

**Title:** Infecto contagious disorders caused by emerging pathogens have become in a worldwide challenge for the pharmaceutical companies.

**Principal Instructor:** Dr Jairo Garcia.

Lake Worth High School – Medical Science Academy

**Abstract:**

Infecto contagious disorders caused by emerging pathogens are a universal concern of growing alarm. **“New, reemerging or drug-resistant infections whose incidence in humans has increased within the past two decades or whose incidence threatens to increase in their near future” (Institute of Medicine 1992).** It should be attended by the current society; therefore, this topic must be one of the first issues to accommodate in the life science curriculum on the Florida Department of Education. In order to collaborate with the public health, the high school science teachers should work closely to the universities and biomedical science researches in Florida based on the following facts: first of all, the current biotechnology techniques and skills are an integral part of the science of emerging pathogens; then, the pupils must learn the diverse method of diagnosis in the biomedical arena. Secondly, the latest on emerging pathogens news, environmental issues concerning their Pathophysiology and treatment have been a challenge for the Health Institutions, pharmaceutical companies, community and the government budget. Finally, allowing the students to achieve a truly approach to the knowledge of Infecto contagious disorders caused by emerging pathogens through the experience of developing biomedical project based researches with the support of the UF-CPET/ICORE scientific staff and the English teacher (honors). This proposal illustrates a section that will be integrated into a component on Molecular biology, biochemistry, genetics and community medicine in the Anatomy & Patho-physiology and Health Science I honors Pre-Med track curriculum in the medical science academy. This unit will embrace debates of these types of illnesses and their transmission (including vectors), predisposing causes, etiology (emerging pathogens), diagnosis, prevention, prognosis and the effort vs. challenge made for pharmaceutical companies to fight these pathogens (treatment-prevention). The Biotechnology techniques will also be emphasized during this module with students’ completion of an Enzyme-Linked Immunosorbent Assay (ELISA) simulation. The opportunity to practice a PCR and gel electrophoresis lab in a field trip to UF/FAU campus will be another experience in the biomedical science ground. In addition, , the students will work in small learning teams to select an emerging pathogen, and present a project based research to the classmates and share with teachers, administrators and others schools in the County. As a method of autoreflexion and motivation, the pupils will emphasize the potential role of emerging pathogens and mutagens as a global issue of alarm such as Bioterrorism; therefore, the students will perform a brochure which would help the community to address this worldwide threat.

**Mission Statement:**

Lake Worth High School and the Pre-med Science Academy challenges its students and faculty to think autonomously and critically, build up permanent learning habits, obtain career skills, approach the gap between high school and universities, and embrace diversity life experiences in the Biomedical science arena; therefore, the new generation become productive citizen in the global community.

**Description of Teaching Unit:** Prior to the Molecular Genetics unit, the students must have completed units on the cell structure division and function, chemistry of Life, Heredity, mutations and Medical terminology. *The Molecular biology, biochemistry and genetics unit* lead the students to a better understanding of emerging pathogens, the human body and its impact in a global society.

**Objectives:** students will be able to:

1. Analyze the Human Genome and disorders influence SC.912.L.14.In.d:
2. Identify ways to prevent infection from emerging pathogens. SC.912.L.14.Su.c:
3. Explain the significance of genetic factors, environmental factors, and pathogenic agents from the perspectives of both individual and public health.
4. Describe viral structure and their replication process (Lysogenic-Lytic cycles)
5. Compare and contrast diverse emerging pathogens such as Fungi, protozoa, parasites, viruses and bacteria
6. Comprehend the ecological relation among the diverse species in the environment and its significance over the emerging pathogens disorders.
7. Practice diverse diagnosis methods in the biotechnology arena
8. Discuss and improve the critical thinking concerning global issues related to emerging pathogens, biotechnology, and bioterrorism supported by a project based research.
9. Analyze a non fiction book regarding emerging pathogen (Yellow fever).  
Fever 1793, author Laurie Halse Anderson
10. Participate in the Junior Science, Engineering & humanities symposium (JSEHS) at UF-CPET 2010 and they will be awarded scholarship and represent Florida at the National Symposium to compete for a trip to the London Youth Science Fortnight.

**The emerging pathogens and biotechnology module will be taught during fifteen classes periods.**

The following is a proposed planning to achieve this goal:

- First day and second day Review: a) Mutagens and genetic code b) Viruses, bacteria, fungi, protozoa and the immune system; Pre-assesment: Test. Activity: Immunoarray simulation test – Exerciseà Database NCBI exercises. Assignment Power Point emerging pathogen and disorders-must follow rubrics
- Third day Importance of vectors (Humans, animal, birds and arthropods) as predisposing cause of disorders caused by emerging pathogens. Activity: Debate Pets control and environment protection avoiding pesticides. New methods of infection prevention
- Four day: Scientific method and project basic research in biomedical science. Explain step by step and rubrics. Advisor and guidance: Medical and English teacher and the principal.  
Activity: Share an example with the students. Norwalk Virus and food process control given by Dr Garcia
- Fifth and sixth day: Overview: The students share a power point presentation concerning emerging pathogens disorders (10 min each).The students will be chosen randomly.
- Seventh day: Lab: Elisa simulation Kit Viruses. (Bio-Rad Kit 166-2400EDU) – 8 groups of students

- Eighth day: Field trip to UF/FAU. PCR and electrophoresis gel lab. The students will be able to talk with the scientist and share experience regarding the Project based research.
- Ninth thru thirteenth day : Project based research presentation include brochure (Bioterrorism- prevention methods)
- Fourteenth day: Sharing section: Administrators (Principal) and other school students (Dr. Rojas/ western Pines Middle School, the best projects based research practices.
- Fifteenth day: Reading section evaluation Fever 1793, author Laurie Halse Anderson. Post assessment: Test

### **Expertise and Contributions of the Principal Instructor:**

The principal instructor was the sole developer of this action proposal. All activities presented in this action proposal will be performed by the principal instructor with an Advanced Placement English teacher

Lake Worth High School/Medical Science Academy/Pre-Med program.

The principal instructor is uniquely qualified to perform the activities presented in this action proposal. The principal instructor holds a MD, Internal Medicine specialist, and M. Ed.in Science Education (Colombia); In addition to these undergraduate and graduate studies, the principal instructor has completed three months of practicing in Scripps Bioresearch Institute (2005), Participate in the Mini-Medical Workshop-CPET-UF (2007, 2008); in addition, two weeks of training concerning emerging pathogens as part of the ICORE program in June 2009. The primary trainer has completed more than seventeen years as a professor in the Medical School (Colombia/University) and high school classroom teaching (Palm Beach County, FI USA)

Professional Standards: Professional teaching certification in Biology-Anatomy & Physiology / Medical Vocational professional certification.

Teaching schedule for the upcoming school year 09-10 will include Anatomy & Patho-Physiology Honors Pre-Med, Health Sciences I Honors Pre-Med

### **Literature Cited:**

**CDC. accessed September 29, 2005.**

**<http://www.cdc.gov/ncidod/dvrd/revb/gastro/norovirus-qa.htm>**

**Directors of Health Promotion and Education. Accessed September 29,**

**Büchen-Osmond, C. (Ed), (2003).**

**Microbiology Department, Mount Sinai Hospital. Accessed October 2, 2005**

**<http://microbiology.mtsinai.on.ca/bug/>**

**Frederick Southwick, M.D. Professor of Medicine and Chief of Infectious Diseases  
University of Florida College of Medicine**

### **Materials**

Bio-Rad Laboratories, Inc. (2008). Bio-Rad Laboratories. Retrieved June 24 2009 from <http://222.bio-rad.com/>.

Budget and Budget Justification:

Bio-Rad ELISA Immuno Explorer Kit (Catalog # 166-2400EDU) \$150.00

**166-2400EDU**

Immunology classroom study kit, includes antigen, antibodies, HRP enzyme substrate, 10x PBS, 10% Tween, pipets, test tubes, bottles/caps, microplates, curriculum, for 48 students; education use only

Bio-Rad 50 µl Fixed-Volume Micropipette, blue (Catalog # 166-0515EDU) \$31.00 × 8

Bio-Rad BR-35 Pipette Tips (Catalog # 223-9035EDU) \$31.00

*TOTAL \$438, 00*

The Bio-Rad ELISA Immuno Explorer Kit is an integral part of the unit on Molecular Genetics. This laboratory activity will provide the students with a vital hands-on experience using this technique. The micropipettes and micropipette tips are required to complete the Immuno Explorer activity as presented in the kit.

**Field Trip**: UF/FAU

Jairo Garcia MD, Final Action Proposal 2008 ICORE

TERM: 1 2 3 4  
 PERIOD: 1 2 3 4 5 6 7

**LESSON PLANS**  
**MEDICAL DEPARTMENT**

**TEACHER'S NAME:** JAIRO GARCIA MD

**SUBJECT:** Health Sciences I Honors /Anatomy & pathophysiology

<p><b>Dates</b> First week</p>	<p><b>10/05/09 Thru 10/09/09 ACADEMIC STANDARDS LA 1.6.3 S F1.2</b> writes fluently organizes information locates, gathers and analyzes information creates graphs and charts understand that numbers can be represented in a variety forms understand inverse relationship</p>
<p><b>Benchmarks &amp; SSS--Cross Curricular Benchmarks Standard</b></p>	<p><b>Benchmark Number: SC.912.L.17.6</b> <u>Benchmark Description:</u> Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.                  Standard: Interdependence -</p> <p>A. The distribution and abundance of organisms is determined by the interactions between organisms, and between organisms and the non-living environment.</p> <p>B. Energy and nutrients move within and between biotic and abiotic components of ecosystems via physical, chemical and biological processes.</p> <p>C. Human activities and natural events can have profound effects on populations, biodiversity and ecosystem processes.</p>

<b>Objectives</b>	<p><b>Students will be able to :</b></p> <ol style="list-style-type: none"> <li>Analyze the Human Genome and disorders influence</li> <li>Identify ways to prevent infection from emerging pathogens.</li> <li>Explain the significance of genetic factors, environmental factors, and pathogenic agents from the perspectives of both individual and public health.</li> <li>Describe viral structure and their replication process (Lysogenic-Lytic cycles)</li> <li>Comprehend the ecological relation among the diverse species in the environment and its significance over the emerging pathogens disorders.</li> <li>Understand the importance of the diagnosis methods in the biotechnology arena concerning emerging pathogens.</li> </ol> <p>Independent</p> <p>» SC.912.L.14.In.d: Describe common human health issues. Students will be able to distinguish among unicellular and eukaryote cell</p> <p>Supported</p> <p>» SC.912.L.14.Su.c: Recognize common human health issues. Students will be able to analyze the Human Genome and disorders influence</p> <p>Participatory</p> <p>» SC.912.L.14.Pa.c: Identify ways to prevent infection from bacteria and viruses, such as hand washing and first aid.</p>
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<b>Activities</b>	Teacher lecture, note-taking, discussion, verbal questioning, beginning/ending review, written assignment, vocabulary, presentation, cooperative learning group, lesson development, report, performance, FCAT activity
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<p><b>Word of the Week</b>  <b>MEDICAL</b>                  bacteria, lytic cycle,                  Lysogenic cycle</p>	<table border="1"> <thead> <tr> <th>DATE</th> <th>Monday</th> <th>Tuesday</th> <th>Wednesday</th> <th>Thursday</th> <th>Friday</th> </tr> </thead> <tbody> <tr> <td><b>Topic</b></td> <td>Human Genome and DNA susceptibility to undergoes mutation</td> <td>Origen of disorders- Mutation during Meiosis</td> <td>Virus Norwalk Virus/H1N1 Virus</td> <td>Read article protozoa disorders Leishmaniasis</td> <td>Fungi kingdom Disorders Skin disorders</td> </tr> <tr> <td><b>Goal</b></td> <td>100% master the DNA-RNA structure and functions</td> <td>Mechanism of diseases- Environmental factors</td> <td>Virus structure and functions.</td> <td>Master protozoa cycle</td> <td>Students master 100% speech skills</td> </tr> <tr> <td><b>Motivation</b></td> <td>Diverse method of diagnosis to detect human genome alterations</td> <td>Transmissible disorders- Emerging Pathogens</td> <td>Viral Physio-pathogenic incidence</td> <td>Protozoa disorders Malaria</td> <td>Power point ppt Athlete's Foot</td> </tr> <tr> <td><b>Teaching Tips</b></td> <td>PCR Gel electrophoresis (General concepts) Immunoarray simulation</td> <td>Diseases transmission and vectors –Sepsis and Aseptic method</td> <td>Lytic and Lysogenic cycle Viral cycles and pathogenic effect</td> <td>Diverse protozoa stages and interaction with the human body</td> <td>Following the Origen of disorders steps</td> </tr> <tr> <td><b>FCAT Clues</b></td> <td>Inferences</td> <td>Cause effect</td> <td>Cause effect</td> <td>Questioning bloom taxonomy</td> <td>Cause effect</td> </tr> <tr> <td><b>Evaluation</b></td> <td>Round table</td> <td>Worksheet –diverse</td> <td>Interactive</td> <td>Worksheet</td> <td>Pop quiz</td> </tr> </tbody> </table>	DATE	Monday	Tuesday	Wednesday	Thursday	Friday	<b>Topic</b>	Human Genome and DNA susceptibility to undergoes mutation	Origen of disorders- Mutation during Meiosis	Virus Norwalk Virus/H1N1 Virus	Read article protozoa disorders Leishmaniasis	Fungi kingdom Disorders Skin disorders	<b>Goal</b>	100% master the DNA-RNA structure and functions	Mechanism of diseases- Environmental factors	Virus structure and functions.	Master protozoa cycle	Students master 100% speech skills	<b>Motivation</b>	Diverse method of diagnosis to detect human genome alterations	Transmissible disorders- Emerging Pathogens	Viral Physio-pathogenic incidence	Protozoa disorders Malaria	Power point ppt Athlete's Foot	<b>Teaching Tips</b>	PCR Gel electrophoresis (General concepts) Immunoarray simulation	Diseases transmission and vectors –Sepsis and Aseptic method	Lytic and Lysogenic cycle Viral cycles and pathogenic effect	Diverse protozoa stages and interaction with the human body	Following the Origen of disorders steps	<b>FCAT Clues</b>	Inferences	Cause effect	Cause effect	Questioning bloom taxonomy	Cause effect	<b>Evaluation</b>	Round table	Worksheet –diverse	Interactive	Worksheet	Pop quiz
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	<b>Method</b>	discussion	Transmissible disorders (emerging pathogens)	questioning Bloom taxonomy	questioning	
	<p><u>Objective</u>                      Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.  <u>Bacteria, Viruses, Fungi, Protozoa, Parasites</u></p>					
<b>Methods of Teaching</b> ESE/ESOL Strategies	Read-aloud, interviews, discussion, rubrics, portfolios, modeling, visuals, realia, alternative assessment, cooperative group, natural approach, modification of text, Recall, reading/writing strategies, computer use & technology					
<b>Materials</b>	Text, board, computer, LCD Projector, Scholastic DVD, Power point , notebooks, journal, worksheet, literature, portfolio, workbook, FCAT materials, other					
<b>Evaluation/ Assessment</b>	Teacher observation, verbal questioning, class work, homework, test, written assignment, project, FCAT , notebook check, skill performance					

TERM: 1 2 3 4  
 PERIOD: 1 2 3 4 5 6 7

**LESSON PLANS**  
**MEDICAL DEPARTMENT**

**TEACHER'S NAME:** JAIRO GARCIA MD

**SUBJECT:** Health Sciences I Honors /Anatomy & pathophysiology

<p><b>Dates</b> Second week</p>	<p><b>12/10/09 Thru 15/10/09 ACADEMIC STANDARDS LA 1.6.3 S F1.2</b> writes fluently organizes information locates, gathers and analyzes information creates graphs and charts understand that numbers can be represented in a variety forms understand inverse relationship</p>
<p><b>Benchmarks &amp; SSS--Cross Curricular Benchmarks Standard</b></p>	<p><b>Benchmark Number: SC.912.L.17.6</b> <u>Benchmark Description:</u> Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.                  Standard: Interdependence -</p> <p>A. The distribution and abundance of organisms is determined by the interactions between organisms, and between organisms and the non-living environment.</p> <p>B. Energy and nutrients move within and between biotic and abiotic components of ecosystems via physical, chemical and biological processes.</p> <p>C. Human activities and natural events can have profound effects on populations, biodiversity and ecosystem processes.</p>
<p><b>Objectives</b></p>	<p><b>Students will be able to :</b></p> <ol style="list-style-type: none"> <li>1. Analyze the Human Genome and disorders influence</li> <li>2. Identify ways to prevent infection from emerging pathogens.</li> <li>3. Explain the significance of genetic factors, environmental factors, and pathogenic agents from the perspectives of both individual and public health.</li> <li>4. Compare and contrast diverse emerging pathogens such as Fungi, protozoa, parasites, viruses and bacteria</li> <li>5. Comprehend the ecological relation among the diverse species in the environment and its significance over the emerging pathogens disorders.</li> <li>6. Discuss and improve the critical thinking concerning global issues related to emerging pathogens, biotechnology, and bioterrorism supported by a project based research.</li> <li>7. Analyze a nonfiction book regarding emerging pathogen (Yellow fever).                      Fever 1793, author Laurie Halse Anderson</li> <li>8. Analyze the ELISA method antigen antibody reaction.</li> </ol> <p>Independent</p> <p>» SC.912.L.14.In.d: Describe common human health issues. Students will be able to distinguish among unicellular and eukaryote cell</p> <p>Supported</p> <p>» SC.912.L.14.Su.c: Recognize common human health issues. Students will be able to analyze the Human Genome and disorders influence by diverse microorganisms</p> <p>Participatory</p> <p>» SC.912.L.14.Pa.c: Identify ways to prevent infection from bacteria and viruses, such as hand washing and first aid. and environmental issues</p>



<b>Activities</b>	Teacher lecture, note-taking, discussion, verbal questioning, beginning/ending review, written assignment, vocabulary, presentation, cooperative learning group, lesson development, report, performance, FCAT activity					
<b>Word of the Week</b> <b>MEDICAL</b> Meiosis, mitosis, bacteria, lytic cycle, Lysogenic cycle_____	<b>DATE</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
	<b>Topic</b>	Bacteria-	Interaction Virus Bacteria	Bacteria-Laboratory	Lab: Elisa simulation Kit Viruses. (Bio-Rad Kit 166-2400EDU) – 8 groups of students	<b>TEACHER</b>
	<b>Goal</b>	Recognize diversity of bacteria and its consequences in the human body.	Students master 100% the importance of interaction virus bacteria and their pathogenic effect in the Human body.	Students recognize 100% diversity of bacteria and its consequences in the human body.	100% Students practice and get skills in the ELISA TEST	<b>WORK</b>
	<b>Motivation</b>	Human body and bacteria living together	HIV and bacteria disorders	Human body and bacteria living together	HIV diagnosis and prevalence worldwide	<b>DAY</b>
	<b>Teaching Tips</b>	Parasites bacteria and the human body E.Colli	Immunity and viral/bacteria disorders	Parasites bacteria and the human body	Scientific process in Diagnosis	
	<b>FCAT Clues</b>	Inferences	Inferences	Inferences	Cause effect	
	<b>Evaluation Method</b>	Bloom taxonomy level III question— Interactive participation HW Bacteria disorders	Pop Quiz Paper pencil evaluation	HW Bacteria disorders Bacteria lab Microscope identification Worksheet	Evaluate the results of ELISA method.	
<b>Methods of Teaching</b> ESE/ESOL Strategies	Read-aloud, interviews, discussion, rubrics, portfolios, modeling, visuals, realia, alternative assessment, cooperative group, natural approach, modification of text, Recall, reading/writing strategies, computer use & technology					
<b>Materials</b>	Text, board, computer, LCD Projector, Scholastic DVD, Power point , notebooks, journal, worksheet, literature, portfolio, workbook, FCAT materials, other					
<b>Evaluation/ Assessment</b>	Teacher observation, verbal questioning, class work, homework, test, written assignment, project, FCAT, notebook check, skill performance					

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 PERIOD: 1 2 3 4 5 6 7

**LESSON PLANS**  
**MEDICAL DEPARTMENT**

**TEACHER'S NAME:** JAIRO GARCIA MD

**SUBJECT:** Health Sciences I Honors/Anatomy & pathophysiology

<p><b>Dates</b> Third week</p>	<p><b>19/10/09 Thru 23/10/09 ACADEMIC STANDARDS LA 1.6.3 S F1.2</b> writes fluently organizes information locates, gathers and analyzes information creates graphs and charts understand that numbers can be represented in a variety forms understand inverse relationship</p>
<p><b>Benchmarks &amp; SSS--Cross Curricular Benchmarks Standard</b></p>	<p><b>Benchmark Number: SC.912.L.14.11</b> <u>Benchmark Description:</u> Classify and state the defining characteristics of epithelial tissue,                  Standard: Organization and Development of Living Organisms -                  A. Cells have characteristic structures and functions that make them distinctive.                  B. Processes in a cell can be classified broadly as growth, maintenance, reproduction, and homeostasis.                  C. Life can be organized in a functional and structural hierarchy ranging from cells to the biosphere.                  D. Most multicellular organisms are composed of organ systems whose structures reflect their particular function.</p>

<b>Objectives</b>	<p><b>Students will be able to :</b></p> <ol style="list-style-type: none"> <li>1. Analyze the Human Genome and disorders influence</li> <li>2. Identify ways to prevent infection from emerging pathogens.</li> <li>3. Explain the significance of genetic factors, environmental factors, and pathogenic agents from the perspectives of both individual and public health.</li> <li>4. Compare and contrast diverse emerging pathogens such as Fungi, protozoa, parasites, viruses and bacteria</li> <li>5. Comprehend the ecological relation among the diverse species in the environment and its significance over the emerging pathogens disorders.</li> <li>6. Discuss and improve the critical thinking concerning global issues related to emerging pathogens, biotechnology, and bioterrorism supported by a project based research.</li> <li>7. Analyze a nonfiction book regarding emerging pathogen (Yellow fever). Fever 1793, author Laurie Halse Anderson</li> <li>8. Analyze the ELISA method antigen antibody reaction.</li> <li>9. Apply the scientific method and practice skills to develop a project based research.</li> </ol> <p>Independent</p> <p>» SC.912.L.14.In.d: Describe common human health issues. Students will be able to distinguish among unicellular and eukaryote cell</p> <p>Supported</p> <p>» SC.912.L.14.Su.c: Recognize common human health issues. Students will be able to analyze the Human Genome and disorders influence by diverse microorganisms</p> <p>Participatory</p> <p>» SC.912.L.14.Pa.c: Identify ways to prevent infection from bacteria and viruses, such as hand washing, first aid and environmental issues.</p>
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<b>Activities</b>	Teacher lecture, note-taking, discussion, verbal questioning, beginning/ending review, written assignment, vocabulary, presentation, cooperative learning group, lesson development, report, performance, FCAT activity
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<b>Word of the Week</b> <b>MEDICAL</b>  Bioterrorism, Project based research, PCR. GEL ELECTROPHORESIS	<b>DATE</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
	<b>Topic</b>	Introduction Bioterrorism and its incidence worldwide	<b>PROJECT</b>			<b>FIELD</b>
	<b>Goal</b>	Students master and Analyze 100% a nonfiction book regarding emerging pathogen (Yellow fever). Fever 1793, author Laurie Halse Anderson		<b>BASED</b>		<b>TRIP</b>
	<b>Motivation</b>	History and importance of emerging pathogens			<b>RESEARCH</b>	<b>FAU/UF CAMPUS</b>
	<b>Teaching</b>	Pathophysiology of				

	<b>Tips</b>	Yellow fever				
	<b>Evaluation Method</b>	Discussion in one week regarding the book "Bioterrorism"				<i>PCR GEL ELECTROPHORESIS</i>
<b>Methods of Teaching</b> ESE/ESOL Strategies	Read-aloud, interviews, discussion, rubrics, portfolios, modeling, visuals, realia, alternative assessment, cooperative group, natural approach, modification of text, Recall, reading/writing strategies, computer use & technology					
<b>Materials</b>	Text, board, computer, LCD Projector, Scholastic DVD, Power point , notebooks, journal, worksheet, literature, portfolio, workbook, FCAT materials, other					
<b>Evaluation/ Assessment</b>	Teacher observation, verbal questioning, class work, homework, test, written assignment, project, FCAT, notebook check, skill performance					