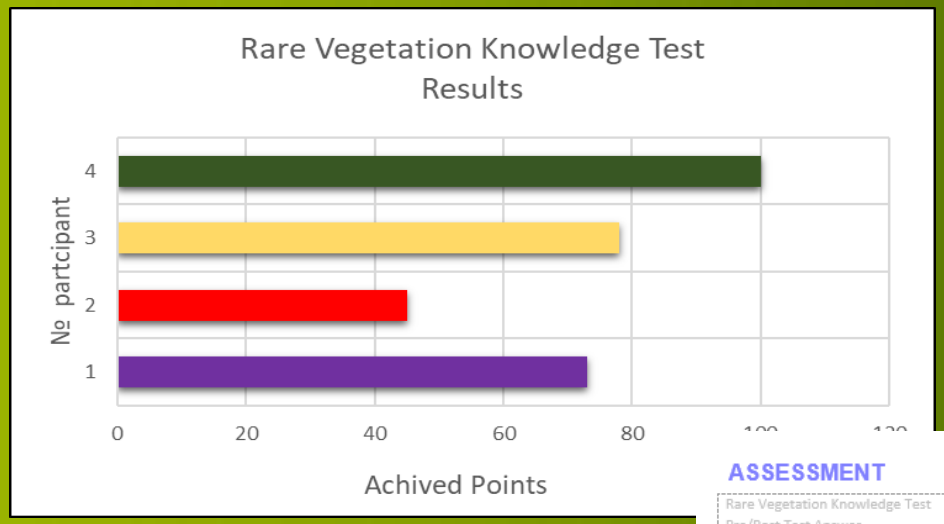
Exam implementation

Progress Bar

- Session 1: “Rare Vegetation Knowledge Test” implementation (100% ready)
- Session 2: Geographic Information Systems (GIS): Knowledge Base – “Special Topic Questionnaire” (100% ready)
- Session 3: Remote Sensing Exercises 100% ready)

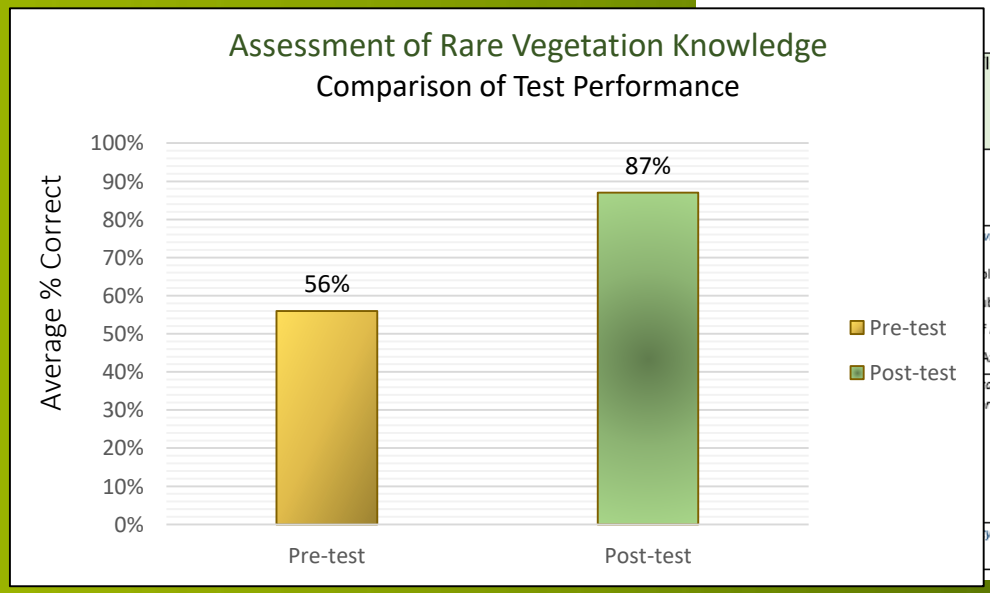
Data processing and quantitative data analysis

Pre and Post Assessment



COMPETENCY TEST

The participants' learning is evaluated by giving them a written test, both before and after the training, with questions on the aspects of rare vegetation mentioned in the learning objective.



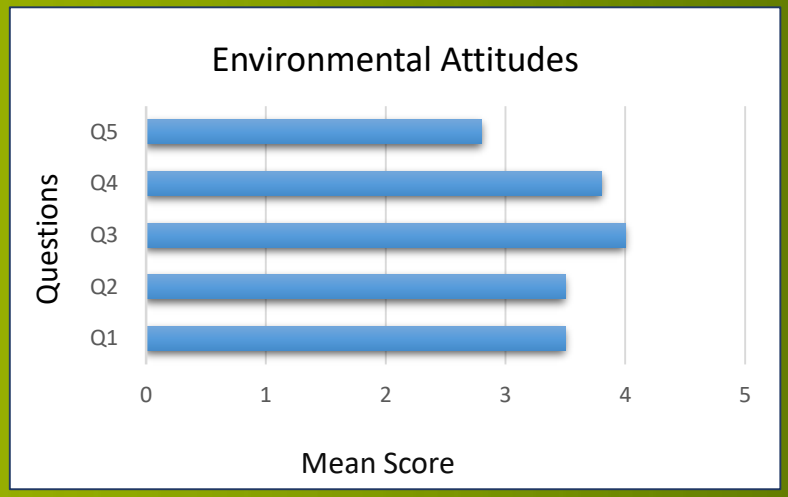
ASSESSMENT

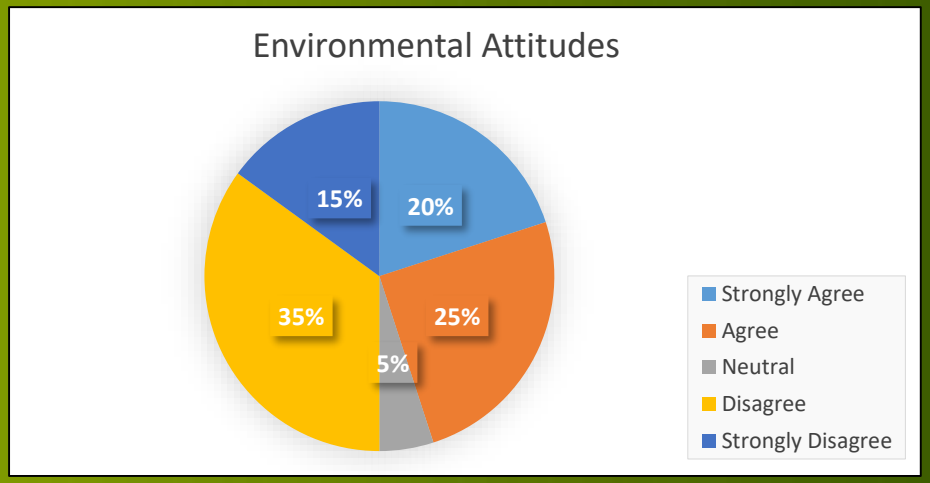
Rare Vegetation Knowledge Test
Pre/Post Test Answer

ION	TOTAL PARTICIPANTS ANSWERED CORRECTLY IN OCTOBER 2016		TOTAL PARTICIPANTS ANSWERED CORRECTLY IN MAY 2018	
	PRE TEST TRUE	OVERALL	POST TEST TRUE	OVERALL
ving definitions of the region	4	4	4	4
blic of Azerbaijan				
blic of Azerbaijan				
Azerbaijan				
zerbaijan				
at for rare species of ring?	0	4	2	4
ypes of vegetation	2	3	3	4

Data processing and quantitative data analysis

Environmental Attitudes





Monitoring Project Progress

Data processing and quantitative data analysis

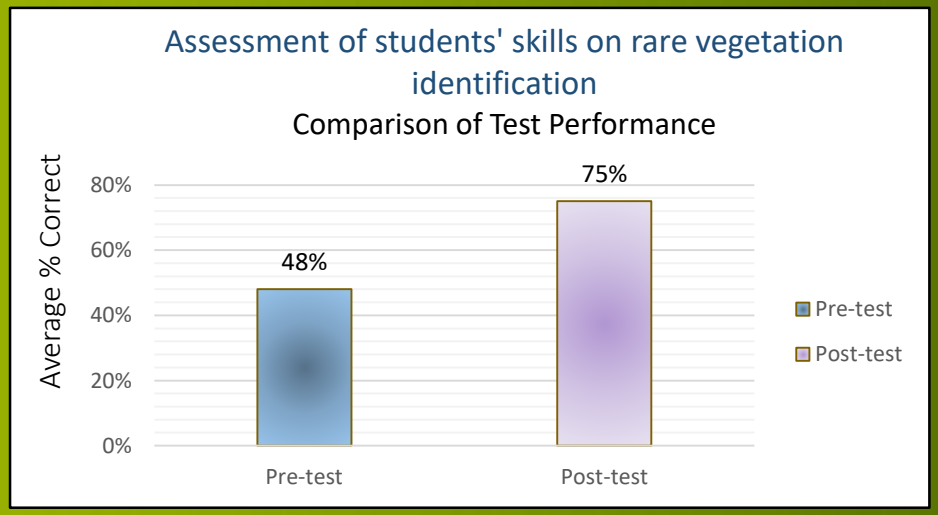
Progress Bar

Assessment Results Evaluation (70% ready)

Final Data analysis (85% ready)

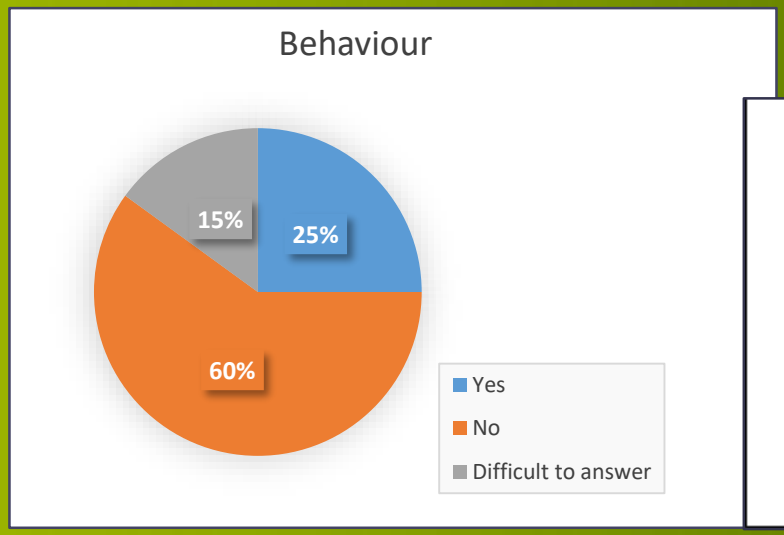
Data processing and quantitative data analysis

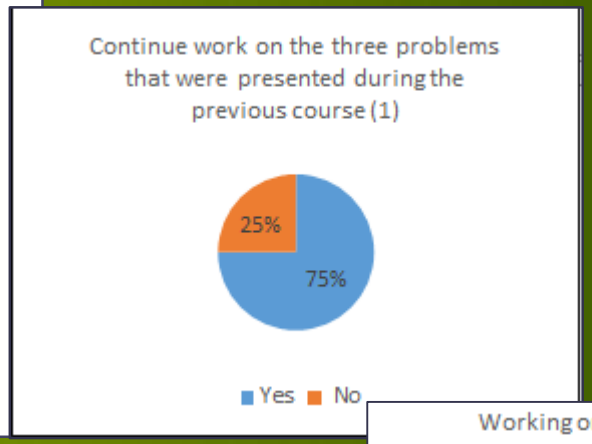
GIS_Remote Sensing – Testing Records

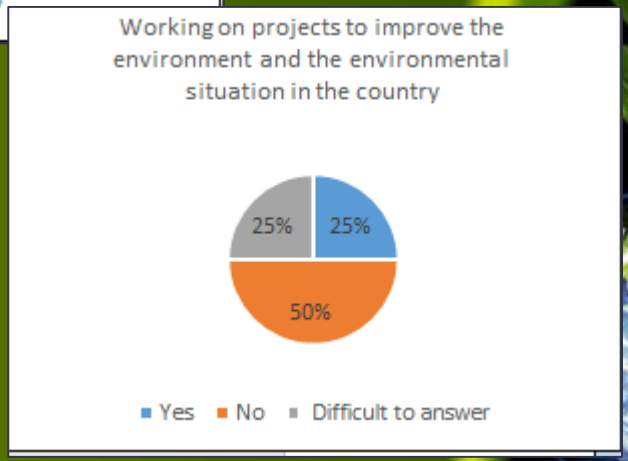


Data processing and quantitative data analysis

Measuring Behaviors Changes



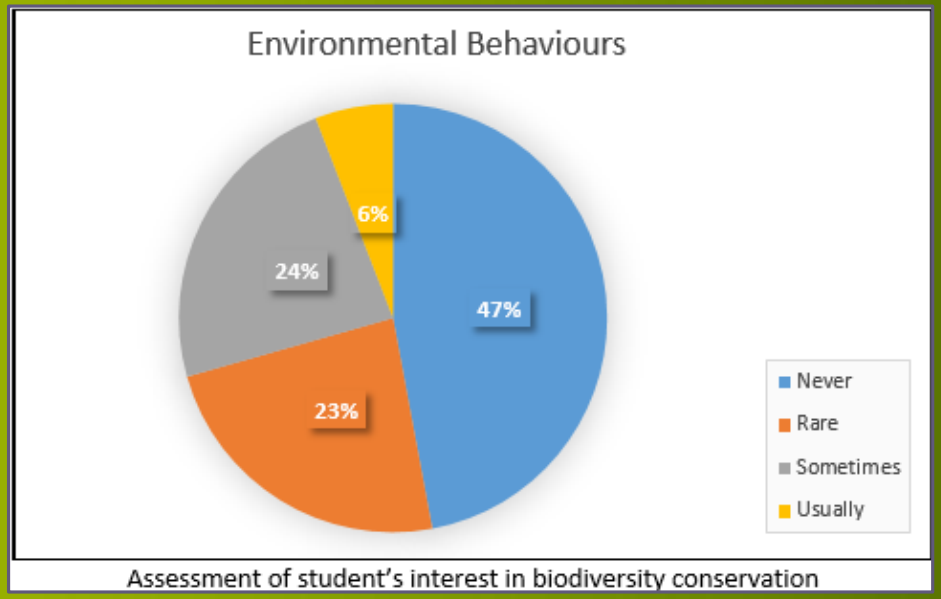




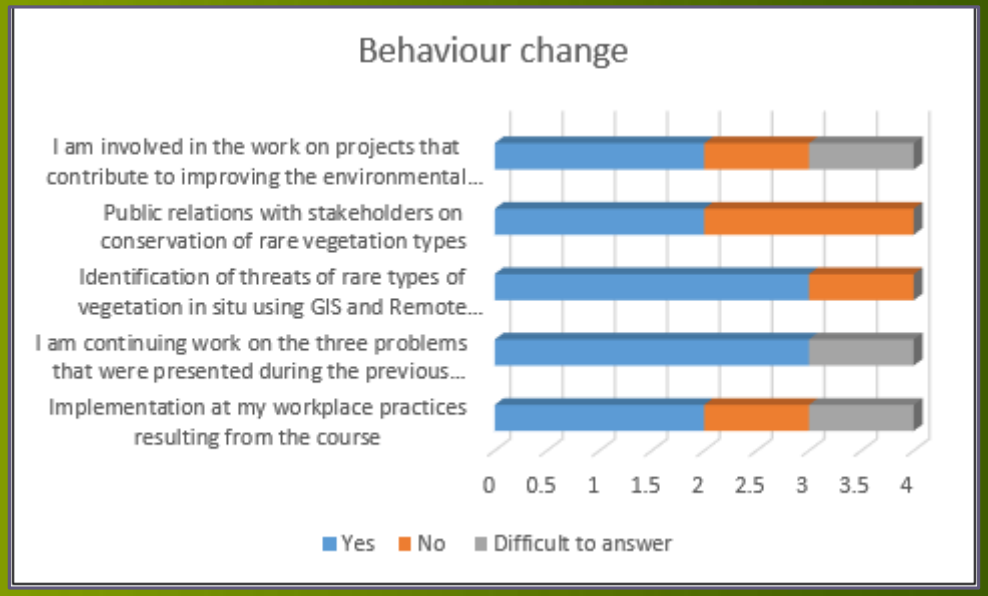
Questionnaire No.	Total	Yes	No	Difficult to answer
A. Implementation at my workplace practices resulting from the course	4	1	2	1
B. I am continuing work on the three problems that were presented during the previous course				
C. I am involved in the work on projects that contribute to improving the environmental situation in our country	4	1	2	1

Data processing and quantitative data analysis

Measuring Behaviours Changes



Assessment of student's interest in biodiversity conservation



Monitoring Project Progress

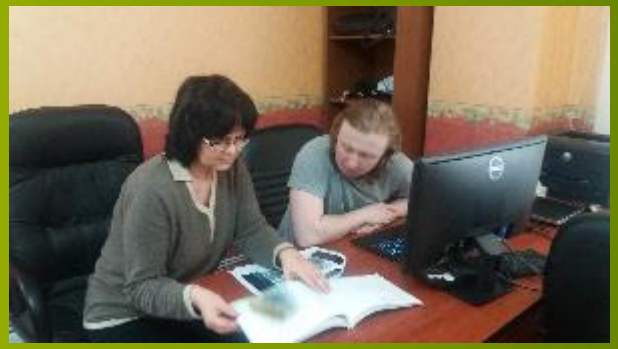
Data processing and quantitative data analysis

Progress Bar

Assessment Results Evaluation (100% ready)

Final Data analysis (100% ready)

Results Summarize the findings



Public Awareness and Understanding for Conservation

Baku.
ART. CULTURE. WILD.

THE ONLINE MAGAZINE ABOUT EVERYTHING

CONSERVATION CORNER: YELENA GAMBAROVA ON RARE PLANT CONSERVATION IN AZERBAIJAN

JULY 23, 2018

Rare plant conservation might not be the sexiest topic in today's headlines, but it's a crucial part of wildlife conservation. Sophie Breitsameter speaks to researcher and scientist Yelena Gambarova about what exactly vegetation conservation involves, the current threats to rare plants in Azerbaijan and how Azerbaijan's nine climate zones affect her work

Yelena Gambarova has been working on rare plant conservation in Azerbaijan for 10 years. In her role as Researcher, Geographic Information Systems and Remote Sensing Specialist at **R.I.S.K. Scientific Production Company**, the race is on to identify and describe potential threats to rare vegetation communities in the country and combat potential extinction in the face of various threats. We speak with Yelena to find out more about her work and the projects that she is currently involved in.

https://baku-magazine.com/conservation/yelena-gambarova-rare-plant-conservation-azerbaijan/

Public Awareness and Understanding for Conservation

United Nations
Convention to Combat Desertification

Conservation Education Program evaluated in Azerbaijan

6 June 2018 – Students from the State National University will take a survey on their environmental knowledge, attitudes, skills and self-reported behaviors to evaluate the outcomes of a project that was launched in 2016 to increase capacity for biodiversity conservation in the Gobustan State National Park. The programme, developed by scientists from the Azerbaijan Institute of Botany and the National Academy of Sciences aims to develop the students' knowledge about the distribution of rare vegetation, skills on monitoring threats to rare vegetation, environmental effects and responsible environmental behaviors. Read more...

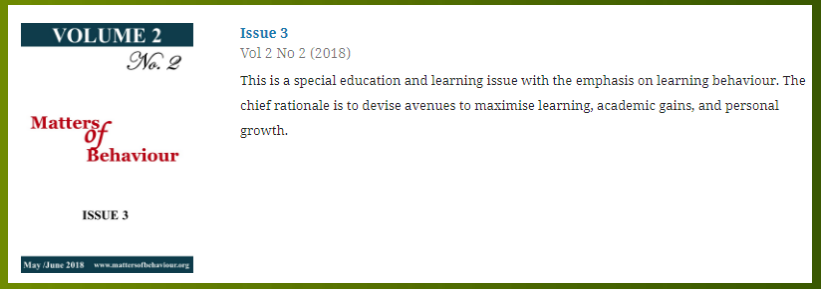
United Nations
Convention to Combat Desertification

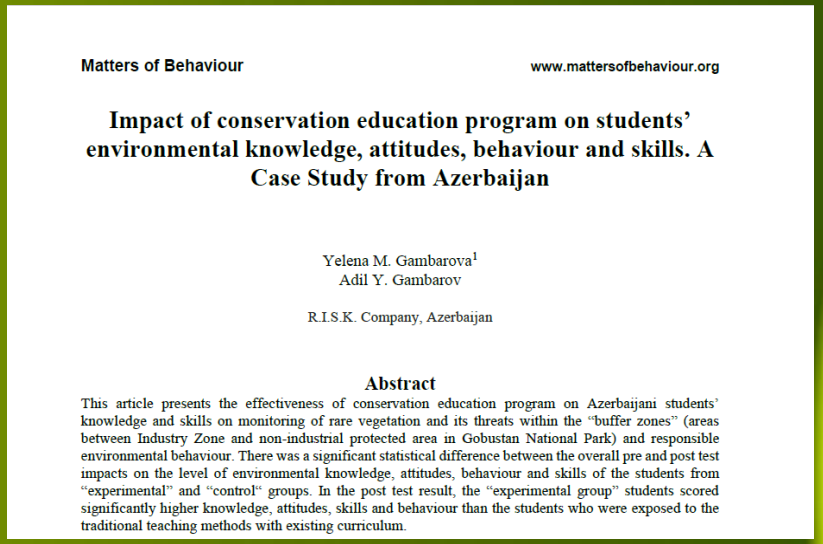
servation education program in
rbaijan demonstrates successful
comes

26 October 2018 – A written evaluation has confirmed the effectiveness of the conservation education programme on rare vegetation conservation in Gobustan National Park, demonstrating that the program participants have significantly increased their knowledge and skills on rare vegetation identification, and their attitudes have became significantly more pro-environmental. The programme, which targeted the students of the State National University, has been launched in 2016 by scientists from the Azerbaijan Institute of Botany and the National Academy of Sciences to develop the students' knowledge about the distribution of rare vegetation, build their skills on monitoring threats to rare vegetation, and educate them on environmental effects and responsible environmental behaviors. Read

https://www.unccd.int/actions/actions-around-world

Public Awareness and Understanding for Rare Vegetation Conservation





Matters of Behaviour www.mattersofbehaviour.org

Impact of conservation education program on students' environmental knowledge, attitudes, behaviour and skills. A Case Study from Azerbaijan

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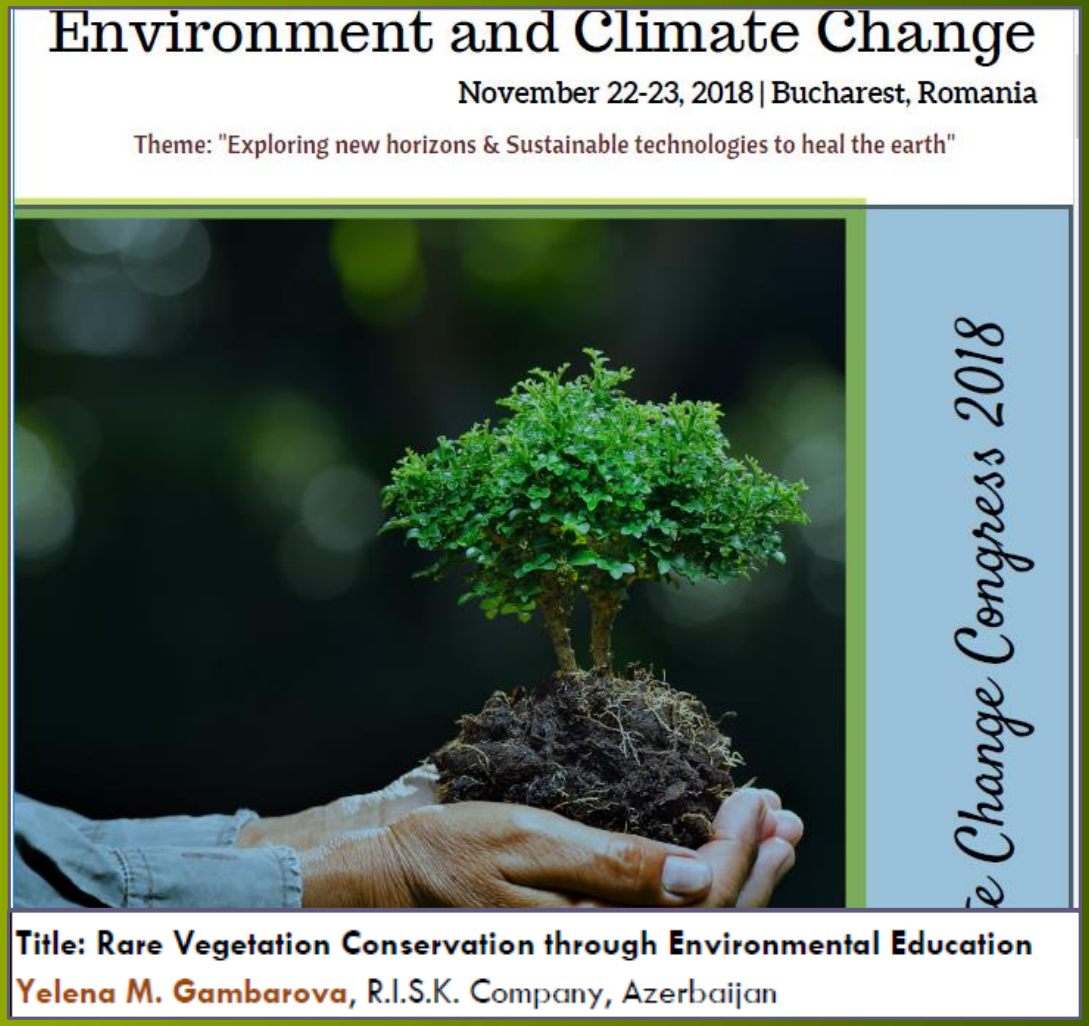
Abstract

This article presents the effectiveness of conservation education program on Azerbaijani students' knowledge and skills on monitoring of rare vegetation and its threats within the "buffer zones" (areas between Industry Zone and non-industrial protected area in Gobustan National Park) and responsible environmental behaviour. There was a significant statistical difference between the overall pre and post test impacts on the level of environmental knowledge, attitudes, behaviour and skills of the students from "experimental" and "control" groups. In the post test result, the "experimental group" students scored significantly higher knowledge, attitudes, skills and behaviour than the students who were exposed to the traditional teaching methods with existing curriculum.

https://ojs.mattersofbehaviour.org/index.php/MoB/article/view/13/8

Public Awareness and Understanding for Rare Vegetation Conservation



Information to Interested Audiences

Information to Interested Audiences

Progress Bar

Meetings (90% ready)

Communication on-line (80% ready)

What's the Next Step?

- Experiences Gained, Recommendations and Lessons Learnt from the project

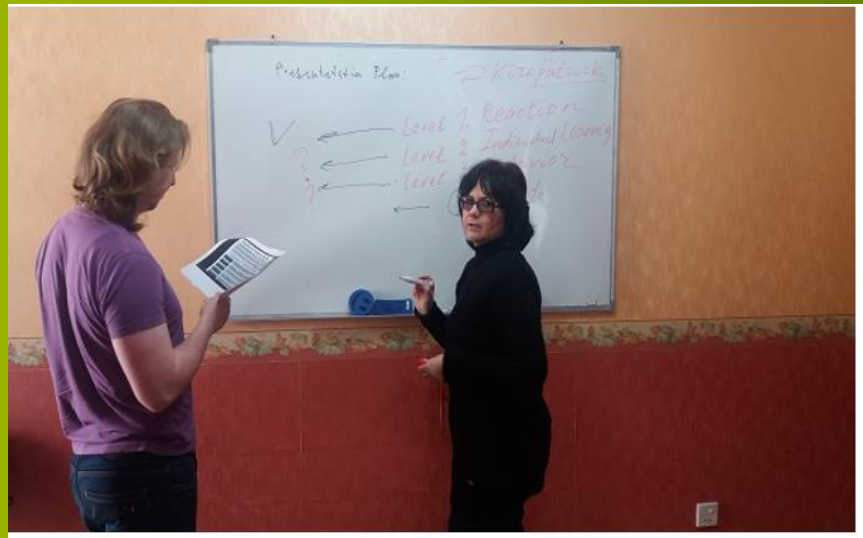
- Conducting a SWOT Analysis for Program Improvement

- Implementing an Action plan for implementation of Kirkpatrick Model Level 4: Results Evaluation_Organizational Performance

What's the Next Step?

Kirkpatrick Model Level 4: Organizational Performance

Action Plan



Action Plan

Overall Intervention Strategy

Level 4: Organizational Level Performance

Level 4: Organizational Level Performance

Action Plan

Overall Intervention Strategy

1. Statement of overall strategy

Continue work on protection of rare vegetation types in Azerbaijan, which can have a profound, long-term impact on the future in the country.

Постановка общей стратегии

Продолжить работу над стратегией защиты редких типов растительности в Азербайджане, которая может оказать глубокое, долгосрочное воздействие на будущее в стране.

Перечень ресурсов, необходимых для осуществления стратегии

A. Лица, которые хотят изучать новые методы работы

B. Лица, участвующие в заседаниях по разрешению проблем

C. Источники финансирования (спонсоры); лица, разрабатывающие учебные программы; люди, которые хотят принять участие в учебной программе

Перечисление некоторых первоначальных задач, которые необходимо предпринять, если стратегия будет успешно реализована

A. Объяснение методов работы; вовлечение людей в сеансы мозгового штурма (решение проблем); спрашивайте людей о том, что им нравится / не нравится в своей работе.

B. Обучение ключевых заинтересованных сторон повышению их способности решать три проблемы; предложить им альтернативы для рассмотрения; облегчить их использование методов решения проблем.

C. Отправить предложение в различные ответственные организации с просьбой об их заинтересованности в проведении предлагаемого плана действий; собирать ответы и анализировать их; направлять резюме отчетов министерствам экологии и государственным предприятиям с просьбой о финансовой / планирующей помощи;

Information to Interested Audiences

Information to Interested Audiences	Progress Bar
Meetings (100% ready)	
Communication on-line (100% ready)	

Development and Implementation of the project have been carrying out with support from:

The Ruffford Small Grants Foundation
www.ruffordsmallgrants.org

ESRI

Thank you for your attention!

Annex 1

Skills development

Certificate_ESRI_Training_2018