AN INTERDISCIPLINARY EDUCATIONAL PROGRAM ON POPULATION GROWTH USING DRAMA AS A TOOL

by

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B.S. in Mathematics, Middle East Technical University, 1997

Submitted to the Institute of Environmental Sciences in partial fulfillment of the requirements for the degree of

Master of Science

In Environmental Social Sciences

Boğaziçi University

2005

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ACKNOWLEDGEMENTS

My endless thanks are to my teachers who didn't let me alone in the most stressfull moments of my thesis study, Ayşenur YONTAR TOĞROL and Miray BEKBÖLET; to my dear husband, Taner ALİBEYOĞLU, whose support and confidence I ever feel; to my family who developed my self-confidence, my confidence in the world and my sensitivity; to my dear friends Didem ÖZERMAN, Nilay YILMAZ, Sema ERAYBAR and Meryem DOĞAN, whose sincerity I am sure of; to a handful of beautiful people of Doğa Community that I encontered in Middle East Technical University (M.E.T.U.); to all people that commit their life to world peace; to Don Quihote of Cervantes; to any children in the world whose powers and sensibilities I never doubt.

AN INTERDISCIPLINARY EDUCATIONAL PROGRAM ON POPULATION GROWTH THAT USES DRAMA AS A TOOL

After the Industrial Revolution in eighteenth century, the gap between human and nature became more visible than the past. Unfortunately, technological and economical developments do not seem as right tools in solving social and environmental problems the world is facing such as racism, poverty, AIDS, climate change, endangered species, wars, atomic and nuclear bombs, loosing cultural diversity, globalisation.

In that sense, environmental education has moved to the countries' agenda as a solution in order to have a more livable environment. Whether population growth is one of the results or reasons of the problems that the earth is facing now, it is obvious that it has a direct relation with social, political and environmental issues.

Environmental education programs, which are learner oriented and based on interdisciplinary approaches, guide for effective teaching and learning environments for the future of the earth, since they emphasize the importance of awareness, knowledge, skills, attitudes, participation and promote a multi perpective look.

The aim of this study is to develop an interdisciplinary environmental education program for 12-14 years old students using process drama technique in order to create an awareness about the factors of population dynamics as well as social, economical and ecological effects of population growth.

DRAMA İLE NÜFUS ARTIŞI ÜZERİNE GELİŞTİRİLMİŞ DİSİPLİNLERARASI ÇEVRE EĞİTİM PROGRAMI

18 yy. gerçekleşen Endüstri Devriminden sonra, insan ve doğa arasındaki uzaklıklar öncesine göre çok daha fazla görünür oldu. Ne yazık ki, teknolojik ve ekonomik gelişmeler dünyamızın karşılaştığı açlık, ırkçılık, AIDS, iklim değişikliği, nesilleri tükenen canlılar, savaşlar, nükleer bombalar, kültürel çeşitliliğin bozulması, küreselleşme gibi sosyal ve çevresel sorunların çözümünde bir araç gibi görünmüyorlar.

Bu bağlamda çevre eğitimi, daha yaşanabilir çevrede yaşamak adına bir çözüm olarak ülkelerin gündemine yerleşti. Nüfus artışı dünyanın karşılaştığı problemlerin ister nedeni ister sonucu olsun, onun sosyal, ekonomik, politik ve çevresel konularla doğrudan bir ilişkisi olduğu açıktır.

Disipliner arası ve öğrenici merkezli çevre eğitim programları, farkındalık, bilgi, beceri, davranış ve katılımın önemini vurguladığı, çoklu bakış açısıyla olaylarına yaklaştığı içindir ki dünyanın geleceği için verimli bir öğrenme ve öğretme ortamına rehberlik etmektedirler.

Bu çalışmanın amacı, 12-14 yaş grubu öğrencilerin nüfus dinamiklerinin yanı sıra nüfus artışının sosyal, ekonomik ve ekolojik etkilerinin farkına varmaları için süreçsel drama tekniğini kullanarak hazırlanmış disiplinler arası bir programı geliştirmektir.

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LIST OF SYMBOLS/ABBREVIATIONS

ANÇEVA	Ankara Governorship Environmental Protection Foundation-Ankara Valiliği Çevre Koruma Vakfı
ÇEKÜL	The Foundation for the Promotion and Protection of The Environment and Cultural Heritage – Çevre ve Kültür Değerlerini Koruma ve Tanıtma Vakfı
DD	Nature Association - Doğa Derneği
EfA	Education for All
EfS	Education for Sustainable Development
ERG	Education Reform Initiative - Eğitimde Reform Girişimi
FAO	United Nations Food and Agriculture Organisation
FEE	Foundation of Environmental Education
GLOBE	Global Learning and Observation for the Benefit of Environment
ICPD	The International Conference on Population and Development
IEEP	International Environmental Education Program
IUCN	International Union for Conservation Nature and Natural Resources
JPI	Johannesburg Plan of Implementations
JDSD	The Johannesburg Declaration on Sustainable Development
MEB	Ministry of National Education - Milli Eğitim Bakanlığı
MIO-ECSDE	The Mediterranean Information Office for Environment, Culture and Sustainable Development
NGOs	Non- Governmental Organisations
NCOEE	North Carolina Office of Environmental Education
SEMEP	South- Eastern Mediterranean Sea Project
SIS	State Institute of Statistics
TEMA	The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats - Türkiye Erozyonla Mücadele Ağaçlandırma ve Doğal Varlıkları Koruma Vakfı
TURMEPA	Turkish Marine Environment Protection Association

TUBITAK	Scientific and Technical Research Council of the Turkish Republic - Türkiye Bilimsel ve Teknolojik Araştırma Kurumu
TÜRÇEK	Turkish Environmental and Woodlands Protection Society - Türkiye Çevre Koruma ve Yeşillendirme Kurumu
TÜRÇEV	Foundation of Turkish Environmental Education - Türkiye Çevre Eğitim Vakfı
UA	National Agency-Ulusal Ajans
UN	United Nations
UNCED	United Nations Conference on the Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNDESD	United Nations Decade of Education for Sustainable Development
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Education Scientific and Cultural Organization
UNFPA	The United Nations Population Fund
UNICEF	The United Nations Children's Fund
USCB	United States Census Bureau
WCED	The World Commission on Environment and Development
WRI	World Resources Institute
WWF	World Wildlife Funds

1. INTRODUCTION

The relation between human and nature has changed especially after the Industial Revolution. When human beings reached the level of Industrial Revolution, occults in nature were being reduced. Man has forgotten the fact that he was a part of the nature and a new philosophy has been established invisibly (Öztürk, 1991).

This new relation between human and nature had different negative impacts on nature. For example, since technologies that were developed based on these needs have been used uncontrolably, the planet faced different environmental problems from time to time (Özer, 1991; Kışlalıoğlu, Berkes, 1993; Şirikçi, 1995).

Human impacts become the reason of many environmental problems not just in local/national level but also in global level. In the last fifty years, environmental issues began to be discussed, moving to world's political and economical agenda, via environmental problems such as overpopulation, global warming, poverty, waste, endangered species, degradation, acid rain, water/soil/air pollution, loosing rain forests.

Many researhes are being run by different organizations such as United Nations (UN), World Wildlife Fund (WWF) in order to understand and measure the level of the human impacts on nature. Some of the findings are;

- The populations of terrestrial, freshwater and marine species declined by about 40 per cent from 1970 to 2000 worldwide.
- Population doubled between 1961and 2000 period.
- Humanity's ecological footprint increased by 160 per cent in the same period. In other words, humanity's ecological footprint in 2001 was 2.5 times larger than in 1961.
- 3900 children die every day because of lack of access to safe drinking water.
- The world has 2.2 billion children but 1 billion of them live in poverty.
- Global water use doubled from 1961 to 2001 mostly by industry.
- The energy footprint increased nearly by 700 per cent between 1961 and 2000, (UNICEF, 2005; WWF, 2000).

As it is seen above, human population is exceeding the capacity of earth now. Eventhough the earth remains in the same size, as the centuries pass, global economy and population continue to grow.

Overpopulation should described in terms of the number of individuals compared with resources they need to survive, rather than simply as a density of the individuals. A decline in mortality rates related with life expectancy, increases in births and over consumption of resources can be the reasons of overpopulation. Over population, increases in the_types and amount of the "needs" of people as well as the developments in science and technology for more comfortable life style created some technical and ethical mistakes that development and progress are compatible only if the natural foundations of life are secured and renewed, if the present do not threathen the future.

The relation between population growth and economical, environmental and social developments is a problematic area; is population growth a cause or an effect? In World Bank Report titled "Sustainable Development in a Dynamic World", environmental degradation such as deforestration, erosion, increase in endangered species, pollutions is taken as a result of population growth (Castro, 2004). Robinson (1975), Ehrlich& Ehrlich (1970), Şirikçi (1995) pointed that if a country's population grows up, some ecological and social problems will occur, such as more comsumption of natural resources, pollution, unemployment. Some social inequalities in the distribution of population cause different problems in supplying basic needs such as food, drinkable water, education, coping with epidemic diseases such as AIDS/HIV. That creates bigger social and economical gaps between developing and developed countries (Zeren, 1994). On the other hand, Bookchin (1988) and Castro (2004) pointed out that population growth is a result of the economical, political and social developments rather than a reason of environmental degradation.

Whether overpopulation is a reason or a result of the world's problems, it is obvious that it is related with the social, environmental and economical problems such as unemployment, social security, poverty, hunger etc. During the 1970s, desirability of growth -from an ecological point of view- was great deal of skepticism (Meadows et al., 1974; Schumacher, 1973). Because of rising environmental problems after 1970s, global

conferences and major documents have been organized in national and international level. Some of the major conferences/reports are:

- Stockholm Conference, held in 1972 which is the first conference about the conflicts between development and environment.
- The laws have been passed in order to protect wetlands, natural heritages,
- Mediterranean Action plan was signed in 1975.
- The World Commission on Environment and Development (WCED) was initiated by the General Assembly of the United Nations in 1983.
- "Our Common Future" a WCED Report, was published in 1987.
- WCED's Report was folllowed by a major international meeting in 1992: United Nations Conference on the Environment and Development (UNCED) in Rio de Janerio called "Earth Summit" where a declaration of principles known as "Agenda 21" was issued.
- "World Summit on Sustainable Development" was held in Johannesburg, 2002.

In that process, development was redefined and a new term called sustainable development began to be used. In World Summit's agenda and in Rio Principles, the protection of the environment, social and economic developments are counted as fundamentals for sustainable development (JDSD, 2002).

Eventhough poverty, consumption and production, natural resource base, which have a cause-effect relation with population growth, were the main topics in World Summit's agenda, population and environmental education were not in the World Summit's agenda. In other words, while forest protection, climate change, biodiversity as well as education were the main topics in Agenda 21 -which is a major action programme of Earth Summit (UNCED,1992)- the term "environmental education" was neither used nor presented as a solution alongside of the major world problems during the World Summit. Although population growth doubled in 1960s and population growth was not an easy task to be solved individually in a short period, it was not taken to agenda neither.

From the holistic view, any changes in environment -either natural or artificial, all living functions are affected from that changes (Scoullos, Malotidi, 2004). Today, it is

more clear that rising environmental problems can not be solved only by legislations or technology. It is only solved by developing/changing positive attitudes and values towards nature. Environmental education is the framework in creating these positive change. In that sense, formal and non formal education sectors -such as schools, Non- Governmental Organisations (NGOs) have important roles in order to reach the goals of environmental education.

"We have to share the planet so don't be selfish. We want food to be shared so that everyone has enough. We want clean water and a home for all people. We are worried about pollution, and war and children starving, while others don't appreciate the food they get. We are afraid that the world will soon belong only to the rich".

From The Global Children's Hearing,
Held in Rio De Janerio at same dates with the Earth Summit, 1992

As it is seen above, children are more sympathetic, much more concerned about our planet and all the living things. They have more positive attitudes towards environment than adults. This indicates that more importance should be given to school where children spend almost 11-13 years of their lives. As Ünal and Dımışkı (1999) pointed out, when a school equipped well enough -including its teachers and students- doesn't let them to loose their curiosity about environment, environmental protection can be mentioned there effectively.

Children are being prepared for the life in schools, and they are always said that that they will have different roles in society -more than now- with their attitudes, behaviours, skills, experiences and values. If human being is not happy with the Earth she/he created and changed in a negative way -and if the nature is suffering from her/him- the time should be spent for the children. By this way, there might be a chance for adults to reconsider his/her actions.

The world population is still increasing especially in developing countries as a result of some environmental, social and economic problems. Today, developed world

constitutes five percent of the world population growth whereas developing world does 95 percent of it (USCB, 2004).

Although environmental education is one of the keywords in saving and improving the environment as well as solving these problems, enough attention hasn't been given to it neither in Turkey nor in the world. In order to do it, there should be some changes in the structure of curricula, the background, skills and the role of teachers etc. Directing teachers'/educators' attention to the world problems (e.g. poverty, overpopulation and its environmental, social and economical dimensions) and encouraging them to bring these topis into their classrooms' agenda via different educational methods are urgently needed.

The aim of this study is to develop an interdisciplinary environmental education program on population growth for children aged between 12-13 year old, using process drama which is one of the effective teaching and learning methods, in order to create an awareness about the factors of population dynamics as well as social, economical and ecological effects of population growth.

2. REVIEW OF RELATED LITERATURE

2. 1. Environmental Education

2.2.1. Environmental Education in the World

2.2.1.1. International Conferences and Study Groups of Environmental Education

Environmental issues became more important in the last fifty years moving to world's political and economical agenda. People began to talk more about the global warming, poverty, waste, dying out of species, pollution, loosing rain forest etc. People also became more aware about the relation between social, economical and environmental issues.

In 1948, an international meeting which was organized by International Union for Conservation Nature and Natural Resources (IUCN) was held in Paris. Environmental education was first used as a term in international level. Besides, IUCN organized a meeting about "Environmental Education in School Curriculum" in Nevada (1970) where environmental education was defined as a process to find the appropriate way between people, their culture and the earth. Decision making was also linked as a part of this process (Skanavis, Sarri, 2004).

On the other hand, attention of the international community to the conservation of the planet for its inhabitants caused environmental education to be mentioned as a solution in United Nations Conference on the Human Environment, held in Stockholm in 1972 (Skanavis, Sarri, 2004). This conference was important, since the conflicts between environment and development were appreciated for the first time. After the Conference, The United Nations Environment Programme (UNEP) was established with UNESCO/UNEP International Environmental Programme (IEEP) in 1975 and their roles were defined: promoting greater awareness, making cooperations easily between all sectors in society -including NGOs- in implementing environmental agenda, making a link between decision makers and scientific community at national and international level

(Ozmanczyk, 2003). The Conference led to the creation and promotion of many NGOs which aims to conserve the environment. In 1975, an international workshop on Environmental Education was organized in Belgrade, Yugoslavia by IEEP, United Nations Education Scientific and Cultural Organization (UNESCO) and Centre for International Studies of Belgrade University. Belgrade Charter, the outcome of the conference, was published -including the aims and objectives of the conference i.e. awareness, knowledge, attitudes, abilities, assessment and participation as key concepts and guiding principles (UNESCO-UNEP, 1976). In a wider perspective formal education and non formal education sectors which were defined as principal audience in The Belgrade Charter were invited to take part in Environmental Education. (Greig, Pike, Selby, 1992; Palmer, Neal, 1996).

The Stockholm Conference and IEEP were the basis of environmental education to be known in international level and for the Tbilisi Conference. The Tbilisi Conference, held in Union of Soviet Socialist Republics in 1977, was known as the first intergovernmental conference on environmental education, discussing holistic and biopolitical approaches; it was organised by UNESCO and 265 delegates, 65 representatives and observers took part in the conference. In Tbilisi, governments adopted the concepts and the visions of environmental education which were formulated in the workshop held in Belgrade, 1975. In Tbilisi Conference, while criteria, issues and targets in Environmental Education were being analysed, the policy was discussed too (UNESCO-UNEP, 1977; Ünal, Dımışkı, 1999). The goals of Environmental Education which were decided in Tbilisi will be explained in detail under the Section 2.2.1.2. entitled “The Goals and Principals of Environmental Education”.

In the Belgrade Charter and Tbilisi Conference, the notions of balanced development, social cohesion and equity were integral parts of the foundations of Environmental Education (Skanavis, Sakellari, 2002). In the following years, IUCN, WWF and UNEP published “World Conservation Strategy” which includes a chapter on environmental education. Ecological processes and life supporting systems, genetic diversity, utilisation of species and ecosystems were three main priorities of this publishment (Brand, Marlow, 1997).

"A new ethic, embracing the plants and animals as well as people is required for human societies to live in harmony with the natural world on which they depend for survival and well-being" (World Conservation Strategy, 1980).

World Conservation Strategy (1980) was argued for conservation, sustainable development and utilization of ecosystems, resources and species. After that special report, WCED was initiated by the General Assembly of the United Nations in 1983. In the tenth anniversary of the First Tbilisi Conference, The Moscow Congress on Environmental Education and Training was held in Moscow, 1987 (Palmer, Neal, 1996). Here, there was more emphasis on the impacts of invidiual's positive behaviour on environment. In 1990s this Conference produced the International Strategy for Action in the field of Environmental Education and Training (Kassas, 2002). The same year, "Our Common Future" was published by WCED. It is one of the most important publishment which is known as Brundtland Report (after its chairman, Prime Minister Gro Harlem Brundtland of Norway). It is important since there were a commitment to the unity of environment and development. The famous definition of sustainable development was also done as follows in Our Common Future (WCED, 1987);

"...meets the needs of present generations without compromising the ability of future generations to meet their own needs"

However, eventhough the definition seems simple, it is criticized for being to vague, for not defining what the needs of present generations are and for not giving any clue about how to achieve environmentally sustainable society (Norgaard, 1994). It can be accepted that there is a political compromise between growth and environmental sustainability. Institutional, financial and legal measures to help solving global, economic and ecological problems through sustainable development were proposed in Brundtland Report. "Sustainable Development" was used and popularised as a term by Brundtland Report where eight key issues were determined for it: population and human resources, industry, food, security, species and ecosystems, the urban challenge, managing the commons, energy, conflict and environmental degradation. While some of the eight key issues were re-examined, the others were proposing that all can be thought under three strategies (Brand, Marlow, 1997).

By the time the Earth Summit was organized in 1992, “sustainable development” had become a well known term. Between 3-14 June 1992, 100 heads of state or government met in Rio de Janerio, Brasil in the 20th anniversary of Stockholm for “International Conference on the Environment and Development” which was also called the “Earth Summit”. 27 principles were adopted by UNCED as a program which was called Rio Declaration (Ozmanczyk, 2003). The principle theme of Rio was “Environment and Sustainable Development”. According to Castro (2004), the Summit did not produce anything different except the ideas about environmental crisis and the summit was more visible because of the leaders’ participation. Major action programme of Earth Summit is known as Agenda 21, where sustainable development became a star concept. Agenda 21 covers 40 chapters from poverty, biological diversity, desertification to youth and education. Chapter 25 (“Children and Youth in Sustainable Education”) and Chapter 36 (“Promoting Education, Public Awareness and Training”) are the implementation of Agenda 21 and should be considered from the perspective of Environmental Education. Chapter 36 outlined three principal programs for environmental education: (a) reorienting education toward sustainable development, (b) increasing public awareness, and (c) promoting training opportunities where Tbilisi Declaration was the resources in preparation. Developing action plans for formal education; developing additional resources and investments to make public education powerful; looking and developing (reorienting) teacher training are the strategies to promote sustainability which was defined in chapter 36, Agenda 21 (UNCED, 1993). According to Burgiel (2002), setting a new agenda for sustainable development made Rio Summit a significant milestone which includes solutions rather than explanations of the reasons of economic and environmental crises.

In 1995, MIO-ECSDE organized the Inter-regional Workshop on "Reorienting Environmental EfS" in cooperation with UNESCO and the University of Athens in Athens. Two years later, in 1997, delegates from governmental, intergovernmental, non governmental organisations, and civil society from 83 countries met in the International Conference on Environment and Society: Education and Public Awareness for Sustainability, in Thessaloniki, Greece. The Conference held by the Government of Greece and UNESCO pointed out the 20th anniversary of the Tbilisi Conference (1977) and fifth anniversary of Rio (1992). Declaration of Thessaloniki is the output which consists of 29 statements. In these statements it is said that education should be focus of regional,

national and international agendas and it should be the foundation of main part of sustainability i.e. economy, regulation, innovation (Skanavis, Sarri, 2004). In other words, the Conference brought the public awareness and education to the centre of interest of international community. Professor Michael Scoullos, as the chairman of the Conference, has pointed out that environmental education should be reoriented, introducing the concept of sustainable development, i.e. the basic objectives of environmental education with the new one will remain almost the same (UNESCO-UNEP, MIO-ECSDE, 1995).

As in the Tbilisi Declaration, in the conference called Education and Public Awareness for Sustainability, participants agreed about the importance of training. In 23th, 24th and 25th statements of the Conference, training of trainers, preservice training and inservice training were mentioned (UNESCO, 1997). On 25th June 1998, The United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters – which was called The Aarhus Convention- was adopted in the Danish city of Aarhus at the Fourth Ministerial Conference in the 'Environment for Europe' process. The Aarhus Convention links the human rights with the environmental rights, government's accountability and environmental protection. In a democratic context, the Aarhus Convention emphasized involvement of all stakeholders in order to achieve sustainable development as well as the interaction between public and public authorities and decision making process with negotiation of international agreeements (UNECE, 2005).

"Mediterranean Workshop on the Promotion of Education and Public Awareness for Environment and Sustainability in the Mediterranean" was held in old sites of Athens, Greece between 18-19 December 1998 which was organized by The Mediterranean Information Office for Environment Culture and Sustainable Development (MIO-ECSDE) as a follow-up to Thessaloniki Conference. Besides the creation of a network of environmental educators throughout the Mediterranean, cooperating with NGOs, a visible product of this initiative -the educational package "Water in the Mediterranean", which was completed with the efforts of six MIO-ECSDE NGO members in collaboration with a team of post graduate students from the University of Athens- were in the agenda of the Workshop. The Millennium declaration was adopted by 147 heads of states or governments including 191 nations at the United Nations General Assembly in September

2000 which recognized the participants' collective responsibility to accept the principles of human equality, equity and dignity. In order to achieve these principles, a set of Millennium Development Goals were defined; these goals were showing the way to accomplish sustainable development and end poverty for each country by 2015. In April 2000, "World Education Forum" was held in Dakar, Senegal. All participants gave a commitment for the achievement of education for all (EfA) goals and targets for every citizen and every society member. At the Forum, where the world community reaffirmed the vision of World Declaration on Education for All adopted in 1990, the participants recognized that education is a fundamental human right and it has an important key to sustainable development, nation building, socio-economic growth, peace and stability.

Ten years after Rio, World Summit on Sustainable Development was held in Johannesburg, South Africa with 21 340 participants -including heads of States and Government, national delegates and leaders from NGOs, private sector, civil society, academia, scientific community. They reaffirmed their commitment to sustainable development. Protecting and managing the world's natural resources base for social and economic development, finding solutions for poverty, changing consumption and production patterns, improving people's lives, using the world resources in balance led nations to organize World Summit on Sustainable Development which is also known as Johannesburg Summit 2002. It was a good opportunity to reconsider and analyse the problems from regional to international level and to progress. Development, implementation, monitoring and reviewing action plans from local to national level were also emphasized as appropriate ways to achieve the objectives of the Dakar Framework for Action (JDSD, 2002). The adoptation of the Decade on Education for Sustainable Development (EfS) by the United Nations General Assembly, starting by 2005 was also recommended in the Summit.

Johannesburg Plan of Implementations (JPI) and the Johannesburg Declaration on Sustainable Development (JDSD) were two main documents which were negotiated and adopted in World Summit on Sustainable Development. However, chemicals and health, time-bound targets for sanitation, renewable energy, energy subsidies, natural resource degradation, biodiversity loss and fish stocks, governance, trade, finance and globalisation,

the Kyoto Protocol, health and human rights were the major areas of disagreement in Johannesburg Summit 2002 (Skanavis, Sarri, 2004).

JDSD, as a political declaration, consists of a vision which is constructed by the evaluation of sustainable development -beginning from Stokholm to Rio and Johannesburg- and it includes the challenges that the international community faced in the implementation of it. More effective ways for implementation of sustainable development are needed and political commitments are made in the Declaration (Bhaskar, 2003). On the other hand, JPI consists of 153 articles which reaffirms the international commitments taken in Rio, the full implementation of Agenda 21 and the Programme for the Further Implementation of Agenda 21.

In JPI, there were three commitments about education for, and awareness of, sustainable development in articles. In Article 124, for the expression of "support the use of education to promote sustainable development, including through urgent actions at all levels", there are four reasons. One of them is, "Recommend to the United Nations General Assembly that considers adopting a decade of EfS, starting in 2005" (JDSD, 2002). Before the World Summit, the Earth Summit 2002 questionnaire was distributed to stakeholder organisations internationally in order to understand their expectations as well as to gauge their thinking about the Earth Summit (WWI, 2002). After the summit, expectations of the participants and non participants were used for evaluation of the Summit. One of them was written in a British newspaper, *The Observer*. Some of the results were as follows: seven out of ten people think that the World Summit has made almost no difference for the future of the planet; one in five hundred people believes that the World Summit will make the world 'a lot better'. The goals of the sustainable development with timetables and deadlines, international guidance to globalisation, direction on sustainable development, new commitments and innovative thinking were absent in Johannesburg World Summit. "Environmental education" was not used as a term neither during the World Summit nor in Declaration. For more sustainable structures, it is equally important to change the political, social, economic systems and not to forget the educational part.

When a comparison between Earth Summit and World Summit is made, there appears some political and social changes in the world. Namely, when the Rio Summit occured,

- The fall of Berlin Wall,
- Broke up of Union of Soviet Socialist Republics,
- Acceptance of democracy in eastern European countries,
- Green governments in Germany etc. were in the agenda;

However, ten years after Rio, in the process of Johannesburg

- Terrorism,
- Poverty,
- Globalisation became the world's agenda.

These political and social changes led to make different decisions and objectives in the World Summit. In Johannesburg, in the World Summit, three main objectives were defined:

- Eradicating poverty,
- Improving standards of life based on sustainable consumption and production,
- Ensuring that the benefits of globalization are shared by all.

"Besides re-affirming the educational objectives of the Millennium Development Goals and the Education for All Dakar Framework for Action, the Summit proposed the Decade of EfS as a way of signalling that education and learning lie at the heart of approaches to sustainable development" (UN, 2005).

In collaboration with the Section for Science and Technology Education, UNESCO's Section for Technical and Vocational Education has launched a project which is coordinated by The Punjab State Council for Science and Technology within the selected Asian countries - Philippines, Indonesia, Malaysia, India, and China- to undertake a series of studies on national initiatives to integrate environmental education in technical and vocational schools since 1999. Collaboration with the Punjab State Council for Science and Technology in Chandigarh, India, a regional workshop on Integrating

Environmental Education in Technical & Vocational Education in Asia has been organized on September 3-5, 2003 under this project.

"The First World Congress on Environmental Education" was held in Espinho, Spain, in 2003. There, the link between environmental education and EfS was explored. However, since the concepts and practices were understood in local level rather than universal level and were in the process of construction, the Congress underlied the need for further discussion (Scoullos, Malotidi, 2004). Definitions about educational systems'/movements' tendecy to stress the limitations rather than to expand and faciliate caused controversy. One year later, the "Second World Environmental Education Congress" was held in Rio de Janeiro, Brazil, September 2004 in order to exchange national and international scientific community's researches, and experiences and to debate present matters on the subject. The topics of interest were meanings and practices; essential values and the development of community projects; the issue of support material; crosscutting topics, their place in the curriculum and in daily life; training and formation for the different profiles of mediators; academic research, multiple approaches. Regional Workshop on Environment Education in Primary Education was organized by UNESCO Regional Bureau for Education in the Arab States in collaboration with ISESCO and the Ministry of Education in Yemen between 21-22 December 2004. The objectives of the Workshop -whose participants were from Yemen, Egypt, Jordan, Qatar, Bahrain, Oman, Saudi Arabia, and Oman- were to improve the current practices on environmental education and to discuss the new international trends.

Programs and projects under the UN are still continuing. Several of them are; Environmental Education Programme, Environmental Education Regional Programme for Great Lakes Region, Objectives and Targets Environmental EfS: A regional training project scheme for the Adriatic-Ionian Basin. 'Education for a Sustainable Future' -an International Conference- was between 18-20 January 2005 at Ahmedabad, India. It was organized by UNESCO New Delhi in colloboration with the Centre for Environment Education (CEE-India) who was in partnership with the Ministry of Environment & Forests (MoEF), the Ministry of Human Resource Development (MHRD), the Government of India and UNEP. As well as the beginning of the United Nations Decade of EfS (UNDESD) and sharing Centre of Environmental Education's twenty years experience in

Environmental education and EfS (EfS), bringing together the international community in education and communication to interact and to share experiences and learnings in EfS were the objectives of the Conference. Several thematic workshops and exibition took place there.

In June 2005, International Conference on Environmental Education was held in Helsinki, Finland in order to present a wide range of research and practices related to environmental education and EfS. The participants were teachers, pre-school teachers, nature school teachers, researchers, youth workers, nature guides, students and other environmental educators coming from the fields of EfS, environmental education and nature studies. Meeting the challenges of the UNDESD, and examining the world view and future for environmental education were planned to help environmental educators during the Conference.

In addition to all the international conferences and study groups of environmental education mentioned here, there is also COPERNICUS University Charter for Sustainable Development, which was drawn up in 1993 and has been signed by more than 281 universities in Europe in order make commitment for further development. The Charter was adopted in 1993 which became a follow-up to a number of university initiatives concerned with environmental awareness and responsibility. The "Cooperation Programme in Europe for Research on Nature and Industry through Coordinated University Studies" (COPERNICUS) was launched by CRE, the Association of European Universities, in order to involve committed European universities into this European network to share the knowledge and expertise in the field of sustainable development in 1988. Some of the commitments are as follows:

- The Magna Charta of European Universities, Bologna, September 1988
- The Talloires Declaration, University Presidents for a Sustainable Future, October 1990
- Urgent Appeal from the CRE, the Association of European Universities, presented to the Preparatory Committee for the UNCED,
- Geneva, August 1991

- Creating a Common Future: An Action Plan for Universities, Halifax, December 1991.

One of the ten principals of COPERNICUS Charter is about environmental education. Involving not only teachers but also researches and students, universities set up environmental education programmes as well as incorporate an environmental perspective in all their work (UNECE, 2005).

There are some events planned by UNESCO in the rest of year 2005 (UNESCO, 2005):

- Between September 13-17, 2005, 9th CEEE conference - Environmental Education and Sustainable Development: from Policy into Practice- is planned to be held in Klaipëda University, Lithuania whose organisational committe consists of Center for Energy and Environmental Education (CEEE), Ministry of Environment and Klaipëda University.
- Promoting the co-operation between formal and nonformal education actors such as teachers, educators and other practioners who work in the field of environmental education, members of te NGOs, researchers and Governmental bodies, adopting environmental education on all levels in the community and enhancing its quality are the main aims of the Conference.
- 7th Global Conference on Environmental Education has been planned to be done in Agra, India between 19-23.09.2005 in order to develop agenda for the Conference on Environmental Education proposed in 2007 - which is 30 years after the Tbilisi Conference.

2.2.1.2. The Goals and Principals of Environmental Education

Before the 1970s, the term environmental education is used for teaching children about nature, emphazising biological process and conservation. The pre-1970 approaches to environmental education is defined as being educated students for natural resources, how they were used, their importance in creating the nation's economy. Those are the children were encouraged for a better understanding of the nature studies, of the world physically and of how mankind fit into it (Alder, 1995). Environmental Education was not

perceived in a holistic way as it was in Tbilisi and there was no specific goals, objectives that were defined for environmental education during that period of time. In other words, when environmenal education were thought in schools, it was being tought “about” the natural world. Since the earth had less problems than now, environmental education were seen under the heading of Natural Study, Geography, Rural Studies. After that, environment had one more role i.e. local environment became a remarkable resource “through” skills and subjects that can be tought/developed. In 1960s and 1970s, the world became more complex and had to face with environmental education more carefully; “changing” became a key word. For example students started to care “for” their environment by changing their school ground and local area.

Since Tbilisi (1977) and Kiev (2003), education has become a fundamental tool for the environmental protection and sustainable development. Thus environmental education, education for environment and sustainability (EfES), and EfS has been integrated into formal education systems. The goals, objectives and guiding principles of environmental education programs which established broad guideleness for implementation and action in national and international level are defined explicitly in The Declaration and Recommendations of Tbilisi by consensus. According to Tbilisi Recommendations (UNESCO-UNEP, 1977), the goals of environmental education were defined as follows;

a. Economical, environmental and political interdependence in urban and rural areas will be fostered to be concerned and be awared,
b. The opportunities will be obtained for everybody who wants to be equipped with skills, knowledge, attitudes, commitment and values to save and improve the environment;
c. New patterns of view for individuals, groups and society in perceiving environment will be created/developed.

As well as the goals, critical objectives of environmental education were defined and developed in Tbilisi Intergovernmental Conference on Environmental Education (UNESCO-UNEP, 1977):

a. Awareness: to help social groups and individuals acquire an awareness and sensitivity to the environment and its allied problems as a whole.
b. Knowledge: to help social groups and individuals gain a variety of experience

and acquire a basic understanding of the environment and its associated problems.

c. Attitudes: to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.

d. Skills: to help social groups and individuals acquire the skills for identifying and solving environmental problems.

e. Participation: to provide social groups and individuals with an opportunity to be actively involved -at all levels- in working towards resolution of environmental problems.

The Declaration and Recommendations of Tbilisi also emphasized the relation between protection/improvement of the world's environment and balanced development of world's community as well as social coherence and equity. This holistic view took place in the entire education process; it moved towards activities on environmental problems through the interdisciplinary approach and with the active participation of individuals and community. Hovewer, one decade after Tbilisi, Environmental Education was not found enough in the achievement of decreasing the environmental problems and in deterioration of the quality of the environment, eventhough lots of countries made efforts. Since the environmental problems that the world faced -such as environmental pollutions, poverty, the gap between developing and developed countries, consumption in that period- increased, the objectives and principles of Environmental Education were adopted and reconfirmed as "new objectives for development" or "redefining the notion of development" in the "Moscow Congress on Environmental Education and Training", 1987 (Scoullos, Malotidi, 2004).

The term "sustainability" and "sustainable development" have been began to be used since 1980s and the most common definition of sustainable development were made in "Our Common Future; the World Commission on Environment and Development". Thus, EfS takes its roots from Environmental Education and it is used in conferences, decleradations after 1980s such as Thessaloniki Declaration and Agenda 21. In the UNCED held in Rio, 1992, role of education was formulated and reoriented towards the challenges and demands of sustainable development that would respect to the natural

environment. Chapter 36 of Agenda 21 stressed this: “Education, including formal education, public awareness and training should be recognised as a process in which human beings and societies can reach their fullest potential. Education is critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviours consistent with sustainable development and for effective public participation in decision making. Both formal and non-formal education are indispensable for changing people’s attitudes, so that they have the capacity to assess and adress their sustainable development concerns” (UNCSD, 1992). Sustainable development and EfS are still discussed. When the two words “education” and “sustainable development” are combined, in one way education seems as a promotional tool. A question can arise on whether” EfS is a part of a particular ideology or not (McClaren, 1993).

The Tbilisi objectives of environmental education were revised for the reoriented education towards sustainability. And considering the recommendations of the Thessaloniki International Conference, the International Commissions’s work on Education for the 21st century -known as Delors Report- was the process for preparation of the Draft Framework for an “International Implementation Scheme for the Decade of EfS”. Following five objectives were defined within this framework (UNESCO, 2003):

- “Give a strong stress to the central role of education and learning in the common pursuit of sustainable development;
- Facilitate links and networkings, exchange and interaction among stakeholders in EfS;
- Provide a space and opportunity for refining and promoting the vision of, and transition to sustainable development – through all forms of learning and public awareness;
- Foster increased quality of teaching and learning in EfS;
- Develop strategies at every level to strengthen capacity in EfS”

As well as objectives, the principles of EfS are redefined based on Recommendation of Tbilisi (UNESCO-UNEP, 1977) as follows;

- Interdisciplinary and holistic-not as a separate subject;
- Value driven;

- Critical thinking and problem solving;
- Different pedagogies for modelling processes - multi-method: art, drama, debate, experience;
- Participatory decision making;
- Integration of learning experiences in day to day personal and professional life;
- Locally relevant as well ad global issues;

Although sustainable development became important after 1980s, and was common common emphasized in World Conservation Strategy, Brundtland Report, Our Common Future, it seems problematic. In some way, more education may create more unsustainable societies. According to current global consumption patterns, the deepest ecological footprints are left by the most educated societies (Hopkins, McKeown, 1999). The most educated societies are looking for having higher living standtards and welfare. These needs/wants cause to more comsumption basically. Bob (1994) pointed out that "EfS" is a problematic area since anyone should not be educated for a specific thing i.e. sustainable development. Education should have a general framework and should be independent from the current system. And secondly, EfS is a complex matter to be understood well enough and has no specific overall goals (Hopkins, McKeown, 1999; Bob, 1994). It should be well analyzed: For what aims the students will be educated? Another question is about the job of education: Do educators/trainers/teachers expect people behave in a particular way or not (Bob, 1994). Beside these arguments, it can be considered that EfS delegates the problems world faces at the moment to the next generation to be solved (Jucker, 2002). Since education is a long life process, it is inevitable in a way. However, continuing decline of the world's biodiversity and proceeding practice of unsustainable technology and (over) consumption create some bariers in ecology and sustainable education.

"Environmental education" is prefered to be used in all studies, instead of "EfS".

2.1.1.3. Drama As a Tool for Environmental Education

Drama is an essential tool in reaching one of the main aims of environmental education – that is learning the realities without loosing relation with nature and building one's own idealism.

Littledyke, Ross, Lakin (2000)'s case study is an example to show the effectiveness of drama that can be used to explore a social context where the care of the environment competes with the need for employment. High level of motivation and interests, better and complex understanding of environmental concepts and reasoning were reported in this study. Since drama and environmental education are process oriented rather than result oriented, it is important for the teachers that the goal is not to find the best explanation but to explore multiple perspectives.

Drama is given as an example of alternative educational method under the EfS's principles in International Implementation Scheme for the Decade of EfS (UNESCO, 2003).

Zelensky (1999) made his studies between 1971 and 1996 on the meta-analysis review related to the impact of applied educational methods on the behaviour of young students and adults towards the environment. "Classrooms settings" -such as lectures, games, teaching on issue investigation and action- and "non-traditional settings" -such as workshops, field trips/studies, nature camps- are the two main categories including the types of methods. Whereas "Classrooms settings" improve the environmental behaviours, the only 44 per cent of this "non-traditional settings" provide this improvement. Also, the educational methods where the learners are active turne out to be more effective in improving environmental behaviour. According to the study, participants/learners who are under 18 years old are influenced more by environmental education programmes i.e. effectiveness of environmental education interventions, improvement of environmental behaviour.

The methods that are used in environmental education programs and school curricula in Europe are based on constructivism since they are student-oriented (Scoullos, Malotidi, 2004), providing opportunities to students to be more actively involved and encourage them to cooperate. Basic Elements for the UNECE Strategy for EfS (2003) also emphasize the importance of methodologies involving creative discussion and active learning. Also, the methodological approaches within EfS mentioned in this study are as follows: action-oriented teaching and learning, approaches for developing critical thinking, democratic principles and processes, holistic, interdisciplinary and multidisciplinary

approaches, use of modern information communication technologies, problem based learning or problem solving, project work.

The basic differences between interdisciplinary and multidisciplinary approaches to education lie in their methods. Multidisciplinarity refers to looking at an issue from different disciplinary perspectives whereas interdisciplinary approaches involve two or more different disciplines in order to imply their cooperation and integration. Thus interdisciplinary approaches can involve multidisciplinarity (Scoullos, Malotidi, 2004). However, integrated studies, thematic instruction, holistic education, multidisciplinary teaching, integrated curriculum, interdisciplinary curriculum and interdisciplinary thematic instruction might be used interchangeably refering to the same meaning (Roberts, Kellough, 2000).

2.1.1.3.1. History of Drama

The origin of play dates as far as back as prehistoric times. Its positive impacts on a child/young person's physical, emotional and cognitive world are well known. Play has important roles in early rituels in order to transfer the traditions (Hatcher, Pape, Nicosia, 1988; Sağlam, 2004). Eventhough there are many educators in the history who emphasized the importance of a play in child education, there were less tendency to see that in the school curricula until the nineteenth century. By the nineteenth century, dramatic activities began to take part in schools through the school plays. They were taken to places out of school areas as a play time, whereas learning had a place in schools since it was a serious task. On the other hand, by the first decades of the twentieth century, dramatic activities found more area to spread and grow in the field of education.

By the twentieth century, education began to be criticised and the needs of education were discussed. Traditional education system was not found sufficient in order to develop future's individual. It was also insufficient since it puts knowledge in the center of the learning, makes learner passive, force people to memorise rather than learning deeply. In that process, the role of learners and teachers are also redefined i.e. learners should have active role in schools where teachers should be a guide rather than giving source of information. From those perspectives, different learning environments began to

take “learner” to the center of the learning process. Education was redefined: education should be joyful and seek a harmony between the organic needs of child development and the demands of social life.

These changes effected the perception of the play and theater, they started to be taken more seriously. The interaction between the things in the play and in the social life gave more space to dramatic activities and theatre which were taking place in the school environment especially class time as a learning tool as well as creation of new concepts and approaches in the field. The new terms “Dramatic Education” or “Drama in Education” –as it is called in Britain- were followed by others such as “Educational Drama”, “Developmental Drama”, “Creative Dramatics”. Approaches and techniques created this variety and richness in the field of drama.

The key components of dramatic education are children and dramatic experiences. Dramatic education is a term which refers to whole activities that includes creativity and dramatic approaches. In the process of dramatic education, both play and theatre take part in various ways, such as role plays or improvisations.

Britain and United States are the first two countries which integrated dramatic education into their curcicula from geographics to mathematics lessons. Drama is thought as an useful educational tool as well as a tool for personal development. First pioneers -seen in the beginning of this century- were Winifred Ward from United States, Harriet-Finley Johnson and H.Caldwell Cook in Great Britain. Harriet-Finley Johnson (1871-1956) was the head teacher of a village’s elementary school, he was dealing with 8-13 years old students in East Sussex whereas H. Caldwell Cook (1886-1937) worked in Perse School which is private, prestigious, residential and independent. Cook was appointed as English Master dealing with 11-14 years old students in the school. Eventhough both pioneers lived in Great Britain and gave big importance to drama as a learning tool and reflected their classroom practices by their books, the purpose of using drama were different for each (Bolton, Davis, 1998).

Harriet-Finley Johnson believed that young people learn if and when they want to and dramatisation is the first essential tool in teaching any subject. She described the

educational goals can be reached through dramamatisation i.e. motivation to learn and to teach – peer teaching, gaining self confidence. Her book called *The Dramatic Method of Teaching* (u.d) gives many examples of teaching literature as well as geography, aritmetic, history etc. In the same years, Caldwell Cook, who wrote *The Play Way* (1917) believed that play has an important role in order to prepare youngsters for adult life and to make them stronger.

Harriet-Finley Johnson used dramatic action in order to teach all subjects in the curriculum whereas Caldwell Cook used dramatic method to teach English and Shakespeare's plays. In both youngsters were more active than before.

Harriet-Finley Johnson and Caldwell Cook's practices were also good examples for Dewey's educational philosophy which consists of active, experimental learning; democratic responsibility and the conception of teaching and learning as a partnership between teacher and learner (Bolton, Davis, 1998).

Meanwhile in the United States, Winifred Ward (1880-1975) used more teacher oriented approach than Harriet-Finley Johnson and Caldwell Cook (Courtney, 1980). Ward used the term "Creative Dramatics" for both as a teaching tool and as a creative activity. She believed that children should be educated not only mentally but also emotionally. She encouraged the students to write and create their own plays through improvised drama (Sağlam, 2004). Her book called "Creative Dramatics" was published in 1930. After these steps were taken, many educators and academicians such as Sir Percy Nunn, Susan Isaacs, Frances Mackenzie etc. took this three pioneers' ideas and practices in the development of drama in schools, colleges and universities opened new courses in teaching drama and theatre. Many publications were done and new approaches, techniques, practices were created.

Slade (1954), in *Child Drama*, pointed out that play has an important role in the expression of a child's throughs. His ideas shaped dramatic activities in schools and drama should take place in schools as a separate lesson like Geographics, Mathematics etc. and as a form of art (Sağlam, 2004; Bolton, Davis, 1998). Slade (1954) pointed out that drama has a power to shape a child's personality but it should not be used in schools in order to

show/present students' works outside of school. In other words, he made the distinction between dramatic activities and theatre. He described the word drama is "Art of Living". Slade emphasized that children should not be evaluated with the same criterias with adults in order to develop the creative education (Adıgüzel, 1993).

Meanwhile, Brian Way (1967), a friend of Peter Slade and the editor of the book called *Child Drama*, emphasized the power of drama that allows children to develop their originality, discover her/his potential and personal aspirations and he explained all his ideas in *Development Through Drama* published in 1967.

Hornbrook (1989) has expressed it:

"Way reinforced Slade's distinction between "theatre" and "drama", but largely abandoned his idea of Child Drama as Art in favour of a comprehensive theory of personal development".

Canadian and Australian works in drama are mostly affected by British and American innovations and developed more slowly. The ideas of Dorothy Heatcote in Britain and Viola Spolin in United States had big influence on many people especially between 1960 and 1970. Dorothy Heatcote used drama as a learning tool. She redefined drama and examine the role of teacher. Her approach will be discussed in more detail later.

In the same period, Viola Spolin (1906-1994) emphasized one's ability to focus in creating spontaneously (Courtney, 1980). She developed Theatre Games for the amateurs in order to teach them how to play. Key aspect of Theatre Games was spontaneity and they based on problem solving. Her book called "Improvisation for the Theatre" has more than two hundred theatre games explaining Spolin's ideas about the uses of these games.

By the beginning of the twentieth century, dramatic education become more important in child's growth and her/his mental, emotional, physical development (Coggin, 1956). Dramatic education gathers all the approaches which includes creativity and dramatic movements that focus on mental and emotional part of children for the educational purposes. Children and dramatic experiences are the core elements of dramatic

education. Children observe her/his environment, make imitation and use role play as a learning tool. On the other hand, dramatic experince is a natural and effective method who help children to release her/his own potential and the world which surrounds them. In educational context, drama is the term that refers to a play which is guided by a leader and done by a group through creative process (Sağlam, 2004).

Although dramatic education can be accepted whether as a method or as learning tool, it leads children to the path of compassion, of tolerance, of empathy, of being themselves through the interactions between others and her/his local environment. Dramatic play is the main part of dramatic education whether it is used for personal development or as a learning tool. Many scientists who researched quality and functions of dramatic play emphasized the importance of the play which consists of imitation and identification. Slade (1956) is one of the educators who states that: "Play is an inborn and vital part of young life. It is not an activity of idleness, but is rather the child's way of thinking, proving, relaxing, working, remembering, daring, testing, creating and absorbing. It is, in fact, life". (p.42)

Play has an important role in the development of a child and in the process of discovering her/his potential (Gönen, Dalkılıç, 1998; Slade, 1956). In play, children expand their understanding of themselves and others, their knowledge of the physical world, and their ability to communicate with peers and adults.

Everything in her/his environment can be a material to play; can be described through with it. Play makes a child ready to express her/himself better with her/his ideas and emotions, help to learn not only how to communicate with the others but also learn to control/express her/his excitement, fear, use of her/his body. Researches show the relation between play and increase of empathy, reduction of aggression, emotional and social health (Robert, Rubin, 1998). In the communication process, the interaction may force her/him to solve the problems s/he faces, to use her/his creativity, to see more options and to make a decision (Erickson, 1984). Piaget (1962) also points out that a child feels freedom and pleasure during play because s/he creates her/his own world with her/his own terms.

Montaigne refuted the people who thought play was no sense in the development of a child. He believed that play was the real task for the children rather than a spending time or having fun (Poyraz, 2003).

Dewey (1900) described spontaneity, play and doing as key elements in learning process. Children learn through play when s/he is enjoying. As it is seen, play is more than a spare time activity. It is an important tool for future's happiness in happy adults (Hallowell, 2002).

McCaslin (1984) pointed out that "If playing is encouraged enough, it can be transfered and practiced as a method for long learning life". Since dramatic play takes its roots from the children plays, high concentration and enthusiasm become main components.

Eventhough drama includes educational purposes, the argument that whether drama should be a seperate lesson as Peter Slade thought or should be used as a teaching role as Dorothy Heathcote believes is not clear yet. This unknown sitiuation cause another distinction too: drama is process or result oriented.

In the next chapter, drama will be taken and explored as a teaching tool.

2.1.1.3.2. The Definition of Drama

Drama takes its root from the Greek word "dran" whose meaning is "action", "to do" (San, 1990). Since the meaning of the word "dram" means bourgeois's theatre in French language, drama is used mostly related to the theatre in Turkish Language.

Drama is also described as "The Art of Living" and an endless activity during a person's whole life (Nutku, 1987).

According to San (1996) and Üstündağ (2004), drama is

- a discipline since it has its own methods, goals and objectives
- an educational method since it is based on interactive and alive-learning processes

- an art education field in wider perspective since it uses theatre techniques, abstraction, visiualisation, thinking with images etc.

As well as explaining what drama means, they explain what it does not, too:

- Drama does not put a specific play(s) in front of -passive- audience. There is no specific text that is followed by the leader in drama.
- The moment "now" and the process are important in drama rather than result.
- There is no specific audience in mind during process since all participants take part in it.
- Drama has educational purposes e.g. it does not interfere in the area of psychology (Maley, Duff, 1988).
- Drama is not a random play since a leader or a teacher is responsible for the whole process.

2.1.1.3.3 Drama in Education

Slade believed that drama activitiy is a fundamental element of a child's personal development and should be a separete lesson in the school curricula. On the other hand, by the 1960s drama became a learning tool. Dorothy Heathcote has an important role in this. Carroll (1993) described her as "one of the greatest teachers of this century". Her initial point was about the absence of the content of dramatic activity as Slade defined. She redefined drama by looking at the relation between drama and education. In that process, the role of drama leader, the usage of drama as well as the principles and responsibilities were examined.

Heathcote advocated drama because of its having its own motivation and emphasized the importance of using drama in the classroom so that children could learn and explore as well as enjoy through it. In her classroom where the complexity of living temporarily into this protected area, there is always a problem or a task carried out for children to solve. The initial point for her is "If there is a way of making the world simpler and more understandable to children, why not use it?" (Johnson, O'Neill, 1984, p.90) To make the world simpler for children, she uses drama as a first tool that isolates an event, compare one with another, looking to the event from different perspectives etc. Because of

that, ”focus” and “task” are important parts of her each lessons and social learning, factual learning, reflective learning and curriculum pressures are taken into them.

Heathcote believes that drama is a tool to gain skills on how s/he uses what s/he knows rather than giving direct knowledge. Children should find their own dramatic activity rather than reading a text or imitating it by the help of a teacher. Her two assumptions that guide her practices were making “meaningful learning” and those meanings related with “human struggle” (Bolton, Davis, 1998). Dramatic experiences must leave children the potential for explication i.e. drama should be about meaning-indicating, meaning-seeking, meaning- making and meaning-finding. She believed that this meaningful learning makes children to be able to understand the human knowledge at personal, cultural and universial level.

Heathcote explained the opportunities that drama offers as follows:

- Drama demands co-operation
- Drama makes people find precision in communication
- Drama stresses the agreement to all sustaining mutual support as well as giving chance to work differently

} People have to express their ideas, feelings, actions

- Drama uses the life experiences
- Drama makes factual experince come into active employment

} People have to develop what they already know

- Drama uses fiction and fantasy but makes people more aware of the reality

} People have to live Two worlds: fantasy and reality but without mixing them

- Drama stresses the use of reflection.

} Drama uses objects but mostly in asymbolic way by changing its role, meaning etc.

- Drama offers people living out crises in a testing kind of way (Johnson, O'Neill, 1984).

People have to interpret the actions of others but often in unfamiliar

Heathcote used drama as a learning tool for almost 30 years with children, university students and teachers. Since she did theatre as an amateur and professional, she has used "speech", "mime", "play", "improvisation", "textual study" featured in her work but she works outside of theatrical approach. She showed what she has done through video tapes and many articles but not at explaining:

"I don't have a name for what I do"(Wagner, 1976, p.13)

Heathcote is critised sometimes by her work that treats students as artists or has anything to do with the aesthetic (Bolton, Davis, 1998). However, she points out that "art can isolate one factor from another, reveal something of infrastructure and give people a no-penalty testing zone, so that contemplation in flux is possible" (Johnson, O'Neill, 1984, p.192). She thinks "dramatic work is a social, detailed and progressing art".

Heathcote emphasized the importance of the interaction between participants/students and forces that have to be in a framework in order to be negotiated their change. Heathcote's view was as; "Change must been seen to happen" (Johnson, O'Neill, 1984, p.115) This view is very important in solving process of some problems that the world is facing at the moment such as environmental problems, violence, children rights because it allows one freedom to construct its own alternatives. Heathcote believes that child has a right to change the world by the help of drama. As she puts it "The child enters the zone of circumstances permitted by the drama situation, and in shaping the circumstance's future, the child's future is shaped, ready to available in the real society"(Johnson, O'Neill, 1984, p.115).

Schools and curricula mostly forget their main roles, dismiss the real life connection. Students read about the discoveries done by scientist and recreate them in the classroom. It is just like making the experiments again, but not adding anything. However, the classroom is not the suitable, authentic place to feel the amazement of the discovery

either. The researches in cognitive psychology studies the nature of learning in authentic contexts under the situated learning (Brown, Collins, Duguid, 1989). Although, a laboratory can be used as an authentic setting for a science lesson, it is not applicable easily as drama that can be constructed with essential elements of authentic contexts (Johnson, O'Neill, 1984**;** Andersen, 2004). Wagner (1976) pointed out the importance of the atmosphere: "It is important to create an atmosphere/situation that participants /students needs to know more as Heathcote does" (Heathcote, 1983). She emphasizes "discovery at this moment, not memory based" (Heathcote, 1971). She uses drama in all subject areas in the curriculum in order to simplify and focus on one particular area that children can move. Drama gives an opportunity in creating this authentic contexts as well as defining the relation between learner/student and leader/teacher in order to make a journey into new area together. The possible benefits to situating learning within an authentic context Heathcote emphasized;

- acquiring implicit knowledge
- putting theoretical knowledge as the ground
- learning in everyday rather than academic contexts
- facilitating transfer of concepts and skills from one context to another
  acquiring curiosity and skepticism about evidence.

Heathcote prefers to begin drama with belief of not only her own but also the group she works with at that moment, living in the same place, time, circumstances and facing with the same problem. She points out the relation between success of drama and belief although she admits that the kind of believing she describe is not easy task. Because of that, she uses "I can belive .....Can you?" rather than using some expressions like "Let's fantasize..", "Can you imagine....", "Pretend with me....". She prefers to affect the children through the plays instead of making plays with children (Wagner, 1976). Eventhough children have more tendency to believe and live something, she belived that their "believing" potential is used less in schools for educational purposes.

Heathcote believed that the most important point in drama is that it brings change. "It does not freeze a moment in time, it freezes a problem in time, and you examine the problem as the people go though a process of change" (Johnson, O'Neill, 1984, p.115).

Heathcote describes several ways in approaching learning through drama i.e.

- Roles -a person is the challenge,
- Mantle of Expert- class sets up a task and solve it by being experts,
- Analogy,
- Text,
- Dance forms-non verbal signals,
- Simulation and games.

All these ways are used by teachers who invite students and encourage them to participate. On the other hand, teacher should be aware of the reality that s/he is involved in, in teaching process; s/he should be sure about being within the limits of her/his own security whatever ways s/he uses. These are important for teachers to determine her/his own conditions of tolerance. Dorothy Heatchcote summarised these thresholds in six areas;

a. Noise Threshold: the volume of noise
b. Space Threshold: the space between students and her/himself
c. Size of Group Threshold: which size of group make the teacher comfortable? Small or large group?
d. Decision-making Threshold: How decision-making process formed? Whether the students really free or not.
e. Teacher Interests Threshold: teachers interests interefe the group or not.
f. Evuluation ans Standards Thresholds: what the teachers are looking for?
g. Role Thresholds: Does teacher control the group invisibly or is there over control?(Courtney, 1980)

Heathcote also pointed the importance of language leader/teacher uses. It reflects her/his philosophy in words, questions. The kind of questions like "Don't you think…?" or "Wouldn't you like to…" have heavy implication or consists of obvious answers for children. Belief is the first starting point in getting drama not just for all class but also for herself. “Once a group is decided what they want to do, the next problem for the teacher is how to help them believe it” (Wagner, 1976). In that process, she prefers to give some facts which are not known by children, rather than heaping information. Otherwise, teacher may cause some negative effects on the developmental values of drama and its educational

values if s/he conceives drama in inductive way or imposes her/his authority (Hoether, 1969).

Dorothy Heatcote's teaching methodology contributed a new term to the field of drama called "process drama". It was introduced by Cecily O'Neill to the drama education vocabulary, associated with her own work (Bolton, Davis, 1998). Process drama is used for exploring a real life problem or a situation, a theme through the use of artistic tools without following a text (O'Neill 1995).

An imaginary world is created by the teachers and students together in process of drama. It focuses mainly on collaborative investigation and problem solving in an imaginary or "as if" world. It has a preparation with *pre-texts* such as newspaper articles, music, photographs in order to "frame" the investigation and raise the students/participants' curiosity. Although the roots of process drama are grown up by Heathcote, in some cases it is independent from her work e.g. in respect to its theatricality, its being made up of a wide range of dramatic forms or not.

Process drama approach contextualizes and enumerates drama conventions into cohesive structure. These dramas takes real life situations under the umbrella of authentic pedagogy. Heathcote (1984) pointed out that if drama is based on a real life situation, it emphasizes the feelings and attitudes of people not simply by the event. Process drama allows both the participant and audience to be present at the same time (Carroll, 1986) rather than abolishing the difference between spectator, author, audience, actor, and character. It permits the holding of two worlds in mind at the same time i.e. "as if" worlds (Boal, 1995). Process Drama features was outlined by Taylor (1995) as follows:

- separate scenic units linked in an organic manner
- thematic exploration
- facilitating interdisciplinary links
- an experience that does not depend upon a written script
- a concern with participants change in outlook
- improvisational activity
- outcomes not predetermined but discovered in process
- a script generated through action

- the project leader actively working within and outside the drama

In process drama, students learn to think about different dimensions on a topic through playing different roles. The teacher seems less active than students but s/he always has a more compex role, aiming for a pedagogical outcome. The reason for using process drama technique in the thesis lies in the relation between environmental education and process drama. Process drama and environmental education both give high priority to thematic issues. Thematic units offers learners/students to develop deeper understanding and develop an awareness of the connections across the ideas. Also, both environmental education and drama are cross-curricular fields that give the opportunity for a style of learning and develop the ability to explore the world through the practice of action-taking, transforming the world and creating her/his own world.

Drama for her is the interaction between participants/students and forces. These interaction have to be in a framework that eases to negotiate their change. Heathcote's view, that "Change must been seen to happen" (Heathcote, 1984, p.115), is very important in solving process of some problems that the world is facing at the moment such as environmental problems, violence, children rights because it allows one freedom to construct own alternatives. She believes that child has a right to change the world by the help of drama. As she puts it "The child enters the zone of circumstances permitted by the drama situation, and in shaping the circumstance's future, the child's future is shaped, ready to available in the real society".

Process drama challenges participants/students' perspectives and demands them be clear as much as possible on their perspectives /viewpoints (Taylor, 1998). Bolton (1984) emphasize on "lived through experience" of the drama rather than outside the drama. "As if" world offers the student/participant a consious part of herself/himself to relate the experiences in "As if" world to her/his real life. Teachers used this area to integrate concepts, terminologies and processes from different range of disciplines into an extended learning experience. As Heathcote pointed out, international environmental conferences or democratic processes can be taken into the classroom by drama. They inlude conflicts and divergent interests in decision making processes which is a part of the real life (Odegaard, 2003).

Dorothy Heathcote uses very specific technique called Mantle of Expert known as "Teacher in Role" generally. It is to become the centrepiece of the methodology. Mantle of expert is a task oriented techniques where the pupils work as themselves but as if they were experts. The roles are not given before or no actual expertise is required for the task. The important point is that the task is taken seriously. Heathcote uses drama as an educational tool like her teacher Harriet- Finlay Johnson. However, she adds one more dimension to drama which is in the field of human education.

Heatcote believes that ideas are born in contemplation but they blow up with actions. This technique helps Dorothy Heathcote to think of the class as a micro society. It also helps her to built a structure of authentic learning even in an unauthentic situation (Johnson, O'Neill, 1984).

By the Mantle of the Expert, both teachers and students explore what they already know while making new discoveries along the way. This is a holistic way of learning, creating not only real emotions but also thoughts connecting to the real world. She gives a big importance to the needs of students. The teacher shapes the idea in action but it is modified in practice by the students. The language s/he uses, the sound of voice are also important factors that should suggets students a Mantle of the Expert approach. They work either individually or as a group. They make decisions on what they read, who will interview, which resources they will use and how to reach all these resources etc. The process continues with self-motivation and self actualisation and self-direction of the children which help students opportunities to learn outside of schools too.

The Mantle of the Expert gives responsibility to pupils to run an enterprise and interact as other people in a fictional world with whom experts are concerned. The body of knowledge and skills used by students in Mantle of The Expert is in the school curriculum. The teacher share her/his power with children who learn the curriculum tasks in an invisible way as well as experiencing professional practices. For example, in order to learn Science of Light -which is in the curriculum- they enter the subject through the perspective of medieval monks needing to extend their scriptorium (Heathcote, Bolton, 1995).

Nobody makes the students expert. The atmosphere that is created by teacher invites them to the situation and everything is re-presented by students through mathematics, drawing or performance etc.

Since Heathcote observes, school is everywhere; she believes that the role of teachers is to provide her/him the tool for learning how to learn and teachers should begin from the point where "the child really is" rather than from where the teacher would like her/him to be. She also gives space children for possibilities and desirability (Carroll, 1993). The problem is discussed in past tense, outside of drama. However, it suddenly turns into present tense in drama.

Teacher has to be well prepared before the class and should be flexible as well. The teachers tools should be adaptable to the changing needs of the class. It is not an easy task for teachers to do it. Eventhough the teacher has an idea in her/his mind, the way it goes is shaped by the students. In order to have more vision about the way and students' feedbacks, Heathcote gives importance to questioning at the beginning of each class. The teacher may have problem in solving skills as well as risk taking.

In order to use the Mantle of the Expert (Heathcote, Bolton, 1995), the ordering of the questioning would be suggested as follows:

a. To what end the children require the particular information?
b. From what frame of reference should the interrogation take place?
c. How shall the information be shaped and placed when they first meet it?
d. What task or series of tasks will engage the children in interrogation?
e. Which tools do the tasks require?
f. What form will be used to hold the knowledge so that it can be applied at future times?

In all her life Heathcote believed the power of The Mantle of the Expert and used it not only for teaching the curriculum's topic but also for human education**.**

2.1.1.3.4. Function of Drama

Education should strive for an active exploration of many voices rather than the acceptance of one voice. This idea comes from the new educational philosophy called progressive education. Students should learn in their own speed, experience what s/he is learning rather than memorising, live in and learn the process etc. are not only important for today's world but also for the future. As it was mentioned before, the role of teachers and students are redefined by progressive education. Education should be more learner oriented than teacher oriented as Heathcote approved this idea for drama. She pointed out that the role of leader/teacher should focus on discovering what children already know and constructing their knowledge rather than loading too much information.

As it was mentioned before drama leads the participants to communicate with others, to improve her/his own skills, to improve decision making processes, to practise thinking in different languages of the subjects etc. Drama offers an opportunity to put back some unforgettable emotional contents and the body back. It implies to take more account of meaning (Maley, Duff, 1988). That causes a child actively involve in drama and can add her/his own emotions or personality to a text they read or listen to and accept their own body easily (Cottrel, 1987). Besides, the drama group can encourage the students to create new ideas as well as being a source of effective evaluation process.

Even though researches pointed out the importance of the balance between emotions and experiences in learning processes (Erden, 1992,s.172), the opportunity that students have are not sufficient in order to understand the world, communicate with themselves and the environment they live in. They read the realities from the books or learn from the teachers but they have less direct contact to experience it from their own feelings. This causes inbalances between cognitive and emotional development of the children and affects their learning process. It can be observed from the knowledge gained by students at schools mostly do not reply to their daily questions. Drama gives this oppourtunity through direct contacts, using five senses etc.

Dorothy Heathcote, one of the drama pioneers, explains the reasons of using drama for expanding children's awareness both in personal and social level, enabling them to look

at reality through fantasy, and seeing below the surface of actions to their meanings (Wagner, 1976).

Since drama has an oppourtunity to offer all sorts of ways such as sight, hearing, and other things including physical bodies in it, each child can find the right channel to explore and express her/himsef (Philips, 1999).

As drama can be a part of learning process, it can be used as creative assesment tool by itself to synthesize what they learn in the course/lesson. As Kyle (1997) pointed out

"Assessment ought to be oriented toward what we value. Assessment, in the context of the total teaching-learning process, ought to be epistemologically sound; the richness of the learning process ought to be reflected in the assessment protocols; and the quality and value of the total education and science experiences ought to be evident".

Although studies and researches show that drama is an effective educational method that develop deeper undestanding and long term learning (Şimşek, 2001; Yazkan, 2000**;** Tveita, 1998) as well as teacher's ability, its efficiency changes the qualification of drama leader, size of the class, the background of students etc. If the drama leader is guiding the group well, drama becomes an activity done by skillful children or some students' monopoly. There are some factors e.g. the class environment, the ages of the students, time, the usefulness of activity, materials, atmosphere created by students and drama leader which are important in order to reach the main goals of planned drama lessons.

2.1.1.3.5. Drama Leader

A drama leader is one of the main component of drama. Who will benefit, where it will take place, what will be taught and who will be the leader are the main questions that have to be answered before drama takes place. A drama leader is one of the main actor and guide in the whole drama process. S/he defines the goals/objectives what the learners will gain, defines the most effective techniques/methods and materials in order to achieve these

goals, and decides how s/he will evaluate the whole experiences by her/himself (Adıgüzel, 1993).

A drama leader should be a good guide rather than administrate the whole process, motivated the learners, and be a participant within the learning process. “Instead of merely transmitting knowledge of science from the science textbook or from the teacher, it has to be re –worked and re-constructed by the students” (Odegaard, 2003, p. 79) as well as being learner oriented and giving space to learners to construct new knowledge with their ex experiences by help of the leader/teacher as a guide.

As Cottrel (1987) pointed out, a drama leader needs to have some properties in order to take learners into meaningful learning process.

Who should be a drama leader/teacher? S/he should have all the properties that a good educator has. Dorothy Heathcote has worked on authentic teacher in her whole life. In the authenticity journey of the teacher, she defined four questions for the teacher:

a. What do you stand for?
b. When you look at your class what do you actually take note of first?
c. What does your working environment have to contain or lack, for you to find it productive to work in, alongside your class?
d. How many kinds of power must you hold on to, and which can you give away?

These questions are important for the teachers who should be aware of her/himself i.e. her/his needs, limits etc.

According to Heathcote, the teacher should

- believe that s/he is bigger than the system
- be able to see as her/his children as they really are i.e. tolerance and acceptance
- be a good observer
- not be afraid to meet where the children are rather than insisting on her/his place/ideas
- not be afraid of new/unfamiliar things

- see the world through children' eyes rather than children see the world the teacher's eyes (Johnson, O'Neill, 1984).

As well as this a drama leader should

- be open to new things and improve her/himself
- be good at her/his subject
- be good at preparing educational programmes
- know and practise drama very well as an educational method.
- have a multi disciplinary approach such as art, music
- find her/his role in the drama process i.e. democratic, observing rather than interfering with the participants, giving time to participants to create relations, and construction (Tümtürk, 1999).

Although a designed drama lesson can have different objectives, there are always general objectives that never change e.g. allow students to express their feelings freely, feel secure, encourage to cooperation learning, develop her/his creativity (Sağlam, 2004). The drama leader can adopt useful techniques/methods according to the needs of students that give confidence and strength (McCaslin, 1984). In that sense, the atmosphere that is created by drama leader/teacher is also very important to guide the rest of the group members.

2.2.1.4. Problems of Implementing Environmental Education

The world faces with different environmental problems that can not be isolated from social and economical dimensions since 1970. For example;

For Africa : Water stress and scarcity, land degradation
For Asia&Pasific : Poverty, overpopulation, loosing biological resources
For Europe : Emissions to air, waste
For North America : Big amount of consumption
For West Asia : Lack of fresh water, hazardous waste production
For Antartica : Ozone layer, air pollutants, global climate change, the decline of several bird, mammal and fish species, and pollution of major rivers.

According to Living Planet Report 2000 (WWF, 2004);

- Global CO_2 emissions has increased threefold since 1961
- In the last thirty years, one third of natural resources have been wiped out
- By 2075, Earth's natural resources will be used totally

As Kyburz-Graber et al.(2001) pointed out that "The only meaningful answer to the worldwide problems of the uncontrollable excesses of human civilisation is a pedagogical answer". On the other hand, according to The WWF Report published in 1994 that more than 86 percent of teachers spend one hour or less on the environment each week (WWF, 1994). In another survey, even though it was done in 1994, 75 percent of the teachers who jointed to the survey, reported that they spent less than half an hour per subject per week teaching about the environment (Lane, Wilke, Champeau, Sivek, 1994). The time spent for the environment was one hour per week in another survey (Smith-Sebasto & Smith, 1997).

One of the main actors in environmental education is the teacher. If a teacher is not well equipped with skills, knowledge or attitudes to "environmentalize their curriculum, it is unlikely that environmentally literate students will be produced"(Wilke, 1985; Heinze-Fry, 1998). Pre-service and in service training are the most important issues in reaching teachers to be understood what environmental education is and what it does. Surveys show that teachers, who were introduced by environmental education techniques in pre-service studies, tend to have environmental education in their classroom; they are more interested in teaching environment and look for new training opportunities (NCOEE, 1994). In that process, distincting environmental education from environmental studies is not an easy task either (Harde, 1982; Filho and O'Loan, 1996). Even though one has the most effective curriculum, inadequate teacher training may cause to fail it. However, there is unfortunately less importance for in-service training and lack of good quality. A study done by National Consortium for Environmental Education and Training in 1994 showed that most of the trainings are informal and in-service training, that are not prefered by most state agencies (Ruskey, 1995). For example, "Guideliness for Excellence" gives very little priority to in-service training. In the 21-page, concept of training appears only in a few paragraphs: "Additional support and instruction should be provided to meet educators' needs", and "Professional development programs are accessible to educators in your area".

Other important point for the future of environmental education are the resources. Losts of environmental education activity packets, curriculum guides and programs such as Project Learning Tree, Project Wild have been produced by different organisations and institutions, but most of them are activity-oriented that lead the trainers picking and choosing an activity (Knapp, 2000). That leads to misunderstanding the educational philosopy behind the programs as well as leading to loose the holistic approach. The duration of the activities are also one of the big issues in the process of assimilating the philosophy. Long term experiences where knowledge is gained and attitudual change occurs are more effective than short term experiences (Marcinkowski, Iozzi, 1994). In the nature of Environmental Education, autonomous thinker who is capable of making decisions and come to his/her conclusions is important. Whereas short activities might be consumed quickly and do not touch in one's behaviour, long term activities can cause people to take responsible citizen behaviours (Knapp, 2000).

During the process starting from Stokholm UN Conference on the Human Environment (1972) and getting by its follow up for Environmental Education in Belgrade (1975) and Tbilisi (1977), the causes and possible solutions of environmental problems were defined. However, the political context was different from today. Due to the fact that the political, social, economical and cultural issues in different countries of the world have been moved, the environmental education found a "radical" issue thought not to be a realistic or was reduced to some activities (Scoullos, Malotidi, 2004; Dikmen, 1993). As it was mentioned before, main objectives of environmental education for an individual are to have an awareness to take positive actions in the process of solving environmental problems. What is needed for the behaviouristic changes? Knowledge, awareness and understanding can change and affect an individual's behaviour and decision making process (Skanavis, Sarri, 2004). Even though students have learned and demonstrated citizienship action skills in some examples of effective curriculum, most environmental education programmes were designed in a traditional way (Hungerford, Volk, 1990). In behavioristic approach, people believe that knowledge leads people responsible citizen actions. If it is right, environmental problems would be meaningless to discuss nowadays. On the other hand, raised awareness and increased knowledge do not automatically create an environmental behaviour by only itself (Jucker, 2002; Munson, 1997). Attitudes lead to action with awareness of issues with deep understanding, discovering, and gaining skills of

analysis as well as learning the strategies are the keys for it (Hungerford, Volk, 1990). The methods that are used in the process of environmental education are shaped the whole curriculum/program whether it is environmental activism or not. Obviously, environmental education is aimed environmental action rather than activism.

Some of the criteria about Environment Education was done by Wilke (1996), as follows:

- Environmental education are based on emotionalism rather than facts;
- Environmental education preaches correct lessons rather than taking advantages from nature;
- Environmental education teaches anti-anthropocentric philosophy rather than eco centric;
- Environmental education politically motivated rather than knowledge and understanding.

These critics are important for the future of the environmental education. Learner-oriented approach should also take place instructor-one which is not approved in the nature of environmental education but some of the practises have been done up to now like that. By that way, learners can be aware of nature as well as learning more and decide what they should do rather than tell what they do. Hungerford (1998) emphasized this as follows;

"It is absolutely imperative that we provide learners with the skills needed to make responsible environmental decisions, and it is totally unethical to tell learners what those decisions should be".

Different dimensions of environmental education such as psychological, social, human made and cultural environment-made it different from the ecology and any other disciplines (Heimlich, Barringer-Smith, 2000), and could not be placed in science only (Disinger, Howe, 1990). Katz and Chard (1989) proposed that through integration of curriculum areas, individuals develop a deeper understanding of concepts and an increased ability to apply them. On the other hand, there are more enviromental education asssesments confirmed the problems with interdisciplinary approach (Lane et al., 1994; Smith-Sebasto, Smith, 1997). As Hopkins, Damlamian, Ospina (1996) pointed out that

interdisciplinary approach in environmental education is problematic because of lack of sufficient in-service training and the structure of the curricula. Namely, environmental education is likely to be found in science-related subjects (Simmons, 1989) and according to some recent research environmental education "integration" is not very successful (Paul, Burde, 1997)

2.2.2. Environmental Education in Turkey

2.2.2.1. Curricula and Environmental Education

According to Tbilisi Declaration, environmental education is based on saving and improving the environment (UNESCO-UNEP, 1977). In order to protect/ improve the environment, the children need to know what's happening on the earth as a whole i.e. biosphere, ecosystems, natural cycles. Children are the most important elements. They are able to follow the current changes quickly and adopt themselves easily to them. Researches show that elementary school level education in developing countries is returned to the society as a benefit (Dikmen, 1993).

In international level, United States were the only country where "National Environmental Law" was accepted in 1970. "Evaluation of Environmental Affect" became an obligation for each national project done by states. More laws were followed e.g. Clean Water Law, Clean Air Law. Besides, some programs and projects were prepared for the schools that were practised in different lessons e.g. social studies for 1-3 grades, science and technology. In 1973, countries such as Holland, Sweden, Belgium, Canada, Austria, Japan in European Economic Association were accepted "Environmental Action Program" and adopted environmental education in different levels as well as in non formal education sectors (Dikmen, 1993).

In Turkey, one of the important protocols was signed by Ministry of Environment & Forestry and MEB in 1999, both committed to work cooperatively on the environmental education in -pilot-preschools and primary schools. Since the subjects under environmental education consist of protecting environment, preventing pollution, gaining positive comsumption habits, it is important recycling be planned to be applied in schools with

activities ("Çevre ve İnsan", 1999). Moreover, Turkey's environmental education problems were discussed in the IV Environmental Council held in Izmir, in 2000 very seriously. Some decisions were made including improvement of interactive activities, usage of technology under the framework of environmental education that will be implemeted in different disciplines in curricula to improve positive attitudes/actions towards nature, ecological view (MEB, 2005).

Teacher is one of the important component of education. High quality of pre-service and in-service trainings about environmental education is needed to be given to teachers. Unfortunately, the general aims of Basic Law of National Education no 1739 which consists of the aims of Turkish Education System does not include any approach about growing new generation with environmental responsibility and awareness (Kiziroğlu, 2000).

Two main lessons which are science and social studies will be examined in 1994, 2000 and 2004 Curricula related with environment in the rest of the chapter.

One of the big issues for environmental education is that whether it should be placed in different disciplines or sould be a specific lesson. Eventhough the tendecy in the world is to place in different disciplines, Environment, Traffic, Health and Reading will become a separate lesson in all levels in primary school by a regulation taken by MEB on the 7th September 1992. It was implemented in 1992-1993 Academic Year (Dikmen, 1993). In this program aims were given too general to be understand and the behaviours that will be gained by the students under these aims are not specified with measurable, observable critearia. Since these were not done, the gained or developed behaviours can not be measured easily. The related environmental units are as follows in 1994 curricula;

Social Studies For 1-3 Grade
1st grade

Our School Life

Our home and Family

How Can We Protect Our Health?

2nd grade

Our New School Year

Fall in Our Environment

Winter in Our Environment

Vehicles and Traffic

Spring in Our Environment

3rd grade

Let's Learn About Our Environment

Let's Learn About Our District

How Can We Protect Our Health?

Observations of Earth and Sky

Let's Learn About The Village

Tools and Machines that We Use in Our Environment

Social Studies
4th grade

Where Do We Live?

Our City and Geographic Region

Our Country: Turkey

5th grade

Our World, Our Country and Our Neighbours

Science

4th grade

Earth and Sky

Life and Living Creatures

Diversity of Living Creatures

Human Beings and Environment

Energy

5th grade

Let's Learn About Our Body

Diversity of Living Creatures

Human Beings and Environment

Even though there are some introduction lessons related with environment in the first three years of Social studies in Primary School Curriculum in 1994, there are no specific stress for environmental education (Kiziroğlu, 2000; MEB,1995). It is mostly science oriented. Another problem is that in both, limited time and heavy program which is subject oriented is too much in order to do student-centered activities. Research shows that with these programs, the core concepts in environment can not be understood efficiently (Tosunoğlu, 1993).

On the other hand, each science curricula from 4th to 8th grades has only one unit related with environment called "Human beings and environment" during the entire school years that includes environment and human health, air and air pollution, water and water pollution, soil and soil pollution, cycle of substance, reasons of environmental destruction, and sustainable development (MEB, 1995). Besides, there is no link across the disciplines especially between 6-8th grades. With these too limited lesson hours, local to global perspectives is not mentioned either. Even theoritical framework is too limited to explore environment with the students by experimenting, environmental activities/practices such as projects did not mentioned either.

The aim of environmental education is to make children realize about the environment and environmental problems with some activities including field trips, materials rather than heaping the information (Ayvaz, 1998). Here, there are two kins of approaches: in student-oriented environmental education progams determining aims, making plan according to the aims, the implementation of the plan, evaluation of the implementation of the plan are important (Ediger, 1995). On the other hand, in the subject oriented environmental education programs mental process are important. On the other hand, However, there are no specific topics that are important in environmental education for example how a field observation can be done; preparation and eveluation of field report; ecosystems; endangered species; laws related to the environment and environmental

protection; the relation between environment, society and finance; institutions/ foundations /associations related with environment and environmental protection; alternative energy. Environment and environmental protection is dynamic area. Therefore, environmental education programs should be changed/designed according to the current environmental studies.

The difference between rural and urban area were not mentioned in the program. People consumed more natural resources in rural areas whereas people in urban areas were quite far away from them in 1990s in comparison with 2000s. This features should be reflected in educational programs but there is no attempt in 1994 Educational Programs.

Structure and functioning of the primary education institutions has been changed within the scope of Law 4306 that primary education institutions started to give education for eigth years from the beginning of the 1997-1998 academic year. The related environmental units are as follows in 2000 curricula;

Social Studies
1st grade

Periods of the year
The Sun and The Earth
Healthy development
Living creatures in our environment

2nd grade

Our school has started
Healthy development
Living creatures in our environment
Earth and space

3rd grade

Conscious comsumption and productivity
The place where we live
Healthy development

The living creatures in our environment

The Earth and Space

Movement and force

4th grade

Social life, life in school and family

Let's learn about our city and geographical region

5th grade

Our beautiful country: Turkey

6th grade

Geography and our world

Our country: Turkey

7th grade

Geographical regions of Turkey

8th grade

The neighbours of our country and the world of Turks

Science

4th grade

Let's learn about our environment

The nature of the substance

Living creatures are diverse

Our planet

5th grade

Living creatures and their interaction with nature

Heat and the journey of heat in the substance

6th grade

Journey to the inner structure of the living creatures

Electricity which conduct our life

7th grade

Power plus movement: Energy

Our home with all living creatures, let's learn about our blue planet and protect

8th grade

Substances for living creatures and energy

Genetics

Magnetic fields affect our lives

When general and private aims of social studies are examined, it can be seen that environmental protection which is only one of the 34 objectives is studied for the importance of current days and future. Private aims consists of four units including 32 objectives (25 per cent) and 39 lesson hours (14 per cent). However, the related topics are limited with planting at least one tree, saving natural and cultural heritages as well as natural parks (Kiziroğlu, 2000; MEB, 2000). There can be some integration among the disciplines especially in between 1-5th grades such as first units of social studies and science in 4th grades but there is no special note or encouragement for the teachers. It can be also seen that both programs are teacher-centered rather than student-centered. One of the remarks should be done on knowledge oriented approach observed in the curricula rather than experimentation on environment. Unfortunately, the level of environmental consiousness was prefered to be after knowing about environment (Atasoy, 2006).

Comparing with the 1994's Educational Programs, there are more subject related with environment. Materials e.g. video cassettes and methods such as experiments, field trip, projects are more defined than the ex-program. The question arises if the practioners have a tendecy to do them, and if there is enough time. Unfortunately, limited time and resources are given for the reasons of limited implementation of environmental education in the curriculum. Eventhough the students know some concepts such as carbon dioxiode,

sulphur, nitrogen, hydrogen, they have less knowledge about the relation between these concepts and air pollution (Kiziroğlu, 2000).

The New Educational Program was improved for the 1^{th}-5^{th} grades and implemented in 9 pilot cities (Ankara, İzmir, Bolu, Kocaeli, Hatay, Van, İstanbul, Diyarbakır and Samsun) with 120 primary schools (MEB, 2004a). The Program was improved in 16 months with the feedbacks from 38 public institutions and NGOs as well as 56 experts and academicians. The new program is much more close to the philosophy of environmental education. It is more student oriented and suggest new methods rather than traditional ones. Individual differences are more emhasized in each subprogram. Thematic approach was used generally in order to design the contents. Learning areas are defined in this framework. One of the main differences is interval disciplines related to learning areas. Another important change is the language used in the new program. In the ex program except science, the terminology used for output of the educational activities were categorised under aims, objectives and behaviours rather than gain which is close to constructivist approach. However, since the each sub programs such as mathematics, science were prepared by different committes, there is a problem in the books with the common terminology. e.g. constructivist.

The new program is more focused on skills rather than knowledge. Skills such as critical thinking, problem solving, decision making, research, creative thinking, communication, using technology, being enterprises, giving importance to social and personal value were emphasized under each programs. The role of teacher which is defined as a facilitator/guide mostly and learning-teaching process are examined in detail more than the ex-programs and more sample activities are given. Environmental conditions and individual differences are mentioned to diffirentiate the sample acitivities. Materials are more encouraged to be used in learning-teaching process and it is expained by the sample activities. The new program suggest the activities that affects the students' research, examining, problem solving and decision making processes. Cooperated learning is also encouraged to be used that is also important for environmental education. Students are defined like scientists who ask questions, create problems, look problems from different dimensions, make generalisation/exceptions after applying experiments. Evaluation is taken into account not only at the end of the learning but also during the process that cause

to use larger variety of tools in evaluation and measurement rather than traditional ones. Peer assesment is encouraged. The related environmental units are as follows in 2004 Curricula;

Social Studies

1st/2nd/3rd grade

My enthusiasm about school

My unique home

Yesterday, today and tomorrow

4th grade

Place (that) we live in

From production to consumption

5th grade

Step by step Turkey

Let's learn about our geographical region

Science

4th grade

Let's learn the substance

Let's learn about the world of living creatures

Electricity in our daily life

Our Planet: The Earth

5th grade

Let's solve the puzzle of our body

Let's learn about the world of living creatures

Transformation of the substance and its recognization

Force and Movement

Electricity in our daily life

The Earth, The Sun and The Moon

It is an important development that the number of the related environmental units have been increased. Although environmental issues are not flowed in spiral in Social Studies Lesson Programs for the 1st-3rd grades and Science and Technology Lesson Programs for the 4th and the 5th grades, "thematic approach" has been implemented by collecting information from different disciplines (MEB, 2004a). As it is seen above, these themes are "My enthusiasm about school", "My unique home", "Yesterday, today and tomorrow" which are designed in continuing form during the three educational year. The name of the Science lesson is changed as "Science and Technology" lesson. There are also thematic approach that "theme" is called "learning area" in this program and units were put under the themes called "Life and Living Things", "Substance and Transformation", "Physical Events", "Earth and Universe". Although, the 4th and the 5th grades Science and Technology Lesson Programs are implemented in pilot school, the 6th grade ones will be implemented in 2005-2006 Academic Year without pilot schools. Since the biological systems are more, environmental issues were taken out in the 6th grade ones. They are planned to be included in the 7th and the 8th grades Science and Technology Lesson Programs. However, interdisciplinary approach is not placed very well such as social studies have linked 20 per cent with Turkish lesson, four per cent with Mathematics lesson in the first grades (MEB, 2004b). It can be mentioned for Science and Technology curricculum too. Although the common knowledge and skills such as reading graphics, making graphs are used in different disciplines, there is no specific information about their first usage (ERG, 2005).

One of the targets of the new educational program is to bring up individuals close to environment and be familiar with the environmental issues as well as aiming to improve the excessive sensivitity to them. The new program is aimed to gain the conscious of environmental protection, effective use of natural resources and consumption patterns, recycling, protection from naturel disasters by student centered educational methods more than the others.

2.2.2.2. National Projects and International Projects in Schools

The protocol which was signed by Ministry of Environment & Forestry and MEB in 1999, some cities have begun Applied Environmental Training Projects. Three main projects are as follows:

Ankara Governorship Environmental Protection Foundation (ANÇEVA) organised different environmental education projects since 1992 with Ankara City Directorship cooperatively. The aims of the projects are to protect nature, not only defining environmental problems but also finding possible solutions for making Ankara better to live by the help of panels, exhibitions etc. with the students from preshools, primary schools and secondary schools. According to Applied Environmental Training Projects between 2000-2001, 50 primary schools were chosen as pilot schools. 30 schools were jointed to the project between 2004-2005 Academic year (Ankara Valiliği Web Sitesi, 2005).

Applied Environmental Training Projects have been proceeded since 2000 with 26 pilot schools. Educational materials that are developed for the project consists of activities that every teacher who teaches from the 1^{st} to 5^{th} grades can easily adopt to the class. Uludag University took roles in the project in developing most of the educational materials and giving education as well as Environmental Protection Foundation, Local Agenda 21 and some governmental authorities. Different materials were prepared under following topics for each level between the 1^{th}-5^{th} grades and delivered to the pilot schools except “waste and comsumption and soil: “Nature, air and climate”, “energy”,”water”,”. Each teacher in the project is responsible for giving activity reports after practised the given materials to the organisational committee of the project (Bursa Büyükşehir Belediyesi Web Sitesi, 2005).

Applied Environmental Training Projects is proceeding since 2000 by Istanbul City Directorship, Istanbul Environmental Directorship as well as governmental organisations. The target group is defined as two teachers and five students for each school in Istanbul i.e. 1454 primary schools and 1 658 948 students (SIS, 2004). The main aim of the project is to increase awareness about environment and to take an active role in environmental actions.

The Report of Istanbul Environmental Directorship has been published and it is quite important that one topic was given to environmental education. When finding documents belongs to the projects are compared, the project which took place in Bursa was found more successful and more close to environmental education principles in since

- improving theme based teacher materials
- interdisciplinary approaches and practises (Sungurtekin, 2001)
- selecting pilot schools rather than whole city
- taking feedback from teachers as practioneer about the process and the materials which were developed for the projects after the implementation by the academicians
- working practioneers and academicians at the same time during the process (Şimşekli, 2001).

Little Things Renew the Nature Project has been launced cooperated with Tetrapak, General Manager of Elementary Schools, Anadolu University and Ministry of Environment & Forestry in October, 2004. The aims of the project are;

- to develop habit for living in a clean and healthy environment,
- to be aware of renewable resources and sustainable comsumption.

The project is implemented in Istanbul at 270 elementary schools in six towns with 17 people who were trained (MEB, 2005).

Clean Sea (Alipot) Project has been launched in 31 primary schools in Istanbul cooperated with MEB and Turkish Marine Environment Protection Association (TURMEPA) in order to prevent sea pollution by training primary school students, teachers and school administrations with visual and auditory materials in 2002. The project are still being implemented in Istanbul, Ankara, Izmir and Balıkesir. The project is planned to be expanded throughout different cities on the coast in the coming years.

Greenhouse Education Project at the Regional Boarding Primary Schools and Boarding Primary Education Schools has been launched cooperated with MEB and FAO in two Regional Boarding Primary Schools and one Boarding Primary Education Schools in Ankara, 2004.

The aims of the project are:

- to apply safety food production, modern agricultural technics and practical agricultural education
- to encourage families living in rural areas to establish their own jobs

Project preparation studies were applied with the cooperation of Ankara Directorship of Agriculture and The Directorship of Education. Preliminary studies were done, greenhouses were established in the three schools and watering and planting jobs were completed. Established greenhouses were supported by students, parents and local people as school gardens at primary education schools. The studies of applied agricultural education are continuing at greenhouses (MEB, 2005).

The Basic Disaster Conscious Education Project has been launched cooperated with Directorship of Istanbul Boğaziçi University Kandilli Observatory and Earthquake Research Institute and MEB in 2004. Its aims to educate primary school teachers and parents about Basic Disaster Conscious. Project will be implemented in 50 cities and 250 teachers will be subjected to distant education. Besides, 100 teachers who will train 250 teachers in total will be selected to be trained by the Directorship of Istanbul Boğaziçi University Kandilli Observatory and Earthquake Research Institute. The first group of teachers was selected through internet and trained in Februrary, 2005. The students and parent will be educated by teachers with the materials such as books and CDs (MEB, 2005).

There are some student communities in schools which work for different topics included environment, environmental protection, and health. Some of them colloborates with related NGOs, Ministry of Environment&Forestry in order to make different organisations to be awareness. Especially for the 5th June-environmental day, student communities organise this activities such as seminars, poem/picture competitions, conferences, theatre.

Global Learning and Observation for the Benefit of Environment (GLOBE) whose target group is primary and secondary school students and teachers is an internatioal school based education and science program. Turkey is joined to GLOBE projects in 1995. 75

different primary/secondary schools registered to GLOBE. It is a partnership over 100 countries supported by National Aeronautics and Space Administration, National Science Foundation and United State Department. Globe aims to increase student awareness of their environment by being the trained teachers from a scientific viewpoint i.e. taking measurements, analyzing data, and participating in researchs. Students send their data to the Project Center, in the United States via internet after collecting the data such as the amount of rain falling, the highest and lowest temperatures, cloud cover, cloud types, acid amount in ground waters and rain waters. MEB is the national coordinator of the project.

Eco Schools is a programme for promoting environmental awareness and having active role in a way that links to many curriculum subjects, and EfS in a holistic view. All schools including non-teaching staff and governors work together with the members of the local community i.e. parents, non governmental organisations, local council who become the member of The School Eco-team. Each school chooses an environmental theme like water, waste, air to work on the whole academic year and make its own action plan.

It has also an award scheme-green flag that will raise the profile of schools in the wider community. If the schools apply for having green flag and the criterias described by the national coordinator are satisfied, the schools can have the green flag. It is kept for two years. After two years, the school should reapply for it. By the end of the 2003/2004 school year, there were about 11.000 primary schools participating of which nearly 4 000 were Green Flag award-winners in 30 countries including Turkey. The Project is operated by Foundation of Environmental Education (FEE) internationally, Turkish Environmental Education Foundation nationally (FEE, 2005) more than 100 primary schools are implemented to the project in Turkey.

South- Eastern Mediterranean Sea Project (SEMEP) is an environmental project which is interdisciplinary and holistic within the UNESCO Mediterranean initiative aiming incorporation actions on social, historical, scientific, technological, economic, ethical and cultural aspects for the development of greater environmental awareness/consciousness in the Mediterranean Region. 23 countries including Bulgaria, Romania and the Black Sea coordinates SEMEP in national level. More than fifty schools in Turkey registered to the project which is executed by Akdeniz University (UNESCO, 1997).

Learning From the Forests Program aims to encourage primary school classes and teachers to make them use for educational activities in different subjects such as mathematics, science, language etc. 14 countries across the Europe are currently involved in the project which is coordinated by Foundation for Environmental Education since 1999. The project is executed by a National Committee which consists of members from two ministries i.e. MEB, Ministry of Environment & Forestry four NGOs in Turkey. 50 pilot schools in Sakarya and Kastomonu Region are selected in Turkey.

Great Volga River Route Project aims to develop new interdisciplinary approaches to EfS with the support of information communication technologies between Baltic, Black and Caspian Seas countries. Its target group are the upper primary schools and the secondary schools students. There are three main areas under the title "sustainable development and world heritage": social and economic implications, preservation of the environment, and cultural implications. Çelik Tarımci, the lecturer at Ankara University, is the national coordinator of the project. Since the project launched in late 2004, only six pilot schools were selected in Turkey (UNESCO, 2005).

Socrates, which is one of the three programs under the European Union Educational Programs, aims to improve the quality of education among European countries Comenius, enhances the quality of teaching, strenghtens its European dimensions, by protecting the cultural diversity and mobility is one three actions under Socrates Program. All members of the education community including local authorities, parents' associations, non-government organisations from pre-school and primary to secondary school can be involved in that program. Turkey has been approved to have full benefit from European Union Educational Programs since April 1st, 2004.

Between 2004-2005 Academic year, nineteen of 101 Comenius projects were approved by the Centre of European Union Education and Youth Programmes-Turkish National Agency (UA, 2005). For 2005-2006 Academic year, thirtyseven of 264 new Comenius projects have been approved. In 2004-2005 Academic year, the top five cities whose project were approved most by the Turkish National Agency, Istanbul (41 projects), Ankara (15 projects), İzmir (6 projects), Antalya (5 projects), Kocaeli (4 projects) whereas the top five cities are Istanbul (62 projects), Ankara (51 projects), Isparta (32 projects),

İzmir (27 projects), Adıyaman (13 projects) in total with the projects who were renewed in 2005-2006 Academic year.

2.2.2.3. Supporting Activities

The activities below have direct or indirect relationship with environmental educationin Turkey.

The last five years, Scientific and Technical Research Council of the Turkish Republic (TUBITAK) has given an effort to make the science attractive for children.
Some activities:

- TUBITAK public has been launched a campaign in the name of "Learning Program of Language of Nature-Doğanın Dilini Öğrenme Programı" in order to take results of scientific researches into daily life i.e. make science popular in 2004. Ankara is the pilot city and the primary and the secondary school students are the target group of the program. The program consists of three subgroups focusing on protection of cultural diversity of Anatolia and passing this heritage to the next generations and looking at culture and cultural heritage with deep inventory in order to see that Turkey has trustful natural and ecological inventory.
- TUBITAK publishes Science for Children Magazine montly to make children love science, improve their curiosity, encourage them to ask questions, and make reasearches including on environment. The target group is 7-15 years old children.
- TUBITAK translates and publishes Popular Science Books in order to introduce children science and scientific approach. 189 books with 5.4 million copies serve children in affordable price.
- TUBITAK has organized "Discovery Day" for children since 2004.
- TUBITAK organizes "National Sky Observation Festival" for people including children with Science for Children Magazine and Science & Tecnic Magazine since 1998.

NGOs had a tendecy to move with governments in a homogenical environment up to 1960s. After that period, NGOs changed their role, which began making pressure on governments on social, economical, environmental and political issues (Acı, 2003).

Eventhough the permission to establish an NGOs was launched in 1909 during the Ottoman Empire (Teziç, 1997), it took too much time to find their own functions in the society till 1960s in Turkey, too. The first NGOs in protecting nature is Turkish Forester Association which was set up in Turkey in 1924. By the third Five-Year Development Plan (1973-1977) decisions related with environmental rights and environmental protections were taken as the first attempts in Turkish Republic. The numbers of the NGOs works on environment get increased by year after 1970s. However, the effective environmental education programs prepared by NGOs are being implemented in 1990s (Hotinli, 2002). All formal and informal sectors in education should work together to make life environmentally friendly where NGOs have important roles to achieve it (Baykal, 1992; Kiziroğlu, 2000).

What are the exact roles of NGOs which works on environment according to that mission:

- In order to take environmental education to the ground.
- make loby to attract government's on environmental education anf affect decision making processes when needed.
- supporting formal education by preparing some school materials such as making common projects, books, CDs.
- train people to become good models for students with their behaviours, responsibility and sensitivity (Hotinli, 2002).
- Various national environmental education activities/projects in the scopes of projects are prepared by the various international associations/organisations such as UNESCO, Regional Environmental Center for Central and Eastern Europe with different NGOs which will be mentioned below.

Although there are many environmental centres used for educational purposes in the world, Turkey has only a few. Up to 2000s, there was not any environmental education centers unfortunately (Kiziroğlu, 2000). Acarlar Lake Model Environment Education and Visitors Center Project are two of them, supported by UNDP Small Grant Projects under the coordination of TÜRÇEK with support from local government institutions since February 2005.

There are three species under the natural protection according to Bern Commitments-Important Plant Areas of Turkey since 2003 as well having some endemic species suh as Hottonia palustris. The area is also important for the birds and wetlands.

The aim of the project is to establishm an environmental education and visitors center in the Acarlar Lake close to Karasu (Sakarya) for the local people including children (TÜRÇEK, 2005).

The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA) has launched a project called “Child TEMA” inviting primary shool children to set up their own organisations fight for environment in Turkey. Students are also educated by teachers/volunteers by the help the educational materials such as posters, CDs and field trips. On the 26th-27th, 2005 Child Tema organized “The First Child TEMA Assembly in Ankara with 175 primary school students from 50 provinces of Turkey discussed the issue of climate change (TEMA, 2005).

Greensteps for Environmental Literacy established in 1998 with the mission of integrating environmental education to curriculums and various aspects of our life.

- published four books as well as many informative materials such as brochures, posters especially about water i.e. “Water Book”, poster about four seasons of water
- consultative status to a TV programme on environment.
- collaborates with ministries of education and environment such as being a part of "Environmental Education Project" of Istanbul since 2000
- being published and delivered some environmental education materials such as booklets, Istanbul
- making environmental education projects such as ‘Greensteps Across Young Minds’ summer camp project for environmental education in order to develope their skills in problem solving, project proposal writing etc., to develope a special education programme on water for Southeast Anatolia Project, and to develope programmes in collaboration with other NGOs targetting consumer awareness and greener production.

- organising/supporting environmental educations programmes since 1998 such as "One Day in Nature, 2003", activities with TURCEV, "Culture and Water Activity"
- organising art exhibitions on "When Waste Turns to Art" every month between January-June, 2003 in different places in Istanbul, collaborating with artists. It is planned to be spread five locations if sponsors are found.

Nature Association (DD) is an non governmental organisation to make the world such a place where human societies live in harmony with nature by aiming to protect Turkey's threatened species, biodiversity areas and priority habitats and to be aware people including children through different activities to reach the aims.

For primary school children, DD

- develope/support educational materials such as My Natural Education Program-prepared for 6-11 years old students, Educational Guide for Bio Diversity, and to improve materials with Royal Society for the Protection of Birds to be used in Gediz Delta Visitor Centre and Birecik Bald Ibis Visitors Centres, translation of activities prepared by Acclimatiation Experiences Institue.

- organise/involve environmental educations activities with different organisations such as "Environmental Education Activities in Sky Observation Day with TUBİTAK", "Biological Diversity Day", "Bird Observation Week with Turkish Bird Research Society as well as environmental education activities with Birecik Bald Ibis and Gediz Delta Visitors Center regularly.

- support environmental education projects/programmes collaborates with MEB, Ministry of Environment & Forestry such as Education Programme on Nature for Sultansazlığı, Eco-schools Projects, Learning From Forests Program Gediz Delta and Birecik Bald Ibis Visitor Center.

- moderating cevre-egitimi@yahoogroups.com in order to improve communications with environmental educators, NGOs, teachers etc.

- publish Gunebakan Environmental Education Bullettin every three months with a special theme since 2004.

- “Gunebakan Environmental Education Bullettin”, Nature Association, September-October-November 2004, 1.

3. METHOD

The prepared environmental education program is designed to be implemented as an curriculum enrichment activity for the age of 12-14 year old children.

According to Piaget's formal operational period which is 11 years and up, children are able to think logically about the abstract propositions and test hypotheses systematically. Therefore, some of the ecological terms like habitat, ecology, community including population can be perceived and conceived in formal operational period better than early stages. This is the most important period of children in the process of learning ecological principles (Atasoy, 2006).

The program consists of twelve modules (see Table 3.1). Each module consists of 2-5 activities lasting three hours.

Table 3.1. Order of the Modules

Number of Module	**Number of the Week**	**Name of the Module**
MODULE 1	1 st week	Prey and Predator
MODULE 2	2 nd week	Bacteria and its Exponential Growth
MODULE 3	3 rd week	Being a Tree
MODULE 4	5 th week	Population Dynamics I
MODULE 5	6 th week	Population Dynamics II
MODULE 6	7 th week	Nature and Culture
MODULE 7	8 th week	Realities of Turkey
MODULE 8	10 th week	Inequalities in the World
MODULE 9	11 th week	Ecological Footprint
MODULE 10	12 th week	World Problems: AIDS and Poverty
MODULE 11	13 th week	World from Children' View
MODULE 12	14 th week	Our Dreams

Drama is mainly used as a tool in all the modules. Authentic context is preferred for the module and in most of the modules children are allowed to take on an expert role. This technique is called “The Mantle of The Expert” by Heathcote is mentioned in chapter 2.1.1.3.3 entitled Drama in Education.

Discussion method, concept mapping, bibliopgraphic research, experiments, field studies, surveys are some of the strategies and techniques used in the modules. Good quality of discussion includes language and communication skills, sharing of information, analysis of the situations and formulation of solutions as well as promoting democratic atmosphere, respecting the others’ opinions, supporting one’s views with arguments is taken into account in the study. The advantages of concept mapping allows opportunity to combine the relation ex -concepts with the new ones, with themselves; and the advantages of experiments allows to gain the scientific methods i.e. formulation of the hypothesis, experimentation, observation, recording findings, data analysis, eloboration and conclusions are prefered to be used. The surveys which involve collection of data, analysis of data, reaching conclusions, presentation as well as questionarries, interviews, opinion sheets are also used.

In order to guide teacher, each module has following parts: title, aims, background, objectives, subjects, garde level, duration, key words, material, procedure, activity, guiding questions and discussions, remarks, closure, evaluation and resources. Concept map, observations, participant assessments, quiz and discussions are considered as evaluation instruments for modules. The format of the modules is clarified at the beginning of the program as it is seen in page 66. A test prepared in order to evaluate the 12 modules as well as with its answer sheet (See Appendix A).

FORMAT OF THE MODULES

The following explanations are about the format of each module in order to find the text easy for user to follow.

MODULE X is put on the right top of the each page's corner. "X" represent the number of the module

TITLE is to attrack the leader's attention that relates to the activity's content.

AIM(s) appears directly under the title and provides two or three sentences what the participants will gain from each module.

PART X.Y.

"X" represent the module's number, "Y" represent the activity number in module e.g. Part 1.2 means second activity in first module.

In each module, the first and/or second part belong to ***warming activitiy***(ies) which is designed in order to warm the participants before coming to the core of module, becoming more specific and more challenging both phsically and mentally. Each warming activity is planned not longer than 20 minutes.

Background appears directly under the PART X.Y. and provides information that are useful for the leader during each activity. Some parts of the background is given in "Guiding Questions and Discussions" section in the parenthesis as answers for the questions.

Objectives is to refer what is expected of participants by each module.

Subjects indicates the subjects such as mathematics, science, arts etc. that each module incorporates.

Grade Level indicates the level of participants that module is recommended. General modules are designed for 7th grades participants. Some of the activities may be used for lower grades.

Duration recommended time allotments for each activity of core module, including preparation. This will vary considerably according to size of group, the age of the participants, whether they are used to working in groups, making drama etc.

Key words are vocabulary that is expected to be explored by the participants more at the end of the each activity.

Material lists materials needed to do the activity.

Procedure describes preparation phase for doing the activity.

Activity is a step-by-step explanations for leading the activity.

Guiding Questions and Discussions are broadly based on different curriculum links and while "***guiding questions***" serve to open up the activity and lead to discussion which could also serve as a useful indicator of the participants' current knowledge and understanding. In each activity, there may be more than one**.**
Note: The questions in *guiding questions and discussion* session are used preferable, according to group's needs.

FOR THE NEXT MEETING (X.Y):
This part refer to the homeworks. "X.Y." is the ***code*** of the assignments. "X" represent the number of the module while "Y" represent a capital letter e.g. A, B, C to show how many assignments are given

FROM THE EX-MEETING
Remind: (X.Y.)
The assignments that were give in ex-modules are put and examined under this title.

Remind is to explain the purpose of assignments with its code "X.Y." in the same box. Under the each ***FROM THE EX-MEETING***, assignments are put as like an activitiy with its format e.g. objectives, durations etc.

There is a small explanation about where the leader can find these assignments in the ex modules

Remarks consist of some reminders for the leader to make the activity more meaningful and to prevent some possible difficulties that the leader may face to.

FOR THE NEXT MEETING(All):
X.Y.
At the end of each module-before the ***resources***, the whole "***FOR THE NEXT MEETING***" parts are written ending with their codes to remind the assignments for the leader

Closure *consists of feelings, ideas, questions that the group members want to share including the leader at the end of the each module.*

Evaluation includes details how leader will assess the outcomes according to his/her aim and objectives

Resources are the list of sources of information used in the whole module. In each module, there are two specific places for resources one is at the end of background part of the each activity and one is at the end of the each module which constists of the whole sources that are used in the module.

4. CLOSURE REMARKS AND SIGNIFICANCE OF THE STUDY

The possible changes in population which is doubled between 1961and 2000 period should be taken into account from environmental, economical and social perspectives. In order words, this raise in the last 40 years causes some problems such as increases in consumption rate, more natural resources are used, some living areas are destroyed that cause damage in biodiversity in nature, unemployment, pollutions etc.

Lots of regional, interregional, national, international conferences are occured about the current environmental problems of the earth including over population and many declarations are signed by most of countries in the world including Turkey.

However, the curricula or educational programs do not follow these development neither quickly nor deeply for the school age children. On the other hand, researches show that elementary and primary school level education in developing countries is returned to the society as a benefit (Dikmen, 1993). In addition to that, the interests and the attitudes gained in kindergarden and in school period are the roots of future's desirable attitudes (Erten, Özdemir, Güler, 2003).

Therefore, the aim of this study is to prepare an enrichment activity for giving children awareness on one of the environmental issues i.e. population growth and its possible affects from different dimensions by drama which is one of the effective tools. By the help of drama, it is prefered children construct their own knowledge rather than heaping the related information in order to guide them to the future's responsible decision makers.

However, it is never forgetten that it is not so easy to change positive human attitudes and behaviours towards environment by the short term educational programs. The most effective way is to delebrate the principles of environmental education as much as possible not only in schools but also out of schools.

As a result of that, the world problems including population growth and its social, economical and environmental dimensions should be taken through indoors and outoors activities using different educational techniques urgently. Researches shows that knowledge should be given in an environment with in the daily practises and in experimental way rather than articifial environments (Erten, Özdemir, Güler, 2003).

The new reformist approach which is one of the positive changes took place in Turkish Education System. The ex-curricula is found teacher and knowledge oriented rather than learner oriented. It is more understood that knowledge is meaningful if an individual transfers her/his awareness and knowledge into the action.

By the new curricula (MEB, 2004), more authentic environment is sustained such as making field trips, going to local nature center, relation with NGOs which work for environment and society, finding a way to get contact with people who are in low living conditions. These positive changes occured in curricula may help children who may get more sensitive and ready to change the negative things around themselves and be a part of solutions rather than the problems.

On the other hand, it is more awared of the importance of participation which is one of the core element of environmental education in this study.

Media can be used for more educational purposes by children as well as parents such as documentaries should be taken to the schools as an enrichment material, environmental education programs should be developed for teachers as well as parents, competition programs on televisions are done related with environmental topics.

More opportunity can be created by parents, school administrations and students by working together. That may also cause to be opened environmental education centers which are very very limited in Turkey.

One of the point of consideration for the program designed and presented here is the qualification of teachers who will apply it. Unfortunately, it is not so much easy to find

teachers who has holistic approaches as well as qualified in different subjects like mathematics, social studies.

Another point is that the program should be implemented as an enrichment activity in the framework of school structure or in NGOs'.

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APPENDIX A. PRE-POST TEST

WHAT DO YOU THINK?

1) Please match the words on the left with the explanations on te right hand side.

a. Ecological footprint	1. Specified group in a certain area
b. Population	2. A method of using multiple constraints, including food, fuel, water, housing, waste deposits to estimate the human caring capacity of the earth
c. Food Chain	3. All the organisms in a given area and their interactions with their physical environment
d. Ecosystems and	4. A series of organisms through which food energy passed

2) Some organisms living in the same ecosystem are given below.

a) Please construct a food chain with these organisms

frog, owl, grass hooper, grass, snake

3) Write a pair of organisms from this food chain which shows prey-predator relation

Prey	**Predator**
.....	.....

4) Write two examples of ecosystem that are in Turkey

a. .....
b.....

5) An ecosystem has various number and kind of organisms where living-living and living-nonliving interactions occur. These interactions define the size of populations in the ecosystem.

Using the information and the table below, please answer the questions

Time	Rabbit	Fox
1990-1991	10	3
1991-1992	17	6
1992-1993	35	17
1993-1994	67	35
1994-1995	36	66
1996-1997	16	30
1997-1998	12	15

a. What kind of relation that the graph shows us between these two animals?

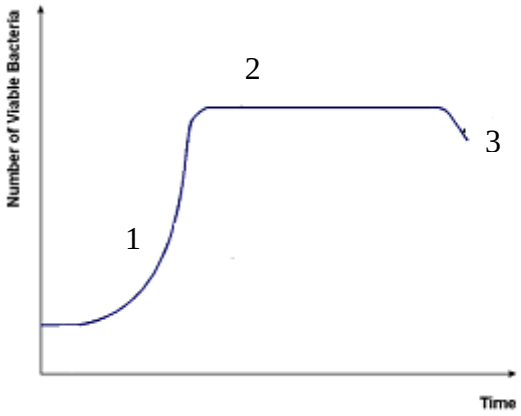
b. What period of time(s) does the rabbit population grow?

c. Write two factors which cause growth in the rabbit population.
1.....
2.....

d. How is the presence of rabbits affect the fox population?

e. What do you think the rabbit population was affected from the decrease in the fox population after 1998?

6)



The graph below shows the number of viable bacteria according to time.

a) According to graph, match the left items with the numbers on the right.

Natural Equilibrium	2
Linear Growth	1
Exponential Growth	3

.

List two reasons that graph change from Exponential Growth to Natural Equilibrium

7) List three possible effects of population growth for a country
a.....
b.....
c.....

8) The following organisms were given: Ibis, monk seals, caretta caretta, squirrel, water snail, adder, jellyfish, pigeon, sparrow

a) Choose three organisms from the list that has smaller populations than the others.

b) Write two reasons for this smaller populations

9) Please answer the following two questions according to the picture given on the left hand side.

a) List three factors that cause to high number of trees in a certain area sun light, rain, minerals in the soil, water supply, suitable temprature for plant growth

b) According to the picture, what does high plant population bring to the ecosystem?

10) People in different parts of the world have various habits such as different clothes, houses, eating and lifestyles. Some kind of individuals who live in China, African tribe and polar regions have different habits. List three reasons for these kind of differences.

a.....
b.....
c.....

11) Although unlimited food, water air are supplied for a population in a closed area, the size of population never grows geometrically forever. What could be the main reason for this stability?

12) Why do we see houses with gardens rather than the apartments in a village?

Thank you very much.

APPENDIX B. PRE-POST TEST WITH ANSWERS

THE ANSWERS OF "WHAT DO YOU THINK TEST"?

1) a-f
b-e
c-h
d-g

2) grass, grass hooper, frog, snake, owl

3)

Prey	**Predator**
Grass hooper	Frog
Frog	Snake
Snake	Owl
Frog	Owl

4) Students should be able to write one of the forest name, sea name, river name, wetland name in Turkey

5)

a. What kind of relation that the graph shows us between these two animals?
Prey-predator
b. What period of time(s) does the rabbit population grow?
1990-1994
c. Write two factors which cause growth in the rabbit population.
Enough food, enough nesting place, less predatory animals/less foxes to hunt the rabbits, immigration

d. How is the presence of high number of rabbits affect the fox population?
The presence of high number of rabbits causes to the increase in fox population

e. What do you think the rabbit population was affected from the decrease in the fox population after 1998?
The rabbit population will increase

6) a) Natural Equilibrium 2
Linear Growth 3
Exponential Growth 1

b) Decrease the food supply, emigration, natural conditons such as epidemic disease, poverty that eliminate the weak individuals

7) a. Unemployment
b. Social inequalities
c. Loosing natural areas

8) a) Ibis, adder, jellyfish

b) Because they are feed by animals rather than plants. That are close to top of the food chain pyamids.

9) a) Sun light, rain, minerals in the soil, water supply, suitable temprature for plant growth

b) High number of animals, higher number of animals, more variety in animals, help ecological balance

10) a.Climate difference
b.Geographical location
c.Natural resources (sea, river, mountains etc.)

11) It grows geometrical for short of time but after the the population began raise the food and air/water became limited and some of the members are died.

12) Less people live in villages. Thats why they have more free space in order to you for different purposes.

APPENDIX C. LIST OF THE E-GROUPS RELATED WITH ENVIRONMENTAL EDUCATION

http://groups.yahoo.com/group/cevre-egitimi

It is a communication net established under the constitution of Environment Society in order to transmit information and experiences and to obtain intercommunication between people and corporations which work on environmental education in Turkey.

http://groups.yahoo.com/group/cekuliletisim

ÇEKÜL organization communication net.

http://groups.yahoo.com/group/cekulegitim

It was established to obtain intercommunication between volunteers who work on environmental education under the constitution of ÇEKÜL

http://groups.yahoo.com/group/geri-kazanim

It is an electronical effort group that aims at recycling waste materials

http://groups.yahoo.com/group/istanbulunsuyu

It is the electronic communication group of Istanbul water observation enterprise. The aim of the enterprise is to constitute civil observation capacity for transparent, sustainable, active and enterprising water supplies management in Istanbul.

http://groups.yahoo.com/group/ekoloji

It is the communication net of the people who oppose the ecological damage and destruction of human being and nature.

http://groups.yahoo.com/group/cevre-doga

Environment, Nature, Culture and Tourism Platform

http://groups.yahoo.com/group/doga_gozculeri

It is the communication gathering people about nature conservation in Turkey, the associations of civil society, platforms, municipal administrations and universities.

http://groups.yahoo.com/group/genclik-stk

It is the announcement and communication net of youth organizations in Turkey.

http://groups.yahoo.com/group/denizlerimiz

It is a communication net established with the aim of protecting the seas.

http://groups.yahoo.com/group/toygar

It is the communication net of the bird observation societies.

civicnettr@superonline.com

It is the announcement and communication net of civil society organizations.

Uluabat_golu@yahoogroups.com

Ulubat Lake conservation activities

APPENDIX D. WEB SITES OF NGOs WORK ON ENVIRONMENTAL EDUCATION

Sample current activities were chosen from NGOs as follows;

- Association for the Protection of Consumers and the Environment (CETKO)
- Environmental Education Foundation of Turkey (TURCEV), http://www.turcev.org.tr/
- Foundation for the Protection and Promotion of Environmental and Cultural Assets (CEKUL)
- Turkish Association for the Conservation of Nature and Natural Resources (TTKD) http://www.ttkd.org.tr/
- Greensteps for Environmental Literacy (YAÇED) http://www.yesiladimlar.org/
- Environmental Protection and Packaging Waste Recovery Trust www.cevko.org.tr
- Turkish Marine Environment Protection Association (TURMEPA) www.turmepa.org.tr
- The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA) http://www.tema.org.tr/
- Nature Association (DD) http://www.dogadernegi.org/
- Turkish Bird Research Society (KAD) http://www.kad.org.tr/
- Turkey Natural Life Protection Association (DHKD) http://www.dhkd.org/
- WorldWide Foundation for Nature-Turkey (WWF-Turkey) http://www.wwf.org.tr/
- Environment Foundation of Turkey (TÇV) http://www.cevre.org
- The Buğday Ecological Living Associations www.bugday.org
- The Mediterranean Sea Seal Research Group (AFAG) http://www.afag.org/
- Turkey Environment Protection and Greening Association (TÜRÇEK) http://www.turcek.org.tr/
- Greenpeace-The Mediterranean Sea Campaign Ofice http://www.greenpeacemed.org.mt/

APPENDIX E. THE MODULES OF THE EDUCATIONAL PROGRAMME

Prey and Predator

Aim(s)

- Participants should be able to be aware of the components which cause to changes in population size i.e. birth, death, immigration, emigration
- Participants should be able to realise more that prey/predator relation is a part of ecological balance in nature
- Participants should be able to examine their knowledge about Turkey's ecosytems

PART 1.1 (Warming)

Background

The prey /predator relationship is important for keeping balance in the ecosystem. Prey is an animal eaten by something else for food whereas predator is an animal that pursues another animal for food e.g.falcon (predator)- frog (prey), fox(predator)-rabbit(prey).

Objectives

- Participants should be able to get to know group members more

Grade Level	**Duration**	
6-7	*Activity*	20 minutes

Subjects

Science

Key words

Prey, predator

Material

Procedure

Get everyone into a circle, with participants about arm's length away from one another. It is best played on grass, and everyone should keep very quiet during each round. Invite two participants, one particiant to be the fox and another to be the rabbit. Bring them both to the center of the circle and blindfold them. If they dont want to, they can just close their eyes.

Activity

The Leader: "The fox is hunting at night and is listening for his prey, the rabbit. The rabbit, naturally, is trying to avoid the fox. The other participants are trees that will guide the rabbit or fox gently back into the circle when either wanders off the playing area".
Turn the rabbit and fox around several times to disorient them slightly, then let the hunt begin. Allow a little time for this game if the participants will want a turn at being the predator and prey.

Guiding Questions and Discussion

- Can plants be a prey/predator?
- Does one animal can be both prey and predator at the same time? Give an example.
- What skills they think a predator might need to be succesful in hunt as well as the needs of prey to avoid capture?

Remarks

- If the fox is in trouble to find its prey, allow the fox to ask "where are you" to rabbit. Rabbit will reply immediately by saying "I am here". It is a challenge for rabbit to find a strategy not to be caught by the fox.

Resource

(1) Archtech Home Page, http://www.arcytech.org/java/population/facts_foodchain.html (accessed June 2005)

PART 1.2

Background

Population as a biological term means organisms of the same species living together in a specific area. When the prey get killed and eaten, population growth of the prey slows because of the mortality. The prey population is increased by births if the predator is not present and the prey population is decreased by deaths not having to do with the predator in question. The predators eat prey and get energy and nutrients. She/he needs prey to survive and to reproduce which causes population to grow, because individuals are living and giving birth. Population size is much bigger with the prey than without e.g. if it is the only prey; very few predators eat just one prey species.

Birth rates, death rates, number of predators, physical conditions such as clean water, amount of food and other environmental factors such as disease, climate cause to change population of a species in the ecosystem. If the number of trees in a ecosystem inrease, more food and shelter becomes available. Bird populations and size of the small animals may also grow up by the number of years. Since local predator know the place better, they may have more food that cause the raises of their population size. Disease, cover for breeding and shelter, over population of a species, , lack of food, water, or extreme weather e.g. drought affect the size of the population and cause to decrease. Especially, a period of low rainfall, the number of trees are important for small animals to live and to find food, shelter. Less shelter cause identification of the small animals easily and to be caught.

Resource

(1) Enviro-Tackle Box Home Page, Behind the Numbers, http://www.envirotacklebox.org/modules/m5popul.htm# (accessed July 2005)

Objectives

- Participants should be able to practise food chain
- Participants should be able to be aware of the interactions between living creatures in nature
- Participants should be able to learn population as a term in biology

Grade Level

6-7

Duration

Activity 35 minutes

Subjects

Science, mathematics, arts

Key words

Food chain, prey, predator, population

Material
Paper, board marker, rubber, colorful pencils, craft paper string, colorful copy of The Natural Conserver's Graph-participant copy sheet. Since each paper has two graphs, copy has to be done for half of the participant numbers

Procedure
Become a circle. Deliver the paper and encourage the participants to make a "concept map" about " population". Give them 5 minutes to finish. Keep their concept maps for future. Count the students by saying "grass, trees, mouse, rabbit, deer, owl, snake, mountain lion, crops" one by one.
Activity
The leader: "Everybody will remember which name were given to her/himself. All the participants who were given the same name will become a group : group of **grass**, group of **trees**, group of **mice**, group of **rabbits** etc.".

The leader will introduce each group using the biological term "population" :

- They are grass population.
- Here is tree population.
- Mouse population, welcome
- What about here!!! Rabbit population

Showing deers, owls, snakes;

- Hereee, "Deer population and owl population"
- And now welcome to mountain lion and crop population

Participants will choose one of the names i.e."grass, trees, mouse, rabbit. deer, owl, snake, mountain lion, crops ". Give them five minutes to make their own mask with colorful pencils and rubber which is used to put the mask on the face

The Leader: "I am the natural conserver. You are a member of the forest community. Some news reached me and I came to the forest to observe the situation, and decide what we would do for the balance of the nature.
In last two years, I have heard that: The tress were cut down. What happened to you as a member of the community in the forest?"

Wait participants' to answer. After that ask the second question:
The Leader: "As a second news, the snake population decreased. What happened to you as a member of the community in the forest ?"

Wait for participants' answer. After that ask the third question:
The Leader: "Lastly, you received rain greater than normal last year, What happened to you as a member of the community in the forest ?"

Guiding Questions and Discussion

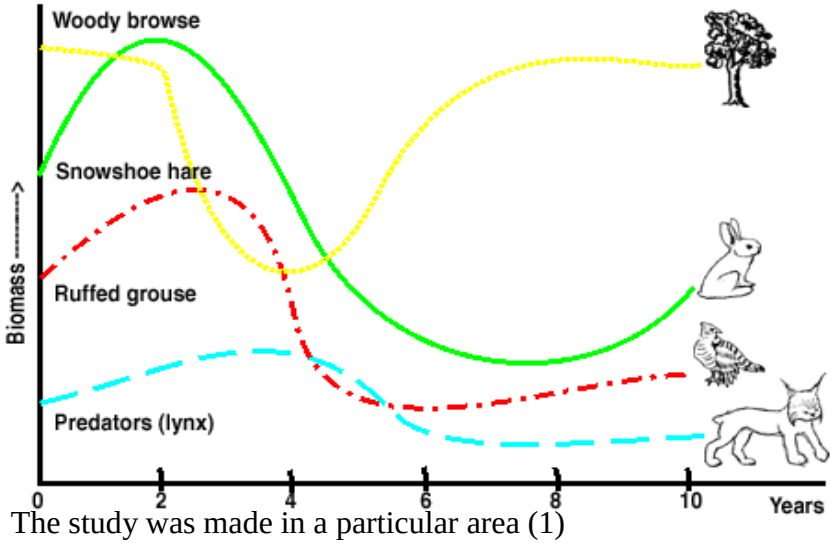
- Do you think similar things happen under the sea? Why/Why not?
- Are these reasons happened in the real world?
- What would be at the end?
- Is there any species that you know/hear but they are not living anymore or dying out?

- Were there any unknown word (s) for you that you don't know the meaning of? [population]

Remarks

- Since ***The leader*** don't give any clues to the participants in order to find out the possible results/solutions of the news i.e. a, b, c; the participants need time to find their own strategy.
- If they are in trouble to find a solution, ask them: "who will be affected **first** if the rabbit population grow up etc.?"
- For food chain, suggest them to use string to show the web between the animals/plants in the game i.e.prey will give the string into its predator and it will proceed like that.
- Invite them to draw their findings into craft paper

FOR THE NEXT MEETING(1.A):.



The study was made in a particular area (1)

The Leader: "The natural conserver left a graph

Here are the graphs.

[Deliver The Natural Conserver's Graph-participant copy to each participant]

PART 1.3
Objectives

- Participants should be able to experience different ecosystems in Turkey
- Participants should be able to

Grade Level
6-7

Duration
Preparation
Activity ***40 minutes***

Subjects
Science, social studies

Key words
Forest, ecosystem

Material
Waste materials i.e. plastic caps, paper, string, bottles, clothes; match box, water, salt, colorful pencil

Procedure
Activity

The Leader: "You are a member of the forest in Turkey. The natural conserver who visited you and his team want to make a map that shows distribution of your animal/plant population in Turkey in the forests. You can make your map on the floor".

Give the waste materials in order to make their map which may show Turkey's borders, regions, some cities, forests, lakes etc. according to the participant's knowledge about Turkey.

Guiding Questions and Discussion

- Which animals/plants did you put on the map? Why?
- How many of them are endangered species?
- For what reasons are they endangered?
- Which regions have most green areas in Turkey? Why?
- If one place is not so green, does it mean that less species are there?

Remarks

- Since the map will be done on the surface, it can not be moved later easily. The place of map should be decided before
- Encourage the participant to be more creative eg. Putting telephone card's pictures etc.
- Encourage the participants to show more animal/plant families on the map such as mammals, bird etc.
- Invite them to think about endangered species or species which are not living anymore that were spoken in the ex- activity.
- They might put less plant species that are endangered, ask them the reason.
- If there is a missing part in the map e.g. legend, scale, number of the species; ask them some guiding questions. For example;
    a. How many animals live in .....?
    b. How big/small is this map? For example; can we take it into the car?
- The map of Turkey which was done by the waste materials would be kept for the next 2-3 meetings

PART 1.4

Background

Births, deaths, immigration, and emigration change the number of organisms in a population over. Deaths and emigration decrease the size whereas, births and immigration increase the size of the population. Population growth refers raise the number of organisms in a population including humanbeing. Migration is defined as the movement from one country, place or locality to another whereas emigration is defined as departing from one country, place or region to settle or reside in another. Most people move for economic reasons such as unemployment, lack of farmland, but some migrate to escape political or religious persecution or simply for better life conditions. The size of the cities grow up more than the size of villages in the period of 1990-2000. The annual growth rate of cities were 2.68 per cent whereas it was 0.42 per cent for the villages. İstanbul, Ankara and İzmir are the first three most populous cities in in Turkey according to 2000 census. Every one person of fifteen lives in Istanbul. The size of the population of Bayburt, Tunceli and Kilis are the least cities in Turkey (2). Antalya has the highest growth rate in 81 cities where tourism is the most important area againsit unemployment. Şanlıurfa and Istanbul are followed after Antalya.

In Colorful Cities-Villages-participant copy sheet, the meaning of the colors are as follows;

- Blue color represent the cities whose annual village growth rate is lower –30.00 per cent.
- Red color represent the cities whose total annual growth rate is more than 20.00 per cent.
- Turquoise color represent the cities which the difference between annual village and city growth rate is remarkable.

Resource

(1) Republic of Turkey Prime Ministry State Institute of Statistics Home Page, http://www.die.gov.tr/nufus_sayimi/2000Nufus.pdf (accessed June 2005)

Objectives

- Participants should be able to be awared of the main population dynamics i.e. birth, death, immigration and emmigration
- Participants should be able to compare reasons that caused people to emigrate/immigrate

Grade Level

6-7

Duration

Activity 40 minutes

Subjects

Science, social studies, mathematics

Key words

Population, birth, death, immigration and emmigration

Material

Copy of Cities-Villages-participant copy sheet and colorful copy of Colorful Cities-Villages-participant copy sheet

Procedure

Deliver the Cities-Villages-participant copy sheet to each participant. Give 2-3 minutes to be examined. After their observation, invite them to the small discussion.

Guiding Questions and Discussion

- What do you see on the paper?
- How were the data collected?
- What is "‰" that is used on the paper?
- What do the numbers represent?
- What does "-" represent?

After the small discussion, deliver Colorful Cities-Villages-participant copy sheet to each. Invite them to another discussion;

Guiding Questions and Discussion

- What is the difference from the ex-one?
- What do the colors represent?
- What does each color represent?
- Is there any city/village whose population decrease between 1990-2000? Why?
- What could be the reason of declining in growth rate?
- What could be the reason of increasing in growth rate?
- Which city has the highest population change i.e. decreasing and increasing? Why?
- If annual village growth rate is decreasing in one village, does it means that people in the village are moving to the city which it belong to officially? Why/Why not?
- Why do you think the **annual city growth rate** is higher in Adıyaman, Antalya, Batman, Bursa, Hakkari, Mardin, Muş, Şanlıurfa, Şırnak, Tekirdağ, Van
- Why does **annual village growth rate** either has negative value or not more than 30 in the list generally?
- What would it be if Rize's annual city growth rate increased while village growth rate decreased?
- Do you have similar situations about immigration and emigration that you know or heard i.e? Give some examples if possible.

Remarks

- While the first discussion is being focused on what they can read from the table, the second discussion were guided to understand and comment about the table.
- In the second discussion, we are expecting to find out the reason of changes in population i.e. birth, death, immigration, emigration
- Participants should also be invited to think about the reasons of immigration and emigration.

FOR THE NEXT MEETING (All)
1.A. The Natural Conserver's Graph-participant copy

The map of Turkey which was done by the waste materials would be kept for the next 2-3 meetings.

Closure
Invite the participants to evaluate today's activities as a whole.

Evaluation

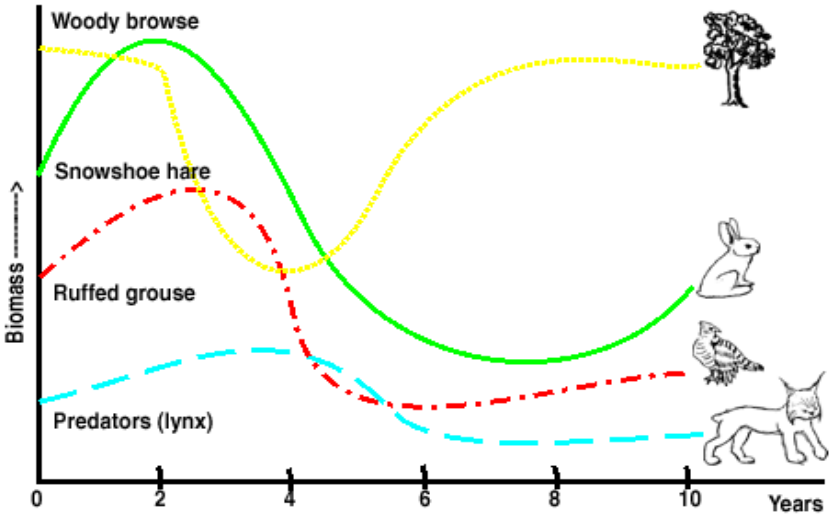
a. Participants will be able to define prey and predator with their roles in nature. They will also be able to describe the reliance on certain senses such as seeing, hearing an animal has during this relationship.
b. The following student outcomes may be assessed through leader observation for the whole module

- Participation.
- Ability to function as a group participant.
- Ability to reach logical conclusions.
- Ability to write 5 reasons for and against immigration. Reasons could be based on classroom discussion and group work. Students should then describe their personal point of view (i.e., Which side would they support and why?)
- Effective communication

Resources

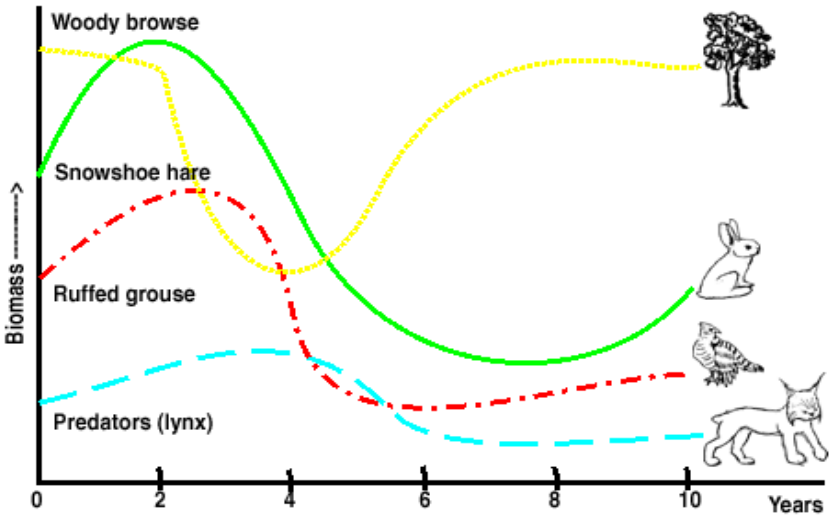
(1) Enviro-Tackle Box Home Page, Behind the Numbers, http://www.envirotacklebox.org/modules/m5popul.htm# (accessed July 2005)
(2) Republic of Turkey Prime Ministry State Institute of Statistics Home Page, http://www.die.gov.tr/nufus_sayimi/2000Nufus.pdf (accessed June 2005)
(3)Archtech Home Page, http://www.arcytech.org/java/population/facts_foodchain.html (accessed June 2005)

THE GRAPH THE NATURAL CONSERVER LEFT



Note: The study was made in a particular area

THE GRAPH THE NATURAL CONSERVER LEFT



Note: The study was made in a particular area

CITIES-VILLAGES

CITY, VILLAGE POPULATION ACCORDING TO CITIES AND ANNUAL POPULATION GROWTH RATE

		General Census						Annual population growth rate ‰		
		1990			2000					
	Cities	Total	City	Village	Total	City	Village	Total	City	Village
	Toplam	**56 473 035**	**33 656 275**	**22 816 760**	**67 803 927**	**44 006 274**	**23 797 653**	**18,28**	**26,81**	**4,21**
01	Adana	1 549 233	1 125 149	424 084	1 849 478	1 397 853	451 625	17,71	21,70	6,29
02	Adıyaman	510 827	222 102	288 725	623 811	338 939	284 872	19,98	42,26	-1,34
03	Afyon	738 979	306 209	432 770	812 416	371 868	440 548	9,47	19,42	1,78
04	Ağrı	437 093	158 758	278 335	528 744	252 309	276 435	19,03	46,31	-0,68
05	Amasya	359 265	162 343	196 922	365 231	196 621	168 610	1,65	19,15	-15,52
06	Ankara	3 236 378	2 836 802	399 576	4 007 860	3 540 522	467 338	21,37	22,15	15,66
07	Antalya	1 132 211	602 194	530 017	1 719 751	936 330	783 421	41,79	44,13	39,07
08	Artvin	212 833	66 097	146 736	191 934	84 198	107 736	-10,33	24,20	-30,89
09	Aydın	824 816	384 711	440 105	950 757	493 114	457 643	14,21	24,82	3,91
10	Balıkesir	974 274	468 758	505 516	1 076 347	577 595	498 752	9,96	20,87	-1,35
11	Bilecik	175 797	90 471	85 326	194 326	124 380	69 946	10,02	31,82	-19,87
12	Bingöl	249 074	86 648	162 426	253 739	123 470	130 269	1,86	35,40	-22,06
13	Bitlis	330 115	144 029	186 086	388 678	219 511	169 167	16,33	42,13	-9,53
14	Bolu	262 919	107 551	155 368	270 654	142 685	127 969	2,90	28,26	-19,40
15	Burdur	254 899	129 112	125 787	256 803	139 897	116 906	0,74	8,02	-7,32
16	Bursa	1 596 161	1 153 007	443 154	2 125 140	1 630 940	494 200	28,62	34,67	10,90
17	Çanakkale	432 263	168 629	263 634	464 975	215 571	249 404	7,29	24,55	-5,55
18	Çankırı	249 344	104 132	145 212	270 355	141 186	129 169	8,09	30,43	-11,70
19	Çorum	608 660	254 272	354 388	597 065	311 897	285 168	-1,92	20,42	-21,73
20	Denizli	750 882	337 416	413 466	850 029	413 914	436 115	12,40	20,43	5,33
21	Diyarbakır	1 096 447	595 440	501 007	1 362 708	817 692	545 016	21,73	31,71	8,42
22	Edirne	404 599	210 421	194 178	402 606	230 908	171 698	-0,49	9,29	-12,30
23	Elazığ	498 225	274 045	224 180	569 616	364 274	205 342	13,39	28,45	-8,77
24	Erzincan	299 251	144 144	155 107	316 841	172 206	144 635	5,71	17,78	-6,99
25	Erzurum	848 201	400 983	447 218	937 389	560 551	376 838	10,00	33,49	-17,12
26	Eskişehir	641 301	477 436	163 865	706 009	557 028	148 981	9,61	15,41	-9,52
27	Gaziantep	1 010 396	738 245	272 151	1 285 249	1 009 126	276 123	24,05	31,25	1,45
28	Giresun	499 617	223 678	275 939	523 819	283 316	240 503	4,73	23,63	-13,74
29	Gümüşhane	168 845	59 551	109 294	186 953	77 570	109 383	10,18	26,43	0,08
30	Hakkari	172 479	71 522	100 957	236 581	139 455	97 126	31,59	66,76	-3,87
31	Hatay	1 109 754	531 707	578 047	1 253 726	581 341	672 385	12,19	8,92	15,11
32	Isparta	434 771	229 796	204 975	513 681	301 561	212 120	16,67	27,17	3,43
33	İçel	1 267 253	788 576	478 677	1 651 400	999 220	652 180	26,47	23,67	30,92
34	İstanbul	7 195 773	6 779 594	416 179	10 018 735	9 085 599	933 136	33,09	29,27	80,72
35	İzmir	2 694 770	2 137 721	557 049	3 370 866	2 732 669	638 197	22,38	24,55	13,60
36	Kars	355 823	130 391	225 432	325 016	142 145	182 871	-9,05	8,63	-20,92
37	Kastamonu	423 206	148 861	274 345	375 476	174 020	201 456	-11,96	15,61	-30,87
38	Kayseri	944 091	606 001	338 090	1 060 432	732 354	328 078	11,62	18,93	-3,01
39	Kırklareli	309 512	149 532	159 980	328 461	189 202	139 259	5,94	23,52	-13,87
40	Kırşehir	256 684	126 745	129 939	253 239	147 412	105 827	-1,35	15,10	-20,52

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41	Kocaeli	920 255	579 681	340 574	1 206 085	722 905	483 180	27,04	22,07	34,97
42	Konya	1 752 658	963 128	789 530	2 192 166	1 294 817	897 349	22,37	29,59	12,80
43	Kütahya	577 905	243 151	334 754	656 903	318 869	338 034	12,81	27,10	0,97
44	Malatya	704 359	369 243	335 116	853 658	499 713	353 945	19,22	30,25	5,46
45	Manisa	1 154 418	590 374	564 044	1 260 169	714 760	545 409	8,76	19,11	-3,36
46	Kahramanmaraş	894 264	407 215	487 049	1 002 384	536 007	466 377	11,41	27,47	-4,34
47	Mardin	558 275	249 032	309 243	705 098	391 249	313 849	23,34	45,16	1,48
48	Muğla	562 809	198 080	364 729	715 328	268 341	446 987	23,97	30,35	20,33
49	Muş	376 543	103 089	273 454	453 654	159 503	294 151	18,63	43,64	7,29
50	Nevşehir	289 509	112 955	176 554	309 914	136 523	173 391	6,81	18,95	-1,81
51	Niğde	301 691	97 286	204 405	348 081	126 812	221 269	14,30	26,50	7,93
52	Ordu	826 886	348 028	478 858	887 765	416 631	471 134	7,10	17,99	-1,63
53	Rize	348 776	134 082	214 694	365 938	205 245	160 693	4,80	42,56	-28,96
54	Sakarya	683 281	404 742	278 539	756 168	459 824	296 344	10,13	12,76	6,19
55	Samsun	1 161 207	527 362	633 845	1 209 137	635 254	573 883	4,04	18,61	-9,94
56	Siirt	243 435	110 221	133 214	263 676	153 522	110 154	7,98	33,13	-19,00
57	Sinop	265 153	86 441	178 712	225 574	101 285	124 289	-16,16	15,84	-36,31
58	Sivas	766 821	384 832	381 989	755 091	421 804	333 287	-1,54	9,17	-13,64
59	Tekirdağ	468 842	258 440	210 402	623 591	395 377	228 214	28,52	42,51	8,12
60	Tokat	718 738	308 999	409 739	828 027	401 762	426 265	14,15	26,24	3,95
61	Trabzon	795 849	331 321	464 528	975 137	478 954	496 183	20,31	36,84	6,59
62	Tunceli	133 584	50 799	82 785	93 584	54 476	39 108	-35,58	6,99	-74,97
63	Şanlıurfa	1 001 455	551 614	449 841	1 443 422	842 129	601 293	36,55	42,30	29,01
64	Uşak	290 398	146 809	143 589	322 313	182 040	140 273	10,42	21,50	-2,34
65	Van	637 433	262 562	374 871	877 524	446 976	430 548	31,96	53,19	13,84
66	Yozgat	578 719	209 947	368 772	682 919	315 156	367 763	16,55	40,61	-0,27
67	Zonguldak	653 739	235 546	418 193	615 599	250 282	365 317	-6,01	6,07	-13,51
68	Aksaray	330 569	144 217	186 352	396 084	200 216	195 868	18,08	32,80	4,98
69	Bayburt	107 330	41 295	66 035	97 358	41 356	56 002	-9,75	0,15	-16,48
70	Karaman	215 181	106 051	109 130	243 210	139 912	103 298	12,24	27,70	-5,49
71	Kırıkkale	350 360	243 378	106 982	383 508	285 294	98 214	9,04	15,89	-8,55
72	Batman	344 121	194 664	149 457	456 734	304 166	152 568	28,30	44,62	2,06
73	Şırnak	262 006	125 264	136 742	353 197	211 328	141 869	29,86	52,28	3,68
74	Bartın	205 834	43 662	162 172	184 178	48 002	136 176	-11,11	9,47	-17,47
75	Ardahan	163 731	34 038	129 693	133 756	39 725	94 031	-20,22	15,45	-32,15
76	Iğdır	142 601	55 547	87 054	168 634	81 582	87 052	16,76	38,43	0,00
77	Yalova	135 121	87 032	48 089	168 593	98 661	69 932	22,13	12,54	37,44
78	Karabük	244 177	152 469	91 708	225 102	157 756	67 346	-8,13	3,41	-30,87
79	Kilis	130 198	87 219	42 979	114 724	74 985	39 739	-12,65	-15,11	-7,84
80	Osmaniye	384 104	237 847	146 257	458 782	311 994	146 788	17,76	27,13	0,36
81	Düzce	273 679	105 834	167 845	314 266	130 632	183 634	13,82	21,05	8,99

Note: The data was taken from Republic of Turkey, Prime Ministry State Institute of Statistics. Available at www.die.gov.tr

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CITIES-VILLAGES

CITY, VILLAGE POPULATION ACCORDING TO CITIES AND ANNUAL POPULATION GROWTH RATE

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04	Ağrı	437 093	158 758	278 335	528 744	252 309	276 435	19,03	46,31	-0,68
05	Amasya	359 265	162 343	196 922	365 231	196 621	168 610	1,65	19,15	-15,52
06	Ankara	3 236 378	2 836 802	399 576	4 007 860	3 540 522	467 338	21,37	22,15	15,66
07	Antalya	1 132 211	602 194	530 017	1 719 751	936 330	783 421	41,79	44,13	39,07
08	Artvin	212 833	66 097	146 736	191 934	84 198	107 736	-10,33	24,20	-30,89
09	Aydın	824 816	384 711	440 105	950 757	493 114	457 643	14,21	24,82	3,91
10	Balıkesir	974 274	468 758	505 516	1 076 347	577 595	498 752	9,96	20,87	-1,35
11	Bilecik	175 797	90 471	85 326	194 326	124 380	69 946	10,02	31,82	-19,87
12	Bingöl	249 074	86 648	162 426	253 739	123 470	130 269	1,86	35,40	-22,06
13	Bitlis	330 115	144 029	186 086	388 678	219 511	169 167	16,33	42,13	-9,53
14	Bolu	262 919	107 551	155 368	270 654	142 685	127 969	2,90	28,26	-19,40
15	Burdur	254 899	129 112	125 787	256 803	139 897	116 906	0,74	8,02	-7,32
16	Bursa	1 596 161	1 153 007	443 154	2 125 140	1 630 940	494 200	28,62	34,67	10,90
17	Çanakkale	432 263	168 629	263 634	464 975	215 571	249 404	7,29	24,55	-5,55
18	Çankırı	249 344	104 132	145 212	270 355	141 186	129 169	8,09	30,43	-11,70
19	Çorum	608 660	254 272	354 388	597 065	311 897	285 168	-1,92	20,42	-21,73
20	Denizli	750 882	337 416	413 466	850 029	413 914	436 115	12,40	20,43	5,33
21	Diyarbakır	1 096 447	595 440	501 007	1 362 708	817 692	545 016	21,73	31,71	8,42
22	Edirne	404 599	210 421	194 178	402 606	230 908	171 698	-0,49	9,29	-12,30
23	Elazığ	498 225	274 045	224 180	569 616	364 274	205 342	13,39	28,45	-8,77
24	Erzincan	299 251	144 144	155 107	316 841	172 206	144 635	5,71	17,78	-6,99
25	Erzurum	848 201	400 983	447 218	937 389	560 551	376 838	10,00	33,49	-17,12
26	Eskişehir	641 301	477 436	163 865	706 009	557 028	148 981	9,61	15,41	-9,52
27	Gaziantep	1 010 396	738 245	272 151	1 285 249	1 009 126	276 123	24,05	31,25	1,45
28	Giresun	499 617	223 678	275 939	523 819	283 316	240 503	4,73	23,63	-13,74
29	Gümüşhane	168 845	59 551	109 294	186 953	77 570	109 383	10,18	26,43	0,08
30	Hakkari	172 479	71 522	100 957	236 581	139 455	97 126	31,59	66,76	-3,87
31	Hatay	1 109 754	531 707	578 047	1 253 726	581 341	672 385	12,19	8,92	15,11
32	Isparta	434 771	229 796	204 975	513 681	301 561	212 120	16,67	27,17	3,43
33	İçel	1 267 253	788 576	478 677	1 651 400	999 220	652 180	26,47	23,67	30,92
34	İstanbul	7 195 773	6 779 594	416 179	10 018 735	9 085 599	933 136	33,09	29,27	80,72
35	İzmir	2 694 770	2 137 721	557 049	3 370 866	2 732 669	638 197	22,38	24,55	13,60
36	Kars	355 823	130 391	225 432	325 016	142 145	182 871	-9,05	8,63	-20,92
37	Kastamonu	423 206	148 861	274 345	375 476	174 020	201 456	-11,96	15,61	-30,87
38	Kayseri	944 091	606 001	338 090	1 060 432	732 354	328 078	11,62	18,93	-3,01
39	Kırklareli	309 512	149 532	159 980	328 461	189 202	139 259	5,94	23,52	-13,87
40	Kırşehir	256 684	126 745	129 939	253 239	147 412	105 827	-1,35	15,10	-20,52

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41	Kocaeli	920 255	579 681	340 574	1 206 085	722 905	483 180	27,04	22,07	34,97
42	Konya	1 752 658	963 128	789 530	2 192 166	1 294 817	897 349	22,37	29,59	12,80
43	Kütahya	577 905	243 151	334 754	656 903	318 869	338 034	12,81	27,10	0,97
44	Malatya	704 359	369 243	335 116	853 658	499 713	353 945	19,22	30,25	5,46
45	Manisa	1 154 418	590 374	564 044	1 260 169	714 760	545 409	8,76	19,11	-3,36
46	Kahramanmaraş	894 264	407 215	487 049	1 002 384	536 007	466 377	11,41	27,47	-4,34
47	Mardin	558 275	249 032	309 243	705 098	391 249	313 849	23,34	45,16	1,48
48	Muğla	562 809	198 080	364 729	715 328	268 341	446 987	23,97	30,35	20,33
49	Muş	376 543	103 089	273 454	453 654	159 503	294 151	18,63	43,64	7,29
50	Nevşehir	289 509	112 955	176 554	309 914	136 523	173 391	6,81	18,95	-1,81
51	Niğde	301 691	97 286	204 405	348 081	126 812	221 269	14,30	26,50	7,93
52	Ordu	826 886	348 028	478 858	887 765	416 631	471 134	7,10	17,99	-1,63
53	Rize	348 776	134 082	214 694	365 938	205 245	160 693	4,80	42,56	-28,96
54	Sakarya	683 281	404 742	278 539	756 168	459 824	296 344	10,13	12,76	6,19
55	Samsun	1 161 207	527 362	633 845	1 209 137	635 254	573 883	4,04	18,61	-9,94
56	Siirt	243 435	110 221	133 214	263 676	153 522	110 154	7,98	33,13	-19,00
57	Sinop	265 153	86 441	178 712	225 574	101 285	124 289	-16,16	15,84	-36,31
58	Sivas	766 821	384 832	381 989	755 091	421 804	333 287	-1,54	9,17	-13,64
59	Tekirdağ	468 842	258 440	210 402	623 591	395 377	228 214	28,52	42,51	8,12
60	Tokat	718 738	308 999	409 739	828 027	401 762	426 265	14,15	26,24	3,95
61	Trabzon	795 849	331 321	464 528	975 137	478 954	496 183	20,31	36,84	6,59
62	Tunceli	133 584	50 799	82 785	93 584	54 476	39 108	-35,58	6,99	-74,97
63	Şanlıurfa	1 001 455	551 614	449 841	1 443 422	842 129	601 293	36,55	42,30	29,01
64	Uşak	290 398	146 809	143 589	322 313	182 040	140 273	10,42	21,50	-2,34
65	Van	637 433	262 562	374 871	877 524	446 976	430 548	31,96	53,19	13,84
66	Yozgat	578 719	209 947	368 772	682 919	315 156	367 763	16,55	40,61	-0,27
67	Zonguldak	653 739	235 546	418 193	615 599	250 282	365 317	-6,01	6,07	-13,51
68	Aksaray	330 569	144 217	186 352	396 084	200 216	195 868	18,08	32,80	4,98
69	Bayburt	107 330	41 295	66 035	97 358	41 356	56 002	-9,75	0,15	-16,48
70	Karaman	215 181	106 051	109 130	243 210	139 912	103 298	12,24	27,70	-5,49
71	Kırıkkale	350 360	243 378	106 982	383 508	285 294	98 214	9,04	15,89	-8,55
72	Batman	344 121	194 664	149 457	456 734	304 166	152 568	28,30	44,62	2,06
73	Şırnak	262 006	125 264	136 742	353 197	211 328	141 869	29,86	52,28	3,68
74	Bartın	205 834	43 662	162 172	184 178	48 002	136 176	-11,11	9,47	-17,47
75	Ardahan	163 731	34 038	129 693	133 756	39 725	94 031	-20,22	15,45	-32,15
76	Iğdır	142 601	55 547	87 054	168 634	81 582	87 052	16,76	38,43	0,00
77	Yalova	135 121	87 032	48 089	168 593	98 661	69 932	22,13	12,54	37,44
78	Karabük	244 177	152 469	91 708	225 102	157 756	67 346	-8,13	3,41	-30,87
79	Kilis	130 198	87 219	42 979	114 724	74 985	39 739	-12,65	-15,11	-7,84
80	Osmaniye	384 104	237 847	146 257	458 782	311 994	146 788	17,76	27,13	0,36
81	Düzce	273 679	105 834	167 845	314 266	130 632	183 634	13,82	21,05	8,99

Note: The data was taken from Republic of Turkey, Prime Ministry State Institute of Statistics. Available at www.die.gov.tr

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Bacteria and its Exponential Growth

Aim(s)

- Participants should be able to draw and read a line graph
- Participants should be able to practise prey/predator relations in order to be released how affects the population dynamics

PART 2.1 (Warming)
Objectives

- Participants should be able to get to know the other parcipants

Grade Level	**Duration**	
6-7	*Activity*	20 minutes

Subjects
Science

Key words
Animal

Material
Clothes for blindfold if needed
Procedure
Make a circle. The leader will remind participants the forest in the north of Turkey that they marked in the Turkey's map in ex-meeting.
The leader will tell a name of an animal to each participant's ear silently one by one: "wild horse, duck, bird, frog, lion, snake, bee, owl, gorilla, woodpecker, wild donkey". Nobody will tell which animal name were given her/himself by the leader. Each animal name will be given more than one person except lion and owl. All animal live in the same forest in the north of Turkey. Some of the animals might not seem to you familar as a member of forest but be relax. They are here with us because of the lake and some immigration/emmigration reasons.
Blindfold all the participants or invite them to close their eyes.

Activity
The Leader: "You are the animals in the forest where you were yesterday. Each of you are looking for his/her own partners who is from the same animal species as you are".

Wait until all animals find her/his partner except lion.

Guiding Questions and Discussion

- Have you got any trouble to find your partners?
- Ask the question to "**lion**" : What do you experience?
- What could be the reasons that you are the onliest member in your species in the forest?

Remarks

- Make sure that all the participants' eyes are closed
- Each partner will define their own strategy to find his/her partners. Voice will be used mostly.

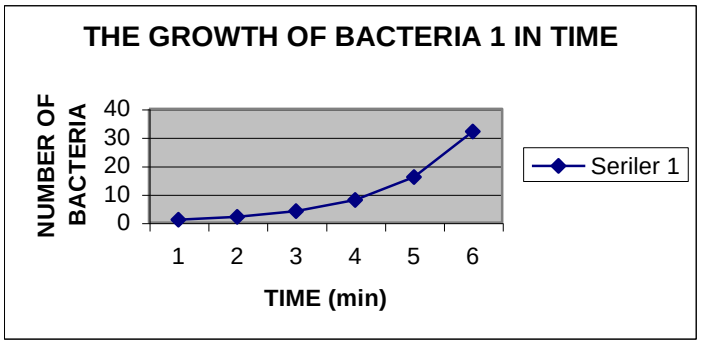
- Since the lion and owl is the onliest member in their species, learning their feelings as well as thinking the reasons why they are lonely are important. Invite them to the reality.

PART 2.2
Background
Bacteria: Bacteria are very important in universe i.e. bacteria help to break down dead organic matter; bacteria make up the base of the food web in many environments. They may be found on the tops of mountains, the bottom of the deepest oceans, in the guts of animals, and even in the frozen rocks and ice of Antarctica. They are so flexible with capacity for rapid growth and reproduction, and great age - the oldest fossils known, nearly 3.5 billion years old.
Bacteria can live in temperatures above the boiling point and in cold that would freeze your blood. They "eat" different things from sugar and starch to sunlight, sulfur and iron. Bacteria are among the earliest forms of life that appeared on Earth billions of years ago. Activities of bacteria are important for land as well as in the water. By their ceaseless labor, the cycling of nutrients such as carbon, nitrogen, and sulfur is completed. Depending their type, bacterias might live with/without oxygen. Each square centimeter of our skin have almost 100,000 bacteria, a single teaspoon of topsoil contains more than a billion (1,000,000,000) bacteria.

GRAPH 1

BACTERIA 1	
TIME (min)	BACTERIA POPULATION
0	1
1	2
2	4
3	8
4	16
5	32
6	64
7	128

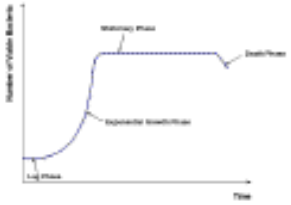
Most of the bacterias are capable of rapid growth rates. Under optimal nutrient and environmental conditions, produce new generation by divide themselves. Since the numbers of a species double each generation as in the table for Bacteria 1. 6th minutes, the number of bacteria would be 64 (2x32=64) and in 7th minutes the numberwill be 128 (2x64=128) since it doubles each time.



It is not on Graph 1-participant copy sheet, it will be drawn by the participants

Showing the pictures is a good example for participants how the bacteria grow up rapidly. More pictures are available at: http://www-micro.msb.le.ac.uk/LabWork/bact/bact1.htm

Bacterial Growth Curve: The curve refers to a single bacterial culture known as a batch culture. Limited number of nutrient were put. It is very simplified in labaratory comparing in nature.



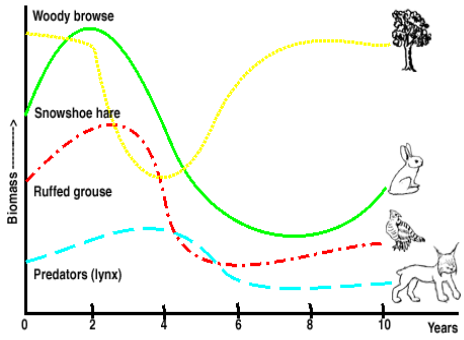
Note: The graph will ve examine more detaily in the next meetings.

Lag Phase: There is no significant changes (increase) in bacteria's population since they have been introduced new. With pH, temperature, nutrients etc. bacteria are becoming "acclimated" to the new environmental conditions

Exponential Growth Phase: The living bacteria population increases rapidly with time. This is an an exponential growth in numbers, and the growth rate increasing with time. Conditions are suitable for growing rapidly.

Stationary Phase: The growth rate has slowed to the point where the growth rate equals the death rate Since the optimal situation i.e. nutrients, pH are changed, build-up of waste and secondary metabolic products, there is no net growth in the bacteria population effectively.

Death Phase: Because of a lack of nutrients and toxic metabolic by-products, the living bacteria population decreases with time.



GRAPH2

Snowshoe hare populations were studied by L. Keith and Associates (Meadows and Keith, 1968; Keith and Windberg, 1978) in a particular area through two periods of decline and one period of increase. Showing
the full population cycle for the woody browse (trees and brush), grouse, snowshoe hare took 15 years and the lynx was about 10 years
Between 0-2 year, due to prey-predator relation, both the tree's and others' biomasses are high.Between 2-4 years, since tree biomass begin decreasing the others were also affected.

Biomass: Biomass is any organic matter which is available on a renewable or recurring basis e.g. plants, trees, plant fiber, poultry litter and other animal wastes, industrial waste

Resources

(1) Corrosion monitoring web site, http://www.corrosion-club.com/waterbactgrowth.htm. (accessed July 2005).
(2) Mirobiology-Leicester, http://www-micro.msb.le.ac.uk/LabWork/bact/bact1.htm. (accessed July 2005).

(3) University of California, Museum of Palentology, http://www.ucmp.berkeley.edu/bacteria/bacterialh.html. (accessed July 2005).
(4) REPP-CREST Home Page http://solstice.crest.org/renewables/re-kiosk/biomass/index.shtml (accessed July 2005)
(5)Pictures were taken from http://animaldiversity.ummz.umich.edu/site/accounts/information/Zonotrichia_albicollis.html and www.mad-cow.org/ 00/mar00_turtle.html [Graph3]
(6) Enviro-Tackle Box Home Page, Behind the Numbers, http://www.envirotacklebox.org/modules/m5popul.htm# (accessed July 2005)
(7) Kocataş, A (1997), Ekoloji ve Çevre Biyolojisi, Ege Üniveristesi Su Ürünleri Fakültesi Yayınları

Objectives

- Participants should be able to develop their knowledge about line graph
- Participants should be able to practise drawing line graph either on paper or in computer
- Participants should be able to practise operations between natural numbers and decimal numbers
- Participants should be able to practise to read natural numbers and decimal numbers
- Participants should be able to practise their knowledge about proportion, ratio, percentage
- Participants should be able to comment about the data on the graphs
- Participants should be able to learn to draw a graph on computer

Grade Level
7

Duration
Activity 60 minutes

Subjects
Mathematics, science

Key words
Line graph, data

Material
A4 papers, pencils, computer with windows program, a hard copy of Graph 1-participant copy sheet**,** Graph 2-participant copy sheet, for each participant, one hard copy of Graph 1-participant copy sheet **,** Graph 2-participant copy sheet, to A3, post it paper in different colors **[Graph 3-participant copy sheet** will be given to participants as an assesment for the next meeting**]**

Procedure
Make a circle sitting on the floor.

Activity
The Leader: "Now we are looking to the small creatures in our forest. Can you tell me a name which is very tiny and difficult to see by eyes?" [Possible answers: small insects, microorganism, bacteria, viruses etc.] Wait until they say BACTERIA
Open http://www-micro.msb.le.ac.uk/LabWork/bact/bact1.htm web site or show hard copy of the pictures that show the bacteria's growth from this web site. Deliver Graph 1-participant copy sheet to each. To be an example for the participant, Graph 1-participant

copy sheet will be done with the whole group. Each questions will be made by discussions except second one and passed to the next after the ex-one is finished
The Leader: "We will answer Graph 1-participant copy sheet's questions step by step. At the end of the sheet, please prepare at least three questions related with data of Graph 1-participant copy sheet. Post it paper can be used for writing the questions".
In the process of doing the answer of second question, observe the participants and make sure they are progressing in the right way. The participants who finished the answer of the second question, can either help to the others or draw Graph1 on the computer by the help of leader. After finishing Graph1, deliver hard copies of Graph 2-participant copy sheet which is known by the participant in the ex-meeting and some Post it paper.
The Leader: "You can work by yourself or with your partner. You remember the graph but this time you will have some questions on it. After completed the sheet, please prepare at least two questions related with Graph 2. Post it paper can be used for writing the questions. At the end, please bring your questions, Graph1 and Graph2 sheets with you".
Hang one copy of Graph 1-participant copy sheet**,** Graph 2-participant copy sheet **[**A3 size] on the wall. When all the graphs are completed by the participants, look each graph on the wall. Take their own questions with were prepared by participants, direct the questions back to the group members to be answered.
If there are some questions that were not asked, please put the questions on the related graph's sheet on the wall [Since the questions were written on Post it paper, they can easily be sticked on the paper]
After finishing Graph1 and Graph2's sheets;

Guiding Questions and Discussion

- For what purposes are graphs used? Give an example
- Is there any similarities/ differences between Graph 1 and Graph 2
- Is there any difficulty to draw a graph on a computer?
- Did you use your mathematical knowledge while dealing with graphs? How and where?
- Are all the graphs related with maths directly? Why/Why not?

FOR THE NEXT MEETING (2.A):
Deliver one copy of Graph 3-participant copy sheet to each participant and invite them to do it up to next meeting. Questions which are on the worksheet will guide participants. They can prepare it either on paper or on computer.

Remarks

- If possible, growth of Bacteria 1 in Graph 1-participant copy sheet can be done both in paper and on excell program in computer.
- Encourage the participants to drive their own questions about the graphs
- Try to listen at least one question from each participant either simple or difficult

PART 2.3
Objectives

- Participants should be able to be aware of bacteria which is around us

Grade Level	**Duration**	
6-7	*Preparation*	10 minutes
	Activity	45 minutes

Subjects
Science

Key words
Bacteria

Material
Computer with internet connections, science books
Procedure
Make a circle.

Activity
***The Leader*: "**You are a bacteria and be a living sculpture of it. Decide where are you and what do you eat? When I touch you, please speak about yourself"
After five minutes, touch all the living sculptures around and listen them.

Remarks
- If they are in trouble, they can either ask yes/no questions to the leader or use resources
- Invite the participants that the living sculpture of bacteria might be organized by more then one member

Make groups of 7-8.

The Leader: "Each group will choose at least two living sculptures which group members presented. Write a story and play".

Remarks:
- Remind the participants the importancy of dramatic movements in a play

FOR THE NEXT MEETING:
2. B. Leaving yogurt/bread outside of the fridge, please observe bacteria's growth which is either on yogurt or on bread. You may compare by making two experiements at the same time i.e. you may change their living conditions i.e. putting one bread/yogurt on a glass faunus and outside in a plate

You may use camera take its pictures regularly, magnifying glass and observation sheet that you will develop.

Take your observations and bacteria to the next meeting.

FOR THE NEXT MEETING(all):
2.A. Re-preparing of Graph 3-participant copy sheet
2.B. Leaving yogurt/bread outside of the fridge, please observe bacteria's growth which is either on yogurt or on bread.

Closure
In the last part (play)
- What did you experience?

- Did you use any resources? For what reason and which resources did you use?

General

- Tell me some words that were used today in your mind?

Evaluation

a. Engage students in individual written assessment of what they learned from doing the today's activity and finish/sketch in complete sentences with their own words.

My idea of the concept of population dynamics is.....

What I learned most about population dynamics was.....

Do you think you could apply what you have learned in your life, how?:
.....
.....

b. Keep teacher observations on a checklist regarding participant's participation in understanding and interpreting of graphs.

Resources

(1) Corrosion monitoring web site, http://www.corrosion-club.com/waterbactgrowth.htm. (accessed July 2005).
(2) Mirobiology-Leicester, http://www-micro.msb.le.ac.uk/LabWork/bact/bact1.htm. (accessed July 2005).
(3) University of California, Museum of Palentology, http://www.ucmp.berkeley.edu/bacteria/bacterialh.html. (accessed July 2005).
(4) REPP-CREST Home Page http://solstice.crest.org/renewables/re-kiosk/biomass/index.shtml (accessed July 2005)
(5) Pictures were taken from http://animaldiversity.ummz.umich.edu/site/accounts/information/Zonotrichia_albicollis.html and www.mad-cow.org/ 00/mar00_turtle.html [Graph3]
(6) Kocataş, A (1997), Ekoloji ve Çevre Biyolojisi, Ege Üniveristesi Su Ürünleri Fakültesi Yayınları [Graph3]
(7) Enviro-Tackle Box Home Page, Behind the Numbers, http://www.envirotacklebox.org/modules/m5popul.htm# (accessed July 2005)

GRAPH 1. BACTERIA GROWTH

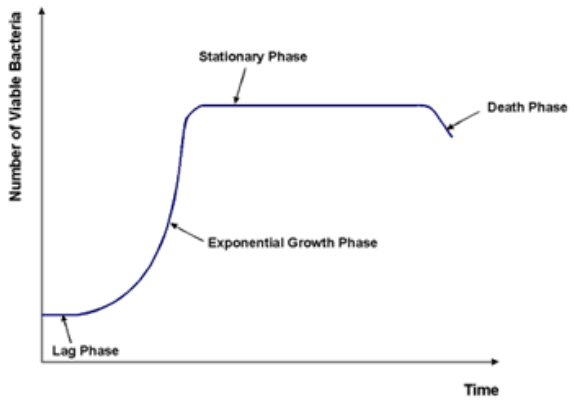
BACTERIA 1

TIME (min)	BACTERIA POPULATION
0	1
1	2
2	4
3	8
4	16
5	32
6	?
7	?

1) What do you estimate in 6th and 7th minutes for Bacteria 1? Why?

2) Can you draw a graph for Bacteria 1?

BACTERIA 2



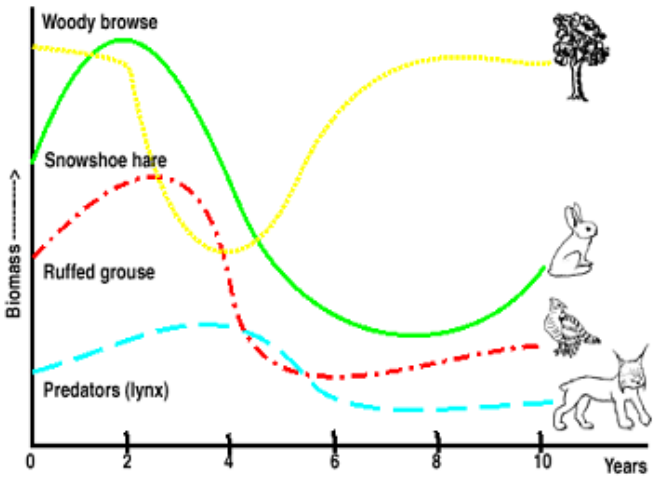
3) Is there any similarity between two graphs? Why?

4)Is there any differences between two graphs? Why?

Resources 1 : The curve were taken from http://www.corrosion-club.com/waterbactgrowth.htm

Resource 2: The data were taken from http://www.slic2.wsu.edu:82/hurlbert/micro101/pages/Chap4.htm

GRAPH 2



My name is.....

What could be "biomass"?

Is there a relation between these animals?

What happened to animals between 0-2 years?

What happened to rabbit and tree in 2nd year?

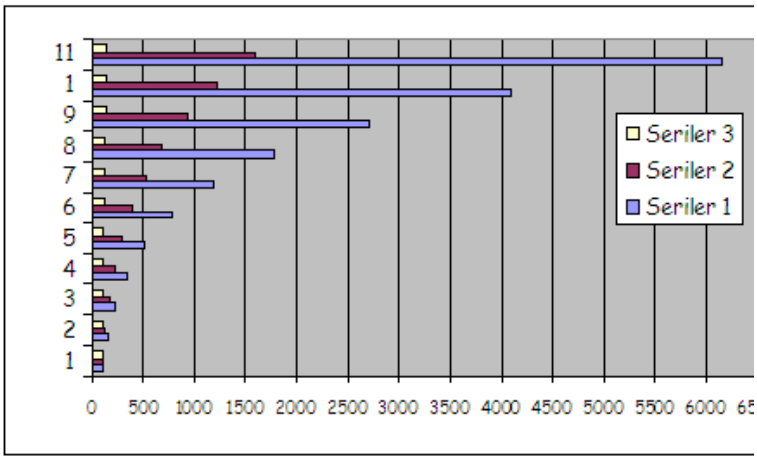
What happened in 4th year?

Your question(s):

Resource: The graph was taken from http://www.envirotacklebox.org/ and this study was made in a specific area

GRAPH 3. BIOLOGICAL GROWTH POTENTIAL OF TURTLE, DEER, SPARROW, SCORPION

YEAR	TURTLE	DEER	SPARROW	SCORPION
0	100	100	100	100
1	151	132	104	89
2	228	174	108	79
3	344	230	112	70
4	519	304	117	62
5	785	400	122	55
6	1185	529	126	48
7	1789	689	132	43
8	2702	922	136	38
9	4081	1216	142	34
10	6162	1606	148	30



1) Is there any missing data in the graph? Explain.

2) Do you have any difficulties to match the data with the graph? How do you solve it? Please show.

3) Can you read the data from the graph easliy?

4) Please draw another type of graph by using the same data.

Resource 1: Pictures were taken from http://animaldiversity.ummz.umich.edu/site/accounts/information/Zonotrichia_albicollis.html and www.ad-cow.org/00mar00_turtle.html

Resource 2: Kocataş, A (1997), Ekoloji ve Çevre Biyolojisi, Ege Üniversitesi Su Ürünleri Fakültesi Yayınları

2.2. Participant copy

Being a Tree

Aim(s)

- Participants should be able to be aware of the reasons in changing plant population size
- Participants should be able to be aware of stories that are affected by the relation between culture and nature

PART 3.1 (Warming)
Background

A tree is a woody plant with a single trunk which is the central column of the tree at least 3 inches in diameter. Trees come in various *shapes* and *sizes. The main parts of a tree are* branches, twigs, leaves, roots, flowers or cones. Living (animals/plants on/around the tree such as worms, birds, butterfly, shrubs, ferns, mosses, lichens, fungi and microscopic soil organisms etc.) and non-living (water, nutrients, rocks, sunlight and air etc.) things are around tree or live in a tree.

Resource: The Tree Council Home Page, http://www.treecouncil.org.uk/. (accessed August 2005)

Objectives

- Participants should be able to think about the nonliving /living components of a tree

Grade Level		**Duration**
6-7	*Activity*	15 minutes

Subjects
Science

Key words
Parts of a tree, animal

Material
A craft paper, pen/pencils

Procedure
Make a circle sitting on the floor.

Activity
The Leader: "Think of a tree. Please be one part of a tree whether surrounded by living or non living. Whenever you feel ready yourself, please come to the middle of the circle one by one by saying your name and acting according which part you decide to be in the tree. You are joined and stay without moving. Everybody will continue to do it wherever he/she wants At the end when each participants took a role in tree, you will represent the tree picture".
After each participants took a role in tree picture;
The Leader: "Please, go out one by one from first to the last person which took role here. When a participant go out, the reat will never change their place. When he/she came back to her/his place in tree picture, another person will go out. It proceed like that".

Give time for it to do it. It is nice to see the whole tree and its surroundings which might be more than they think.
Hang on a sheet of a paper which is two times bigger that a craft paper on the surface. Tell them to write/draw something that is in their mind for them after this activity.

Resource
(1) The Tree Council Home Page, http://www.treecouncil.org.uk/. (accessed August 2005)

PART 3.2

FROM THE EX-MEETING
Remind:
2.A. Questions which are on Graph 3 worksheet were given to student to be done by the participants.
They can prepare it either on paper or on computer.
The leader can find it Module 2, Page 6

Objectives

- Participants should be able to draw different types of graphs
- Participants should be able to be aware of importancy of data intervals

Grade Level
6-7

Duration
Activity 15 minutes

Subjects
Mathematics

Key words
Line graph, bar graph

Material
Copy of GRAPH 3-Solutions-leader copy sheet into A3, new Graphs 3's made by participants

Procedure
Invite the participants to show their solution graphs.

Activity
Guiding Questions and Discussion

- Where did you have any difficulties? Why/Why not?
- Was it easy to put data in a one single graph? Why?
- What kind of solutions did you find? Explain.
- Did you use different types of graph? Which one was more efficient for you?
- Do you think these animals are related? Why/Why not?
- What does the graph show?

After the discussion, show copy of GRAPH 3-Solutions-leader copy sheet into A3.

Remarks

- The leader hangs all the graphs that were drawn by the participants on the wall to be seen by all.

PART 3.3

FROM THE EX-MEETING

Remind:
2.B. Leaving yogurt/bread outside of the fridge, please observe bacteria's growth on yogurt, bread etc. You may compare by making two experiements at the same time i.e. you may change their living conditions i.e. putting one bread/yogurt on a glass faunus and outside in a plate
The leader can find it Module 2, Page 8.

Objectives

- Participants should be able to observe growth of bacteria

Grade Level
6-7

Duration
Activity 20 minutes

Subjects
Science

Key words
Growth

Material
The participants's materials

Procedure
Invite the participants to show their search and materials they took during their experiment e.g. bacteria samples, observation sheet, pictures taken by camera.

Activity
Guiding Questions and Discussion

- How often did you observe the bacteria?
- What did you realise? Color, smell etc.
- Did it grow as you expected?
- In how many days are the bacteria visibly?
- What do you think about its growth: fast, linear, exponential? [exponential]
- Which materials did you use during the observation? Were they enough? Why?
- Do you have any experience that changing the living conditions and compare? Which conditions did you change? What did you observe?

FOR THE NEXT MEETING (3.A):
Give back participants' observations to them, tell them to continue their observations.

Remark

- Sharing different observations are important

PART 3.4

Background

As it is mentioned in Background 3.1., trees has non-living parts i.e. water, nutrients, rocks, soil, sunlight and air. In an healthy tree, all these components are in balance.

Objectives

- Participants should be able to identify the basic needs of a tree (water, sunlight, soil and mineral)
- Participants should be able to examine the needs of plant population to live longer

Subjects

Science

Key words

Population, water, mineral and soil, climate

Material

Pinus Nigra-participant copy sheet for pairs, Pinus Nigra-leader copy sheet

Procedure

Make partner. Deliver Pinus Nigra-participant copy sheet to each partner. Give 2-3 minutes for observing.

Activity

The Leader: "When you are observing the pictures, I have two questions for you to consider:

- Is there any similarities and differences between the two pictures?
- Why is plant population different in each picture?"

Resource:

Department of Botany, Rheinische Friedrich- Wilhelms-Universitat Bonn, http://www.botanik.uni-bonn.de/conifers/pi/pin/nigra.htm. (accessed June 2005

The leader will bring some real parts of a pine tree i.e. in the pictures
Give 2-3 minutes more.

Resource:

Department of Botany, Rheinische Friedrich-Wilhelms-Universitat Bonn, http://www.botanik.uni-bonn.de/conifers/pi/pin/nigra.htm. (accessed June 2005)

Sit down in the circle showing the pictures.

Guiding Questions and Discussion

- How was being a part of a tree?
- What do you observe in the pictures?
- Is there any similarities and differences between the two pictures? Explain.
- From which regions do you think were these pictures taken? Why? [Invite them to show the possible regions on the map they have done in Activity1]
- Why is plant population different in each picture?
- Eventhough they are the same species, what do they look like so different?
- Compare the reason which affect human population and plant population size? [If they have a difficulty to remember, remind the activity 1, populations according to cities/villages. If they are in trouble finding reasons the leader can tell one of them i.e.birth, death, immigration, emigration]? Why, why not?
- What do you think about the animal population here in two pictures? Are there same amount of animal and species?

- What kind of animals may live there? Why?
- What about human population?

Remark

- As a starting question, you can ask to the participants for giving examples related with population You can also remind them Activity 1 .

PART 3.5

Background

Southern Europe; nearby Asia i.e.Austria, the Balkans, Greece, Turkey, Cyprus and the Crimea are the habitat for pinus nigra. It is an evergreen needle conifer tree, medium to large size. Its male flowers yellowish, in clusters whereas female flowers yellow-green. Cones shiny yellow-brown are the fruits which persists for 2 years. Pinus nigras can be relatively adaptable to most soils as well ad tolerant of pollution, urban coniditionsi heat, salt.

Trees are not only related with science but also literature. For example, nature is the central axis of Native Americans' world. They wrote many stories and myths related with nature. Lots of folktales about tress are written not only by Native Americans but also by different cultures e.g. Greeks by their inspriation and imagination about tree.

Resources

(1)Department of Botany, Rheinische Friedrich- Wilhelms-Universitat Bonn Home Page, http://www.botanik.uni-bonn.de/conifers/pi/pin/nigra.htm. (accessed June 2005).
(2) University of Connecticut's College of Agriculture and Natural Resources Home Page, http://www.canr.uconn.edu/plsci/mbrand/p/pinnig/pinnig1.html. (accessed June 2005).
(3) The Spirit of Trees, http://www.spiritoftrees.org/. (accessed June 2005).

Objectives

- Participants should be able to become familiar with pine tree

Grade Level	**Duration**	
6-7	*Activity*	55 minutes

Subjects

Science, language

Key words

Pine tree

Material

Clothes, paper, newspapers, band, colorful pencils, scissors, Peer Evaluation Report copies [the number of the copies will be number of groups x (number of groups-1)]

Procedure

Sit in the circle. Make a group of 6-7 by saying "pine, oak, plane tree, cedar, lime tree" to each of the participants one by one. All the members who were given the same name will become a group e.g. group of pine, group of oak

Activity

The Leader: **"**One researcher who works the relation of culture and nature visited me. She shared a part of a story that was found

with me. As I understood the story is related with pine tree. I try to imagine the rest of it. I would like to read this. Please try to completed the rest of the story with your imagination":

"Glooskap called Cuhkw, and offered him take the three, and plant them with their feet in the ground. Immediately Cuhkw came rushing from his lodge, and, seizing the three, planted them in the forest. And they became three straight Pine Trees" (3).
Give them 20 minutes for the preparation.

Remarks

- Encourage the participants to use materials and the importancy of dramatic moments during their play
- The leader might read the whole story which is on The First Pine Trees-leader copy sheet written by Frances Jenkins Olcott.

Guiding Questions and Discussion

- Is there any difficulty? Why/Why not?
- What did you experience?
- Was it interesting for you? Why?
- Do you think is it possible that the story was written in Turkey where we saw the pine tree pictures in ex activity? Why /Why not?
- Is there a relation between culture and human environment? How and why? Pelase explain.

FOR THE NEXT MEETING
3.B. Speak with people in your family/area where you live about the stories related with plant. Record the stories for the next meeting

FOR THE NEXT MEETING(All):
3.A. Give back the material participant brought to them, tell them to continue their observations.
3.B. Speak with people in your family/area where you live about the stories related with plant. Record the stories for the next meeting.

Closure

Encourage participants to complete the rest of the sentences individually:

I like.....
The most enjoyable part was .....
I have realised .....
I did not understand.....
I have never heard the term ".....

Evaluation

a.During/after the presentation of a group, Peer Evaluation Report will be filled by the rest of the groups which haven't present. Each group also evauate themselves by filling the

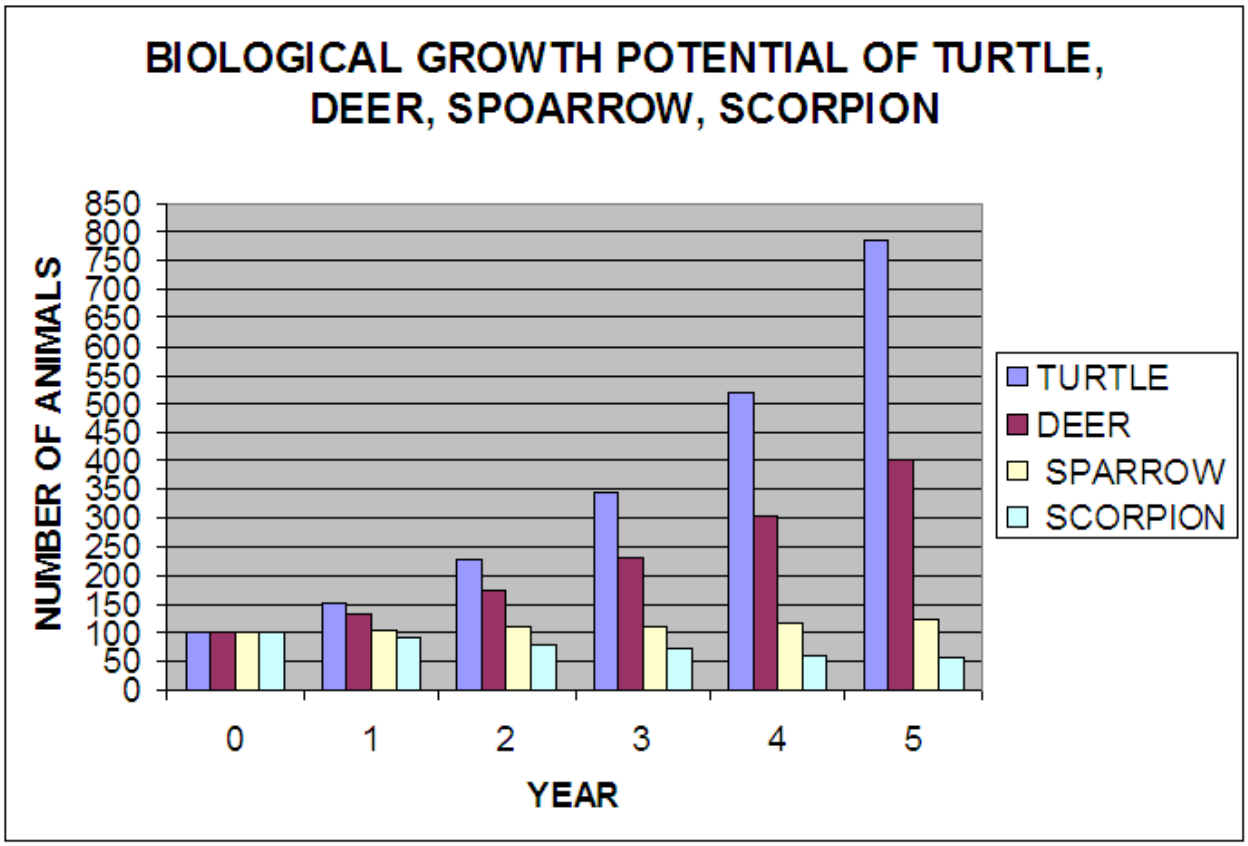
same report. After all the presentations are completed, each group will come together to discuss about the reports that were written for their own presentation by the others.

b. The leader evaluate the participants' homeworks and give feedbacks.

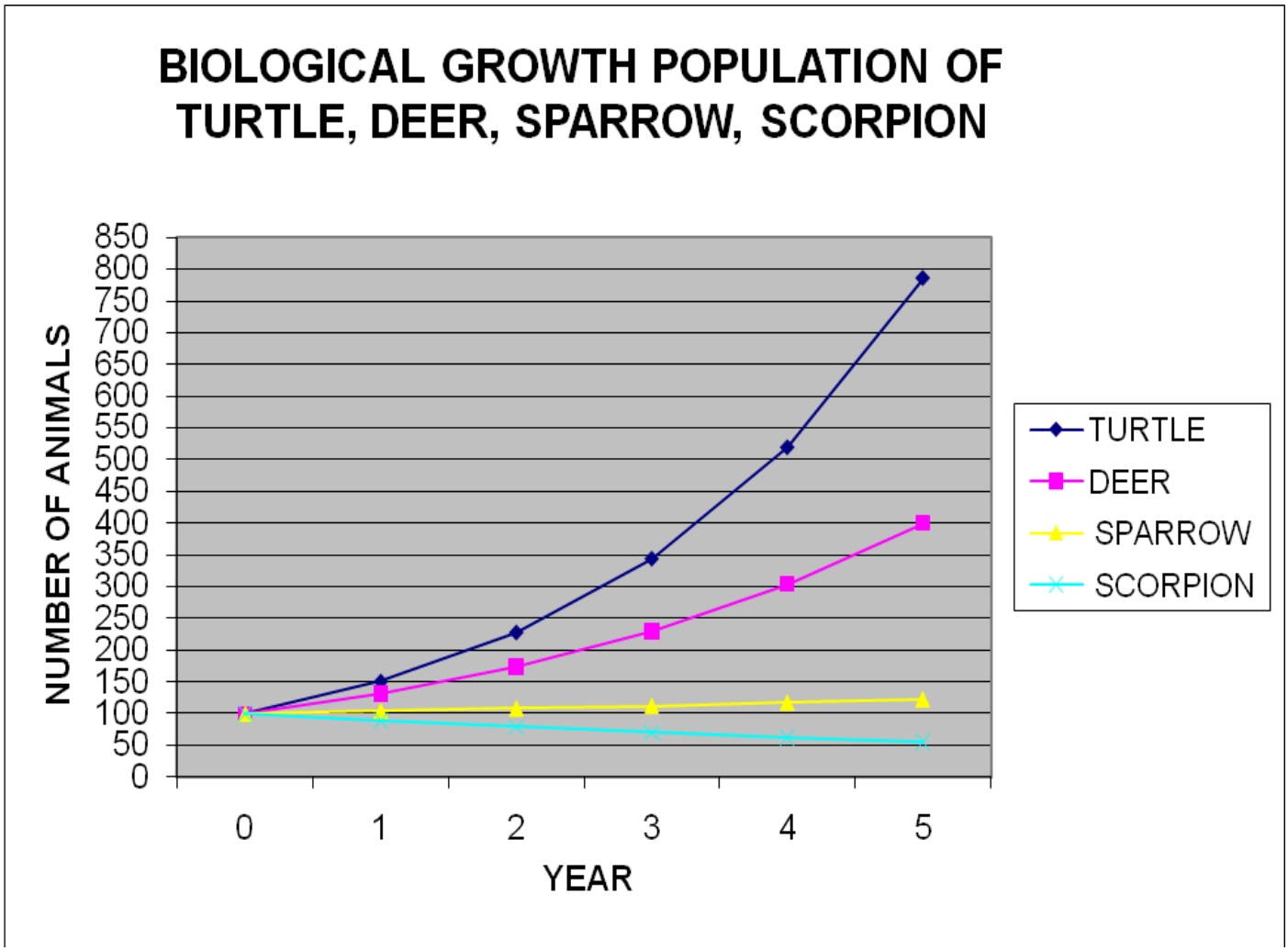
Resources

(1)Department of Botany, Rheinische Friedrich- Wilhelms-Universitat Bonn, http://www.botanik.uni-bonn.de/conifers/pi/pin/nigra.htm. (accessed June 2005)
(2) University of Connecticut's College of Agriculture and Natural Resources Home Page, http://www.canr.uconn.edu/plsci/mbrand/p/pinnig/pinnig1.html. (accessed June 2005).
(3) Olcott, F. J. , 1912. The Red Indian Fiary Book, http://www.mainlesson.com/display.php?author=olcott&book=indian&story=pine.
(4) Pictures of pine trees;
Picture 1: Mustafa Kargıoğlu, 1997. III.Afyonkarahisar Çevresi Flora ve Vejetasyonu. http://www.haber.aku.edu.tr/049-060.pdf.
Picture2: Arboretum de Villardebelle's Home Page, http://www.pinetum.org/PhotoMPF2.htm. (accessed June 2005).
(5) The Tree Council Home Page, http://www.treecouncil.org.uk/. (accessed August 2005)
(6) The Spirit of Trees, http://www.spiritoftrees.org/. (accessed June 2005).
(7) Roberts, P.L., Kellough, R.D., 2000. A Guide for Developing Interdisciplinary Thematic Units, 2nd Edition, USA: Prentice-Hall Inc

SOLUTION 1 FOR GRAPH 3



SOLUTION 2 FOR GRAPH 3



PINUS NIGRA WORKSHEET

Picture 1

Picture 2

3.4. Participant copy

Pinus nigra
Arn.subsp.
pallasiana (Lamb.)
Holmboe
(Karaçam topluluğu)

Picture 1

Picture 2

Picture 1: Mustafa Kargıoğlu, 1997. III.Afyonkarahisar Çevresi Flora ve Vejetasyonu. http://www.haber.aku.edu.tr/049-060.pdf.

Picture2: Arboretum de Villardebelle's Home Page,

http://www.pinetum.org/PhotoMPF2.htm. (accessed June 2005).

THE FIRST PINE TREES

(Micmac)

[234] THIS is another tale of the old time, before Glooskap, the mighty Magician, set sail in his stone canoe for the Land of the Red Sunrise.
There were three brothers dwelling together. And when they heard that Glooskap had promised to fulfil the wish of any warrior who reached his magic lodge, they decided to brave the dangers in the way.

The first brother was very tall, far above all his fellows, and vain of his height. To make himself look even taller, he put bark in his moccasins, and plastered his hair to stand high, and on the very top he stuck a long Turkey feather. But he wished to be taller yet, so that all the squaws would admire him.
The second brother wished that he might remain forever in the forest, beholding its beauty, and that he need never work again.
The third brother wished to live to a very old age, and always to be in perfect health.
[235] So the three brothers started on their way along the dangerous trail that led to Glooskap's lodge. They came to an exceedingly high mountain in a dark and lonely land. The side of the mountain was as smooth as iron, and the other side was worse, for there the trail led between the heads of two huge Serpents, who darted out their fearful tongues. After that, the trail passed under the Wall of Death which hung over it like a cloud, rising, and falling, and rising again. And if it happened that any man passed beneath the cloud as it fell, he was crushed to death.
But the three brothers escaped all these perils of the trail, and came to the island where Glooskap dwelt. The mighty Magician welcomed them, and bade his younger brother, Martin the Fairy, place food before them. And after they had eaten and were refreshed, they told their wishes.

Now, in another lodge near by lived Cuhkw the Earthquake. He could pass along the face of the land, and make all things shake with terror. Glooskap called Cuhkw, and bade him take the three brothers, and plant them with their feet in the ground. Immediately Cuhkw came rushing from [236] his lodge, and, seizing the three, planted them in the forest. And they became three straight Pine Trees.

The first brother, who wished to be exceedingly tall, was the highest Pine Tree on earth. His head rose above the forest and the wind whistled through his boughs. And to-day his Turkey feather may be seen waving in the air.
The second brother, who wished to remain in the forest, and admire its beauty without working, could never leave it again; because his roots were fastened deep in the ground.
The third brother, who wished to live to a very old age, in perfect health, gained his desire. To-day he stands hale and hearty in the forest, unless men have cut him down.
And if you go into the forest, you may see the tallest Pine Tree with his Turkey feather waving in the wind; and the Tree murmurs all day long, in the Indian tongue:—

"Oh! I am such a great Indian!—
Oh! I am such a tall man!"

Resource: Olcott, F. J., 1912. The Red Indian Fiary Book, http://www.mainlesson.com/display.php?author=olcott&book=indian&story=pine

Peer Evaluation Report of Participants –Observer

Observed Module..... (number) for Activity .....(number)

The group members are ....(name) did the following:

	Never	Sometimes	Always
Spoke up so all could hear			
Finished sentences			
Appeared confident before group			
Clear introduction			
Focus on topic			
Gave googd ending			
Appeared confident with group			
Replies questions with good answers			
Replies questions with positive behaviours			
Confident for unknown answers			

Resource: Roberts, P.L., Kellough, R.D., 2000. A Guide for Developing Interdisciplinary Thematic Units, 2nd Edition, USA: Prentice-Hall Inc.

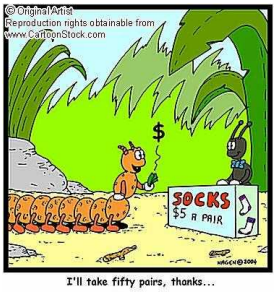
Population Dynamics I

Aim(s)

- Participants should be able to read different graphs on population
- Participants should be able to learn the meaning of natural equilibrium, limited growth

PART 4.1 (Warming)

Background



I'll take fifty pairs, thanks...

Millipedes which have no backbone have between 47 to 197 pairs of legs of are irs of legs, depending on the species. Their body temperature depends on the temperature of their environment and warm/wet weather always encourages them to be active more. Millipedes walk with two pairs of legs on each body segment, except for the last three, which have one pair.

Resource

(1) Enchanted Learning Home Page, http://www.enchantedlearning.com/subjects/invertebrates/arthropod/Millipede.shtml. (accessed July 2005).

Objectives

- Participants should be able to coorporate and coordinate with the members of group
- Participants should be able to be curious about millipede and his/her walking

Grade Level

6-7

Duration

Activity 20 minutes

Subjects

Science

Key words

Millipide, feet, harmony

Procedure

Activity

The Leader: "We are again in our forest. In the ex meetings, we looked at the forest being a tree and being a very small creature i.e. bacteria.

What about for today?"

Wait for their reply. Possibly they will tell *animal.*

The Leader: "I am looking for my rest. I am the head of the "millipede runner". I would like to find rest of my body and walk as whole. As you know we are also a member of our forest community and walk with two pairs of legs on each body segment, except for the last three, which have one pair. Do you want to join me?".

Remarks

- Although the leader is the head of the millipede, live the participants alone to organize themselves. If they need; remind how a millepede looks like
- The leader should never tell about whatever their strategy is in the process. She/he can say some positive sentences [thats good, it is an attempt, we know that it is not easy as it is seem etc.] if the group motivation goes down.

Guiding Questions and Discussion

- How is moving like a millipede compared to walking by yourself?
- How would you like to walk as part of a millipede?
- Did you chose a leader?
- Why did the creatures have to move together in the same motion at the same time?
- What do insects or animals have to move and work together to survive? ***(Possible answers:*** *ants, bees)*
- Do we sometimes do groups of people? Can you give an example? [Relate question to the larger concept that doing anything as a group requires teamwork.]
- When are some things easier, or possible if you have a small group of people? What activities are more appropriate for a large group of people? [In advance, think about population density and how it relates to young students' lives at home and at school. Feel free to add other examples to the following list:
  a. Riding the bus b. Making camp in nature c. Celebrating birthday parties
  d. Standing in the lunch line f. Having lunch]

PART 4.2

Background

Animal homes are specific places within their habitat where an animal lives such as a den, nest, or burrow. Animal habitats are the landforms in which a specific animal prefers to live. Some animals prefer woodland, others prairies, and many can live only in ponds, rivers, lakes, or streams. Many animals live underground or in crevices or caverns. Animal homes vary from dens, burrows, hollow logs, galls on plants and trees, and numerous types of nests. Look for signs of animal homes by listening for animal sounds such as birds singing, the rustling of animal movement, and the sounding of alarms. Observe tracks and trails found in mud, sand, or snow. Notice feeding signs such as chew marks on plants, animal remains, and droppings or scat. Look for traces of feathers, fur, antlers, shells, and skins. By learning about the habits and characteristics of animals, you will be able to locate and identify many of their homes.

Animals	**Their Homes**
1. Panthera pardur (Anadolu Parsı)	- Foress and deep valley
2. Otis Tarta (Toy)	- Agricultural steps/fields without trees areas
3.Bald Ibis (Kelaynak)	- They were making their homes close to human settlements but now, they live in cages in Birecik
3. Caretta carretta (Deniz kaplumbağası)	- Seas
4. Oxyura Leucocephala (Dikkuyruk ördeği)	- Lakes
5. Monascus monascus (Akdeniz foku)	- Seas

Resources

(1) Thematic Pathfinders for All Ages Home Page, http://42explore.com/animhom.htm. (accessed June 2005)
(2) WWF-Türkiye Doğal Hayatı Koruma Derneği Home Page, http://www.wwf.org.tr/tr/

(3) BirdLife International Home Page, www.birdlife.net
(4) Kültür Bakanlığı Web Sitesi, http://www.kultur.gov.tr/TR/BelgeGoster.aspx?F6E10F8892433CFFA79D6F5E6C1B43FFDBA70C97114F1A29. (accessed June 2005).
(5) Dedicated Home Page to Monk Seals and their Threatened Habitats, http://www.monachus-guardian.org/break00/div020220.htm

Objectives

- Participants should be able to be aware of each animal has different home
- Participants should be able to discuss and decide where animals live

Grade Level

6-7

Duration

Activity 40 minutes

Subjects

Science

Material

One colorful copy of Dying Species-leader copy sheet to A4, one copy of Estimation Table-participant copy sheet

Key words

Homes of the animals

Procedure

Make a circle. The leader will show each animal picture in Dying Species-leader copy sheet by hiding the name of the animals on the sheet.

Activity

Guiding Questions and Discussion

- Do you know this animal before?
- Describe its habitat;
- What does it eat? Why?

Guide the participants to discussion. If they are in trouble, the leader may answer participants' yes/no questions.

After all the pictures are shown and small discussions were done,

Guiding Questions and Discussion

- Is there a relation between where the animals live and what they eat? Why?
- Can you give some more examples ?
- Compare all the animals' home area. Which animal(s) need the bigger living areas than the others? Why?
- When we think about the human, for example yourself, how much living area do you have in your home per person? Are all areas that participant have in the same size or not? Why?

After the discussion;

The Leader: "Can you write down your estimation about how much living area does each of you have in your home per person and how much living area does each person have in your town?

Give them Estimation Table-participant copy sheet to be filled.

FOR THE NEXT MEETING

4.A.Can you calculate your living area in your home and each person's living area in your town up to the next meeting? Please write down your calculation in details.

4.B. Deliver I Saw A Home-participant copy sheet to the participants.

The Leader: "We live together with different animals around us. Shall we observe their life? Please fill in the worksheet and write a short article about them related with your observation. It can be a small funny story or an article for the school/local newspaper".

FROM THE EX MEETING

Duration: 10 minutes

After talking about the animals, the leader asks about the bacteria they observe.

a. How does it grow?

b. Is there any changes i.e. color, smell, size of the bread/yogurt etc?.

Remarks

- Eventhough all the animals shown are dying out, the leader should not mention about this fact in this step. If some of the participants might know this i.e. possible and nice, the leader gives a positive reply. It is important not to speak about animals' special situation at the moment since it affects participants negatively agaist to HUMAN. It will be discussed in a different content.

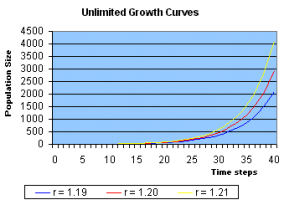
PART 4.3

Background

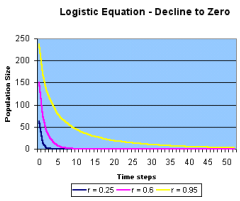
"r" represents the multiple that determines the growth rate.

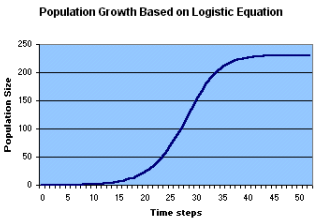
"p" represents the population size at time t.

"t" represents the time period. The units of time could be minutes, weeks, years depending on the species being considered.

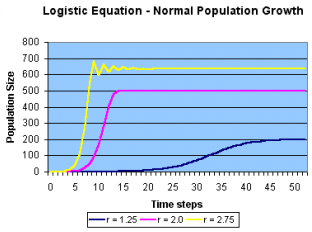


Graph 1 is a J-shaped curve. Although the difference in the value of *r* between the yellow and blue curves is only 0.02(1.21-1.19=0.02), but the population size is exactly double (4,000 vs. 2,000) after 40 time steps. This type of growth is called **exponential growth** in mathematics.



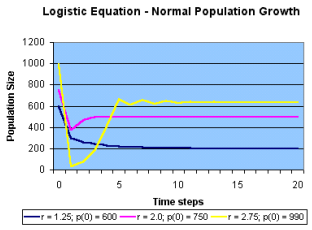


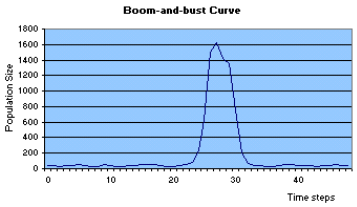
In Graph 2, the value of "r" is 0.25, 0.6, 0.95 i.e. between 0 and 1. When it occurs the population goes to 0 eventually. The curve in graph 3 produced S-shaped curve. The popuation shows an exponential growth phase up to the carrying capacity i.e. approximately when the time step reaches 37-38, the curve slows down and after a time it reaches a stable level. The population in unstable environments can have dramatic changes.



By three cases, the curve in Graph 4 shows that how different speeds towards achieving their own stable values is. As it was seen yellow cure whose r is larger than 2.4, the population size goes up very quickly but as it is seen in the others that the population value setteles down to its own steady value.

Being different than the above curve, the value of "r" reaches to 3 where the population does not reach one steady value i.e. the population is enough and in reasonable value and increases in size dramatically. However on the following season, there is overpopulation scrambling and many die decreasing the size. Therefore, size of the population changes between two values i.e. goes up and down between two values.





The curve in Graph 6 increase dramatically i.e. not exactly but it shows exponential growth for a few generations ad then go back to its own normal stable position. Insects are the good example to this growth.

Resource

(1) Archtech Home Page, http://www.arcytech.org/java/population/facts_math.html#unlimited. (accessed June 2005).

Objectives

- Participants should be able to read the line graphs
- Participants should be able to explain the graphs related with population dynamics

Grade Level

7

Duration

Activity 40 minutes

Subjects

Mathematics, science

Key words

Natural equilibrium

Material

Colorful copy of Unknown Graphs Sheet-participant copy sheet for each participant

Procedure

Sit in a circle. Without saying anything start doing the activity part [below]

Activity

The Leader: "All of you welcome to our Karaçeşme Council. Unfortunately, we organised this meeting in a very short time because we need your help urgently. You represent different professionals e.g. biolog, statician, mathematician. I know that you are curious about the reason why all we are here. As you know that we are the new members in the Council because of the election that happened two months ago. When we changed the place of documentation room, some of the documents were spread and found by the staff. That's why we invited you what the graphs might represent more than us. According to your feedbacks, we hope to manage to find the rest of the documents they belong to".

Deliver Unknown Graphs Sheet-participant copy sheet to each participants.

The Leader: "Let me introduce myself first: I am working in the Council as a staff who is responsible from documentation. Could all of you introduce yourselves, with your professions and work place?"
After listening to all participants' introduction,
The Leader: "It might be more practicle to work with small groups. Can you make groups according to your professions that would be one-two in a group .
The graphs would represent an animal, plant or human population. Please write what the graphs represent according to your view".
Each group might have 30 minutes to be discussed. And then we can discuss with the whole group. After they completed their work,
The Leader: "I would like to be the facilitator for the meeting if possible".

Guiding Questions and Discussion

- What does "r" represent?

For each graph, take the group's ideas and invite them to discuss;

For UNKNOWN GRAPH 1

- What may Graph1 show? Why?
- Which curve has more rapid growth? Why?
- Do all the curves go up like that?
- When do they stop or decrease?

For UNKNOWN GRAPH 2

- Which curve does down rapidly than the others?
- What may it represent? Could it belong to bacteria for example?
- What could be the reasons that the curves go down?
- What does it mean if the population size goes to zero? Why?

For UNKNOWN GRAPH 3

- In which part of the curve does it increase or stay constant?
- In the growing part can you show where the population grows most rapidly?
- Why does the population size become/seem constant after a while? [Wait for their possible answers. If they need,as a small clue the leader can ask: "Can we say that there *limited factors* affect population?"]
- What may it represent?
- Can we say that there is an *equilibrium?*

For UNKNOWN GRAPH 4

- What may "r" represent located at the bottom of the graph?
- In which parts curves are increasing?
- Which curve has the least increase?
- Why is the blue curve physically different than the others?
- Is there any similarities/differences with the ex-graphs? Why/Why not?

For UNKNOWN GRAPH 5

- What may p(0) represent?
- Is there any similarities/differences between the ex-one? Explain.

- For each graph, can you show where the curves go up/down and stay constant?
- Which one has the most sharp decrease?
- What may this curve show?

For UNKNOWN GRAPH 6

- What does it look like? Is it different than the others? Why?
- How many species are there?
- What could it be to the species after 40 time steps?
- Can you explain the changes between 23-34 time steps? Why?
- Can we combine some graphs to make this curve?

After all the graphs were discussed,

- Would all graphs represent human population?
- Is there any unrealistic graphs when we think human population?
- Does any graph show endangered/dying out species? Which one (s)?

Remarks

- From the ex activity to this activiy, passing is important i.e. should be natural and the leader belive her/his roles. It should make them suprised them and they should try to find out their role. Therefore, the leader should be aware of this.

***FOR THE NEXT MEETING(all)*:**
4.A. "Can you calculate your living area in your home and each person's living area in your town up to the next meeting?"

4.B. Deliver I Saw A Home-participant copy sheet to the participants.

Closure

- What is your emotion at the end of all the activities we have done?
- Did you have any trouble? Where?
- What is the enjoyable part for you today?

Evaluation

a. Each group give feedback about their group work (understanding of the graphs, dynamics of the group etc.)
b. Give "What do the curves shows us?" to participants to be filled. The feedback will be given in the next meeting.

Resources

(1) Enchanted Learning Home Page, http://www.enchantedlearning.com/subjects/invertebrates/arthropod/Millipede.shtml. (accessed July 2005).
(2) Thematic Pathfinders for All Ages Home Page, http://42explore.com/animhom.htm. (accessed June 2005)
(3) WWF-Türkiye Doğal Hayatı Koruma Derneği Home Page, http://www.wwf.org.tr/tr/. (accessed July 2005).
(4) BirdLife International Home Page, www.birdlife.net. (accessed July 2005).
(5) Kültür Bakanlığı Web Sitesi, http://www.kultur.gov.tr/TR/BelgeGoster.aspx?F6E10F8892433CFFA79D6F5E6C1B43FFDBA70C97114F1A29. (accessed June 2005).

(6) Dedicated Home Page to Monk Seals and their Threatened Habitats, http://www.monachus-guardian.org/break00/div020220.htm. (accessed July 2005).
(7) Archtech Home Page, http://www.arcytech.org/java/population/facts_math.html#unlimited. (accessed June 2005).
(8) Kimball's Biology Pages, http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/P/Populations2.html. (accessed July 2005)
(9) National Wildlife Federation Home Page, http://www.nwf.org/nationalwildlifeweek/1999/edguide.pdf. (accessed July 2005).

SPECIES

1 

 2

3 

4 

5

6

Resource 1: WWF-Türkiye Doğal Hayatı Koruma Derneği Home Page, http://www.wwf.org.tr/tr/

Resource 2: BirdLife International Home Page, www.birdlife.net

Resource 3: Kültür Bakanlığı Web Sitesi, http://www.kultur.gov.tr/TR/BelgeGoster.aspx?F6E10F8892433CFFA79D6F5E6C1B43FFDBA70C97114F1A29. (accessed June 2005).

Resource 4: Dedicated Home Page to Monk Seals and their Threatened Habitats, http://www.monachus-guardian.org/break00/div020220.htm

SPECIES

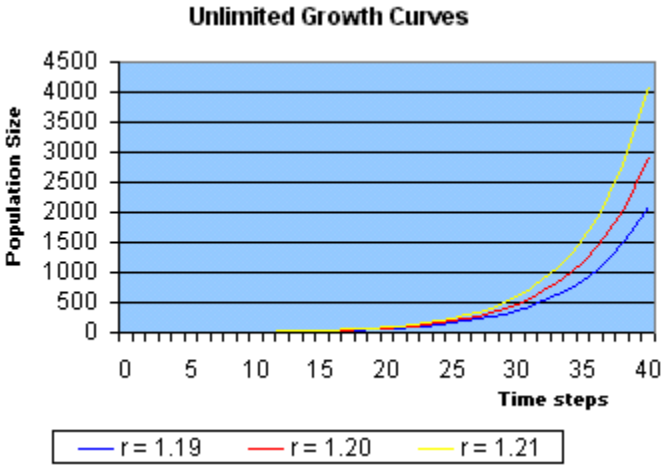
1. Panthera pardur (Anadolu Parsı)
2. Otis Tarta (Toy)
3. Bald Ibis (Kelaynak)
4. Caretta carretta (Deniz kaplumbağası)
5. Oxyura Leucocephala (Dikkuyruk ördeği)
6. Monascus monascus (Akdeniz foku)

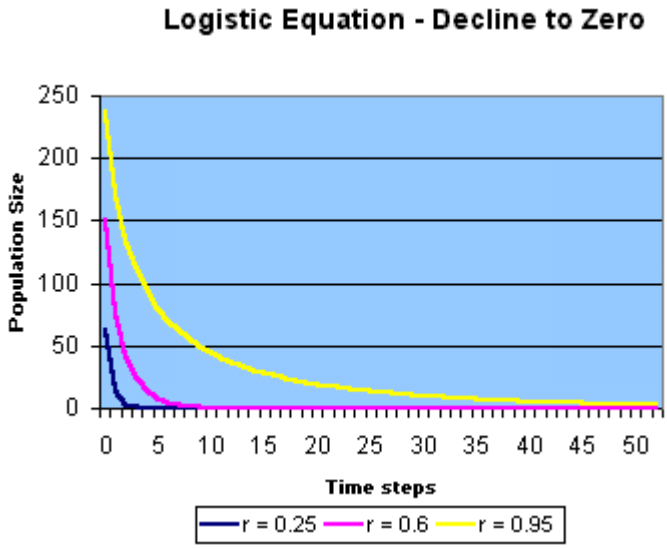
ESTIMATION TABLE

NAME & SURNAME	AREA IN ISTANBUL PER PERSON (km2)	AREA IN HAKKARİ PER PERSON (km2)	AREA IN CHINA PER PERSON (km2)	AREA IN FINLAND PER PERSON (km2)

UNKNOWN GRAHPS

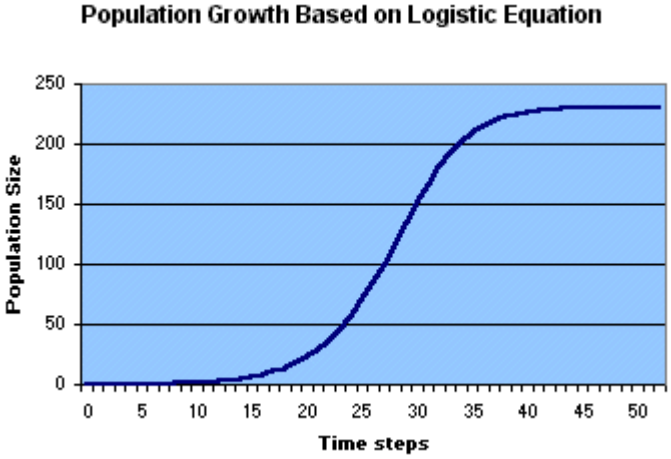
UNKNOWN GRAPH 1



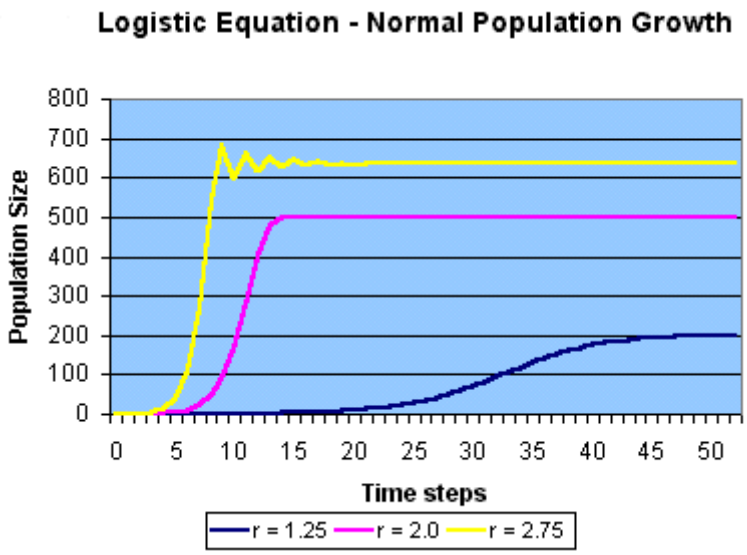


UNKNOWN GRAPH 2

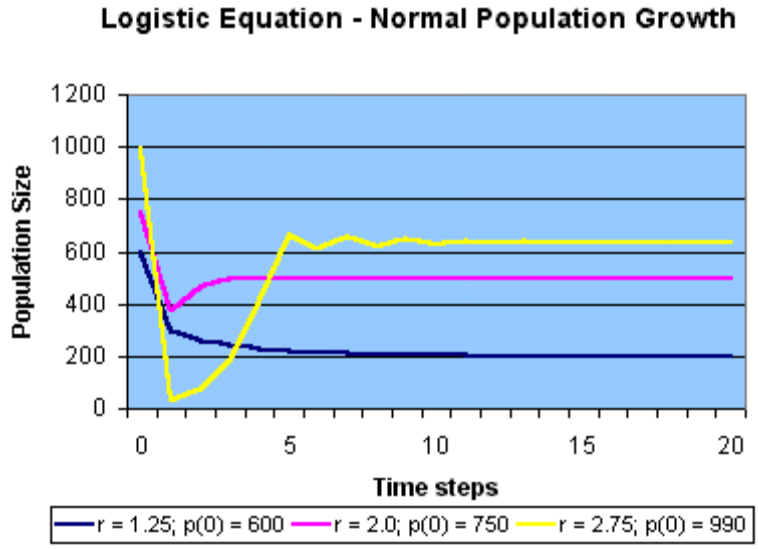
--- p(0)=60; --- p(0)=150; --- p(0)=240



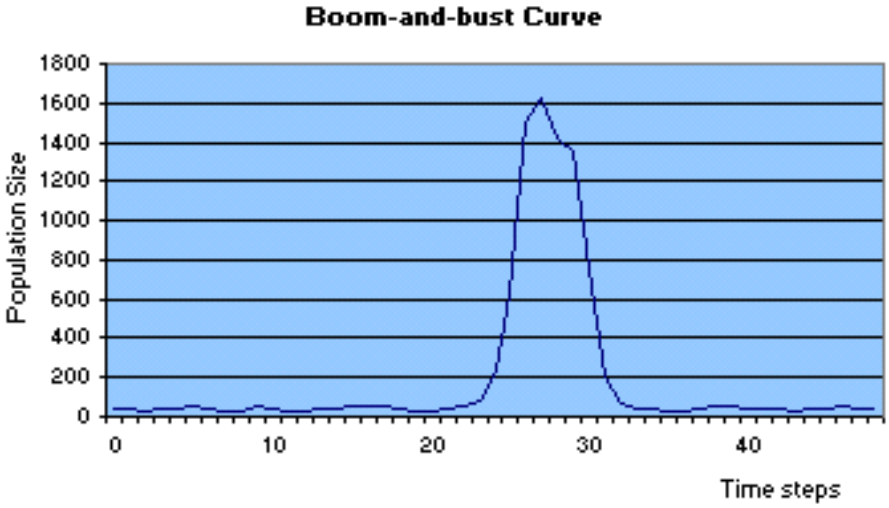
UNKNOWN GRAPH 3



UNKNOWN GRAPH 4



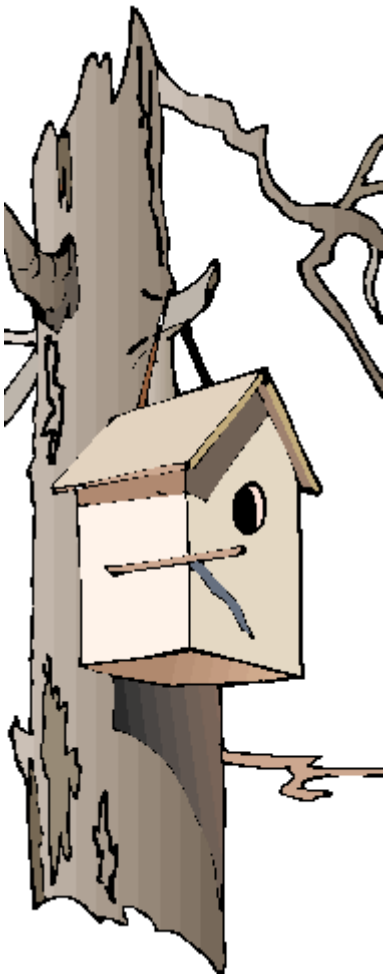
UNKNOWN GRAPH 5



UNKNOWN GRAPH 6

NAME OF THE GROUP: **GROUP MEMBERS:**

I SAW A HOME



1. Can you tell the name of the animal you observed?

2. Please draw/take its picture ?

3. How is its habitat?

4. What does the animal eat?

5. Do you think it makes its own home?

6. Where does your animal usually have home?

7. Can you draw a picture of its home in the back of the paper?

8. Does it always live there? Why?

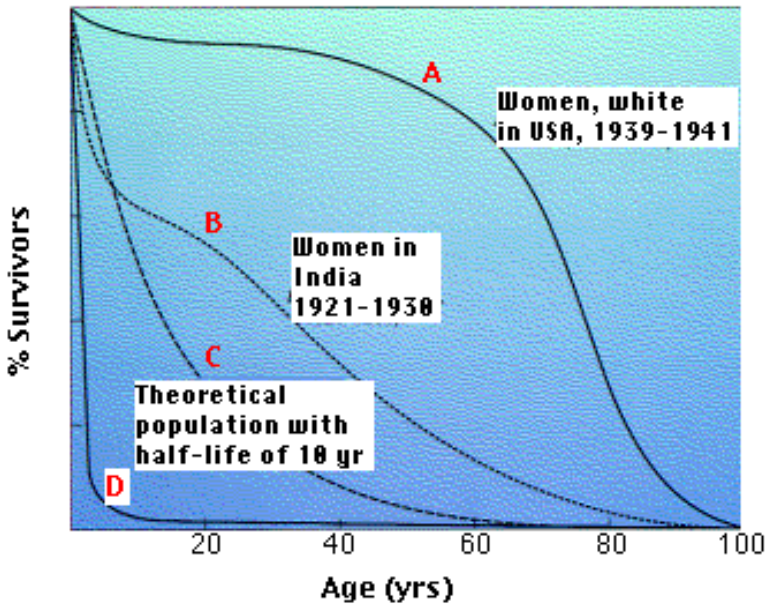
9. Which family does it belong to?

10) Do you think the home is safe for her/him?

Your Additional Notes:

My name is.....

WHAT DO THE CURVES SHOW US?



The graph shows four representative survivorship curves. Please write your opinions for each curve.

Population Dynamics II

Aim(s)

- Participants should be able to realise the link between the population growth and the mathematics in social dimension
- Participants should be able to express the reasons of immigration/emigration that change population size of a country/region/district/province

PART 5.1 (Warming)

Objectives

- Participants should be able to practise in giving directions
- Participants should be able to feel empathy with blind people

Grade Level	**Duration**	
3-7	*Activity*	25 minutes

Subjects

Social studies

Key words

Left, right, forward, corner, step

Material

Waste solid materials

Procedure

Make a pair. Make four different stations in the corner and send equal number of pairs to the sitations.

In each station define an area called flower garden with its entrance and exit gate. Like in a mine-field, put one waste material representing one flower in the area. Waste material will be put in different directions not in one or two lines.

Activity

Showing each areas,

The leader: "These are flower gardens. Each waste material represents different type of flowers. For the beginning, one of the partner is blind, please close your eyes. The blind person is at the entrance of flower garden wheras the other partner is in the exit gate. The friend who is in exit gate will try to give directions to her/his blind friend in order not to be damaged flowers and be come her/his blind friend to the exit gate safely. When one of the pairs comes from beginning to exit gate the partners will change their roles".

Guiding Questions and Discussion

- Which one was more difficult: giving directions or walking according to the directions as a blind person? Why?
- Which terms/expressions in giving directions that were used in your stations?
- Do you sometimes need to give/hear directions in your real life? When?
- How do you feel when you are blind? Explain.
- Do you think that the settlements are designed according to the needs of disabled people? Why?

Remark

- The reason of making three different stations is for not to consume time. The leader will observe each situation and take notes for expressions that are used for giving directions

PART 5.2

FROM THE EX-MEETING
Remind:
4.A. ***The Leader***: "Can you calculate your living area in your home and each person's living area in your district up to the next meeting?"
The leader can find it Module 4, Page 3-4

Background

In order to calculate one's living area in her/his home, the area of the house and number of the person who live in it should be known/calculated. The area of the house can be calculated room by room and added. The shape of the rooms are optimised by well known geometrical shapes. The area formulas of geometrical shapes such as rectangle, square. One's living area is found when the area of the house is divided by number of the person.
Maps also is used in this activity. The concepts of latitude which is measured in relation to the equator (north or south) and longitude which is measured in relation to the prime meridian (east or west) are important as well as how they are recorded. There are different types of maps from physical to topographic. Legend is an important part of a map that show the user what different symbols mean. For instance, two small line with a variety of widths and combinations may represent the roads. Scale which indicates the relationship between a certain distance on the map and the distance on the ground is an another important part of a map since an accurate map represents the land. Scale generally is located in legend box of the map. A ratio indicates how many unit on the map is equal to units on the earth's surface. For example; the scale 1/100,000 means one centimeter in the map equals to 100,000 centimeters on the earth.

Resource:
(1) About Geography Home Page,
http://geography.about.com/od/studygeography/a/mapparts.htm. (accessed August 2005)

Objectives

- Participants should be able to practise working with maps
- Participants should be able to practise reading of natural numbers and doing operations between them
- Participants should be able to practise reading decimal of numbers and doing operations between them
- Participants should be able to practise area calculations and measurement
- Participants should be able to calculate their own living area
- Participants should be able to calculate each person's living area in their own town
- Participants should be able to realise the relation between population size and person's living area

Grade Level	**Duration**	
6-7	*Activity*	45 minutes

Subjects
Mathematics, social studies

Key words
Living area, calculation. map

Material
Printed map showing participant's home, one political map of Istanbul

Procedure
If available, each participant opens the following web site on the computer: www.multimap.com. If not, look at Estimation Table-participant copy sheet that was filled by participants in ex-module (Module 4, page 3). Looking at each participant's postal address, you can find a map that shows their home with 1:1000 000 000 scale and print two copies of each map before the activity begin.

Make a pair. Deliver participant's own map that the leader printed out two copies to each.
Activity
The leader: "Please sit down back to back. Please mark your home in one of the maps in your hand. One of the pairs is A, the other is B".

All A's will give one copy of their maps which is unmarked to B.
The leader : "All A's will give directions to make B find her home in B's map. You will never turn to each other and look your partner's map".
Give them 3-4 minutes to finish.

Change the turn i.e. "B" will give the directions. However, this time "B" can not use the name of the street while giving the directions for being finding her/his home. Give them 5-6 minutes to finish.

Hang Istanbul's political map on the wall that every participant can see easily.

Guiding Questions and Discussion

- Which one was easier? Why?
- How did you solve the problem that occured because of not using the name of the street? [coordinate system in map, reference points etc.]
- Do you have any suggestions to your pair about the direction she/he gave you?
- Is there any missing in your maps when you think about what a map consists of ? [scale, legend]
- Compare your map in your hand with the Turkey map you prepared in Module 1.
- Does the map of Turkey have scale? Who decides scale to be put in the map?
- Do all the maps show the same things? Explain. [physical, geographical, political etc]

The leader: "It is ok, if everybody knows his/her partner's home adress approximately. Please show your calculation about your living area in your home and each person's living area in your town up.
I will deliver Living Area Table-participant copy sheet to be filled by each of you according to your calculations.

Please note your estimation living area per person in your home in Estimation Table-participant copy sheet you filled in ex meeting".

Deliver both Living Area Table-participant copy sheet and Estimation Table-participant copy sheet .

Guiding Questions and Discussion

- What kind of information did you need for your calculations?
- How did you get these information? Explain.
- Did you find formula to calculate your living area in your home? Compare the formula with the formula for person's living area in your town. Explain
- Are all of your living areas in your home equal? Why/why not?
- What about person's living area in each town you live? Explain
- Compare your living area in your home with person's living area in your town individually. Why are they different?
- Who has the largest/smallest living area in your group? Why are these areas different?
- Are there any living areas in towns that are close in numerically? If they are close, does it mean all the data we used are also close in numerically? Explain.
- What do you estimate for a person who has larger living area: in Istanbul or Edirne?
- Were the each person's living area in your town equal 10 years ago? Why/why not?

Remarks

- In this question: "Are there any living areas in towns that are close in numerically? If they are close, does it mean all the datas we used are also close in numerically?", there is no need that the populaton sizes and areas of the towns should be close e.g. 12 : 4 = **3** and 21 : 7 = **3**. Eventhough the results are same in both, components of division are not.
- Encourage the participants to use of the tem of "latitude" and "longitude" by asking what does " 110°W " or "30°S" mean.

PART 5.3

FROM THE EX-MEETING

Remind:

4.B. I Saw A Home-participant copy sheet: We live together with different animals around us. Shall we observe their life a little bit. Please fill in the worksheet and write a small article about them related with your observation. It can be a short funny story or an article to the school/local newspaper.

The leader can find it in Module 4, Page 4

Objectives

- Participants should be able to be aware of the animal diversity around
- Participants should be able to be practise the relation between animal house (Place and size), population size, family of animal and type of nutrition

Grade Level	**Duration**	
5-7	*Activity*	15 minutes

Subjects
Mathematics, science

Key words
Living area, type of nutrition, population, edit

Material
I Saw A Home-participant copy sheet filled by participants, articles written by students

Procedure
Sit in a circle.

Activity
The leader: "Can you bring I Saw A Home-participant copy sheet filled by their observations and their article you wrote? "

Guiding Questions and Discussion

- Was it difficult to find their home?
- Is there any relation between the animal's family and population size in your animal's home ?
- Were there anything that you did not expect?
- Is there a relation between animal house (place and size), population size, family of animal and type of nutrition
- Is there a relation between the animal's defence strategy and living area?

The leader: "Each of you is a editor. Please give your article to anyone in the group that you think you had less relation up to now and begin to read. If the article will be planned to be published in the school/local newspaper, please edit it. Share the results with the owner of the article before doing any changes on the article. Please bring all articles you edit".

FOR THE NEXT MEETING
5.A You are editor, please edit your friend's article up to the next meeting.

Remark

- At the end of the discussion, ask them where they reached the same conclusions before? [Module 4, page 2-3]

PART 5.4
Background
Annual growth rate which is used for the number of persons added to (or subtracted from) a population in a given year due to several reasons such as natural increase, net migration is expressed as a percentage of the population at the beginning of the time period.
The table in Annual Growth by Regions-participant copy sheet, there is some missing data. City population of Marmara Region is found by substracting the number of the total population is Marmara Region (13 295 878) from the number of village population (2 945 571) in the same region. The number of city, village and total of a region can be calculated in a similar way either by adding or by substracting. There are:

The answers of the two questions under the table in the same worksheet were showed and given.

Resource
(1) Republic of Turkey, Prime Ministry State Institute of Statistics Home Page, http://www.die.gov.tr/nufus_sayimi/2000tablo2.xls. (accessed July 2005)

Objectives

- Participants should be able to practise operations with natural numbers
- Participants should be able to practise to read natural numbers
- Participants should be able to practise operations with decimal numbers
- Participants should be able to practise the calculation of a percentage
- Participants should be able to use percentage in a social dimension
- Participants should be able to comment about the data in table

Grade Level **Duration**
6-7 *Activity* 50 minutes

Subjects
Mathematics, social studies

Key words
Annual growth rate, population, birth, immigration, emigration, death

Material
Hard copy of Annual Growth by Regions-participant copy sheet for each participant, a copy of Annual Growth by Regions-leader copy sheet for the leader, calculators, paper, pencil, one folder

Procedure
Divide group of 5-6 participants each.

Activity
The leader: "You begin to work in Republic of Turkey, Prime Ministry State Institute of Statistics as an expert. Because of the viruses in the prepared document, some of the data has been lost. This document should be presented with possible conclusions to a committee which consists of delegates from different Ministry such as Economy, Ministry of Labour and Social Security. Your boss gave this responsibility".

Deliver Annual Growth by Regions-par**ti**cipant copy sheet to participants either as a hard copy or on the computer which was saved as a document called Annual Growth by Regions-par**ti**cipant copy sheet on screen if possible. Calculators and papers can be used if participants want to during their calculations.
While one group presents their report to the committee, the rest will be the committe members who will ask 5 questions at most to each group.

The following guiding questions may be asked by the leader as a committee member to the presentation group.

Guiding Questions and Discussion

- Check the missing points that everybody agree or not.
- How were the data collected?

- What is ‰ used in ***Annual Growth byRegions Sheet***?
- Does the total annual growth rate calculate adding the village and city's annual growth rate? Explain.
- Compare the population size of the regions of Guneydoğu and Doğu Anadolu with the other regions.
- What is the highest population growth rate? Why?
- Why does the village' population growth rate in Karadeniz and Doğu Anadolu Region minus?
- What would happen if the total annual population grows up in a place both with cities and villages? E.g. Akdeniz Region

Remark

- Using "immigration, emigration, birth and death" as the factors of changing the population size is important. These terms were used in Module 1 also.

After all presentations;
The leader: "The committee waits for your **official** report in a one week".
Encourage them to use computers and internet to write on.

FOR THE NEXT MEETING
5.B. Write an official report to the committee in two weeks.

***FOR THE NEXT MEETING(all)*:**
5.A You are an editor, please edit your friend's article up to the next meeting.
5.B Write an official report to the committee in two weeks.

Closure
Invite the participants into sharing.

- Which subjects do you think you used in today's activities e.g. science etc?
- Do you think is there a relation what we have done today? Explain.
- Which part was the most difficult for you?
- Which part you enjoyed most?

Evaluation
a. The leader make the new concept map on population which was also done in Module 1, Part 1.2 and give the ex concept map to each participant to be compared.

b. The leader also gives feedback to each participant by comparing her/his own concept maps.

Resources
(1) About Geography Home Page, http://geography.about.com/od/studygeography/a/mapparts.htm. (accessed August 2005).
(2)Republic of Turkey, Prime Ministry State Institute of Statistics Home Page, http://www.die.gov.tr/nufus_sayimi/2000tablo2.xls. (accessed July 2005).
(3) MultiMap Home Page, www.multimap.com. (accessed August 2005).

LIVING AREA TABLE

Name & Surname	Living Area per Person in her/his Home (km2)	Living Area per Person in Your Town (km2)

Name & Surname	Living Area per Person in her/his Home (km2)	Living Area per Person in Your Town (km2)

5.2. Participant co

ANNUAL GROWTH BY REGIONS

Group Members:

This table shows the annual population of city and village according to Regions with annual population growth rate

Regions	General Census in 1990			General Census in 2000			Annual population growth rate (PGR) ‰		
	Total	City	Village	Total	City	Village	Total	City	Village
Total	56 473 035	33 656 275	22 816 760	67 803 927	?	23 797 653	18,28	26,81	4,21
1. Marmara.....	13 295 878	?	2 945 571	17 365 027	13 730 962	3 634 065	26,69	28,26	21,00
2. Ege.....	7 594 977	4 344 471	3 250 506	?	5 495 575	3 443 206	16,29	23,50	5,76
3. Akdeniz.....	7 026 489	4 051 596	2 974 893	8 706 005	5 204 203	3 501 802	21,43	25,03	16,30
4. İç Anadolu.....	9 913 306	6 412 910	3 500 396	11 608 868	8 039 036	3 569 832	15,78	22,59	1,96
5. Karadeniz.....	?	3 337 392	4 799 321	8 439 213	?	4 301 747	3,65	21,48	-10,94
6. Doğu Anadolu.....	5 348 512	?	3 062 714	6 137 414	3 255 896	2 881 518	13,75	35,37	-6,10
7. Güneydoğu Anadolu	5 157 160	2 873 801	2 283 359	6 608 619	4 143 136	?	24,79	36,57	7,67

Note: The datas was taken from Republic of Turkey, Prime Ministry State Institute of Statistics. Available at www.die.gov.tr

Please examine the table and fill the missing places.

a. What would be the total city population in Akdeniz region in 1991?

b.What would be the total village population in Doğu Anadolu region in 1992?

ANNUAL GROWTH BY REGIONS

Group Members:

The annual population of city and village according to Regions with annual population growth rate

Regions	General Census in 1990			General Census in 2000			Annual population growth rate (PGR) ‰		
	Total	City	Village	Total	City	Village	Total	City	Village
Total	**56 473 035**	**33 656 275**	**22 816 760**	**67 803 927**	**44 109 336**	**23 797 653**	**18,28**	**26,81**	**4,21**
1. Marmara.....	13 295 878	10 350 307	2 945 571	17 365 027	13 730 962	3 611 047	26,69	28,26	21,00
2. Ege.....	7 594 977	4 344 471	3 250 506	8 938 781	5 495 575	3 443 206	16,29	23,50	5,76
3. Akdeniz.....	7 026 489	4 051 596	2 974 893	8 706 005	5 204 203	3 501 802	21,43	25,03	16,30
4. İç Anadolu.....	9 913 306	6 412 910	3 500 396	11 608 868	8 039 036	3 569 832	15,78	22,59	1,96
5. Karadeniz.....	8 136 713	3 337 392	4 799 321	8 439 213	4 137 466	4 301 747	3,65	21,48	-10,94
6. Doğu Anadolu.....	5 348 512	2 285 798	3 062 714	6 137 414	3 255 896	2 881 518	13,75	35,37	-6,10
7. Güneydoğu Anadolu	5 157 160	2 873 801	2 283 359	6 608 619	4 143 136	2 465 483	24,79	36,57	7,67

Note: The datas was taken from Republic of Turkey, Prime Ministry State Institute of Statistics. Available at www.die.gov.tr
Answers:

a. What would be the total city population in Akdeniz region in 1991?
Answer is 4153007,44788.
It can be calculated : 4 051 596 x 25.03: 1000 = 101411,44788 and 4 051 596 + 101411,44788 = 4153007,44788

b.What would be the total village population in Doğu Anadolu region in 1992?
Answer is 3025462,8528.

It can be calculated 3 062 714 x 6.10 :1000= 18682,555; 3 062 714 - 18682,5554 = 3044031,4446 (at the end of 1st year)
3044031,4446x 6.10 :1000= 18568, 5918 ; 3044031,4446- 18568, 5918 =3025462,8528

5.4. Leader copy

Nature and Culture

Aim(s)

- Participants should be able to be recognised the link between nature and culture
- Participants should be able to get to know about endangered species in Turkey

PART 6.1 (Warming)

Objectives

- Participants should be able to feel the music and be part of it

Grade Level
2-7

Duration
Activity 15 minutes

Subjects
Music

Key words
Harmony

Material
Music of Marshs on CD,

Procedure
Stand up.

Resource:
Archelon, The Sea Turtle Protection Society of Greece, http://www.archelon.gr/eng/biology.htm. (accessed July 2005).

Activity

The leader: "When you are listening to the music, express your feelings with your body. You may follow one voice in the music and be part of it or you can add another voice/animal harmonic to the music".

Remark

- Encourage the participants to involve anything according to the environment which music inspired

PART 6.2

Background

Marine turtles live in ocean and come to shore for laying eggs on sandy beaches in tropical and subtropical waters (Pough et al., 2003) where they mate, feed, migrate and hibernateDuring the incubation period, eggs are threatened by a variety of vertebrate and invertebrate predators (Dodd 1988). Sea turtles are not to move fast and do not have the agility to catch fast-moving prey. Caretta caretta which is one of the marine turtles live in Turkey's coast are endangered. Weather (wind, rain, cold etc.) is one of the natural threats. prime factor. Beach erosion destroys nesting beaches. Sometimes foxes, dogs may dig up the eggs and damage them. Even they reach the sea, they may be caught by large fishes. However, the main threats comes from the man i.e. capture by fishermen, nesting beaches is dangerous beacuse of tourist development, Sand compaction due to vehicular traffic, pollutionsCaretta caretta nest on the beach where eggs incubate from mid-April to early October. It is important to to protect the sea turtles and their habitats through monitoring and research, developing and implementing management plans, habitat restoration, raising public awareness and rehabilitating sick and injured turtles. The World Wildlife Fundation (WWF) and International Union for Conservation Nature and Natural Resources (IUCN) begin to save the caretta caretta in Turkey especially in Dalyan, Muğla since 1978s.

Monachus -Monachus is one of three species of Monk Seal and one of the worlds most endangered mammals. It mostly live in mediterranean sea. **Phocaea** in Attica and **Phocaea** in Asia Minor took their name from the mediterranean monk Seal. According to Greek culture, since the monk seals and dolphins love the sea and the sun was believed to be protected by Poseidon and Apollo. But unfortunately, pollutants, plastics and fishing lines ride the waves, and fishermen are threated the life of monk seals today. The bigger threat today is the presence of humans in their feeding and breeding grounds.

Resource: The Monascus Guardian Home Page, http://www.monachus-guardian.org/mguard09/09newmed.htm. (accessed in July 2005).

Since they are so sensitive, divers and motorized boats can traumatize them. The two main organisations that works for protecting monk seals are Underwater Research Society - Mediterranean Seal Research Group (SAD-AFAG) and Mediterranean Programme and Turkish Society for the Conservation of Nature (DHKD).

Resources

(1) Pough, F. H., et al. 2004, 2003. Herpetology, 3rd Ed., Upper Saddle River, New Jersey, Pearson Prentice Hall.
(2) Dodd, C. K., Jr., 1988. Synopsis of the biological data on the loggerhead sea turtle ***Caretta caretta*** (Linnaeus 1758). United States Fish and Wildlife Service Biological Report 88(14):1-110.
(3) Archelon, The Sea Turtle Protection Society of Greece, http://www.archelon.gr/eng/biology.htm. (accessed July 2005).
(4) WWF-Türkiye, Doğal Hayatı Koruma Vakfı Web Sayfası, http://www.wwf.org.tr/tr/denizkiyi_denizkaplumbagasi_main.asp. (accessed July 2005).
(5) Sualtı Araştırma Derneği Akdeniz Foku Araştırma Grubu Web Sitesi, http://www.afag.org/. (accessed July 2005).
(6) The Monascus Guardian Home Page, http://www.monachus-guardian.org/mguard09/09newmed.htm. (accessed in July 2005).

Objectives

- Participants should be able to improve their reasoning and justification process,
- Participants should be able to be aware of the endangered species in Turkey

Grade Level
6-7

Duration
Preparation 15 minutes
Activity 40 minutes

Subjects
Social studies, science, language

Key words
Endangered species

Material

Paper, colorful pencils, copy of Founded Species-participant copy sheet, one copy of Founded Species-leader copy sheet

Procedure

Sit down in a circle.

Activity

The leader: "You are invited to WWF- Turkey's Istanbul office in order to analyze two pictures about two living creatures. As our secretary said that one villager left these two pictures to our office. Because of being too busy, she didn't realise how the villager found them. In each group there are some specialists like botanists, zoologist, paleantologiest from university and non governmental organisations.

Unfortunately, some parts of these pictures are missing and we have a trouble to complete the rest. We would like to learn more about these creatures about their physical views, species, families, habitats, foods they eat, locations in Turkey and in the world etc. we doubt that they are endangered or not".

Divide the group into two. Deliver one of the pictures in Founded Species-participant copy sheet to each participant. One group will work on monk seals while the other is working on caretta carettas. Monk Seal group and caretta caretta groups will have subgroups of 5-6 participants.

The leader "We invited you to hear your ideas. It is better to work in group of five or six including different experts We took colorful copies of these pictures for you. These pictures were also shown to antropologiest and archeologist. We expect their report as well as yours".

Give them 15 minutes.

The leader: "We would like to be persuaded with one of your works. When one group of experts/inviduals explain their opinions about the species, we will ask some questions to be persuaded".

Invite the participants to ask the questions related with the pictures and creatures and make discussion.

Guiding Questions and Discussion

- What is its name and its species?
- Where is its habitat? Why?
- What does it eat? Why?
- Does it have different colors in season? Which season was this photo taken?
- Who is predator/prey? How is their population?
- How is the world population in Turkey and in the World?
- Is it endangered species? Why/Why not?
- Who/which institutions work on that species in Turkey and/or in the World?

At the end of the discussion, show them Founded Species-leader copy sheet

Guiding Questions and Discussion

- What do you know about them?
- Do they live in Turkey? Where?
- Do they have some similarities? Explain. [Possible answers: both live in sea ecosystems, both live in Turkey's cost, both are endangered species]

- Who works for their protection in Turkey? [Possible answers: AFAG, WWF-Turkey]
- What could be the reasons that they are endangered and need to be protected? [Possible answers: tourism, over population, fishing, habitat destruction]
- Were there any connections with the first activity we have done for you? Explain.
- Are there any endangered species in Turkey? [Possible answers: Panthera pardur, Otis Tarta, Bald Ibis , Oxyura Leucocephala]

Remark

- It is important for the participants to be encouraged about giving reasons and justifications what he/she says about the creatures he completed

PART 6.3

Background

Sea turtles are important for coastal peoples because of religious, economic and food sustenance for many years. Myth of the world's creation i.e. Mother Earth rest s on the back of a turtle is found in many different cultures eventhough they are too far from each other e.g. the indigenous people of North America, the island people of Papua New Guinea and in Ancient Hindu culture. The shell of the turtle is believed to have the markings of heaven and earth upon it. In Chinese mythology, turtle symbolizes wealth, longevity, strength and endurance. According to the findings, the earlist city of ancient Greece is the island of Aegina which was one of the greatest commercial centers of the ancient world to adopt the use of coined money. The coin ordered with number 10 in the Coins-participant copy sheet. is the first coin shaped like a turtle and became the standard currency in the early world. . There could be different reasons: seafaring traditions, the turtle was a creature sacred to Aphrodite. As sea turtles, people lived with nature in harmony. They transfer this feelings to their daily lives.

Resources

(1) Snible Home Page, http://www.snible.org/coins/hn/lucania.html#81. (accessed July 2005).
(2) London Coin Galeries, http://lcgmv.com/PresFolder.html. (accessed July 2005).
(3) New World Treasures Home Page, http://www.newworldtreasures.com/turtle.htm. (accessed July 2005).
(4) Sea Turtle Restoration Project Home Page, http://www.seaturtles.org/press_release2.cfm?pressID=38. (accessed July 2005).
(5) Feng Shui Shop Online Home Page, http://www.fengshui-shop-online.com/auspicious_feng_shui_turtles.html. (accessed July 2005).

Objectives

- Participants should be able to realise the link between the nature and people's life styles
- Participants should be able to be more cuirous about Greek Mythology

Grade Level

6-7

Duration

Preparation 20 minutes
Activity 45 minutes

Subjects

Social studies, mathematics

Key words

Coins, Greek Mythology

Material

Copy of Coins-participant copy sheet. for each group, one copy for Coins-leader copy sheet, a map of Turkey, Names-leader copy sheet

Procedure

Make group of 5-6. Deliver Coins-participant copy sheet to each group. Cut the names on Names-leader copy sheet

Activity

The leader: "Please choose at least two of coins, make a story related with them and play".

After all play were watched,

Guiding Questions and Discussion

- What do you observe on Coins-participant copy sheet?
- Which century may they belong?Why?
- What is the relation between the coins which has human body and an animal or a plant that were put close to each other and given one number for both? [Possible answers: In Greek Mtyh, every God/Godness has at least one special animal or plant to protect him/herself]
- Are there any similarities/differences with the coins? [Possible answers: old, related with animals/plants, ancient greek period]
- What may the reason(s) of putting these creatures on coins? [Possible answer: nature was important for the people and Gods]
- When was the money invented first? [Possible answer: by Lydians in Asia Minor]
- What might the people in the past buy with these coins? Explain.
- Do you know Greek Gods? How? Can you give some examples [Possible answers: Zeus, Hera, Herkules?, Aphrodite; by television cartoons, books etc.]
- Did only Greeks have God/Godness? Explain . [Possible answers:Red Indians, Indian]
- What does a myth associate to you?
- From which possible needs did the people create myths ?
- Do we have stories, songs etc. in our country? Explain.

Read Coins-leader copy sheet to participants that sea turtles, monk seals and dolphins are familiar animals to people who live in Mediterranean and Aegean coast.

The leader: "I am Hermes, ambassador of the Godness and God. I have a message to you: since Greek God/Godness love nature, they wonder about sea creatures' living conditions especially monk seals (monascus monascus) and sea turtles (caretta caretta). Both are endangered/exctint species in the world including Turkey. They would like to understand what is happening to Aegean Sea, Mediterranean Sea that these animals live. They would like to have a meeting with monk seals, caretta carettas and people who live where monk seals and caretta caretta live mostly in Kemer (Antalya), Cirali Regions and Foca next week. Please tell the name of the persons and their roles who should come to the meeting".
If they are in trouble to find them, read some of the names by chance which was cut from Names-leader copy sheet
Thetis (the leader) is a volunteer to be the moderator of the meeting.
The leader: *"Before forget,if y*ou may wish to come to the meeting with your search, you are welcome".

Remarks

- It is important that the participants should be well prepared what each participant represent i.e. with graphs, data, tables, maps should be examined by the participants
- Encourage the participants to wear different costumes according according what they represent
- According to the number of participants, the leader changes the number of the names

FOR THE NEXT MEETING (6.A):
Greek God/Godness would like to have a meeting with different Aegenan Sea, Mediterranean Sea, monk seals (monascus monascus), sea turtles (caretta caretta) and human beings (living in Kemer (Antalya), Cirali Regions and Foca; representatives from non governmental organisation, locam administration etc. next week.

FOR THE NEXT MEETING (All)
6.A. Preparation of the meeting with Greek God/ Godness

Closure

- What did you learn today?
- What do you still want to learn to know?
- What was the most interesting that you learned/realised?
- Which subjects did you use?
- Do you know what is the unpleaseant situation for a turtle? [Have to be in a posisiton of itching of its back]

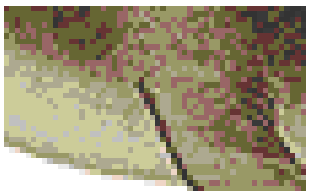
Evaluation

a. Each participant sit in the circle and make an peer evaluation.
b. Leader observation on a checklist of participation in drama process, in discussing process.

Resources

(1)Pough, F. H., et al. 2004, 2003. Herpetology, 3rd Ed., Upper Saddle River, New Jersey, Pearson Prentice Hall.
(2) Dodd, C. K., Jr., 1988. Synopsis of the biological data on the loggerhead sea turtle ***Caretta caretta*** (Linnaeus 1758). United States Fish and Wildlife Service Biological Report 88(14):1-110.
(3) Archelon, The Sea Turtle Protection Society of Greece, http://www.archelon.gr/eng/biology.htm. (accessed July 2005).
(4) WWF-Türkiye, Doğal Hayatı Koruma Vakfı Web Sayfası, http://www.wwf.org.tr/tr/denizkiyi_denizkaplumbagasi_main.asp. (accessed July 2005).
(5) Sualtı Araştırma Derneği Akdeniz Foku Araştırma Grubu Web Sitesi, http://www.afag.org/. (accessed July 2005).
(6) The Monascus Guardian Home Page, http://www.monachus-guardian.org/mguard09/09newmed.htm. (accessed in July 2005).
(7) The Monascus Guardian Home Page, http://www.monachus-guardian.org/profiles/mediseal.htm. (accessed July 2005).
(8) Explore Crete Home Page, http://www.explorecrete.com/nature/caretta.html. (accessed July 2005).
(9) Snible Home Page, http://www.snible.org/coins/hn/lucania.html#81. (accessed July 2005).

(10) London Coin Galeries, http://lcgmv.com/PresFolder.html. (accessed July 2005).
(11) New World Treasures Home Page, http://www.newworldtreasures.com/turtle.htm. (accessed July 2005).
(12) Sea Turtle Restoration Project Home Page, http://www.seaturtles.org/press_release2.cfm?pressID=38. (accessed July 2005).
(13) Feng Shui Shop Online Home Page, http://www.fengshui-shop-online.com/auspicious_feng_shui_turtles.html



FOUNDED SPECIES

Resources:

(1)Mediterranean Monk Seal,

http://www.monachus-guardian.org/profiles/mediseal.htm (accessed July 2005)

(2)Explore Crete, http://www.explorecrete.com/nature/caretta.html (accessed July 2005)

COINS

COINS

Resource:

(1) Snible Home Page, http://www.snible.org/coins/hn/lucania.html#81. (accessed July 2005).

Realities of Turkey

6.3. Leader copy

Aim(s)

- Participants should be able to be aware of the human activities that threats species's life
- Participants should be able to clarify that the solutions of any environmental problems can not be isolated from economical and social dimensions
- Participants should be able to aware of Turkey's economical, environmental and social realities

PART 7.1 (Warming)

Objectives

- Participants should be able to be aware of the endangered species
- Participants should be able to be learn impact of human activities that effect the nature negatively

Grade Level

6-7

Duration

Activity 20 minutes

Subjects

Science, social studies

Key words

Endangerd species

Resource:
World Wildlife Funds Home Page, http://www.panda.org/about_wwf/what_we_do/species/showspecies.cfm?SID=28&LID=2&FH=E. (accessed July 2005).

Procedure

Put a chair for each participant. Give different endangered animal and plants name to each participant. Each name can be given to different participants depending the number of participants.

Snowdrop (3 participants), east spruce (4 participants), green turtles (3 participants), eurasian lynx (2 participants), Giant panda (1 participant), bengal tigers (4 participants), african elephant (1 participants), polar bears (2 participants), great apes (3 participants), blue whales (2 participants), brown bear (3 participants), bearded vulture (5 participants), borneo orang-utans (2 participants), Hector's dolphins (2 participants), otis tarda (6 participants), geronticus eremita (2 participants)

The Species	**Reason of being protected**
Bengal tiger	: Human and tiger conflict
African elephant	: Poaching
Giant panda	: Habitat loss
Eurasian lynx	: Human activities
Hector's dolphins	: Pollution and fishing
Green turtles	: Tourism
Snowdrop	: Commercial logging
Blue whale	: Global climate change
Brown Bear	: Poaching

Resource:
World Wildlife Funds Home Page, http://www.panda.org/about_wwf/what_we_do/species/showspecies.cfm?SID=44&LID=2&FH=E. (accessed July 2005).

East spruce : Makin roads
Great apes : Mining, and commercial logging
Polar Bears : Pollution
Otis tarda : Agriculture
Geronticus eremita : Pollution

Activity

The leader: "We are some species in the earth. Because of some reasons we are endangered species now. When I said one name of a species, they will stand up and change the chair they sit".
The leader may vary it by saying "all the animal species, all plant species, all sea species, all land species, etc. Play it 4-5 minutes.
Take of a chair out and say the name of a species in the group. Since the species whose name were said by the leader have no chair to sit, the leader will tell the reason why he/she endangered listed in above. Continue to do it by taking one chair out each time.

Guiding Questions and Discussion

- What were the reasons that speices have to be protected?
- If humanbeings stop doing agriculture, will we solve some problems? Why/why not?
- What's wrong with human activities?
- How would it be solved? Explain.

PART 7.2

FROM THE EX-MEETING
Remind:
6.A. Greek God/Godness would like to have a meeting with different Aegenan Sea, Mediterranean Sea, monk seals (monascus monascus), sea turtles (caretta caretta) and human beings (living in Kemer (Antalya), Cirali Regions and Foca; representatives from non governmental organisation, locam administration etc.
The leader can find it Module 6, Page 5

Background

Gross national product (GNP) per capita is the dollar value of a country's final output of goods and services in a year, divided by its population. Because of that, it reflects the average income of a country's citizens. There are high income coutries whose a GNP per capita in 1998 of $9,361 or more, middle income countries whose a GNP per capita is between $761 and $9,360 and low income coutries whose a GNP per capita is $760 or less. GNP per capita shows what part of a country's GNP each person would have *if* this GNP were divided equally e.g. life expectancies, literacy rates, access to safe drinkable water, infant mortality rates.

Resource

(1) The World Bank Home Page, http://www.worldbank.org/depweb/english/modules/economic/gnp/. (accessed June 2005).

Objectives

- Participants should be able to be aware of the Turkey's economical and social status
- Participants should be able to be aware of poverty in Turkey

- Participants should be able to be examine the relation between population size and poverty
- Participants should be able to realise not to look environmental problems from one dimension
- Participants should be able to collect, classify and analyse the data related with Turkey
- Participants should be able to interpret statistics to be collected and collect by themselves

Grade Level
6-7

Duration
Activity 90 minutes

Subjects
Mathematics, social studies, music

Key words
Environmental problems, economy, population size, poverty

Material
Data projector, colorful copy of Data of Turkey-participant copy sheet for every four participants (if data projector is not available), craft papers, board markers with different colour, CD Player for listening The Sounds of Nature called Seas/A Voyage in Meditarrenean

Procedure
Stand up.
Activity
The leader: "You came to Olympos to have a meeting with Gods / Godness. Since, you have time up to the meeting,

- you are walking around. [Behave who you are].
- Introduce yourself to the others you see.

Thetis (the leader) come to the place introducing herself and invite people to have a meeting.

The leader (Thetis): "Welcome to Olympos. Can we say our names one by one quickly to remind. I am Thetis. I am responsible to protect the justice".
Give 2-3 minutes.
The leader: "As we said before, we are wondering about the world. Since it is a big issue, we want to focus on more about sea creatures's life especially monk seals (monascus monascus) and sea turtles (caretta caretta) in Turkey .
I have prepared an agenda for today. If you want to add, please tell. Can I read it?

- Turkey's realities.
- The population of monk seals (monascus monascus) and sea turtles (caretta caretta) in the world and Turkey and threats
- Human settlements and human activities in Foca, Cirali, Kemer, Antalya where monk seals' (monascus monascus) and sea turtles' (caretta caretta) habitats
- Impact of human activities
- Possible solutions and "action plan"

If data projector is available, show Data of Turkey-participant copy in power point. If not, put a copy of Data of Turkey-participant copy sheet for every six participants on the floor.
***The leader*: "**As Greek Gods/Godness, we are quite far form the Turkey's realities".

Guiding Questions and Discussion

FOR SLIDE 1

- Does the population of Turkey increase according to Table 2 in 2000s? Why/Why not? [Possible answers: yes, because the the length of the bar is longer in each following year]
- Is there any contradiction between Table 1 and Table 2? Why/Why not? [Possible answers: no, the curve which goes down in Table 2 shows the annual growth rate. Eventhough the rate is decreasing, it doesn not meant that the popuation is decreasing also (Table 1). The populationis still growing but slower than ex years.]

FOR SLIDE 2

- Which cities has high population density? Why? [Possible answers: Kocaeli, Istanbul, Bursa, İzmir, Hatay, Trabzon etc. One of the main reson of immigration is unemployment.]
- Compare the regions according to their annual growth rate.[Possible answers: Doğu Anadolu and Güney Doğu Anadolu Regions are regions having highestannual growth rate where Karadenis Region is the opposite.]
- Is there any region that the population rate of the city lower than the village? [Possible answers: no.]
- Which one is higher : difference between population rate of city or village in 1927 and 2000? Explain
- Why may be the reason (s) of this change?

FOR SLIDE 3

- What is the highest five populated countries? [Possible answers: China, India, USA, Russia and Pakistan.]
- Which are the top five countries which have highest annual population growth rates accordig to Table 7 (average)? [Possible answers: Saudi Arabia, Pakistan, Turkey/Colombia, Egypt Arap Republic.]
- Why may the some countries life expectancy at birth rate be lower than the others like Misir? [Possible answers: education, family planning programmes etc.]
- Are there any correlation between under 5 mortality rate and life expectancy at birth rate ? Explain.
- Are there any relation between adult literacy rate, under 5 mortality rate, life expectancy at birth rate and annual population growth rate? Why/Why not?

FOR SLIDE 4

- What do these pyramids represent? [Possible answers: it represent the change in population distribution for Turkey. The data are standardized and expressed as a number per 100,000 population. It also shows the age-sex distribution of a population and proportion of the population wich consists of too young people to work and, in the short run, is dependent upon those who can.]
- Which gender's population is lower after 70 years old in 2000? [Possible answers: female.]

- In which pramids, percentage of people whose age is under 30 is higher? Why? [Possible answers:male, by adding the numbers which is represented in bars]
- Compare the population size in 2000 which consist of people lower than 15 and between 15-30 years old? [Possible answers:both are higher and they are almost same]
- What is the difference between population pyramids of 2000 and 2025? [Possible answers:population distribution range is changing towards older ages]
- What do you predict for the population size of Turkey in 2050? Lower than 2025? Why/why not?

FOR SLIDE 5

- How are net migration and rate of net migration calculated? [Possible answers: net immigration is calculated by substraction in migration from out immigration for a specific area.]
- What does "-" represent in the table 9? [Possible answers: the amount of out immigration is bigger than the in immigration]
- What is the top five cities whose rate of migration is higher than the rest? How?
- Is there any relation between number of in-migrations and out-migrations?

FOR SLIDE 6

- What does the average number of household in Turkey, 2003? Does it same in city and village? [Possible answers:16 744 495 . The average number of household in rural is lower than urban.]
- Which one is higher: total consumption expenditure of a family whose average number of household is more than 5 or is less than 5? Why? [Possible answers: more than 5. Since the number of the people who live in the same place is more than the others, they consume more.]
- Is there a correlation between average number of household and total consumption expenditure? Why/Why not?
- Compare the total consumption expenditure?
- Which one is lower: number of home owner in city or in village? Why?
- Is there a correlation between ownership status of the dwelling and total consumption expenditure? Show that.

FOR SLIDE 7

- In which cities, expenditure for transportation is higher than 10? Is there a relation between Table 3? Explain [Possible answers: Istanbul, Bursa, Izmir etc. Since the population is higher in these cities, the border of the city is growing or at least the places that are not in the city center begin to be used more that cause to needore transportation vehicle.]
- Compare Tekirdağ and Istanbul according to the data in Tabel 12. Is there a relation with the data for both cities in Table 9?

FOR SLIDE 8

- Does Turkey make more exports than imports? [Possible answers: no, more imports it does.]
- Which are the top five countries that make high exports? [Possible answers:Germany, France, England, Holland and Italy.]
- Which are the top five countries that make high imports? [Possible answers: Possible answers:Germany, England France, , Italy and Holland.]

- Is there a correlation between the top five countries in exports and imports?
- Is there relation between the last three countries' exports and imports amounts?
- Compare Table 13, 14 and 15 for Germany and Turkey?

FOR SLIDE 9

- What is the inflation? How does it effect a country's future? [Possible answers: Increase in the volume of money and credit relative to available goods and services resulting in a continuing increase in general price levels. High inflation cause to inrease in the cost of living.]
- Compare the inflation in Turkey with the others in Table 16. [Possible answers: it was lower than in 1995s but it is still higher than most of the other countries.]
- What is the the top five countries having high unemployment in 1995?
- Compare the top five countries having high unemployment in 1995 and 2003?
- How did Turkey's unemployment change between 1995 and 2003?

FOR SLIDE 10

- What is poor people?
- According to Table 18, where the number of the poor individual is higher i.e. in urban or in rural? Why? Is there a relation between the curves in Table 5? [Possible answers: rural. People have less area to cultivate, they earn less money than ex years etc.]
- Compare the number and percentage of poor individual who has less than $1 and less than 4.3 $ per day?
- What is the number of poor individuals if the population is 10 million? [Possible answers: 1 million 350 thousand]
- Is there a contradicton when someone look to number of the poor and rate of poor in household data?
- According to Table 19, compare the rate of poor household with the rate of poor individual in Turkey general?
- What are the top two household sizes that the rate of poor is high in Turkey general? [Possible answers:5-6 and more than 7]
- Where is the number of poor individuals higher i.e. in rural or in urban? [Possible answers:rural]

FOR SLIDE 11

- According to Table 20, which educational level does an invidual belong to mostly in Turkey? [Possible answers: graduation from primary school]
- Where is the number of people who are illiterate in rural or in urban area? Why?
- When you order the rate of poverty according to educational level for Turkey general, what can you say? What about for rural and urban areas? [Possible answers: rate of poverty is the highest in people who are literate without diploma. It is higher in rural area]
- In which education level does an individual have less poverty risk? Why?
- What would be the effects of poverty for Turkey? Social and environmental?
- Do you know anybody who is poor? How is his/her living conditions?
- Are there any country who suffers form poverty in the world? Give some examples [Possible answers: most of the countries in Africa].

FOR SLIDE 12

- When you look to the number of convicts in Table 21, which age groups's size has rapidly increased between 1999 and 2003? Compare it with Table 8. [Possible answers:under 19. The reason may be the high number of young people in Turkey]
- Compare the number of persons in prison according to their marital status.
- According to Table 22, what is the education level of people in prison mostly? [Possible answers: primary school]

Remarks:

- Invite participants to consider about their own life and life around themselves.
- Invite participants to be empathic with poor individuals ad people who are in prison.

The leader: "Ok, the view is not to positive as we have imagined. Now, we came back to the second item in our agenda. i.e. the population of monk seals (monascus monascus) and sea turtles (caretta caretta) in the world and Turkey and threats.

I would like to give time to monk seals (monascus monascus) and sea turtles (caretta caretta) to listen for this issue first".
Continue to discuss on the issues in the agenda

- The population of monk seals (monascus monascus) and sea turtles (caretta caretta) in the world and Turkey and threats
- Human settlements and human activities in Foca, Cirali, Kemer, Antalya where monk seals' (monascus monascus) and sea turtles' (caretta caretta) habitats
- Impact of human activities
- Possible solutions and action plan

The leader: "I thought it is better that the possible solutions should be reported. I need a volunteer for that".
[Give craft papers and board markers with different colour to the reporter.]

The leader: "It is not so common to have a meeting with huge range of people, animal, Gods/Godness like we had.
I would like to make this day memorial. Can we make a group foto with our all positive feelings that invited us to this meeting in order to make the earth better".

[Take real foto of the group]

Remarks

- Encourage all participants to speak
- According tothe group dynamic, after first issue in agenda which is Turkey's realities, the group can make a break for 10 minutes

Closure

- What did you learn today?
- What was the most difficult moment for you today?
- What was the most enjoyable time for you today?
- Are you planning to take actions after producing solutions for monk seals and sea turtles? If any, how?
- Did you have any awareness at the end of the day to share with us?

Evaluation

a. Keep the teacher observation on a checklist of participants' participation related to be involved in the meeting with God/Godness

b. Participants write a brochure that outlines the actions people can take and explain why protection of endangered species is important.

Resources

(1) The World Bank Home Page, http://www.worldbank.org/depweb/english/modules/economic/gnp/. (accessed June 2005)

(2) Republic of Turkey Prime Ministry State Institute of Statistics Home Page, http://www.die.gov.tr/yillik/yillik_2004_eng.pdf . (accessed June 2005).

(3) World Wildlife Funds Home Page, http://www.panda.org/about_wwf/what_we_do/species/showspecies.cfm?SID=28&LID=2&FH=E. (accessed July 2005).

(4) World Wildlife Funds Home Page, http://www.panda.org/about_wwf/what_we_do/species/showspecies.cfm?SID=44&LID=2&FH=E. (accessed July 2005).

TABLE 1

SOME DATA ABOUT TURKEY

(thousand) TURKEY'S POPULATION BETWEEN 1927-2000

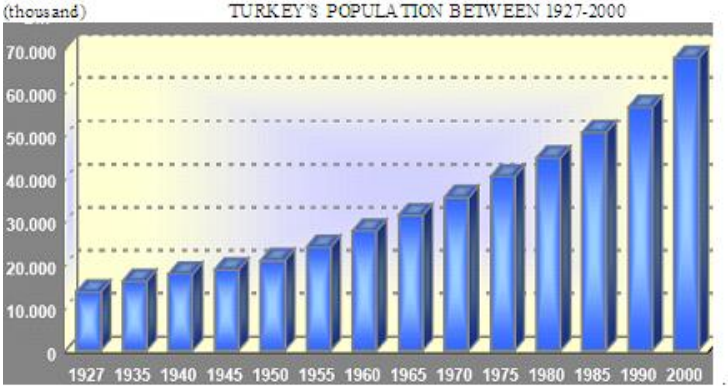
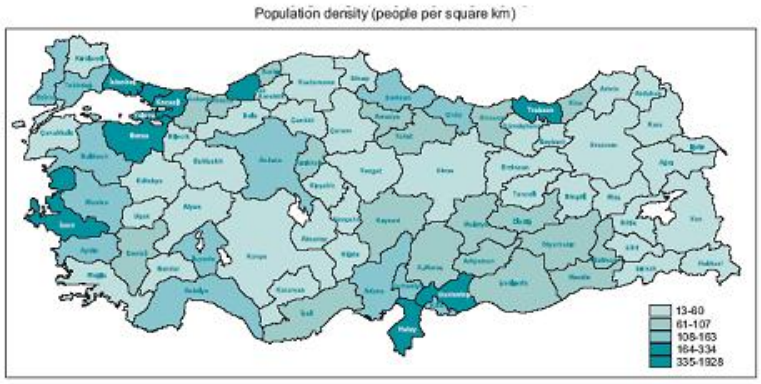


TABLE 2.



ıd according to the results of 2000 General Population Census.

TABLE 3.a.

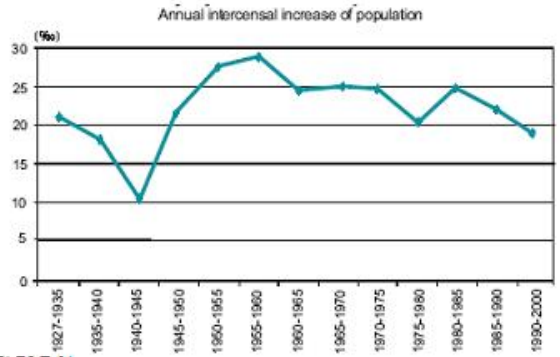
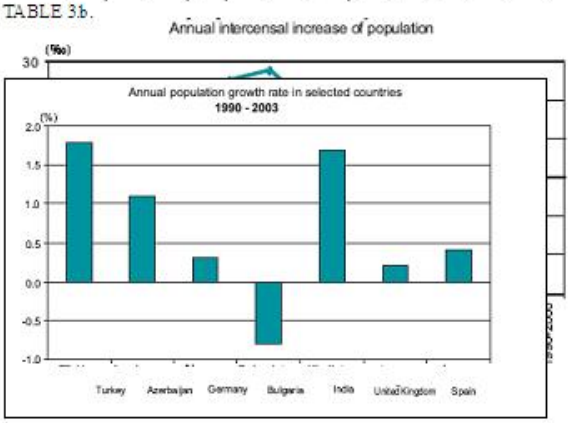


TABLE 3.b.



7.2.Leader copy

TABLE 4.

THE POPULATION RATE OF CITY AND VILLAGE BETWEEN 1927-2000

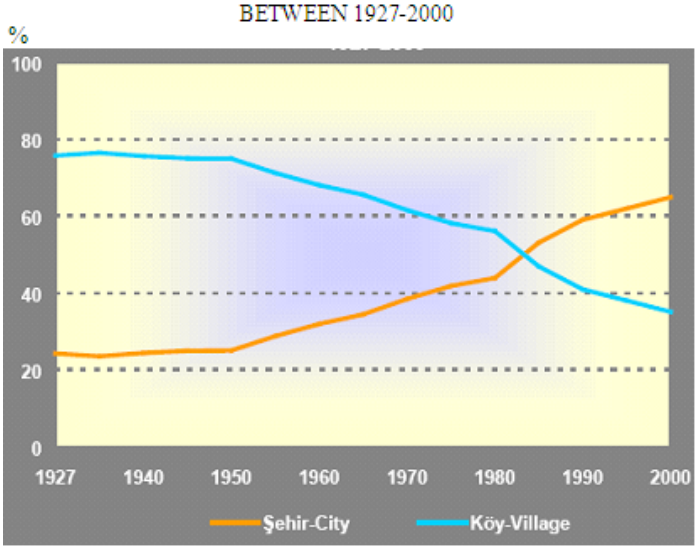


TABLE 5.

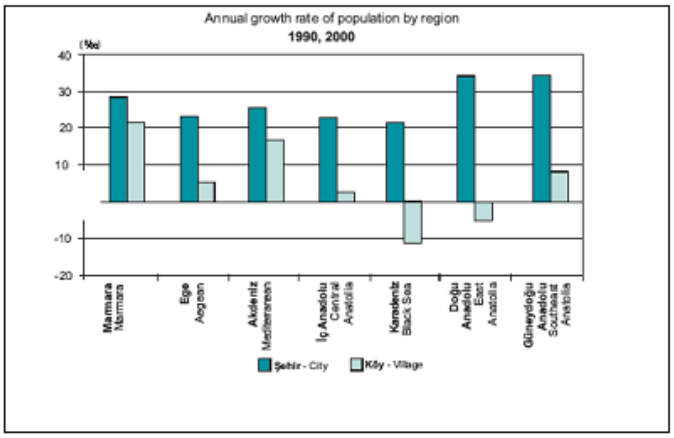


TABLE 6.

7.2.Leader copy

Population Pyramid Summary for Turkey

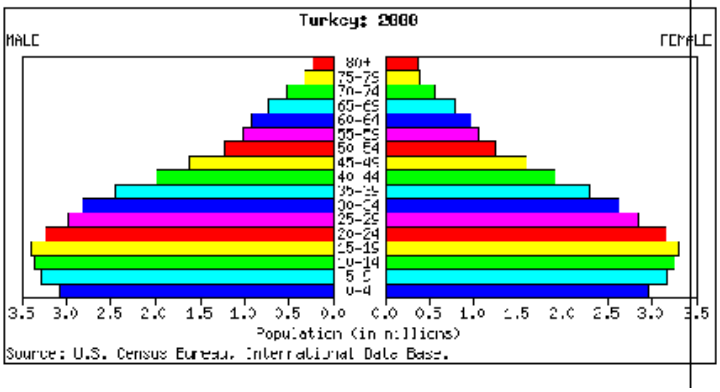


TABLE 7.

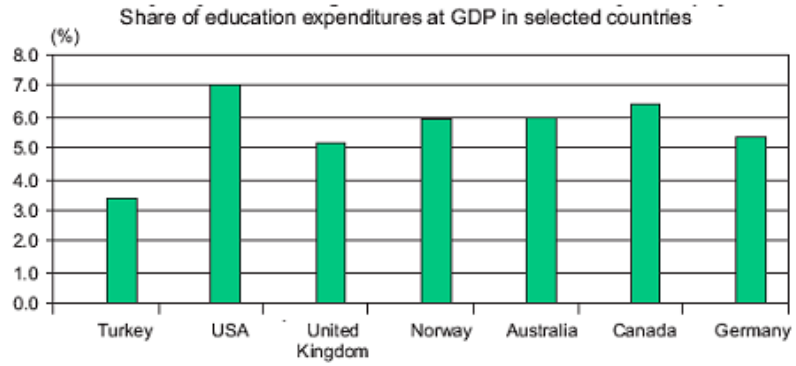


TABLE 8.

Female population by literacy, education level and fertility, number of live born and living children by sex, 2000
[12 ≥ yaştaki kadın nüfus - 12 ≥ age and over female population]

Okuryazarlık ve eğitim durumu (USES, 1997) Literacy and education level (ISCED, 1997)	Doğurganlık durumu Fertility: Canlı doğum yapan Gave alive births	Canlı doğum yapmayan Didn't give alive births	Canlı doğan çocuk sayısı Number of live born children: Erkek Males	Kız Females	Yaşayan çocuk sayısı Number of living children: Erkek Males	Kız Females
Toplam - Total	16 415 301	1 638 367	30 496 753	28 434 328	26 849 609	25 414 814
Okuma yazma bilmeyen Illiterate	4 456 413	247 406	12 725 354	11 790 383	10 692 906	10 092 187
Okuma yazma bilen fakat bir okul bitirmeyen Literate but no school completed	1 230 344	75 997	2 871 283	2 670 682	2 438 355	2 317 329
Okul bitiren Graduates	10 721 542	1 313 152	14 888 173	13 962 070	13 707 823	12 995 337
İlkokul mezunu Primary school graduate	7 889 255	747 940	11 991 224	11 231 125	10 946 983	10 373 465
İlköğretim mezunu Primary education graduate	5 645	8 334	3 952	3 735	3 790	3 573
Ortaokul veya ortaokul dengi meslek okul mezunu Junior high school or equivalent vocational school graduate	878 911	121 359	1 035 260	971 883	978 974	926 507
Lise veya lise dengi meslek okul mezunu High school or equivalent vocational school graduate	1 355 956	276 613	1 329 797	1 255 712	1 271 175	1 209 291
Yüksek öğretim mezunu Higher education graduate	591 775	158 906	527 940	499 615	506 901	482 501
Mezuniyeti, okuma-yazma durumu bilinmeyen Education level, literacy status unknown	7 002	1 812	11 943	11 193	10 525	9 961

TABLE 9.

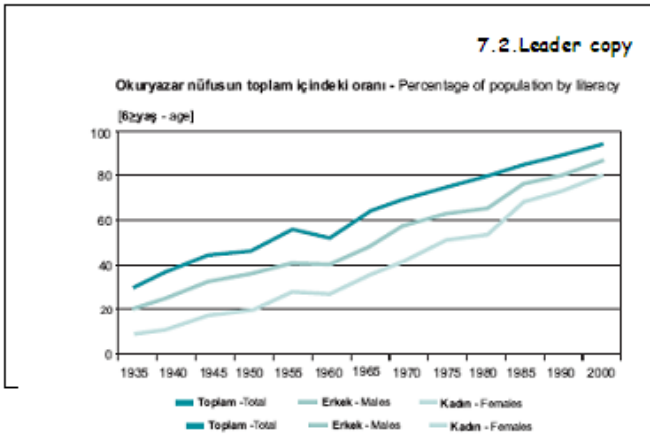


TABLE 10.a

Provincial in-migration, out-migration, net migration, rate of net migration

Permanent place of residence in 2000	Population of place of residence in 2000 (1)	Aldığı göç In-migration	Verdiği göç Out- migration	Net göç Net migration	Rate of net migration ‰ (2)
Toplam - Total	60 752 995	4 788 193	4 788 193	0	0
Adana	1 659 361	92 684	133 181	- 40 497	-23.97
Adıyaman	559 772	17 624	58 369	- 40 745	-70.23
Afyon	728 613	35 636	52 252	- 16 616	-22.55
Ağrı	451 287	24 586	50 799	- 26 213	-56.45
Amasya	334 884	30 294	39 393	- 9 099	-26.81
Ankara	3 597 662	377 108	286 224	90 884	25.59
Antalya	1 451 771	171 982	81 525	90 457	64.31
Artvin	176 083	14 374	25 934	- 11 560	-63.56
Aydın	857 507	76 570	55 017	21 553	25.45
Balıkesir	992 564	80 207	75 403	4 804	4.85
Bilecik	179 562	24 586	14 481	10 105	57.91
Bingöl	222 139	13 795	25 202	- 11 407	-50.07
Bitlis	331 728	24 270	31 374	- 7 104	-21.19
Bolu	246 417	25 532	35 786	- 10 254	-40.76
Burdur	234 021	17 328	22 702	- 5 374	-22.70
Bursa	1 933 732	180 171	94 846	85 325	45.12
Çanakkale	425 212	42 818	31 327	11 491	27.39
Çankırı	242 287	20 869	25 340	- 4 471	-18.28
Çorum	549 321	27 073	60 095	- 33 022	-58.36
Denizli	773 169	57 412	42 207	15 205	19.86
Diyarbakır	1 176 390	62 996	111 060	- 48 064	-40.04
Edirne	361 227	35 973	41 079	- 5 106	-14.04
Elazığ	513 839	36 075	48 438	- 12 363	-23.77
Erzincan	282 662	29 336	30 661	- 1 325	-4.69
Erzurum	825 427	50 809	97 300	- 46 491	-54.78
Eskişehir	650 265	62 802	53 220	9 582	14.84
Gaziantep	1 119 535	68 550	65 051	3 499	3.13
Giresun	481 779	30 844	36 693	- 5 849	-12.07
Gümüşhane	168 573	13 777	17 780	- 4 003	-23.47
Hakkari	186 976	13 369	15 715	- 2 346	-12.47
Hatay	1 110 055	47 298	85 539	- 38 241	-33.87
Isparta	458 365	45 579	31 710	13 869	30.72
İçel	1 497 575	117 894	99 465	18 429	12.38
İstanbul	9 044 869	920 955	513 507	407 448	46.09
İzmir	3 078 981	306 387	186 012	120 375	39.88
Kars	290 611	28 937	47 288	- 18 331	-61.15
Kastamonu	350 200	26 171	37 860	- 11 689	-32.83
Kayseri	954 397	64 169	67 476	- 3 307	-3.46
Kırklareli	294 998	29 968	24 698	5 270	18.03
Kırşehir	233 028	19 273	30 021	- 10 748	-45.08
Kocaeli	1 079 603	119 301	119 090	211	0.20
Konya	1 958 640	107 316	104 529	2 787	1.42
Kütahya	603 765	38 553	39 617	- 1 064	-1.76
Malatya	773 959	49 192	66 015	- 16 823	-21.50
Manisa	1 149 708	76 526	72 839	3 687	3.21
Kahramanmaraş	890 448	33 864	59 394	- 25 530	-28.27

TABLE 10.b

Provincial in-migration, out-migration, net migration, rate of net migration

Permanent place of residence in 2000	Population of place of residence in 2000 (1)	Aldığı göç In-migration	Verdiği göç Out- migration	Net göç Net migration	Rate of net migration ‰ (2)
Mardin	601 621	26 083	68 165	- 42 082	-67.58
Muğla	632 850	80 782	37 861	42 921	70.20
Muş	390 308	13 379	37 448	- 24 069	-59.82
Nevşehir	273 293	23 171	25 125	- 1 954	-7.12
Niğde	312 784	27 740	28 439	- 699	-2.23
Ordu	809 013	35 790	72 748	- 36 958	-44.66
Rize	337 609	25 050	32 523	- 7 473	-21.89
Sakarya	681 577	50 354	66 252	- 15 898	-23.08
Samsun	1 108 182	59 628	111 272	- 51 644	-45.54
Siirt	218 773	17 932	34 994	- 17 062	-75.08
Sinop	208 376	16 205	32 592	- 16 387	-75.67
Sivas	680 536	43 309	78 936	- 35 627	-51.02
Tekirdağ	555 916	88 618	37 283	51 335	96.81
Tokat	748 680	33 384	70 556	- 37 172	-48.45
Trabzon	893 179	52 923	62 900	- 9 977	-11.11
Tunceli	83 642	15 705	18 828	- 3 123	-36.65
Şanlıurfa	1 243 058	38 320	87 632	- 49 312	-38.90
Uşak	297 112	18 807	20 865	- 2 058	-6.90
Van	726 202	35 053	67 406	- 32 353	-43.58
Yozgat	614 176	32 948	59 223	- 26 275	-41.88
Zonguldak	574 182	27 839	71 848	- 44 009	-73.82
Aksaray	353 155	18 892	23 661	- 4 769	-13.41
Bayburt	87 386	6 027	11 387	- 5 360	-59.51
Karaman	219 055	13 374	16 145	- 2 771	-12.57
Kırıkkale	349 476	23 455	35 081	- 11 626	-32.72
Batman	390 289	20 133	38 165	- 18 032	-45.18
Şırnak	276 300	28 457	22 507	5 950	21.77
Bartın	172 597	10 069	25 727	- 15 658	-86.78
Ardahan	119 982	8 791	22 317	- 13 526	-106.72
Iğdır	145 602	11 944	13 305	- 1 361	-9.30
Yalova	148 182	22 774	22 260	514	3.47
Karabük	208 057	15 440	24 080	- 8 640	-40.88
Kilis	102 002	7 157	11 199	- 4 042	-38.86
Osmaniye	415 089	23 845	34 230	- 10 385	-24.71
Düzce	281 797	23 982	21 739	2 243	7.99

(1) Population by place of residence does not cover immigrants.
(2) See definitions and explanations.

TABLE 11.

Population indicators in selected countries

	Nüfus Population (000 000)	Yıllık ortalama nüfus artış hızı Average annual population growth rate(%)	Nüfus yoğunluğu Population density	Doğuşta beklenen ömür (yıl) Life expectancy at birth (years)	Beş yaş altı ölüm oranı Under-5 mortality rate(‰)	Okuryazar yetişkin oranı (15 ≥ yaş) Adult literacy rate (15 ≥ age) (%)
	2003	1990 - 2003	2003	2002	2002	2002
Türkiye - Turkey	70.7	1.8	92	70	41	87[1]
ABD - USA	291.0	1.2	32	77	8	...
Almanya - Germany	82.6	0.3	237	78	5	...
Avustralya - Australia	19.9	1.2	3	79	6	...
Avusturya - Austria	8.1	0.3	97	79	5	...
Azerbaycan - Azerbaijan	8.2	1.1	95	65	96	...
Belçika - Belgium	10.3	0.3	342	79	6	...
Bulgaristan - Bulgaria	7.8	-0.8	71	72	16	99
Çek Cumhuriyeti - Czech Republic	10.2	-0.1	132	75	5	...
Çin - China	1 288.4	1.0	138	71	38	91[1]
Danimarka - Denmark	5.4	0.4	127	77	4	...
Finlandiya - Finland	5.2	0.3	17	78	5	...
Fransa - France	59.7	0.4	109	79	6	...
Hindistan - India	1 064.4	1.7	358	63	90	61[1]
Hollanda - Netherlands	16.2	0.6	479	78	5	...
İngiltere - United Kingdom	59.3	0.2	246	77	7	...
İran - Iran Islamic Republic	66.4	1.5	41	69	41	77[2]
İrlanda - Ireland	3.9	0.9	57	77	6	...
İspanya - Spain	41.1	0.4	82	78	6	98
İsveç - Sweden	9.0	0.3	22	80	3	...
İsviçre - Switzerland	7.3	0.7	186	80	6	...
İtalya - Italy	57.6	0.1	196	78	6	99
Japonya - Japan	127.2	0.2	349	82	5	...
Kanada - Canada	31.6	1.0	3	79	7	...
Kolombiya - Colombia	44.4	1.8	43	72	23	92
Macaristan - Hungary	10.1	-0.2	110	72	9	99
Mısır - Egypt Arab Republic	67.6	1.9	68	69	39	...
Norveç - Norway	4.6	0.6	15	79	4	...
Pakistan - Pakistan	148.4	2.4	193	64	101	...
Polonya - Poland	38.2	0.0	125	74	9	...
Portekiz - Portugal	10.2	0.2	111	76	6	93
Romanya - Romania	22.2	-0.3	96	70	21	97[1]
Rusya Federasyonu - Russian Federation	143.4	-0.3	8	66	21	100
Suudi Arabistan - Saudi Arabia	22.5	2.7	10	73	28	78
Tunus - Tunisia	9.9	1.5	64	73	26	73
Yunanistan - Greece	10.7	0.4	83	78	5	97

TABLE 12.a

Consumption expenditures by household size, 2003 (**Aylık ortalama** - Monthly average)

Hanehalkı büyüklüğü Household size	**Hanehalkı sayısı** Number of household			**Toplam tüketim harcaması** Total consumption expenditure (000 000 TL)		
	Türkiye Turkey	**Kent** Urban	**Kır** Rural	**Türkiye** Turkey	**Kent** Urban	**Kır** Rural
Toplam - Total	16 744 495	10 686 864	6 057 632	12 363 160 445	8 983 882 590	3 379 277 855
(%)						
1	3.7	4.0	3.2	2.7	3.1	1.6
2	15.9	15.1	17.4	14.4	14.6	13.9
3	20.1	22.3	16.1	21.5	23.6	16.0
4	26.1	29.1	20.8	28.7	30.8	23.1
5	15.9	15.5	16.8	15.4	14.7	17.2
6	8.3	7.2	10.2	7.7	6.6	10.8
7	4.4	3.4	6.2	4.1	3.2	6.3
8	2.3	1.7	3.4	2.1	1.6	3.4
9	1.3	0.7	2.3	1.3	0.7	3.0
10+	2.0	1.0	3.7	2.1	1.1	4.6

TABLE 12.b

Consumption of expenditures by ownership status of the dwelling, 2003 **(Aylık ortalama** - Monthly average)

Konut mülkiyet şekli Ownership status of the dwelling	**Türkiye** Turkey	**Kent** Urban	**Kır** Rural
Hanehalkı sayısı			
Number of household	16 744 495	10 686 864	6 057 632
(%)			
Ev sahibi - Home owner	71.95	64.16	85.69
Kiracı - Tenant	21.60	28.01	10.28
Lojman - Lodging	1.33	1.39	1.23
Diğer - Other	5.13	6.44	2.80
Toplam tüketim harcaması			
Total consumption expenditures (000 000 TL)	12 360 313 481	8 981 193 186	3 379 120 295
(%)			
Ev sahibi - Home owner	73	69	84
Kiracı - Tenant	21	24	12
Lojman - Lodging	2	2	2
Diğer - Other	5	5	3

7.2.Leader copy

TABLE 13.b

24.11 Distribution of expenditure groups by SRE 2 , 2003
[Monthly average] (%)

Sağlık Health	Ulaştırma Transportation	Haberleşme Communication	Eğlence ve kültür Entertainment and culture	Eğitim Education	Lokanta ve oteller Restaurants and hotels	Çeşitli mal ve hizmetler Various goods and services	SRE 2	
2.2	9.8	4.3	2.2	2.0	4.1	3.5	Total	
2.7	11.2	4.5	2.8	3.1	5.4	3.7	TR10	İstanbul
3.4	8.3	4.6	1.8	2.1	5.7	3.2	TR21	Tekirdağ
2.7	8.3	4.3	1.9	1.3	3.7	3.5	TR22	Balıkesir
2.3	10.0	4.3	2.7	1.7	5.0	3.4	TR31	İzmir
1.4	9.0	4.2	1.6	1.0	2.5	2.9	TR32	Aydın
2.2	7.6	3.9	1.5	1.3	3.5	3.0	TR33	Manisa
2.3	14.3	4.1	2.4	1.4	5.5	3.3	TR41	Bursa
1.6	8.8	4.5	1.6	1.3	4.8	4.0	TR42	Kocaeli
1.7	11.5	4.6	2.7	2.3	4.8	4.2	TR51	Ankara
2.9	8.8	4.3	2.2	1.3	3.4	3.4	TR52	Konya
1.4	14.5	4.4	2.2	1.8	3.0	3.2	TR61	Antalya
2.0	10.1	4.1	1.9	1.5	4.1	3.9	TR62	Adana
4.1	10.5	3.6	2.2	1.6	3.4	4.0	TR63	Hatay
1.7	7.4	4.3	1.5	1.7	2.0	3.0	TR71	Kırıkkale
1.6	6.9	4.1	1.5	0.9	1.9	1.9	TR72	Kayseri
1.5	8.5	4.4	1.4	0.8	2.5	2.7	TR81	Zonguldak
1.2	6.6	4.2	2.1	1.5	2.4	3.3	TR82	Kastamonu
1.8	6.1	4.7	1.2	2.0	2.6	3.6	TR83	Samsun
1.9	7.2	4.6	2.3	2.5	3.0	3.9	TR90	Trabzon
1.5	5.8	4.2	1.2	0.6	1.5	3.7	TRA1	Erzurum
1.4	3.5	4.1	0.9	2.0	1.1	4.9	TRA2	Ağrı
1.6	7.0	4.4	2.2	1.3	3.0	3.4	TRB1	Malatya
0.9	6.1	4.2	1.1	0.4	3.1	2.6	TRB2	Van
2.2	6.6	3.1	1.4	0.9	5.1	2.8	TRC1	Gaziantep
2.2	6.0	3.5	1.4	0.7	2.5	3.6	TRC2	Şanlıurfa
1.7	5.5	2.8	1.0	0.8	1.2	3.8	TRC3	Mardin

TABLE 14.a

Poverty rates according to poverty line methods, 2002

Yöntemler - Methods	Yoksul fert sayısı Number of poor individual (000)			Yoksul fert oranı Percentages of poor individual (%)		
	Türkiye Turkey	**Kent** Urban	**Kır** Rural	**Türkiye** Turkey	**Kent** Urban	**Kır** Rural
Gıda yoksulluğu - Food poverty	926	376	550	1.35	0.92	2.01
Gıda ve gıda dışı yoksulluk Food and non - food poverty	18 441	9 011	9 429	26.96	21.95	34.48
Kişi başı günlük 1 $'ın altı Below $ 1 per capita per day(1)	136	10	126	0.20	0.03	0.46
Kişi başı günlük 2.15 $'ın altı Below $ 2.15 per capita per day(1)	2 082	971	1 111	3.04	2.37	4.06
Kişi başı günlük 4.3 $'ın altı Below $ 4.3 per capita per day(1)	20 721	10 106	10 615	30.30	24.62	38.82
Göreli yoksulluk - Relative poverty	10 080	4 651	5 430	14.74	11.33	19.86

(1) Here, for 2002, 618 281 TL which is the equivalent of 1 $ purchasing power parity (PPP) is used.

TABLE 14.b

Poverty rates according to household size, 2002

Hanehalkı büyüklüğü Household size	**Hane** - Household			**Fert** - Individual		
	Toplam sayı Total number (000)	**Yoksul sayısı** Number of the poor (000)	**Yoksul oranı** Rate of poor (%)	**Toplam sayı** Total number (000)	**Yoksul sayısı** Number of the poor (000)	**Yoksul oranı** Rate of poor (%)
Türkiye - Turkey	16 447	3 693	22.45	68 393	18 441	26.96
1-2	3 269	540	16.51	5 872	967	16.48
3-4	7 507	1 229	16.37	26 942	4 495	16.68
5-6	4 026	1 169	29.03	21 651	6 380	29.47
7+	1 645	756	45.95	13 927	6 598	47.38
Kent - Urban	10 093	1 754	17.38	41 048	9 011	21.95
1-2	1 807	131	7.24	3 201	229	7.16
3-4	5 014	649	12.94	17 994	2 382	13.24
5-6	2 449	635	25.94	13 074	3 461	26.47
7+	823	339	41.15	6 778	2 939	43.36
Kır - Rural	6 353	1 939	30.52	27 345	9 429	34.48
1-2	1 462	409	27.97	2 671	738	27.64
3-4	2 493	580	23.27	8 948	2 113	23.61
5-6	1 576	533	33.83	8 577	2 919	34.03
7+	821	417	50.75	7 150	3 659	51.18

TABLE 14.c

Poverty rates according to educational level of the household members, 2002 (%)

Eğitim durumu Educational level	Nüfus payı Population share[2] Türkiye Turkey	 Kent Urban	 Kır Rural	Yoksulluk oranı Rate of poverty Türkiye Turkey	 Kent Urban	 Kır Rural
Toplam - Total	100.00	100.00	100.00	26.96	21.95	34.48
6 yaşından küçük fertler Individuals yourger than 6	10.04	10.79	8.91	33.17	31.18	36.79
Okur-yazar değil - Illiterate	11.27	9.53	13.89	41.07	35.88	46.42
Okur-yazar olup bir okul bitirmeyen Literate without a diploma	19.32	18.81	20.08	34.60	29.96	41.13
İlkokul - Primary school	33.57	29.95	39.01	26.12	21.81	31.08
İlköğretim - Elemantary school	4.70	4.68	4.74	26.47	21.22	34.25
Ortaokul ve orta dengi meslek- Secondary school and equivalent vocational school	6.11	7.08	4.66	18.77	13.80	30.11
Lise ve lise dengi meslek- High school and equivalent vocational school	11.19	13.80	7.28	9.82	7.06	17.65
Yüksekokul, fakülte, yüksek lisans, doktora University, faculty, masters, doctorate	3.79	5.37	1.43	1.57	1.07	4.37

TABLE 14.d

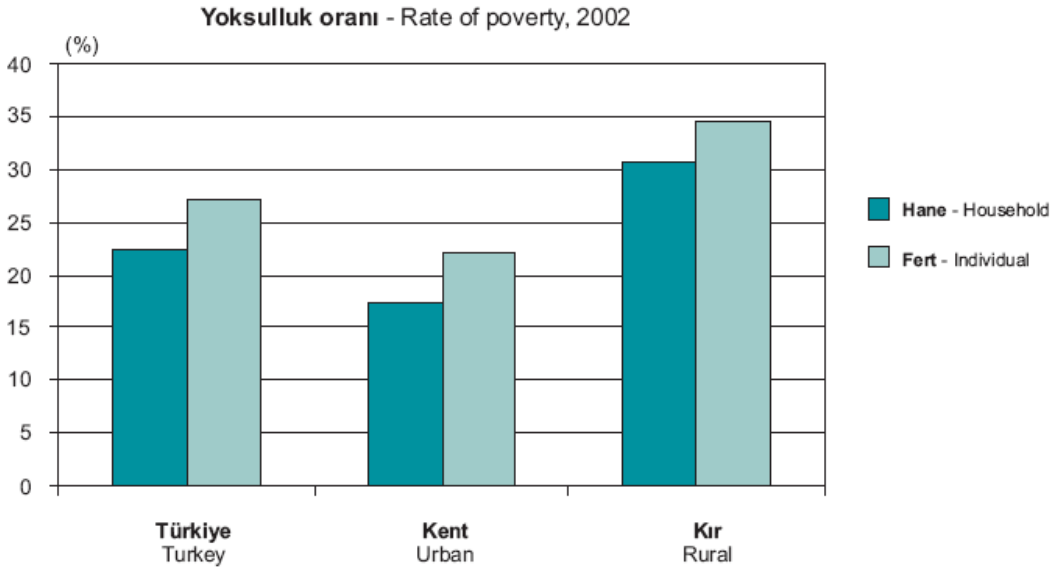
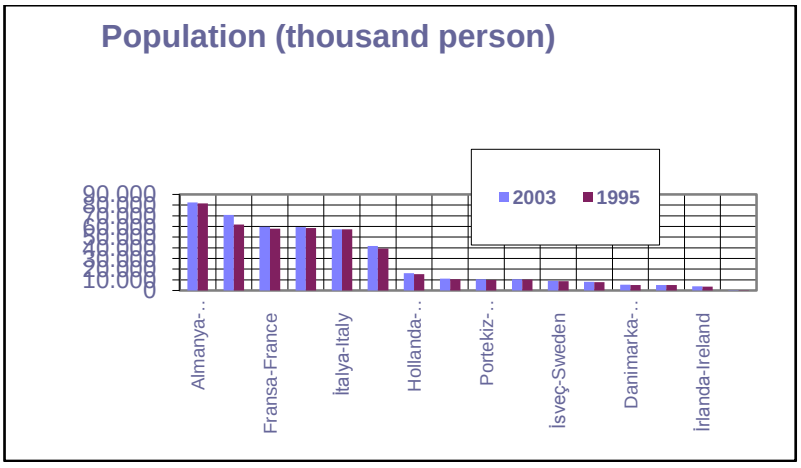


TABLE 15.b



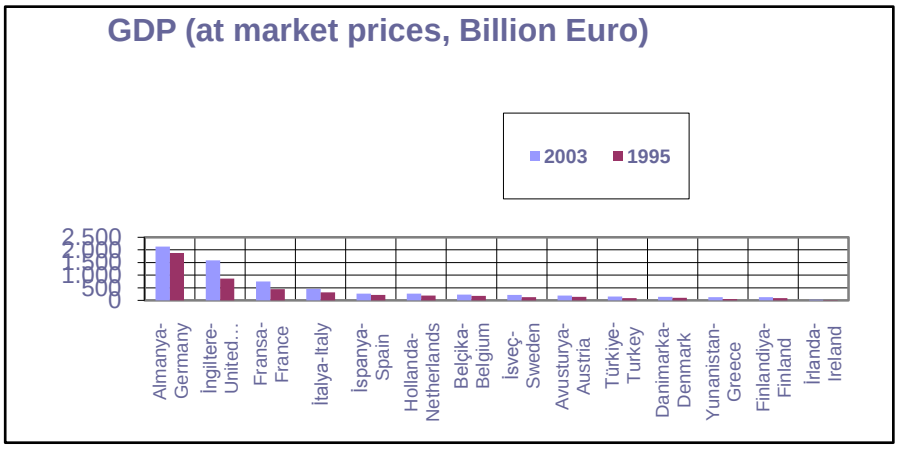


TABLE 15.b

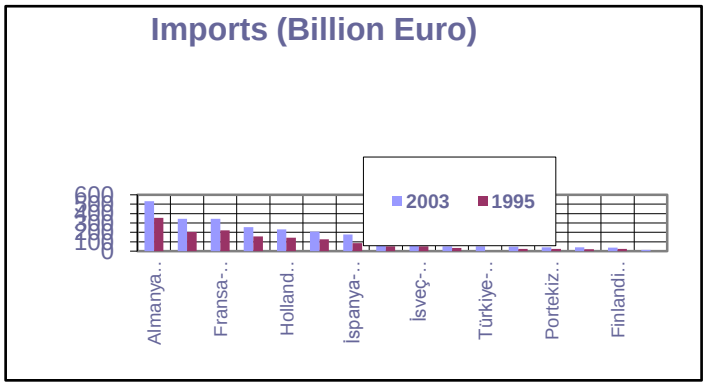


TABLE 15.c

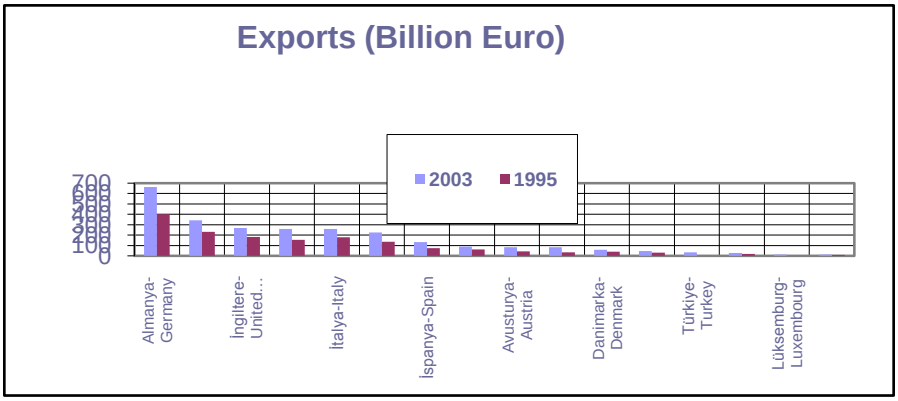


TABLE 15.d

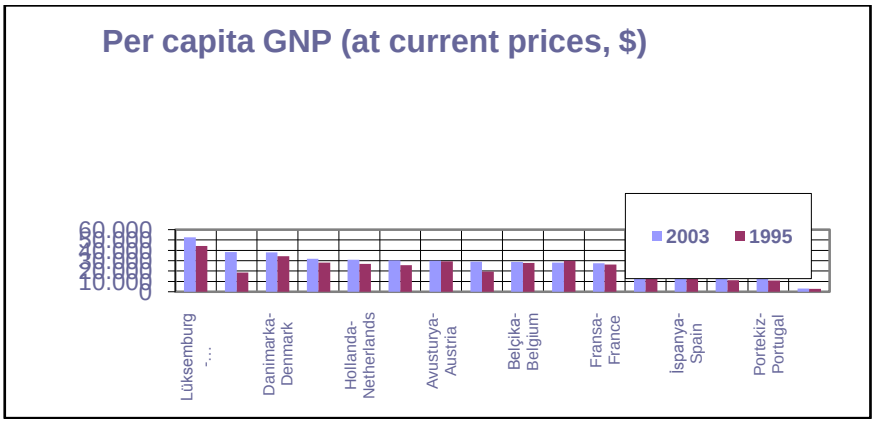


TABLE 15.e

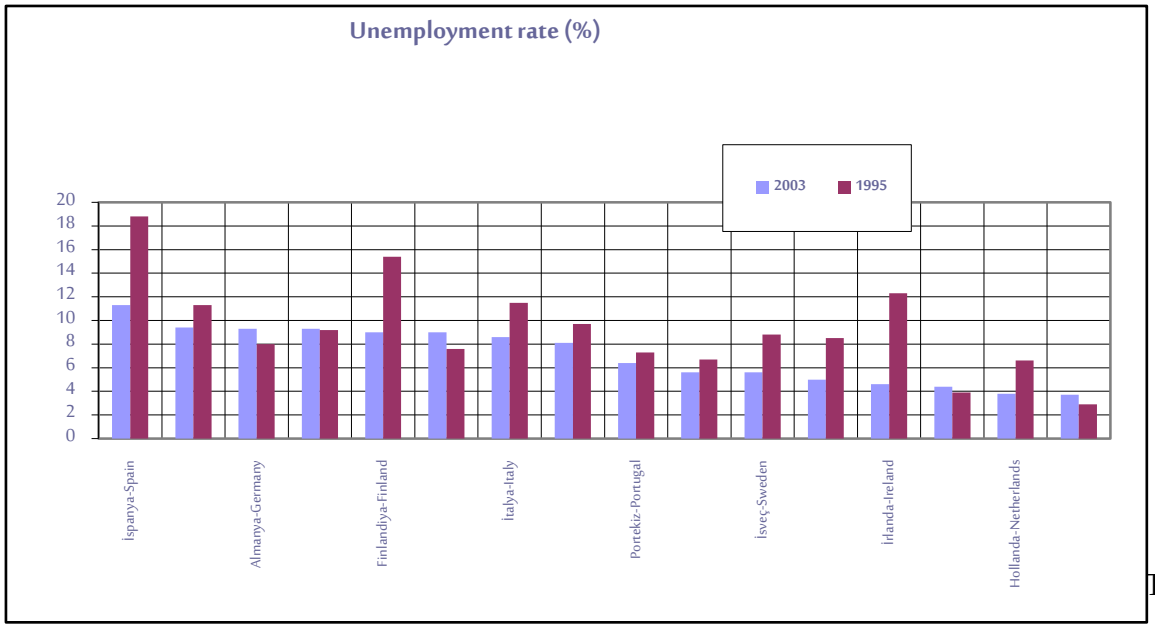


TABLE 16.b

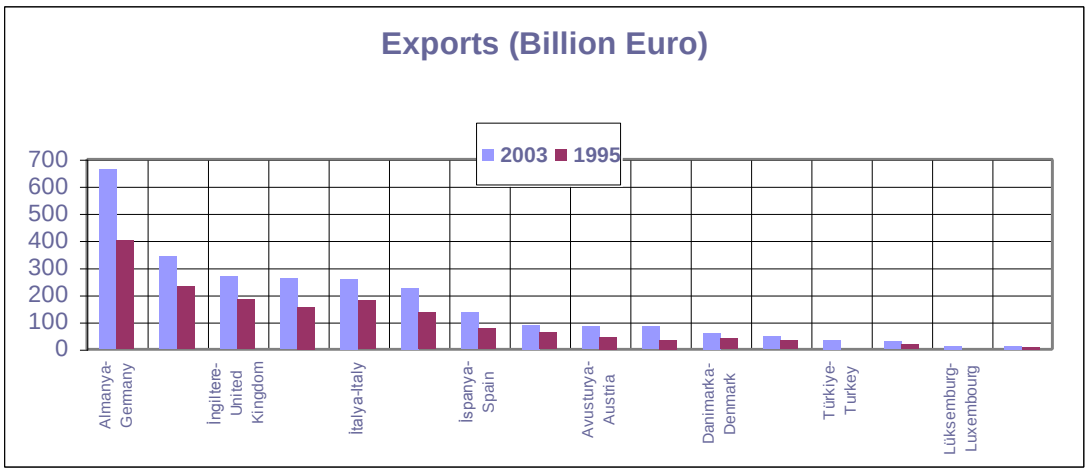


TABLE 16.a

Resource: www.die.gov.tr

Inequalities in the World

Aim(s)

- Participants should be able to realise inequalities in the world
- Participants should be able to know about endangered species in Turkey

PART 8.1 (Warming)

Objectives

- Participants should be able to practise countries' names that he/she knows

Grade Level

3-7

Duration

Activity 15 minutes

Key words

Country, border

Procedure

Make a circle. Invite a volunteer.

Activity

The leader: "Make a group by three. In each group, two participants take each other by the hand to make small circle, the other participant will be in the circle being a traveller. The two participants will be represent a part of a country's borders that the traveller enter the country from there.
When I said "traveller goes", all the countries' border doors will be opened i.e.leave the hands and traveller which is in a country will go to another country differ than the ex one. The vounteer we chose who is also a traveller, find a country when the border doors are opened. Everybody have to change its country . Lets play the game".

Each time, the leader should tell that the "traveller goes" in order to be change the travellers' places.

Play this game 4-5 minutes. After that, change role of participants who were traveller and a part of countries' border doors.
The leader: "Now, we have a new traveller. This time, when a traveller is entering to the new country, the doors will be opened from farest point in the country, you have to come to the country's otherside i.e. hands will ve left from the back side".
Play 4-5 minutes.
Change the participants who were travellers and parts of the countries' border doors.
The leader: "Now, the doors will not open i.e. The traveller will enter to country under the hands. Because of the increased emigrations, they are categorising according to your nationality. Tell your country's name when you are entering the country. Each time please tell different name of a country".

PART 8.2

Background

In order to find out the missing places in Needs of the World Map-participant copy sheet; Students: According to Six Regions-Data Table-participant copy sheet, total population of world is 6036,5 million. By a simple proportion 6036,5 million is divided by the number of the students who will be involved in the play.

Halleys : According to Six Regions-Data Table-participant copy sheet, total GNP in the world is $ 49860. If there is 100 halley, one halley represent $498.6 and by a simple proportion divide each region's GNP by $498.6. For example; GNP of USA is 28,230. When 28,230 is divided by 498.6, the result will be 56, 61. It was accepted "56" in the Needs of the World Map-leader copy sheet

Peanuts : According to Six Regions-Data Table-participant copy sheet, each region's calories is divided by 400 since one peanut is 400 calories. For example, 2880 calories is needed per day for Latin America, 2880:400=7,2. It is assumed 7.

Fireball : According to Six Regions-Data Table-participant copy sheet, total energy consumption oil barrels per capita is 97 represented by 50 fireballs according to Needs of the World Map-participant copy sheet . By a simple proportion one fireball represent 0,5 oil barrels i.e.51:97=0,5. If 0,5 is multiply by each region's energy consumption given in Six Regions-Data Table-participant copy sheet, how many fireball is needed can be found. For example, 0,5x26=13 for Europe.

The others can be done in a similar way.

Objectives

- Participants should be able to use operations with natural and decimal numbers
- Participants should be able to practise area calculations of different geometric shapes
- Participants should be able to make calculations with percentage
- Participants should be able to realise making map process
- Participants should be able to realise inequalities in population/food/income/energy among regions
- Participants should be able to argue clearly and concisely

Grade Level

7

Duration

Preparation 30 minutes
Activity 90 minutes

Subjects

Mathematics, social studies, science, language

Key words

Map, regions, consumption

Material

World population-quiz for each participant, Bants, cardboards, craft paper, Six Regions-Data Table-participant copy sheet to each group, one copy of Play cards-participant copy sheet, string and rubber bands to blop up the black ballons, materials whose amounts will be determined by the participants at the end of their calculations in Needs of the World Map-participant copy sheet but the items are peanuts, halley chocolates, "red hots" or "atomic fire balls", plate or paper plates and/or plastic bags, black balloons, glass of water or cups of water for different size of participants, calculator the amount of items for the world map, solution of Needs of the World Map-leader copy sheet copy of Evaluation of Module 8-participant copy sheet for each participant.

Procedure

Deliver World population-quiz to the participantsand give them 20 minutes.
Make groups of six. Write on a paper the following names of the regions: North America, Latin America, Africa, Europe (including Russia), Asia (excluding China), and China.
Each group will choose one of them by chance.

Activity

The leader: "In 2007, Cairo will host the 7th International Congress on Population Growth. More than 176 countries are being planning to be attend. Because of that, the School of Life wants to attract their students on "population growth". The administration found our company that produce school educational materials from internet. They offered me to make a map of world on their school ground according to real data which will be delivered in a second. After the map is completed, as the representatives of different regions we and the School of Life's students will have a small sample of 7th International Congress on Population Growth in the school ground with the discussions. Some of the students will have active role with us in the map as a delegate of a region, some of them will be United Nations International Advisory Board members. The rest will be the observers/wacthers of the Congress".

FOR THE NEXT MEETING (8.A):
By the beginnig of the first day of the Congress, we also will open a ***cartoon exhibition*** hat everybody can participate. It will be ended at the end of the last day of the Congress. Please bring your own cartoons about population,

The leader: "When we are prepared the world map, we will do a simiulation of the congress with the school teachers to show the efficiency of it before students watched. We planned to do this sample congress for **four days**. Here is our school ground. I planned some parts of the map but I need your help. Here is the materials I prepared for the world map".

Deliver Six Regions-Data Table-participant copy sheet and Needs of the World Map-participant copy sheet to each group as well as Play cards-participant copy sheet according to their regions as well as different colors of cardboards to each group.

Guiding Questions and Discussion

- Can you tell me the possible effects of population growth for the world? [Write their opinion on craft paper and hang on on the wall]
- Is there any positive affect of population growth?
- This would be a little bit different than Turkey's map as we have done in Module 1. Why/Why not? [Possible answer: scale, total area, area of the lakes etc.]
- Will the world map be two or three dimensional? Wht/Why not? How can we change it? [Possible answer: two dimension. By giving deep, it can be three dimensional]
- Is there any words that you dont know on Six Regions-Data Table-participant copy sheet ? For example what may GNP be? Explain [Possible answer: GNP is the total value of all the goods and services produced in a region divided by the population of the region]
- Ignore their original shapes of the regions; if we want to show the regions's areas with real data in Six Regions-Data Table-participant copy sheet on the map, which geometric shape would be better to choose that the regions' areas can be comparible easily? Compare.
- Suppose that you have an area with 16 m2. Try to find out different geometric shape's size who has an area with 16 m2. Which shape it seems easier? [If they

need, remind them the area formulas of a square, a circle, a triangle, a rectangle, a paralellogram, a trapezoid etc. Besides that, Square's, circle's, triangle's areas etc. are not easy to be calculated as rectangle. For example with natural numbers; A rectangle with 16 m2 area can be with different sizes 2 x 8= 4 x 4 = 8 x 2= 1 x 16= 16 x 1].

- Are your regions' areas in regular geometric shapes? Why/why not? [Show the map]

Deliver Maps-participant copy sheet to them.

- Which area is larger ? By which method can we calculated the areas of countries approximately?

FOR THE NEXT MEETING (8.B):
Deliver Maps-participant copy sheet . How can you estimate and roughly calculate Turkey's and Zimbawe's total areas? Do you think which one is bigger?

The leader: "I think we touched some of the effects of population growth you defined. Each group will calculate how many persons does their region need to populate In another words, when we put one person in the map on school surface for a region, we should know how many people she/he represents in the real world. There are similar processes for showing calorie consumption per day, GNP per country, energy consumption, CO_2 emissions per capita, percentage of people who have access to safe drinking water whose real data were given in Six Regions-Data Table-participant copy sheet

To make the calculation easier and save time, I prepared an agenda and a table. According to agenda:the first and second days will be about the realities of world, third and fourth days will be about the solutions.
In the Table I, we have halley chocolates (100), fireballs (50), ballons (39) as I filled in Needs of the World Map-participant copy sheet .
I would like to give an example: if you have decided to put two peanuts on a plate, they represent calorie consumption per day as 800 calories since each peanut represents 400 calories. After all calculation, put the items such as ballons, glasses hold up with waters etc. to complete the world map".
Observe the participants while working on doing world map.

Remarks

- In the world map, it is important to work with te whole group. If they miss this point, ask them "How can the regions' areas be compared ?
- To do the demonstration of the map and the sample Congress, there will be needed large open floor space.
- Remind the importancy of the legend of the world map

When they finished the preparation of the world map on the surface, gather the whole group define their role in the congress: 2-3 representatives of the region, 5-6 members of United Nations International Advisory Board, a moderator, a reporter.
Determine the moderators for four days of the Congress by the participants and be volunteer for the fourth day.

Guiding Questions and Discussion

- What does a moderator do in a meeting? [Possible answers: guiding agenda, discussion, time management]
- What is the role of United Nations International Advisory Board? [Possible answers: Recommend some policies help deal with the population/food/income/energy inequalities among regions]

- Compare the population sizes of regions. [Possible answers: Asia is the most populated regon whereas
- How many people are there compared to the amount of land in each region?
- How many people live in cities?
- How much agricultural land is there per person?
- With all that land to farm, how can there be food scarcity? [Possible answer: There is much less agricultural land per region]
- In which region do the citizens consume the most calories? The least?
- Does everbody in a region share the goods/services equally in the wealth? Why?
- In which region do the citizens have the highest per capita GNP? The lowest?
- What might be the relationship between the countries that are high and the countries that are low?
- In which region do the citizens have the most energy consumption in barrels of oil per capita? the least? Why do some regions of the world consume more barrels of oil per capita than others?
- What carbon dioxide is and how it is produced? Explain. [Possible answer: Carbon dioxide is a a gas that is produced when fuels are burned]
- In which region do the citizens have the highest carbon dioxide emissions per capita? The least?
- Is it better to be highest or lowest? Why?
- What is the relationship between the consumption of oil and the amount of carbon dioxide emissions per capita? Why is it not an exact relationship? [Possible answers: burning wood produces CO_2 so it is not a direct tie to petroleum-based manufacturing and transportation by automobile. Some regions with lots of manufacturing and auto transportation may be using more pollution control devices to reduce emissions than regions that may have a little less manufacturing but are using no control devices]
- In which regions do the largest percentage of citizens have access to safe drinking water? The smallest percentage? Why?
- Why is reaching to have safer drinking water important?
- What are the problems you see after all explanation with data?
- Should food aid be given to countries which have not yet come to terms with their "population problems"?
- Do donor nations have the right to link food aid to certain policies?
- Should rich countries reduce their consumption levels? How could this be encouraged or enforced?

Remarks

- Encourage the participants to use data when they are speaking during the discussion
- Encourage the moderator about defining duration of the first day of the Congress at the beginning and about the time management.

When the moderator close the first day of the Congress;

FOR THE NEXT MEETING (8.C):
The leader: A documentation will be prepared about the Congress consists of your reports, news, fotos, interviews, policies, questionarries etc. The documentation will be edited at the end of the third day of the Congress. Please dont forget that please put your critics about the Congress also.

After the explanation of the documentation;

The leader: "Hello Mrs/Mr.....You are one of the representative of.....region. How did you find the first day?"

Encourage some of the participants to have different roles such as reporter, journalist, fotographer, representatives to speak with the participants to the Congress in order to take their evaluation about Congress.

FOR THE NEXT MEETING (All)
8.A. There will be a cartoon exhibition that everybody can participate in the Congress. It will be ended at the end of the last day of the Congress. Please bring your own cartoons about population.

8.B. Deliver Maps-participant copy sheet . How can you estimate and roughly calculate Turkey's and Zimbawe's total areas? Do you think which one is bigger?

8.C.The leader: After the Congress take over, a documentation will be prepared about Congress consists of your reports, news, fotos, interviews, policies, questionarries etc. The documentation will be edited at the end of the third day of the Congress.

Closure

- How did you feel as being a representative of a region?
- Did you have any trouble in calculations?
- Which one is easier for you, working as an individual or group? Why?
- What is the enjoyable moments of working in a group?

Evaluation

a. Deliver World population-quiz as a pre-test before beginning to the whole activity. In the following days, it will be given as a post-test. The feedback will be given by the leader. It can be evaluated by writing the correct answers of the questions accepted each branch of the questions is one separete ones.
b. Keep leader observation on a checklist of participantion's participation related to the Congress and during the discussions

Resources

(1) Population Reference Bureau, http://www.prb.org/Template.cfm?Section=LessonPlans&template=/ContentManagement/ContentDisplay.cfm&ContentID=5000#ambassador_cards. (accessed August 2005).
(2) The Web Site of National Geography, Map of Turkey, http://mapmachine.nationalgeographic.com/mapmachine/viewandcustomize.html?themeId=100&ext=25.665829,35.818443,44.820545,42.109993. (accessed July 2005).
(3) The Web Site of National Geography, Map of Zambia, http://mapmachine.nationalgeographic.com/mapmachine/viewandcustomize.html?themeId=100&ext=21.996387,-18.074923,33.702278,-8.191668. (accessed July 2005).

LEGEND OF THE MAP

Region	Class Size	# Students	GNP # Halley	Calories # Peanuts		Energy # Fireballs	Water		CO2 # Balloons
			1=$500	1=400	# Needed	1=2 barrels	Cups Safe	Cups Unsafe	
North America	25	1			9		1	0	
	30	1	56 only	9 each	9	26 only	1	0	20 only
	40	2			18		2	0	
Latin America	25	2			17		2	0	
	30	3	8 only	7 each	21	4 only	2	1	4 only
	40	3			21		2	1	
Africa	25	3			18		1	2	
	30	4	1 only	6 each	24	2 only	2	2	1 only
	40	5			30		2	3	
Europe	25	3			24		3	0	
	30	4	27 only	8 each	32	13 only	4	0	9 only
	40	5			40		5	0	
Asia (excl. China	25	10			70		7	3	
	30	12	6 only	7 each	84	3 only	9	3	2 only
	40	16			112		11	5	
China	25	6			42		4	2	
	30	6	2 only	7 each	42	2 only	4	2	3 only
	40	9			63		6	3	
Amount Needed	25	25	100	180		50	18	7	39
	30	30	100	212		50	22	8	39

Resource: Population Reference Bureau. Available at www.prb.org

7.3.Leader copy

	40	40	100	284	50	28	12	39

INFO SHEET

Legend of the world map was designed for different size of participants: 25 or 30, or 40 participantsas you can see on the table above

- Peanuts are show calorie consumption per day; assumed that 1 peanut = 400 calories
- "Halley" chocolates are to show GNP per country; 1 halley chocolates = $500
- "Red Hots" or "Atomic fire balls" are to show energy consumption; 1 candy = 2 barrels of oil consumed per capita
- Plates or paper/plastic bags are to hold the peanuts and candy for each region
- Black balloons are to show CO_2 emissions per capita, metric tons; 1 balloon = 1 metric ton. String and rubber bands will be used for ballons
- Glass of water or cups of water are to show percentage of people who have access to safe drinking water; clear water for safe water, colored water for unsafe

SIX REGIONS-Data Table

	North America	Latin America	Africa	Europe	Asia excl. China	China
2000 Population (millions)	306	518	800	728	2,420	1,264.5
Natural Increase %	0.6	1.8	2.4	-0.1	1.7	0.9
Doubling Time (yrs)	124	39	29	-	40	79
Total Fertility Rate	2	2.8	5.3	1.4	3.3	1.8
Land Area, % Total	14	16	23	17	16	7
% Urban	5	9	13	12	40	21
Agricultural Land, % Total	30	38	37	22	50	57
GNP, $/capita	$28,230	$3,880	$670	$13,420	$2,910	$750
Calories/ person/day	3,698	2,792	2,439	3,217	2,699	2,972
Energy Cnsmt. (oil barrels/ capita)	51	7	3	26	6	4
Solid Waste CO2 Emis/capita (metric tons)	20	4	1	9	2	3
% pop. w/access to safe drinking water	100	79	47	100	71	75
Infant Mortality Rate (1000 births)	7	35	88	9	64	31
Est. Population in 2025 (millions)	374	703	1258	714	3,292	1,431

Resources:

Population Reference Bureau, http://www.prb.org/Template.cfm?Section=LessonPlans&template=/ContentManagement/ContentDisplay.cfm&ContentID=5000#ambassador_cards. (accessed August 2005).

North America

I am the North American ambassador, representing Canada and the United States, which contains ? % of the world's population and consumes approximately 40% of its natural resources. Our population growth rate is the highest among the industrialized regions. At $28,230, our GNP per capita is the highest of any region in the world.

The percentage in the world:

1. Land :.....%
2. Population : .....%
3. Urban area : .....%
4. Agricultural area : .....%

Africa

I am the African ambassador, representing 57 countries. One out of ..... people in the world lives in my region. Our population growth rate is the highest in the world and women average nearly six children each. Africa has the lowest literacy rate in the world; less than 50% of women can read and write. Our GNP per capita is $670.

The percentage in the world:

1. Land :.....%
2. Population : .....%
3. Urban area : .....%
4. Agricultural area : .....%

Latin America

I am the Latin American ambassador, representing the Caribbean, Central America, and South America. ..... percent of the world's population resides in our area. Our region has two of the five largest cities in the world, São Paulo and Mexico City. Our GNP per capita is $3,880.

The percentage in the world

1. Land :.....%
2. Population : .....%
3. Urban area : .....%
4. Agricultural area : .....%

Europe

I am the European ambassador, representing 47 countries including Russia. Europe contains .....% of the world's people and currently has the lowest birth rate of any region in world history. Ours is the only region that has a higher death rate than birth rate. GNP per capita is $13,420.

The percentage in the world

1. Land :.....%
2. Population : .....%
3. Urban area : .....%
4. Agricultural area : .....%

China

ıe ambassador from China, the country with the ıopulation in the world. One out of .....people in d is Chinese. Despite government legislation that family size to one child, our population is still g steadily. With a GNP per capita of $750, we are ıe poorest countries in the world.

entage in the world

ınd :.....%

ıpulation : .....%

rban area : .....%

Asia

I am the ambassador for Asia except for the populat China, which has its own representative. Asia is, by most populous region, with over one .....of the people. Our diverse region includes one of the world's countries, Bangladesh, and one of the richest, Japan. per capita is $2,910.

The percentage in the world

1. Land :.....%
2. Population : .....%
3. Urban area : .....%

8.2. Participant copy

North America

: North American ambassador, representing Canada United States, which contains 5 % of the world's n and consumes approximately 40% of its natural s. Our population growth rate is the highest among trialized regions. At $28,230, our GNP per capita is est of any region in the world.

entage in the world:

nd :.....14.....%

pulation : .....5.....%

Africa

I am the African ambassador, representing 57 count out of ...eight.... people in the world lives in my re population growth rate is the highest in the world ar average nearly six children each. Africa has the literacy rate in the world; less than 50% of women and write. Our GNP per capita is $670.

The percentage in the world:

1. Land :.....23.....%
2. Population : .....13.....%

Latin America

Latin American ambassador, representing the n, Central America, and South America. .....9..... of the world's population resides in our area. Our s two of the five largest cities in the world, São Mexico City. Our GNP per capita is $3,880.

entage in the world

nd :.....16.....%

pulation : .....9.....%

rban area : .....74.....%

Europe

I am the European ambassador, representing 47 including Russia. Europe contains ...12.....% of the people and currently has the lowest birth rate of ar in world history. Ours is the only region that has death rate than birth rate. GNP per capita is $13,420

The percentage in the world

1. Land :.....17.....%
2. Population : .....12.....%
3. Urban area : ....73.....%

8.2. Leader copy

China

ε ambassador from China, the country with the ɔpulation in the world. One out of ..five.....people in d is Chinese. Despite government legislation that family size to one child, our population is still ɡ steadily. With a GNP per capita of $750, we are ε poorest countries in the world.

ntage in the world

nd :..... ..7.....%

ɔulation : .....21.....%

ban area : .....31.....%

Asia

I am the ambassador for Asia except for the popula China, which has its own representative. Asia is, by most populous region, with over one ..third.....of th people. Our diverse region includes one of the world' countries, Bangladesh, and one of the richest, Japan. per capita is $2,910.

The percentage in the world

1. Land :.....16.....%
2. Population : ....40.....%
3. Urban area : .....38.....%

8.2. Leader copy

THE NEEDS OF THE WORLD MAP

REGION	LEGEND	North America	Latin America	Africa	Europe	Asia (excl. China)	China	Total Amount Needed
Students	1 Student=							
GNP	1 Halley chocolate=							**100**
Calories	1 Peanut=400 calories							
Energy	1 Fireball=							**50**
Water	1 Cup (100% full of water) = 11% of population access to safe drinking water							
CO2	1 Ballons=							**39**

MAPS OF ZAMBIA AND TURKEY

8.2. Participant copy

NATIONAL GEOGRAPHIC marcopolo
XPEDITIONS
www.nationalgeographic.com/xpeditions

NATIONAL GEOGRAPHIC marcopolo
XPEDITIONS
www.nationalgeographic.com/xpeditions

Resources:
(1)The Web Site of National Geography, Map of Turkey
http://mapmachine.nationalgeographic.com/mapmachine/viewandcustomize.
545,42.109993. (accessed July 2005).
(2) The Web Site of National Geography, Map of Zambia,
http://mapmachine.nationalgeographic.com/mapmachine/viewandcustomize.
18.074923,33.702278,-8.191668. (accessed July 2005).

ZAMBIA

Area
752,614 sq km (290,586 sq mi)

Population
10,896,000

Capital
Lusaka 1,394,000

Religion
Christian, Muslim, Hindu

Languages
English, indigenous languages

Literacy
81%

Life Expectancy
41

Currency
Zambian kwacha

GDP Per Capita
U.S. $800

Economy
-Industry: copper mining and processing, construction, foodstuffs, beverages.
-Agriculture: corn, sorghum, rice, peanuts; cattle.
-Exports: copper, cobalt, electricity, tobacco, flowers.

TURKEY

Area
779,452 sq km (300,948 sq mi)

Population
71,224,000

Capital
Ankara 3,428,000

Religion
Muslim (mostly Sunni)

Languages
Turkish, Kurdish, Arabic, Armenian, Greek

Literacy
87%

Life Expectancy
69

Currency
New Turkish Lira

GDP Per Capita
U.S. $7,300

Economy
-Industry: textiles, food processing, autos, mining, steel, petroleum.
-Agriculture: tobacco, cotton, grain, olives; livestock.
-Exports: apparel, foodstuffs, textiles, metal manufactures, transport equipment.

N

8.2. Participant c

POP QUIZ

1.What is the world population in 2004?

a) 1 billion b) 2.5 billion c) 6.3 billion d) 7.8 billion e) 11.5 billions

2) Current death rate in the world is 9 per 1000. Current birth rate in the world is 22 per 1000.
Note: Data are rounded off.

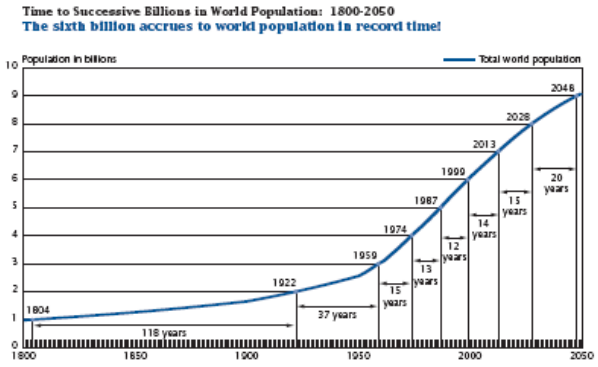
2.1) (Yes/No) World population is decreasing.

2.2) Calculate the world's growth rate.

2.3) How many people does the world population grow each year?

a) 60-65 million b) 65-70 million c) 70-75 million d) 75-80 million
e) 80-85 million

3)



According to the graph above,

3.1) Roughly how many time bigger the world population in 1922and 1974?

3.2) Roughly how many times bigger the world population comparing 1959 and 1999?

3.3) After which year the world population change rapidly?

4) Which has not been a major cause of the population explosion?

a) an increase in birth rates b) improved sanitation
c) modern preventive medicine d) longer life expectancy
e) lower infant mortality

5) Write highest top three most populated countries in order:

.....

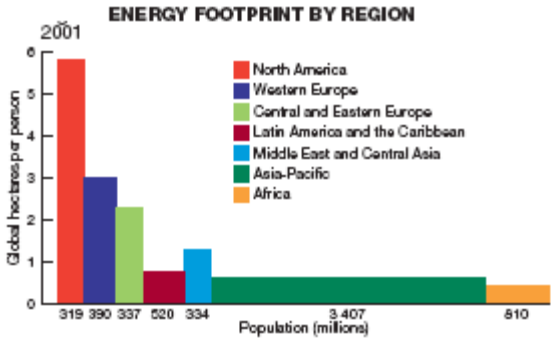
.....

.....

6) Which country has the highest number of net migration?

a) Singapore b) Mexico c) United States d)Australia e)United Kingdom

7)



According to the graph,

a.Which region is the highest energy consumption? .....

b. Write two countries in the region you marked in "a" as an answer:

.....

.....

ANSWERS TO POP QUIZ

1) c) 6.3 billion
The graph in question 3 is also a clue to be used.

2.1) No.
Current death rate in the world is lower than current birth rate.

2.2) 1.3 per cent
Substract the death rate from the birth rate i.e. 22-9=12 and divide the result by 10.

2.3) e) 80-85 million
Since the world's growth rate is calculated 1.3 per cent and the world population is 6.3 billion in 2004, 1.3 x 6.3 billion= 81.9 million.

3.1) Two times
The world population is almost 2 billion in 1922 and 4 billion in 1974.

3.2) Two times
The world population is almost 3 billion in 1959, 6 billion in 1999.

3.3) After 1959
The world population curve as sharper change after 1959.

4) a) an increase in birth rates
An increase in birth rates and a decrease in death rate cause population growth. Improved nutrition and sanitation, advances in the areas of medicine and agriculture contributed to the decrease in death rates. Since the fertility remained at its previous high level for some time after death rates dropped in some countries, rapid growth resulted. As it is seen decrease in death rate is the main cause for population explosion rather than increase in birth rate.

5) China-India- U.S.A.

6) c) United States

7) a) Nort America
b) Unites States, Canada
Eventhough United States makes up approximately 5 per cent of the world's population, it consumes almost 25 per cent of the world's energy.

Resources:

(1) Population Connection Home Page, http://207.233.141.23/eyeocontentserver/data/upload/PopQuiz_nov02.pdf. (accessed September 2005)

(2) Global Population Profile, 2002, www.census.gov/ipc/www/wp02.html. (accessed July 2005)

(3) Living Planet Report, 2004, http://www.panda.org/downloads/general/lpr2004.pdf. (accessed July 2005).

Ecological Footprint

Aim(s)

- Participants should be able to interpret statistics about how over population has a relation with social, economical and environmental problems.
- Participants should be able to be aware of a cause-effect link between population and environment
- Participants should be able to realise the relation between wants and needs with high and low ecological footprint per person/country

PART 9.1 (Warming)

Objectives

- Participants should be able to be a member of group in different size
- Participants should be able to use different parts of their body

Grade Level

2-7

Duration

Activity 15 minutes

Subjects

Mathematics, science

Key words

Parts of the body, numbers

Procedure

Begin walking in the room

Activity

The leader: "Please use all tiny places in the room when you are walking. I will give you some instructions".

Give the instructions as follow. Give 5-6 seconds to participants after each of your instructions to be organised.

Instructions

- Find three person which is close to you and join your knees.
- Find four person which is close and join your elbows
- Join six feet !
- Join your heads with nine persons
- Join eight foot fingers
- Find three person which is close to you and join your hands

The leader may vary the instructions or invite the participants to give instructions.

Remark

- When choosing the instructions, be careful about not to damage/hurt the participants during the game.

PART 9.2

Background

Needs are good and services that satisfy foods, clean water, house etc. which can be called basic physical needs as well as providing good health, education etc. that can be called

under satisfying quality of life. *Wants* are the goods and services that satisfy people's perceptions of what they 'need' to be. For example; cosmetics, big cars, latest mobile phone, overseas holiday etc. *Needs* and *wants* vary between people in different cultures and socio-economic systems. "One's body, clothes, speech, leisure pastimes, eating and drinking preferences, home, car, choice of holidays, etc. are to be regarded as indicators of individuality of taste and sense of style of the owner/consumer".
The ecological footprint is a measure of consumption each human places on the environment they live within to produce the resources it consumes and to absorb its wastes, taking into account prevailing technology.

Share of:	**Richest 20%**	**Poorest 20%**
Population total	1.2 million	1.2 million
World GNP	82.7%	1.4%
World trade	81.2%	1.0%
Commercial bank loans	94.6%	0.2%
Meat and fish consumption	45%	5%
Energy consumption	58%	4%
Paper consumption	84%	1.1%
Telephone lines	74%	1.5%
Vehicles	87%	<1%

Beriefly, the figures in this table can be discussable that over population is the cause of global environmental decline, poverty and famine

$$I = C \times T \times P$$

(I) : The impact of resource use in the world

(C) : Consumption levels per person

(T) : The technology used to produce the goods and services consumed

(P) : Population numbers

For most people, a better quality of life means improving their standards of living as measured by income level and use of resources and technology. However, the world is needed different. For example, economic and environmental goals will not be achieved successfully unless social goals - such as universal access to education, health care and economic opportunity - are also achieved. According to the formula "$I = C \times T \times P$", at any level of development, human impact (I) on the environment is a function of population size (P), per capita consumption (C) and the environmental damage caused by the technology (T) used to produce what is consumed. In other words, when any variables in the formula i.e. (P), (C), (T) increase, the human impact will also increase. Any increase/decrease in the value of "C", "I" and "P" affect "I" directly in the same proportion. For example, ever-increasing numbers of people aspiring, justifiably, to 'live better', also affects and increases the potential for damage to the environment. Patterns of consumption and resource use of industrialised countries are the reasons of most of the environmental degradation. However, growing populations, whatever their levels of consumption, also place a burden on resources and the environment. Since environmental science as an interdisciplinary field is the relative youth, there are not enough data

including baseline data. Over population is not an onliest reason of the human impact on nature. Population growth, urban industrial society, economic development, environmental degradation and loss of biodiversity have a cause and effect relation that none can be effectively addressed in isolation from the others.

Resources

(1) UNESCO Home Page, http://www.unesco.org/education/tlsf/theme_c/uncofrm_c.htm. (accessed August 2005).

(2) Featherstone, M. (1991) *Consumer Culture and Postmodernism*, Sage, London, p. 83.

(3) Global Footprint Network Home Page, http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview. (accesses August 2005).

(4) Our People, Our Resorces, IUCN: The World Conservation Union, Gland, 1997.

Objectives

- Participants should be able to interpret a mathematical formula in environmental and social framework
- Participants should be able to be clear that population growth can be either cause or effect
- Participants should be able to express a picture with their own words

Grade Level
6-7

Duration
Activity 60 minutes

Subjects
Art, science, language

Key words
Our needs and wants, human impact

Material
A copy of Tell me a name 1-participant copy sheet, board to write on, Looking to Population-participant copy sheet

Procedure
Sit in a circle.
Activity
The leader: "If this is a sample congress for students/teachers, I have some suggestion.

First, lets make a small table about our needs and our wants as human".

Divide the board into two: one side for "needs", one side is for "wants". And write what they opinions.

Guiding Questions and Discussion

- Is it a problem having "wants"? Why/Why not? [Possible answers: Having 'wants' is not a problem but t become a problem when a person/family/country etc. begin to confuse them with 'needs']
- Who and/or which affects us that we may confuse our "needs" and "wants"? [Possible answers: advertising, market pressures under the idea of the 'good life', television etc.]

Make group of three. Deliver Looking to Population-participant copy sheet. Give them five minutes to fill the sheet.

Discuss about the questions on the sheet

Make a group of six. Deliver Tell me a name 1-participant copy sheet to each group.

The leader: "Now, I have another picture. Please make a group sculpture according to what does the picture in Tell me a name-participant copy sheet inspried you. Give a name to your sculpture.

When you are ready, stay whereever you are as a sculpture. Think about, if you were the artists, which name would you give to your group sculpture?"

Touch each group sculpture and learn their names.

Resource:
UNESCO Home Page, http://www.unesco.org/education/tlsf/theme_c/uncofrm_c.htm. (accessed August 2005).

The leader: "Please observe the others without leaving being a part of your sculpture. When I touched one of you, please tell your name of the sculpture".

After Guiding Questions and Discussion

- What did you observe in the picture?
- Why are a foot on the surface?

Introduce them the term "Ecological Footprint" as follows: the impact of all our activities can be likened to an imprint or 'footprint' on Earth. This imprint is referred to as our 'Ecological Footprint'. In other words, Ecological Footprint is a measure ea An inidividual, a city, a country, a region or humanity

FOR THE NEXT MEETING (9.A)
The leader: Invite them to visit the Global Footprint Network's web site http://www.footprintnetwork.org and Earthday Network's web iste http://www.myfootprint.org/ and give feedback to us about Ecological Footprint

PART 9.3

FROM THE EX-MEETING
Remind:
8.A.Deliver Maps-participant copy sheet . How can you estimate and roughly calculate Turkey's and Zimbawe's total areas? Do you think which one is bigger?
The leader can find it Module 8, Page 4

Background

One of the most accurate methods is to use a planimeter to trace the border of the country. It is designed for an area on a two-dimensional plane. Second method are digital tablets or computer scanners that can also be used to trace or scan a bathymetric map image. The most popular one is to place a grid pattern over the country and count the squares from the grid in the calculation of country surface area.

Resource

(1) Florida Lakewatch, http://lakewatch.ifas.ufl.edu/circpdffolder/Morph2ndEdApx.pdf. (accessed August 2005).

Objectives

- Participants should be able to realise that natural land can not be calculated with our knowledge about geometric shapes
- Participants should be able to develop methods in order to calculate a natural land's area

Grade Level

6-7

Duration

Activity 5 minutes

Subjects

Mathematics, social studies

Key words

Area, geometric shape

Material

The participants' Maps-participant copy sheet

Procedure

Activity

The leader: "Please hang on your Maps-participant copy sheet on the wall that everbody can see your method to calculate both areas".

Guiding Questions and Discussion

- Where do we use a country's area? [Possible answers: ecological footprint, green area per peson, living area per person/region]
- Who calculate a land's area? Explain.

PART 9.4

Background

The world population is roughly doubled at the beginning of 20th century since 1960 and reached more than 6 billion. According to Table 1 in World-participant copy, the time

required for global population between first and second billion was 118 years, 13 years between fourth and fifth billion, 12 years after fifth billion. It will increasingly need longer periods to reach seventh and further according to current Census Bureau projections.

Objectives

- Participants should be able to analyze the graphs, tables to see how the world population is changing.
- Participants should be able to interpret for a region that is more/less developed according to its ecological footprint

Grade Level
7

Duration
Activity 55 minutes

Subjects
Mathematics, science, social studies

Key words
Population, ecological footprint

Material
Data projector or copy of World-participant copy sheet for each four participants

Procedure
Activity
The leader: "Ok, let's come back to to the second day of the Congress**.** We are again in our world map on the school ground. As we have seen it is difficult to say that over population is a main cause or a part of environmental problem itself. Now, we have a small presentation about the world population".

[If data projector is available, show World-participant copy sheet in power point. If not, put copy of World-participant copy sheet for each six participants on the floor.]

The leader: "We have spoken on inequalities in the world yesterday but we do not speak about the trend of the world population yet. Now, the time is for discussion on the slides related with" .
Invite the moderator. In observing of the slides either in data projector or on hard copy of World-participant copy sheet. Invite the participants to discuss on slides.

Guiding Questions and Discussion
FOR SLIDE 1

- Is the curve linear or exponential? Why? [Possible answers: exponential curve since
- Is world population decreasing or increasing? Will it continue to increase? Why/why not? [Possible answers: world population is increasing. According to the projection, it will continue to increase till to 2048. However, as we have seen before in Module 1-3 (bacteria growth), it has to be constant after a time. Eventough the population continue to go up, the number of the death will be higher than in the past to balance. It is not possible to increase exponentially because of the caring capacity of the earth.]
- In which period, the population of word doubled? [Possible answers: between 1959-1999, world population grew rapidly.]

- Which period did the world population begin to increase rapidly? Why might be the reasons? [Possible answers:after 1922 bur especially after 1959. There might be some social/political reasons for it.]
- Who is more developed countries? Less developed countries? Give some examples. [Possible answers: more developed countries are high income countries. Major of them: Australia, Austria, United Kingdom, United States of America Belgium/Luxembourg, Canada, Denmark, Finland, France, Germany, Greece, Ireland. However, less developed countries are mostly low income countries. Major of them: Afghanistan, India Albania, Kenya, Ethiopia Angola, Armenia, Azerbaijan, Bangladesh, Benin, Burkina Faso, Burundi, Pakistan Cambodia, Cameroon, Central African Rep, Chad, Congo, Congo Dem Rep, Cote Divoire, Eritrea, , Gambia, Ghana] Resource: Living Planet Report, 2004
- What is the situation of Near East and Africa in annual growth rate? [Possible answers: the annual growth rate of these regions are higher that the others]

FOR SLIDE 2

- What are two regions having highest birth and death? Lowest? [Possible answers: Near East and Africa have the highest whereas North America and Europe&Some New Independent States have lowest]
- Compare more developed countires' and less developed countries' birth-death rates?[Possible answers: in less developed countries's birth rate are higher that their death rate that makes their population increasing. However, more developed countires
- According to Table 4, what does net migration is? Why is the net migration minus on the left? [Possible answers: net migration is the difference between the number of migrants and those leaving a country in a year. Having negative value means that the number of migrants is lower than the leavers from the country.]
- Which problems may one of the top ten net receiver countries face? [Possible answers: unemployment, weakness in the countries' economy,

FOR SLIDE 3

- What happens if the ecological footprint of a region is getting higher? [Possible answers: since the ecological footprint is a measure of how much biologically productive land and water area a region requires tp produce teh resources it consumes and absorb the waste it generates, using technology and resoruce management schemes, it is not an advisable situation for the earth's future.]
- According to Table 5, compare a person's footprint in middle income country and high income country. [Possible answers: a person's footprint in a middle income has changed little over the past 40 years, decline in the last ten years between 1960-200 whereas a person's footprint in a high income country was almost three times larger in 1961 than a person in a middle income countries]
- What may be the reasons in increase of a person's footprint who is in high income country? [Possible answers: over consumption, changing the habits]
- According to Table 6, compare the world population growth and humanity's ecological footprint between 1960-2000. [Possible answers: Humanity's ecological footprint grew up about 160 percent (1.6%) while the population doubled over the same period i.e. footprint rate was faster than the population rate.]
- According to Table 7, what are a bar's height and width? [Possible answers: The height of each bar is proportional to each region's average footprint per person while the width of each bar is again proportional to its population..]

- What is a bar's area? [Possible answers: Because of the ex explanation, the area of each bar is proportional to the region's total ecological footprint.]
- According to Table 7, which Region's ecological footprint is higher Africa or North America? [Possible answers: When the areas of each bar belong to Africa and North America are calculated, Africa's ecological is 1/3 of North America Region.]
- Do you think does the high ecological footprint is occured because of the needs of people or because of wants that we spoke in Part 9.2.?

Remarks

- It is important that if the questions are be asked by the participants. The following questions as in above are the possible ones which was wanted to be asked by the participants
- If they are in trouble to ask, ask some questions from the above questions.

Closure

Please complete the rest of the sentences:
I enjoyed in part.....
.....part would be different
I am bored in part.....
I have learned.....

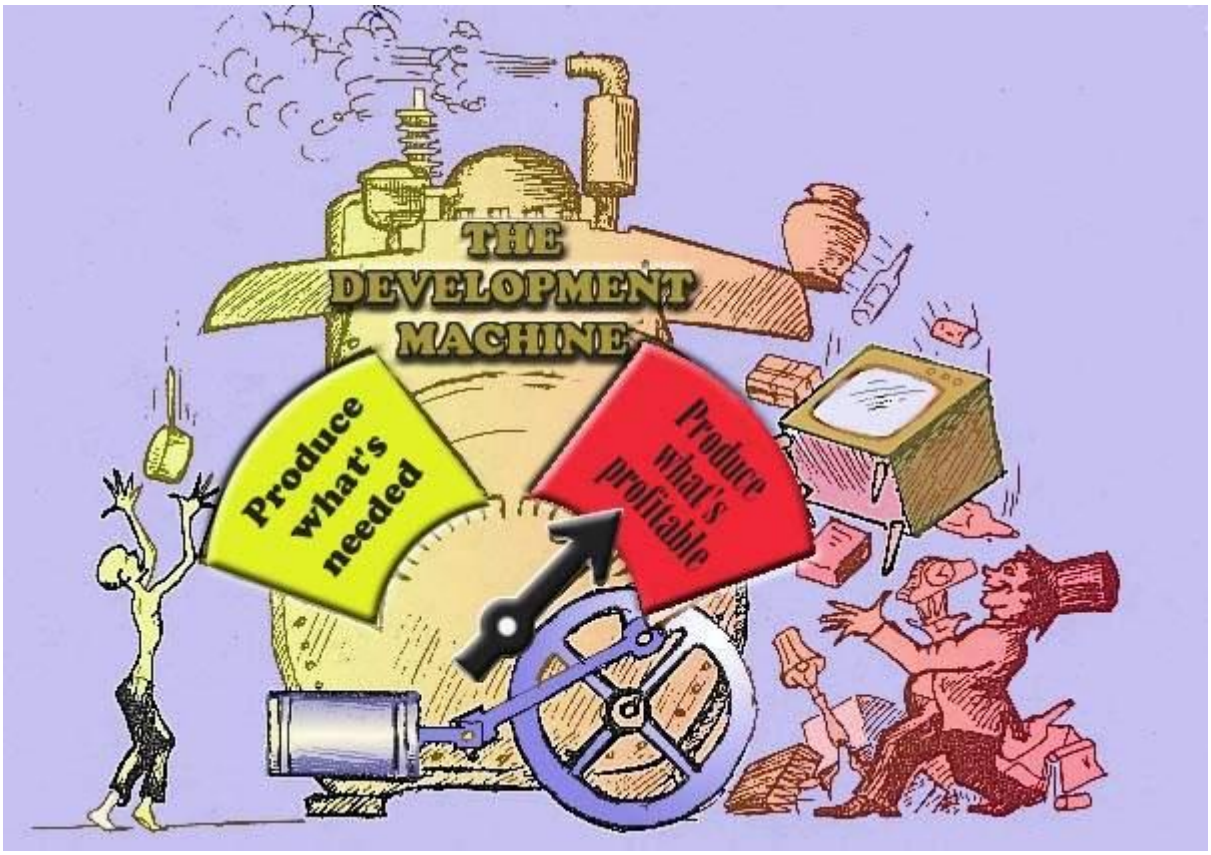
Evaluation

a. Deliver Evaluation of Module 9-participant copy to each to be filled by individually. The leader will give feedback in the next meeting.
b. Participants can share their opinions about the process they lived.
c. Keep teacher observation of participants related to discussion in asking/answering the questions

Resources

(1) UNESCO Home Page, http://www.unesco.org/education/tlsf/theme_c/uncofrm_c.htm. (accessed August 2005).
(2) Featherstone, M. (1991) *Consumer Culture and Postmodernism*, Sage, London, p. 83.
(3) Global Footprint Network Home Page, http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview. (accesses August 2005).
(4) Our People, Our Resorces, IUCN: The World Conservation Union, Gland, 1997.
(5) Global Population Profile 2002, www.census.gov/ipc/www/wp02.html. (accessed August 2005).
(6) UNESCO Home Page, http://www.unesco.org/education/tlsf/theme_c/uncofrm_c.htm. (accessed August 2005).
(7) Florida Lakewatch, http://lakewatch.ifas.ufl.edu/circpdffolder/Morph2ndEdApx.pdf. (accessed August 2005).
(8) Living Planet Report, 2004, http://www.panda.org/downloads/general/lpr2004.pdf. (accessed August 2005).

TELL ME A NAME-1



TELL ME A NAME

9.2. Participant copy

LOOKING TO POPULATION

LOOKING TO POPULATION

Share of:	Richest 20%	Poorest 20%
Population total	1.2 million	1.2 million
World GNP	82.7%	1.4%
World trade	81.2%	1.0%
Commercial bank loans	94.6%	0.2%
Meat and fish consumption	45%	5%
Energy consumption	58%	4%
Paper consumption	84%	1.1%
Telephone lines	74%	1.5%
Vehicles	87%	<1%

Population	(millions)
World	6,148,1
High Income Countries	920,1
Middle Income Countries	2.970,8
Low Income Countries	2.226,3

What does the tables show ?

Who are the richest countries? Poorest countries?

According to the figures in table, what is the relation between over population and global environmental decline

$$I = C \times T \times P$$

(I) : The impact of resource use in the world

(C) : Consumption levels per person

(T) : The technology used to produce the goods and services consumed

(P) : Population numbers

What is the formula used for? What would happen if consumption level increase?population goes down?

According to this formula, what is the relation between over population and global environmental decline

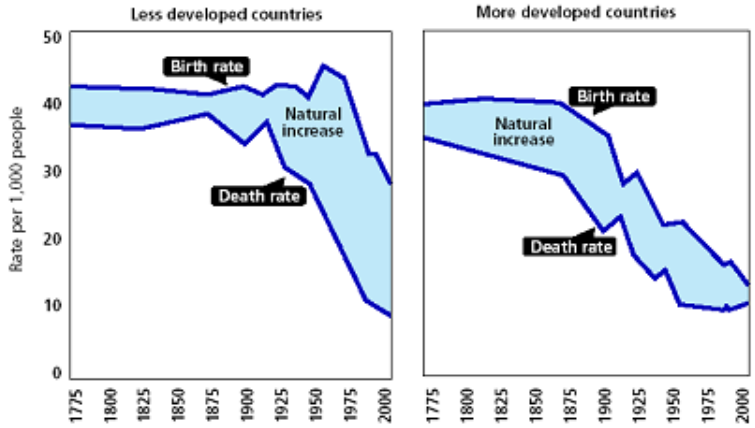
Compare the table and formula. Is there a contradiction?

Resource1: Unesco Home Page, http://www.unesco.org/education/tlsf/theme_c/uncofm_c.htm (accessed August 2005)
Resource2: Global Footprint Network Home Page, http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview. (accessed August 2005).

BIRTH AND DEATH RATE

Population growth through natural increase, 1775-2000

Name of participant:



Source: Population Reference Bureau.

A. What does the graphs show?

B. Who might use these graphs?

C. What is the highest birth rate and year in both graphs?

D. What is "less developed countries" and "more developed countries? Who decide it? Give some examples.

9.Evaluation /Participant copy

E. Is there any similarities/differences between two graphs?

F. Is the population going down after 2000? Why /Why not?

G. In 1775, which countries have high population?

H. Eventhough the birth rate and death rate are going down worldwide, why is the world population growing up?

Your questions:

World Problems: AIDS and Poverty

Aim(s)

- Participants should be able to critise about the term "development"
- Participants should be able to explore their knowledge about AIDS and poverty

PART 10.1 (Warming)

Objectives

- Participants should be able to be aware that using a land for different purposes affect to the creatures which live on the land

Grade Level

3-7

Duration

Activity 15 minutes

Subjects

Music, science

Key words

Habitat loss

Material

Newspaper

Procedure

Put the newspaper on the of the room.

Activity

The leader: "You are beautiful species who live here-by showing the newspaper. Please come to your habitat".

The leader: "You went for poaching. [Wait for them to walk around] When you came your habitat was like that".[Fold the newspaper]

The leader: "You are again outside of your habitat.[Wait for them to walk around]. Your habitat was used for making agriculture". [Fold the newspaper]

Continue to fold the newspaper by saying;

- You went for finding water. Some part of your habibat was damaged in order to make constructions
- You migrate because of lack of food. Some part of you habibat was damaged n order to make damp.
- You went to lake. Crops were died because of the pollution on the land.
- You went for hunting. Some part of your habitat were used in order to make hotels.

At the end, there will be a tiny newspaper that the nobody can live.

Remarks

- The size of the newspaper change according to the number of the participants. At least up to 3 folding everybody should be in the newspaper.
- If they need, tell the participants that each time, participants try to be in the newspaper's area

PART 10.2

FROM THE EX-MEETING
Remind:
8.B.The leader: After the Congress take over, a documentation will be prepared about Congress consists of your reports, news, fotos, interviews, policies, questionarries etc. The documentation will be edited at the end of the third day of the Congress.
The leader can find it Module 7, Page 6

Background

In Ancient Rome, the *editor ludorum* was the person who put on the games whereas e*diteur* means "publisher" in French . The word came into English from French. In print publishing, human editors include people who are responsible for:

- newspapers and wire services (news trade- newspapers, magazines-, radi and television broadcasters)
- organizing anthologies and other compilations
- organizing and publishing a magazine

There are a copy editor (correcting spelling, grammer, design of pahes and selection ofnews for inclusion), a scholarly editor*(*producing a definitive edition of a classic author's works), symposium editor or volume editor (organizing and managing contributions to a multi-author book), a sponsoring editor (finding marketable ideas and presenting them to appropriate authors),a acquisitions editor (obtaining copy or recruiting authors or *commissioning editor* for a publishing house), a substantive editor (improving an author's writing so that they indeed say what they want to say).

Resource

(1) Wikipedia, The Free Encyclopedia Home Page, http://en.wikipedia.org/wiki/Wire_services. (accessed August 2005).

Objectives

- Participants should be able to express views through different media
- Participants should be able to use differents techniques to gather information in the process of publising a newspaper
- Participants should be able to explore their knowledge about editor as a job

Grade Level

6-7

Duration

Preparation: 15 minutes
Activity : 25 minutes

Subjects

Language

Key words

Editor, documentation

Material

Colorful pencils, documents that will be bring by the participants, a craft paper, board marker, bant, scissors, waste materials such as newspaper, plastic boxes

Procedure
Sit in a circle and make a group of 4.
Activity
The leader: "Can you give your documents related with for the Congress's Newspaper for the last two days to different than yours".
Invite them to the discussion

Guiding Questions and Discussion

- Why has a newspaper to be edited? How often?
- Is there any people deal with this work? Explain
- How should an editor be equipped?
- Which techniques does an editor use? Can she/he give feedback to the writer?
- Do you know any editor?
- What kind advantages/disadvantages being a editor?

After the small discussion, invite the participants to edit the documents as a group and invite their role as an editor

PART 10.3
Background
A virus called HIV, the Human Immunodeficiency Virus caused AIDS. HIV can be transfered by the blood, vaginal fluid, semen, and breast milk of people infected with HIV i.e. mostly by having sex with an infected person, sharing a needle (shooting drugs) with someone who's infected, being born when the mother is infected, or drinking the breast milk of an infected woman. HIV can not transmitted by tears or saliva but open sores in your mouth or bleeding gums are some of the reasons infected by HIV. The total number of people living with HIV virus is estimated 39.4 million that is the highest level up to now. Past year approximately 3.1 million people has died because of AIDS.

Sub-Saharan Africa is the worst affected region i.e. 25.4 million people living with AIDS at the end of 2004. When it is compared with the whole, two thirds of all people living with AIDS are in sub-Saharan Africa.

Resources
(1) AIDS Home Page, http://www.aids.org/factSheets/101-What-is-AIDS.html. (accessed July 2005).
(2) The Aids Epidemic Update 2004, http://www.unaids.org/wad2004/EPI_1204_pdf_en/EpiUpdate04_en.pdf.(accessed August 2005).

Objectives

- Participants should be able to get to konw Thomas Malthus asa scientist and its relation with population
- Participants should be able to realise the different types of problems of the world: AIDS and poverty in the world

Grade Level	**Duration**
6-7	85 minutes

Subjects
Mathematics, science,

Key words
Economy, Thomas Malthus, over population, family planning, education, legislations

Material
Board/craft paper, chalk/board marker, data projector or copy of AIDS and Poverty in the World-participant copy sheet

Procedure
Come to the place of where the world map with the participants in order to continue Congress.
Activity
Since moderator decided in the first day of the Congress, remind the today's agenda i.e.the global solutions to over population.and inform about the speaker called Thomas Malthus for today in the plenary session.

The leader will introduce her/himself as Thomas Malthus. Invite moderator and the participants to the last day of the Congress.

If data projector is available, show AIDS and Poverty in the World-participant copy sheet in power point. If not, put copy of AIDS and Poverty in the World-participant copy sheet for each six participants on the floor.
Invite the participants to define solutions

Guiding Questions and Discussion

- What is the impacts of over population? [Possible answers:poverty, human rights problems, low incomes, using more world resources, uncontrollable diseases, gender inequalities.]
- What can we propose as solutions to reduce these affects? [Possible answers: reduce population problems by making family planning, legislations, education, high income countries can help low income countries etc.]

FOR SLAYT 1

- Compare the children and adults' A IDS death, number of people living with HIV in 2004 and people newly infected with HIV in 2004. ? [Possible answers: more than death people in 2004 got infected by AIDS. Woman and children are in risk]
- How does a person catch the HIV viruses? [Possible answers: by the blood, vaginal fluid, semen, and breast milk of people infected with HIV i.e. mostly by having sex with an infected person, sharing a needle (shooting drugs) with someone who's infected, being born when the mother is infected, or drinking the breast milk of an infected woman.]

FOR SLAYT 2

- Which regions' income capita lower than 10 000 US dolars? Higher? [Possible answers: The Asia& Pasific and Africa are the two region which have the lowest income capita whereasNoth America is the hishest.
- What does it cause? [Possible answers: inequalities in society, lack of social service etc.]

- How many people live under 1 U.S.Dolar per day? [Possible answers: 1174.8 millions people live under 1 U.S. Dolar per day. South Asia and sub-Saharan Africa are the most critical regions in that sense.]
- What is HIV? Is it related with AIDS?
- How is the global AIDS epidemic curve between 1990-2003? [Possible answers: the number of people living with AIDS is fourth times bigger than the number in 1990.]
- What does poverty and AIDS cause?

FOR SLAYT 3

- Which region who has affected from AIDS most? Least? Why?
- Compare the countries according to the AIDS trends in Table 4 i.e Bostwana and Zimbabwe

FOR SLAYT 4

- According to Table 8, compare the distribution of AIDS in Turkey between 1995 and 2003? [Possible answers: it increased more than %100 in eight years.]
- What are the top five age groups reported AIDS victims between 1985-2003?
- What is the number of children who infected from AIDS under 10? How may they infected? [Possible answers: if her/his mother or father is infected by AIDS, she/he also can have HIV viruses by birth]

During the discussions;
The moderator can invite in any time of the discussion thomas Malthus When Malthus (the leader) was invited to the meeting area;

The leader **(Thomas Malthus)**: "I like to make an interactive discussion. I will try to answer to your questions. Please ask".

[The leader will answer the questions by the help of Life of Malthus-leader copy sheet**]**

Guiding Questions and Discussion

- How do you describe the word "development"?
- Tell me some words that can be used for a "more developed country" and "less developed country"?
- Do you think are there any affects of "more developed country" for a country which is less development? Why/why not?

Remarks

- Slides are designed in order to make the discussion effective i.e there is no need goes through on each of them except Slide 4.
- **IMPORTANT**: The leader should read Life of Malthus-leader copy sheet and understand Maltus's theory he suggested. Since the leader will introduce her/himself as Thomas Malthus, it is advisable to dress her/himself more historically related with the period where Malthus lived in order to attract the participants

Closure

I was surprised to find that. . .
I really like . . .
I did not like . . .

I want to learn more about . . .

Evaluation

a. Understanding the problem: Write an newspaper article which will be published in The Washington times under "**Net immigration rises by millions**" title which will consists of impacts of rising immigration. A newsletter article

b. Deliver World population-quiz as a post-test after the whole activity. Compare pre and pro-test by the partiipants. The feedback will also be given by the leader.

Resources

(1) Turkey's Statistical Yearbook 2004, www.die.gov.tr. (accessed August 2005).
(2) Wikipedia, The Free Encyclopedia Home Page, http://en.wikipedia.org/wiki/Wire_services. (accessed August 2005).
(3) The Aids Epidemic Update 2004, http://www.unaids.org/wad2004/EPI_1204_pdf_en/EpiUpdate04_en.pdf. (accessed August 2005).
(4) United Nations Population Fund Home Page, http://www.unfpa.org/swp/2002/english/ch2/index.htm#12. (accessed August 2005).
(5) Global Population Profile 2002, www.census.gov/ipc/www/wp02.html. (accessed August 2005).
(6) AIDS Home Page, http://www.aids.org/factSheets/101-What-is-AIDS.html. (accessed July 2005).
(7) University of California, Berkeley Home Page, http://www.ucmp.berkeley.edu/history/malthus.html. (accessed July 2005).
(8) United Nations Population Fund Home Page, http://www.unfpa.org/intercenter/food/morefood.htm. (accessed July 2005).
(9) The History of Economic Thought Website, http://cepa.newschool.edu/het/profiles/malthus.htm. (accessed July 2005).

GLOBAL SUMMARY OF THE AIDS EPIDEMIC DECEMBER 2004

Number of people living with HIV in 2004	**Total**	**39.4 million (35.9–44.3 million)**
	Adults	37.2 million (33.8–41.7 million)
	Women	17.6 million (16.3–19.5 million)
	Children under 15 years	2.2 million (2.0–2.6 million)
People newly infected with HIV in 2004	**Total**	**4.9 million (4.3–6.4 million)**
	Adults	4.3 million (3.7–5.7 million)
	Children under 15 years	640 000 (570 000–750 000)
AIDS deaths in 2004	**Total**	**3.1 million (2.8–3.5 million)**
	Adults	2.6 million (2.3–2.9 million)
	Children under 15 years	510 000 (460 000–600 000)

Resource:The Aids Epidemic Update 2004, http://www.unaids.org/wad2004/EPI_1204_pdf_en/EpiUpdate04_en.pdf. (accessed August 2005).

10.3. Participant copy

Table 2. Income per capita by region, 1975-1995.

(in 1990 U.S. dollars)

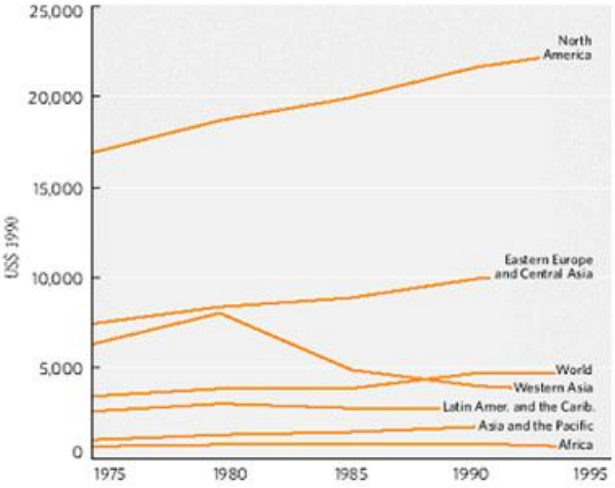


Table 3

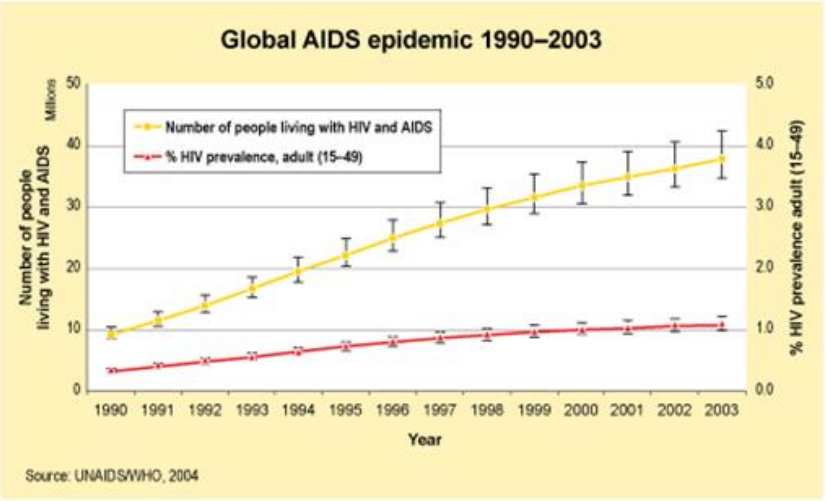


Table 4.

Population living onless than a dollar a day
(at 1993 purchasing power parity)

	1987		1998	
	%	millions	%	millions
E. Asia	26.6	417.5	14.7	267.1
E. Europe/Central Asia	0.2	1.1	3.7	17.6
Latin Amer./Caribbean	15.3	63.7	12.1	60.7
Middle East/N. Africa	4.3	9.3	2.1	6.0
S. Asia	44.9	474.4	40.0	521.8
Sub-Saharan Africa	46.6	217.2	48.1	301.6

Resource 1: United Nations Population Fund Home Page, http://www.unfpa.org/swp/2002/english/ch2/index.htm#12. (accessed August 2005).

Resource 2:The Aids Epidemic Update 2004, http://www.unaids.org/wad2004/EPI_1204_pdf_en/EpiUpdate04_en.pdf. (accessed August 2005).

10.3. Participant copy

Table 6

Projected HIV Seroprevalence for Selected Countries of Africa: 1990-2010

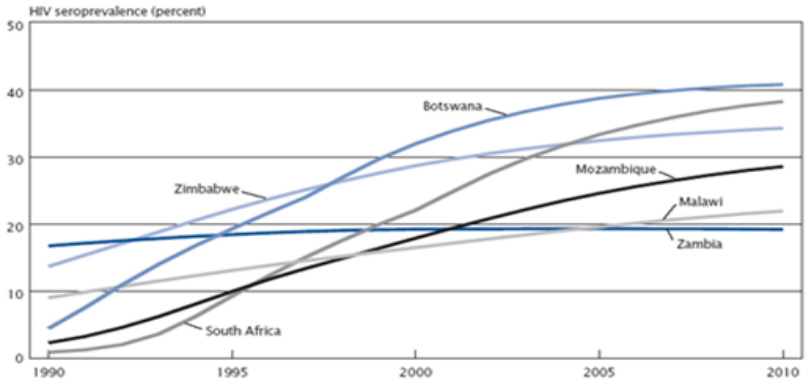
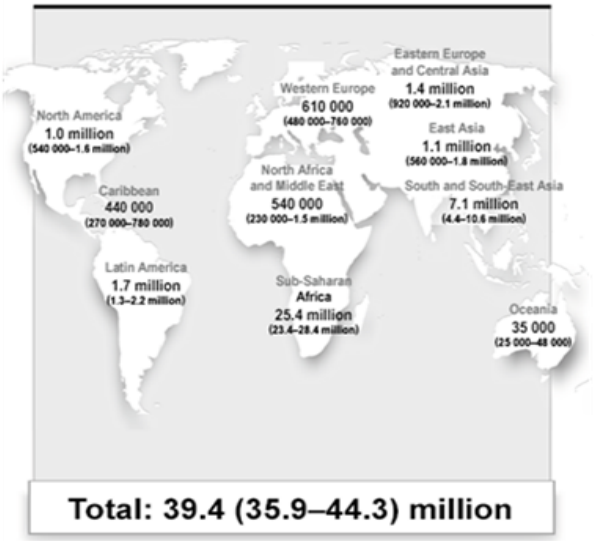


Table 5

ADULTS AND CHILDREN ESTIMATED TO BE LIVING WITH HIV AS OF END 2004



ESTIMATED ADULT AND CHILD DEATHS FROM AIDS DURING 2004

Resource 1: Global Population Profile 2002, www.census.gov/ipc/www/wp02.html. (accessed August 2005).

Resource 2:The Aids Epidemic Update 2004, http://www.unaids.org/wad2004/EPI_1204_pdf_en/EpiUpdate04_en.pdf. (accessed August 2005).

10.3. Participant copy

Table 8

Distribution of reported AIDS cases and carriers in Turkey

	1995	2000	2001	2002	2003
Toplam - Total	91	158	184	190	197
Vaka - Cases	34	46	40	48	52
Taşıyıcı - Carriers	57	112	144	142	145

Distribution of reported AIDS cases and carriers by age groups and sex in Turkey

1 October 1985 - 31 December 2003]

Age groups	Total	Males	Females
Toplam - Total	1 712	1 176	536
0	9	8	1
1 - 4	9	3	6
5 - 9	10	3	7
10 - 12	4	3	1
13 - 14	2	1	1
15 - 19	44	15	29
20 - 24	243	113	130
25 - 29	264	178	86
30 - 34	307	238	69
35 - 39	204	168	36
40 - 49	227	178	49
50 - 59	135	93	42
60+	62	45	17
Bilinmeyen - Unknown	192	130	62

Thomas Malthus (1766-1834)

I was born in a country estate in Dorking, Surrey (south of London) in 1766. I was the second son of my father-Daniel Malthus, a country gentleman and avid disciple of Jean-Jacques Rousseau and David Humee knew personally). Thats why, I was educated according to Rousseauvian precepts by my father and a series of tutors.

I went to Jesus College, Cambridge, in 1784 and was ordained a minister of the Church of England in 1788. I earned my M.A. in 1791.
Around 1796, I became a curate in the sleepy town of Albury and later have been elected Fellow of Jesus College in 1793. I worked both in Cambridge and Albury.
Intellectual debates with my father over the "perfectibility of society" thesis was advanced by William Godwin and the Marquis de Condorcet. I begin to set my ideas down on paper. The *Essay on Population* (1798) was published as a pamphlet like that

"Positive checks" (starvation, disease and the like, elevating the death rate) and "preventive checks" (i.e. postponement of marriage, etc. that keep down the birthrate) kept the population growth in being checked.

I mainained that actual population always has a *tendency* to push above the food supply. Because of that, any attempt to ameliorate the condition of the lower classes by increasing their incomes or improving agricultural productivity would be fruitless, as the extra means of subsistence would be completely absorbed by an induced boost in population. As long as this tendency remains, I argued, the "perfectibility" of society will always be out of reach.

There are some evidences: the farming techniques are being improved and between 1960 and 1991 global food production outpaced population growth, food production grew from the equivalent of 2,300 to 2,700 calories a day per capita. Although there are some increases , we can not translate it that more food for the poor. Because cheaper food for consumers means lower prices for producers. For example, in low income countries as you know them, small armers can not afford especially in a time of falling prices. FAO (FOOD and Agriculture Organisation of the United Nations has identified 88 "food deficit" countries which can neither feed themselves nor afford the imports they need.

Because of these changes some farm failies left form their land. In some countries to reduce the land available for subsistence farming even as rural populations are growing. Population growth in the 1980s actually outpaced food production and new techniques have made little impact on food crops in Asia and Africa. Even small fishing communities found themselves in trouble because of commercial fisheries.

Eventhough, more people are being fed adequately today than ever before, it is also true that the numbers of the poor and malnourished have risen. The cycle of increasing outputs and lower food prices may be warning that because of population growth, increased consumption and environmental damage the world is headed for absolute food shortage.

I travelled to Germany, Russia and Scandinavia. After these journey, I have found to introduce the possibility of "moral restraint" bringing the unchecked population growth rate down to a point where the tendency is gone in my Essay which I revised it in 1803. In practical policy terms, this meant inculcating the lower classes with middle-class virtues. Because there is a danger that once the poor had a taste for luxury, then they would demand a higher standard of living for themselves before starting a family. In other words, I suggested the possibility of "demographic transition", i.e. that sufficiently high incomes may be enough by themselves to reduce fertility.

People recognized my *Essay* as the first serious economic study of the welfare of the lower classes. Even **Karl Marx**, who deplored his conservative policy conclusions, grudgingly granted me this.

Also, **Charles Darwin**:

"In October 1838, that is, fifteen months after I had begun my systematic inquiry, I happened to read for amusement Malthus on *Population*, and being well prepared to appreciate the struggle for existence which everywhere goes on from long- continued observation of the habits of animals and plants, it at once struck me that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed. The results of this would be the formation of a new species. Here, then I had at last got a theory by which to work".

Charles Darwin, from his autobiography. (1876)

“I forfeited my fellowship at Cambridge in 1804 since I got married. In 1805, I was appointed Professor of Modern History and Political Economy at the East India College in Haileybury, thereby becoming the England's first academic economist. I also believed that economic crises were characterized by a general excess supply caused by insufficient consumption. I was a political economist with my concerns about what I see “the decline of living conditions in nineteenth century England”.

“I have found three reasons for this decline: The overproduction of young; the inability of resources to keep up with the rising human population; and the irresponsibility of the lower classes. I suggested the family size of the lower class ought to be regulated such that poor families do not produce more children than they can support. It should be quite familiar for you. Although not only lower class families but China has implemented a policy of one child per family”.My life continued like that and I was died in 1834.

Resources:

(1) University of California, Berkeley Home Page, http://www.ucmp.berkeley.edu/history/malthus.html. (accessed July 2005).

(2) United Nations Population Fund Home Page, http://www.unfpa.org/intercenter/food/morefood.htm. (accessed July 2005).

(3) The History of Economic Thought Website, http://cepa.newschool.edu/het/profiles/malthus.htm. (accessed July 2005).

World from Children' View

Aim(s)

- Participants should be able to explore the basic needs of a child
- Participants should be able to aware not all the children have same opportunity in order to reach the basic needs to live
- Participants should be able to explore the relation between art, environmental and social problems

PART 11.1 (Warming)

Objectives

- Participants should be able to live time enjoyable

Grade Level	**Duration**	
3-7	*Activity*	15 minutes

Key words

Play

Procedure

Two volunteers are needed. With the rest of the group, make group of three.

Activity

The leader: "There are two friends. I will try to explain their game that created.

Each group consists of three people represent a house. We will call these three members as house members. One of these two volounteers is escaping not to be caught by the other, and the other one is trying to find out her/him. The escaper goes to different houses. Since the houses is too small, it doesnt host more than three people.

Please, these each group members, be arm to arm. When escaper goes to one of the houses by taking one of the house members located in the end the arm, the participants who is in other end will begin to escape as a new escaper. When the catcher catch the escaper before goes to house, they can the role between catcher and escaper".

Remark

- If the participants need, there can be small simulation. To understand the game better.

PART 11.2

Background

Class inequality, gender inequalities in education (continuing improvement of the position of girls and women in the education system), racial inequalities in education occur. The Ministry of National Education and UNICEF's campaign to close the gender gap in education called "*Haydi Kızlar Okula*" entered its third phase this year. At the moment, there are fifty-three provinces out of Turkey's eighty-one provinces. There are some reasons for gender inequalities such as girls are sent to informal working sector such as in home, in work places in cheap labour.

Resource:

(1) Unicef Turkey Home Page, http://www.unicef.org/turkey/hm/hm1.html. (accessed July 2005).

Objectives

- Participants should be able to be aware of the inequalities in education
- Participants should be able to realise the reasons of the inequalities in education

Grade Level
4-7

Duration
Activity 25 minutes

Subjects
Social studies, language

Key words
Children, education

Procedure
Make a group of four. The leader immiates a conservation between two people (A child and a person who is one the phone) on the phone.

The leader immiate a child is trying to call 183-Child Telephone connection
The leader (a child): Hello, is it 183-Child Telephone connection
The leader (the child): Ok., I have a problem
The leader (the child): I want to go to school but.....

The leader stop immiating like the child.

Activity
The leader : "Please complete the sentences and make a group foto according to that. Please say your sentence loudly. Each group can make more than foto".

Guiding Questions and Discussion

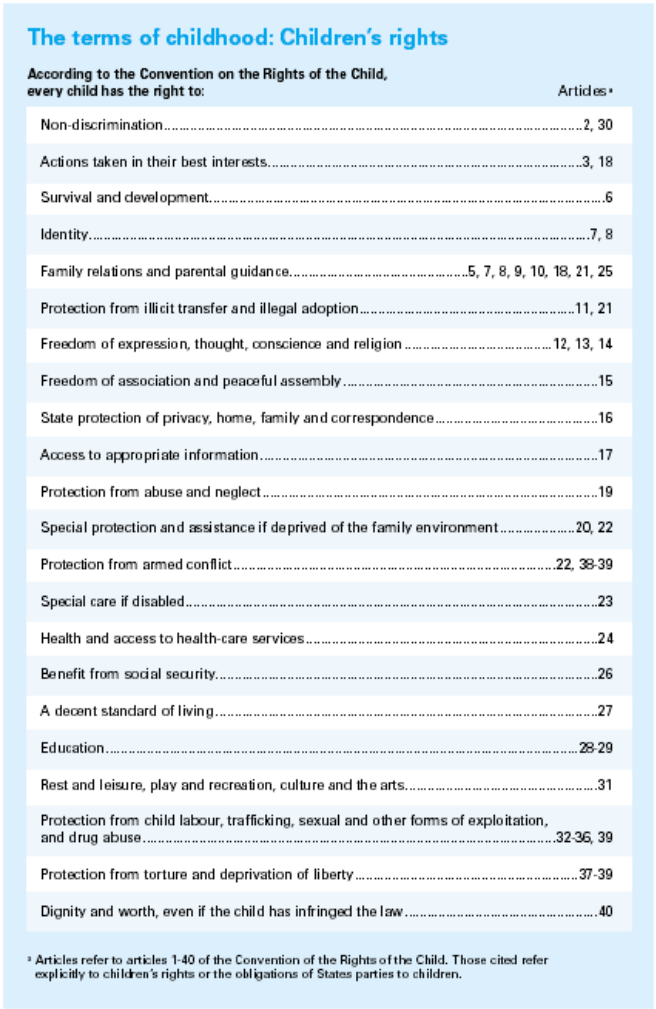
- What does a child face as problems in Turkey? [Possible answers: education, health, lack of play ground, gender inequalities etc]
- Did you hear 183-Child Telephone Connection before? What kind of service may it give?

Remark

- Encourage the participants to think about other childeren' life which are around

PART 11.3

Background
Unfortunately, children face with different kinds of problems such as poverty, conflict and violence, HIV/AIDS, financial problems etc. Poverty cause endangers their lives and limits their potential. They are not in secure in Palestine, Iraque, Kashmir etc.HIV/AIDS kills children' parents, teachers etc. On the left part in the next page, the essential needs of a child were explained whereas on the right there are some statistics about children:



The terms of childhood: Children's rights

According to the Convention on the Rights of the Child, every child has the right to: — Articles*

Non-discrimination	2, 30
Actions taken in their best interests	3, 18
Survival and development	6
Identity	7, 8
Family relations and parental guidance	5, 7, 8, 9, 10, 18, 21, 25
Protection from illicit transfer and illegal adoption	11, 21
Freedom of expression, thought, conscience and religion	12, 13, 14
Freedom of association and peaceful assembly	15
State protection of privacy, home, family and correspondence	16
Access to appropriate information	17
Protection from abuse and neglect	19
Special protection and assistance if deprived of the family environment	20, 22
Protection from armed conflict	22, 38-39
Special care if disabled	23
Health and access to health-care services	24
Benefit from social security	26
A decent standard of living	27
Education	28-29
Rest and leisure, play and recreation, culture and the arts	31
Protection from child labour, trafficking, sexual and other forms of exploitation, and drug abuse	32-36, 39
Protection from torture and deprivation of liberty	37-39
Dignity and worth, even if the child has infringed the law	40

* Articles refer to articles 1-40 of the Convention of the Rights of the Child. Those cited refer explicitly to children's rights or the obligations of States parties to children.

CHILDHOOD ■ Number of children in the world: 2.2 billion. ■ Number of children living in developing countries: 1.9 billion. ■ Number of children living in poverty: 1 billion – every second child. ■ The under-18 population in Sub-Saharan Africa: 340 million; in Middle East and North Africa: 153 million; in South Asia: 585 million; in East Asia and Pacific: 594 million; in Latin America and Caribbean: 197 million; and in Central and Eastern Europe and the Commonwealth of Independent States (CEE/CIS): 108 million. ■ **SHELTER, WATER AND HEALTH CARE** ■ 640 million children in developing countries live without adequate shelter: one in three. ■ 400 million children have no access to safe water: one in five. ■ 270 million children have no access to health services: one in seven. ■ **EDUCATION, COMMUNICATION AND INFORMATION** ■ More than 121 million primary-school-age children are out of school; the majority of them are girls. ■ Number of telephones per 100 people in Sweden, 162; in Norway, 158; in South Asia, 4. ■ Number of Internet users per 100 people in Iceland, 65; in Liechtenstein, 58; in Sweden, 57; in the Republic of Korea and the United States, 55; in Canada, Denmark, Finland and the Netherlands, 51; and in South Asia, 2. ■ **SURVIVAL** ■ Total number of children younger than five living in France, Germany, Greece and Italy: 10.6 million ■ Total number of children worldwide who died in 2003 before they were five: 10.6 million. Most of these deaths could have been prevented. ■ Daily toll of children in the world who die before their fifth birthday: 29,158 ■ The number who die each day because they lack access to safe drinking water and adequate sanitation: 3,900; those who die each year: 1.4 million. ■ Ranking of the 10 countries where children are most likely to die before their fifth birthday, in descending order: Sierra Leone, Niger, Angola, Afghanistan, Liberia, Somalia, Mali, Burkina Faso, Democratic Republic of the Congo, Guinea-Bissau. ■ **IMMUNIZATION** ■ Percentage of infants who receive DPT3 vaccine: 76. ■ Number of infants vaccinated each year: 100 million. ■ Number of child lives that could be saved each year through routine immunization: 2.2 million. ■ **MALNUTRITION** ■ Percentage of infants with low birthweight: in Yemen, 32; Sudan, 31; Bangladesh, 30; India, 30; and Sweden, 4. ■ Percentage of children under five who are moderately and severely underweight: in Sub-Saharan Africa, 29; Middle East and North Africa, 14; South Asia, 46; East Asia and Pacific, 17; Latin America and Caribbean, 7; and in CEE/CIS, 6. ■ Percentage of children under five who are severely underweight: in Sub-Saharan Africa, 8; Middle East and North Africa, 2; South Asia, 16; East Asia and Pacific, 3; Latin America and Caribbean, 1; and CEE/CIS, 1. ■ **LIFE EXPECTANCY** ■ Life expectancy for a child born in Japan in 2003: 82 years; number of Japanese children who died before they were five years old: 5,000. ■ Life expectancy for a child born in Zambia in 2003: 33 years; number of Zambian children who died before they were five years old: 82,000. ■ Worldwide life expectancy has increased by seven years in the past 30 years: from 56 to 63. ■ Increase in life expectancy in Middle East and North Africa since 1970: 16 years. ■ Number of countries in Africa where life expectancy has declined since 1970: 18. ■ **HIV/AIDS** ■ Percentage of 15- to 49-year-olds in Botswana who are HIV-positive: 37.3; in Swaziland, 38.8. ■ Number of children who have been orphaned by HIV/AIDS worldwide: 15 million; the number of children living in Germany: 15.2 million; the number in the United Kingdom: 13.2 million.

THE FACTS

Resource:
(1) The State of the World's Children 2005, http://www.unicef.org/sowc05/english/sowc05.pdf. (accessed July 2005).

Objectives

- Participants should be able to feel an empathy with other children who live/work in different places in the world
- Participants should be able to think about the physical/emotional needs of a child
- Participants should be able to be aware of the reasons of having international laws/institutions for saving children

Grade Level
5-7

Duration
Preparation: 20 minutes
Activity : 50 minutes

Subjects
Social studies, language

Key words
Play, food, education, daily work, Children Rights, parents, government

Material
Pictures, a craft paper, board marker, color pencil, bant, scissors, waste materials such as newspaper, plastic boxes

Procedure
Four pieces of A3 papers whose size is A3 will be hung on the wall that everyone can see. And write Group 1, Group 2, Group 3, Group 4 at the top of the paper each. For example;

GROUP 1

Divide four groups. Deliver each group a couple of pictures. The themes in the pictures are following;
Group 1: Children and play
Group 2: Children and being safe
Group 3: Children and education
Group 4: Children and health

Activity
The leader: "Please examine the pictures. According what the pictures are inspired and thought to you, please live and share with us".

After the each play;
The leader: "What could be the name of the the play?Write down all the possible names that participants said under the each group paper on the wall. Invite them to hang the pictures on the wall"

Guiding Questions and Discussion

- Do you think is there a theme for each of the pictures?
- What did you observe in the pictures? Emotionally and physically? Why?
- Where do you think the pictures were taken? Why?
- What does a child need to live?
- Think about your parent's chilhood. Compare two.
- Is there any relation between the ex activity and this one? Explain.
- How can children' problems be solved as an individual/national level?
- If a child is in trouble, who care about him/her?
- Is there a law, institiution thats take care of children?
- What are the jobs related with children?

Guiding Questions and Discussion

- What do you think about the development? Do you think that Turkey/the world is developed more in the least 20 years?
- Do you think does a child have similar problems in another country? Why?
- What are the advantages/disadvantages of a "developed country" ?

Remarks
Do not mention about the relations in pictures or between the others as a leader

PART 11.4

FROM THE EX-MEETING
Remind:

8.A. There will be a cartoon competition that everybody can participate in the Congress. It will be ended at the end of the last day of the Congress. Please bring your own cartoons about population, we would like to put the three winner in the documentation of the Congress

The leader can find it Module 8, Page 3

Objectives

- Participants should be able to create their own cartoon about
- Participants should be able to explore the relation between art, environmental and social problems

Grade Level
4-7

Duration
Activity 25 minutes

Subjects
Language, arts
Key words
Cartoon

Material
A copy of Cartoons-participant copy sheet on A3 paper, cartoons that participants bring, blue-tucks, bands, post it paper in different colors, Cartoons-leader copy sheet (orijinal form of the cartoons if needed)
Procedure
Activity
The leader: "Please hang your cartoons on the wall for the exhibition.
Besides that, there are one sheet consists of four cartoons hanging on the wall. Their caricaturists are looking for a suitable name/slogan for them. Please write you ideas/name/slogan on them by using pros it papers".

Guiding Questions and Discussion

- What was the most difficult moments you have when you are drawing the cartoon?
- Which skills do you think one person need to be good at drawing cartoon?

The leader: "I would like to thank for your great contributions for the Congress.
International recognition of world population patterns and trends, population growth dynamics, "new understanding of population and developmen" the issues studied so far in this module - world population patterns and trends, population growth dynamics and sustainable development - has led to a 'new understanding' of population and developmen"t.
I would like to end my sentence with a citation

"We stand at a critical moment in Earth's history, a time when humanity must choose its future. As the world becomes increasingly interdependent and fragile, the future at once

holds great peril and great promise. To move forward we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with a common destiny. We must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generations. “

Closure

If todays activities would be a sweet, how would you describe it?

Evaluation

a. Participants write paragraph or draw a picture about what they have learned. Hang them onthe wall like an exhibition.

b. Keep teacher observation about their participation to the group work and discussions.

Resources

(1) Unicef Turkey Home Page, http://www.unicef.org/turkey/hm/hm1.html. (accessed July 2005).

(2) Childhood Under Threat, http://www.unicef.org/sowc05/english/sowc05.pdf. (accessed July 2005).

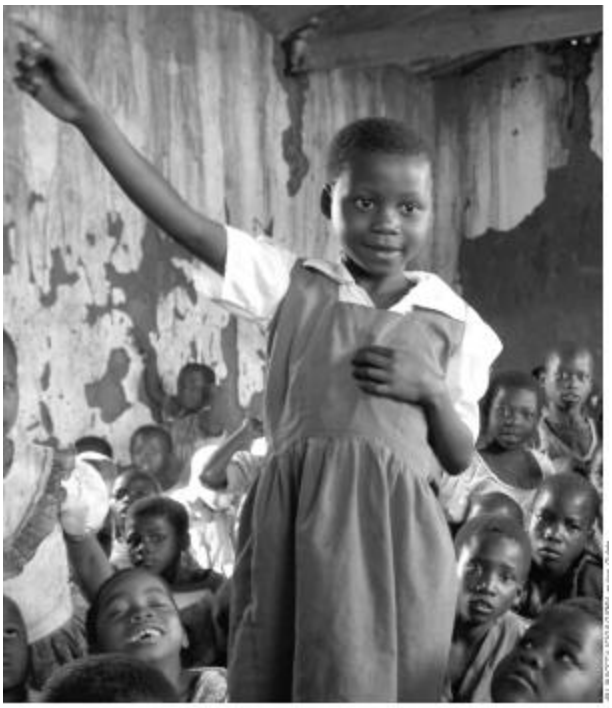
(3) The State of the World’s Children 2005.
http://www.unicef.org/sowc05/english/sowc05.pdf. (accessed July 2005).

11.3. Participant copy

A young boy stands amid the rubble of what used to be the Safe Play Area in Rafah, Occupied Palestinian Territory.

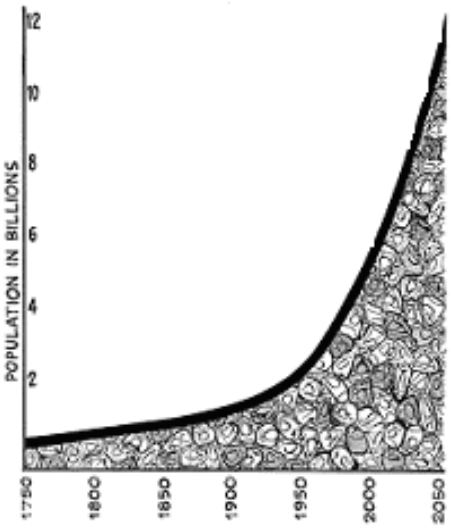
11.3. Participant copy

The situation in Iraq remains extremely volatile. More than 100 children were reported killed in Fallujah and Basra as a result of the clashes between Iraqis and coalition forces – some of them on their way to school. Still, in June 2004 students flocked to schools throughout the country to take their year-end exams. At the Bilad Al-Arab High School for Girls in Baghdad, there was no electricity and everyone was suffering from the intense heat. Khalid Salman was waiting outside the school building with his wife, while their daughter, Yusra, took the test.



In a crowded class at Chadza Primary School in LiLongwe, Malawi, a young girl volunteers an answer during an English lesson. The school is involved in the African child-to-child survey, which works to boost the attendance of out-of-school children.

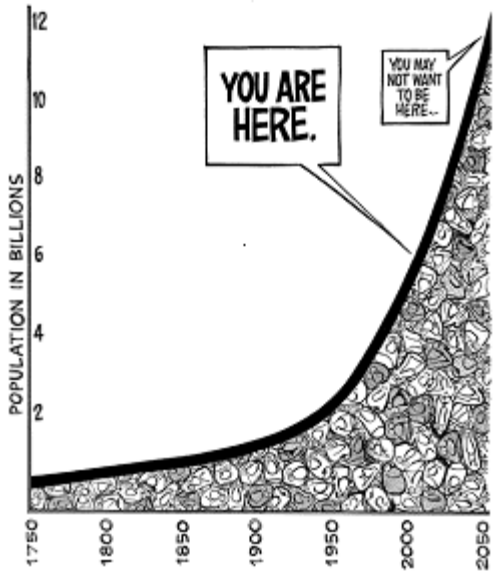
CARTOONS


POPULATION IN BILLIONS
12
10
8
6
4
2
1750
1800
1850
1900
1950
2000
2050


RESOURCES


THE CHRISTIAN SCIENCE MONITOR

CARTOONS



Now divide.

Be fruitful and multiply...

Agoraphobic activists do what they can to help save the rain forest.

11.4. Leader copy

Resource 1: http://www.cagle.com/news/NationalPopulation/winners.asp
Resource 2: http://www.cartoonstock.com/

Our Dreams

Aim(s)

- Participants should be able to dream for their future
- Participants should be able to realise that different people has different dreams

PART 12.1 (Warming)
Objectives

- Participants should be able to use their own body as a musical instrument
- Participants should be able to move in harmony with the whole group

Grade Level	**Duration**	
4-7	*Activity*	20 minutes

Subjects
Music

Key words
Music, sound, body

Procedure
Make a circle with standing. Divide the group of 4 each.

Activity
The Leader: "Every group will determine a sound for itself and continue to repeat the same sound until I say "stop"".
Give 1-2 minutes to each group to determine their sounds.
The Leader: "We will listen to each group's sound one by one for 1-2 minutes. Each group can speed up/down their own sound. After listening to each group, this time listen to groups two by two. Each group does its own sound at the same time. Groups perform two by two. At the end, listen to the whole groups' sounds at the same time. The volume speeds up slowly as the whole group members wish".
The Leader: "Now, we are moving another activity. I will begin to make a voice/movement using any part of my body i.e. your body will be your instrument e.g. saying "A, A, A" sing my voice or putting my feet twice to the floor . Everybody repeats the same movement/sound without stopping i.e.continuing. After a while, as the group members wish to join, he/she will add a movement/sound after the last sound. The group will continue to do whole movements/ sounds from the beginning. Another member will add one more thing. Then everybody will repeat the same from the beginning. We will make our own music".
Repeat the sounds until the group harmony is kept and the music of the group are composed. After 4-5 movements /sounds, it is the time for the group harmony in which all the movements /sounds will be repeated without stopping until everybody follows and joins. Listen to the sound that the group makes to decide whether it is harmonic or not.

Remark

- The important point is that nobody will stop while passing through the voice /movements

PART 12.2
Objectives

- Participants should be able to describe their own dream about where they want to live
- Participants should be able to make their own models/paints by using their creativity

Grade Level
6-7

Duration
Preparation: 25 minutes
Activity : 20 minutes

Subjects
Art, language

Key words
Dream

Material
Waste materials such as short/long paper roles, plastic bottles, beads, toothpicks, colourful cardboards, papers, colourful of strings, bands, colourful pencils/ boardmarkers, papers for painting

Procedure
Bring all materials

Activity
The leader (as the genie of Alaaddin bewitched lamb): " I am the genie of Alaaddin bewitched lamb. Please tell me your dream. Where do you want to live as well as a person who lives in this place? Write a small description about the model briefly by giving a name including the person".

Give them the whole materials. Encourage them to use different techniques e.g. draw the picture, make their own models to describe their dream.
After completing the models/paints,

The leader (as the genie of Alaaddin bewitched lamb): "Make a small exhibition with the whole dreams".
After preparation of the exhibition, observe the models and speak with the owner of the model as the genie of Alaaddin bewitched lamb.After the activity is completed write down the names of the models on a sheet of paper that will be used in Part 12.4.

Remarks

- Participants may describe the person with different features i.e. physically, emotionally. Leave them free.

PART 12.3
Objectives

- Participants should be able to understand that the words in a song is not chosen ordinarily

Grade Level
6-7

Duration
Preparation: 10 minutes
Activity : 10 minutes

Subjects
Music, language

Key words
Values, responsibility, alienation

Material
CD of Bulent Ortaçgil, CD player, craft paper/board, blue tuck for craft paper, paper

Procedure
Put the CD

Activity
The leader (as the genie of Alaaddin bewitched lamb): "I received a CD from someone. She explained me that "my dream is inside in the music. Please help me to understand this dream. I need yor help because I do not want to make any unwilling dream real".

Give enough time to participants for listening to the music two times. Ask them to tell the words that inspire/come out them in music. Write down their ideas on craft paper which hangs on wall or on board as well as writing on a sheet of paper

Remarks

- Keep the board/craft paper with their words about the music in CD for the next activities

PART 12.4
Objectives

- Participants should be able to make a story with the model developed by someone else and a word
- Participants should be able to realise the other's dreams that is similar to themselves or not

Grade Level
6-7

Duration
Preparation: 15 minutes
Activity : 35 minutes

Subjects
Language

Material
Names of the models written in 12.2, the words appeared in 12.3, two bags

Procedure
Put the names of the models and the words appeared in 12.3 in two different bags**.** Make group of 4-5. Each group will pick up a name from each bag.

Activity
The leader (as the genie of Alaaddin bewitched lamb): "I like to verify the dreams. Please prepare a story by using these names and the person described in the model".

Closure
Which part did you like most?
Which part did you like least?
Why do people dream?
Are the dreams similar? Why?

Evaluation
a. Test is implemented again as a post test. It is compared with the pre-test by the participants and give feedback.
b. Discuss on their opinions about the whole module, the process and listen their suggestions.