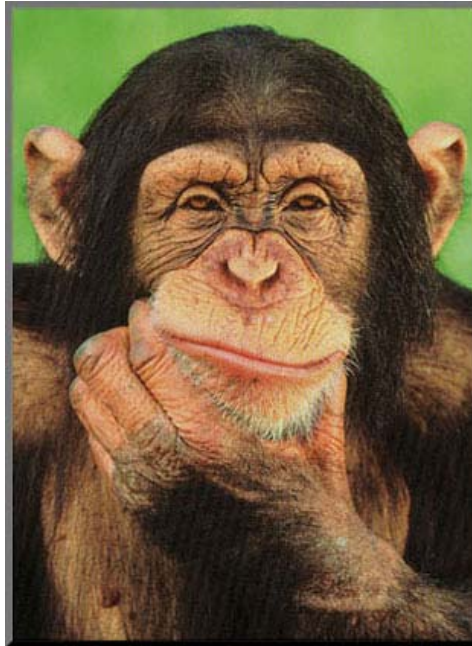


Evolution in Context for Teachers 81.547

University of Massachusetts Lowell
Graduate School of Education
Dr. David Lustick
Spring 2012
Syllabus



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NOTE: There is no textbook for this class, but you will be asked to report on a book from an approved list.

Course Description

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During this course you will have the opportunity to learn about the basic ideas, concepts, and issues pertaining to the theory of evolution as they apply specifically to teachers. Our over-arching question pertains to understanding evolution in a variety of different contexts. How can evolution be used to understand a wide range of issues our society faces? These issues include preservation of biodiversity, scientific research, depletion of valuable ecosystems, pandemics such as avian flu and AIDS, teaching evolution, and the intense debate around the theory of evolution as seen in the judicial system and the society in general. When we are done, you should be able to clearly articulate the basic tenets and principles of evolutionary theory and apply your understanding to improving the learning of your students, parents, and local community in the area of evolution and civic debate.

Conceptual Framework at UMASS Lowell's Graduate School of Education

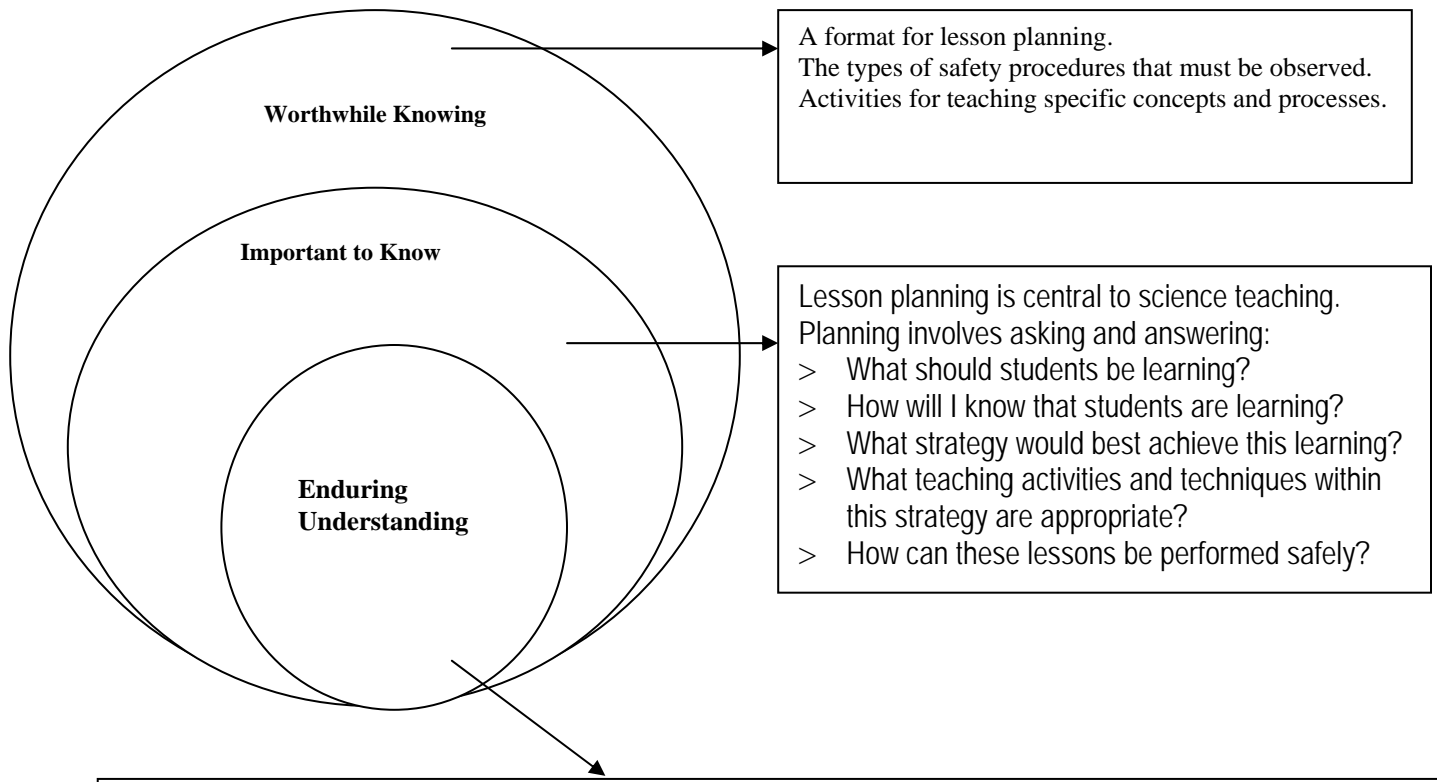
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A theme entitled *Education for Transformation* provides a conceptual framework that unifies programs at the Graduate School of Education. The mission of the University of Massachusetts Lowell is to promote and sustain regional economic development. The Graduate School of Education (GSE) contributes to this mission by developing professionals who help transform the region through leadership roles in education. The GSE's commitment to "Education for Transformation" produces graduates who:

- demonstrate excellent knowledge, judgment, and skills in their professional fields;
- promote equity of educational opportunity for all learners;
- collaborate with other educators, parents, and community representatives to support educational excellence;
- use inquiry and research to address educational challenges

The fundamental tenets of the School are excellence, equity, collaboration and inquiry. Throughout this course, we will be considering the topic of evolution from many different perspectives. For each week's work, there will be information that is worthwhile and important to know. However, our goal is to develop enduring understanding of both science content and the pedagogical content knowledge necessary to teach it effectively to diverse learners. Below is a graphic of how the Graduate School of Education distinguishes between these different ways of knowing.

Different Ways of Knowing



A format for lesson planning.
 The types of safety procedures that must be observed.
 Activities for teaching specific concepts and processes.

Lesson planning is central to science teaching. Planning involves asking and answering:

- > What should students be learning?
- > How will I know that students are learning?
- > What strategy would best achieve this learning?
- > What teaching activities and techniques within this strategy are appropriate?
- > How can these lessons be performed safely?

Teaching requires that teachers possess at least three types of knowledge:

1. CONTENT KNOWLEDGE
2. GENERAL PEDAGOGICAL KNOWLEDGE
3. SUBJECT SPECIFIC PEDAGOGICAL CONTENT KNOWLEDGE (ssPCK)

Content knowledge involves a thorough understanding of the theories, models, concepts and processes of the discipline, as well as understanding of the nature and history of science. General pedagogical knowledge includes the techniques for managing the learning environment.

Subject specific pedagogical content knowledge (ssPCK) - is specialized knowledge about teaching and learning science. It includes knowledge of (i) students' prior conceptions in science, (ii) analogies that assist student learning, (iii) the means of invoking conceptual change, (iv) levels of inquiry and when and how they are appropriately used, (v) safety practices for teaching science, and (vi) means of assessing learning as it is occurring and not just at the end of a unit of work.

Schedule of Class Topics per Week

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This course will address a series of issues central to understanding evolution in a biological, environmental, and humanistic context. From the biological perspective, the course will examine how evolution operates at the individual, species, and community levels using the avian flu as an example. The second part of the course will compare a few major ecosystems under attack from development and how their loss might impact the course of evolution on a local and global level. Included in these ecosystems are the Brazilian rainforest, The Great Barrier Reef, and Old Growth Forests of North America. Finally, the course will delve into the judicial, political, and philosophical controversy around evolution in the United States and try to understand why Darwin's ideas still invoke such fierce emotional commitments from different constituents.

Evolution in Context for Teachers: Outline

Week 01	Jan 25	Evolution in the Context of Science
Week 02	Feb 1	Darwin and the Origin of the Species
Week 03	Feb 8	Misconceptions & Myths in Evolution
Week 04	Feb 15	Rainforests & Diversity
Week 05	Feb 22	Barrier Reefs & Development
Week 06	Feb 29	Old Growth Forests & Preservation
Week 07	March 7	Evolution in the Context of Disease
	March 14	SPRING BREAK
Week 08	March 21	Evolution in the Context of Education
Week 09	March 28	Evolution in the Context of Ideas
Week 10	April 4	Evolution in the Context of Religion
Week 11	April 11	Evolution in the Context of Agriculture
Week 12	April 18	Evolution to the Extreme
Week 13	April 25	Evolution in the Context of the Universe
Week 14	May 2	Human Evolution
Week 16	May 9	Final Exam

Weekly Cycle

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Wednesday	Thursday	Friday	Sat	Sun	Monday	Tuesday
Cycle Begins at 4:00 PM 1) Overview 2) Notes 3) Readings 4) Activities 5) Discussion	Schedule time to read, explore activities, and write.					Cycle Ends at 9:00 AM Release Weekly Summary

Course Grading Structure

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<i>Grade</i>	<i>GPA</i>	<i>Point structure</i>	<i>Comment</i>
A+	4.0	99-100	Work of the highest professional standard demonstrating independent and exemplary performance
A	4.0	96-98	Excellent work demonstrating independent and high quality performance.
A-	3.7	91-95	Very good work, carefully executed, but requiring some areas of improvement.
B+	3.3	86-90	Good work, indicating careful thought and attention to the task, yet requiring several areas of improvement.
B	3.0	80-85	Work of graduate standard, but omissions exist or careful analysis is not in evidence.
Below Graduate Standard			
B-	2.7	76-79	Effort is evident, but work indicates lack of understanding of the demands of the task
C+	2.3	70-75	Poor quality work with little attention to detail and the demands of the task.
C	2.0	65-69	Work of very poor quality, indicating no understanding of the depth of analysis required.
F	0.0	Below 65	Serious neglect or evidence of cheating.

Communication Guidelines

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Chat:

Our chat sessions should be thought of as office hours. Currently, Class chat will be Wednesday evenings. You need to attend at least 2 chats. Chats take place from 7 pm to 8 pm ET. If you are unable to attend two chats, an alternative assignment may be substituted. Currently they are scheduled for Feb 15, March 21, and April 18. During the chat, issues related to readings, current events, weekly activities, assignments, or logistic can be addressed. During chats, you will be able to interact with me and other students in real time.

Chat room guidelines :

Please keep subject matter related to course material.

When you are "talking" to someone in particular, please begin your statement with that person's name, followed by a colon. For example, if you wanted to ask John Smith a question, your statement would look something like: "John: what do you think about..."

Of course, no profanity. If profanity or any other type of harassment takes place, you will immediately be excluded from the chat.

Discussion Board:

Each Learning Module (week) has its own discussion board. Contributions to the discussion board go towards the 30% participation part of your grade. The discussion board is the place for asking and answering questions related to the work of the course. Please post all questions to the discussion board, and I will try to answer them within 24 hours. I will be checking the discussion board regularly throughout the week at around 9:00 am. Please do not email me your questions (unless they are personal), because chances are, if you have a question related to Blackboard and/or the course material, someone else has the same question. Many students can benefit from your question, and subsequent answer. Also, feel free to respond to your peers' questions. No need to wait for me! The discussion group is a great place to interact and exchange ideas over time.

Your postings are expected to be clear, concise and informal. Though proper English is expected, first person is acceptable. IM language is (i.e. ?I C U!?) is strongly discouraged. A posting should be no more than a 3-5 sentence paragraph. In the beginning, I will begin the discussion thread with a question. Within a couple weeks, students will be assigned different weeks to post the initial thread. Discussion entries such as "I like Joe's idea" or "I agree with this comment" will not be acceptable without further clarification and substantiation. Postings to discussion should include not only your ideas but the reasons for your thinking.

Throughout the course I will post a variety of topics to be discussed in the discussion board. I will try to post the question/comment by Wednesday morning, and you will have until the following Tuesday morning by 9 a.m. to respond (unless otherwise noted).

Email:

Direct email messages to me should be reserved for issues related to your grade or items of a personal nature. Discussion and Chat are your main venues for solving problems related to the course. *If all else fails*, email me directly at David.Lustick@uml.edu . If for some reason, a student "goes silent" for a weekly cycle, I will contact the student via email to make sure that all is well.

Presence & Feedback:

As your online professor, I will be monitoring all activity on our discussion board and chat sessions. I will not be responding to every post, but will be providing summative feedback each week. In addition, each week's activities will be accompanied by lecture notes and an outline.

Online Communication FAQ

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On what day will you "release" or open your course materials each week?

Course materials will be released on Wednesday of each week.

What types of discussion board activities will you use each week?

Question of the Week
Examine one aspect of a reading

Provide evaluation of online learning resource (i.e. simulation)
Share an anecdote that illustrates a point of the reading
Debate an issue relevant to the reading and the classroom
Discuss individual projects (local community action, on line blog)
Discuss class projects (research projects, writing, curriculum)
Share online resources (sites, simulations, graphics, etc.)
Address issues raised in the context of teaching and learning

When will those discussion questions/activities be posted and in what timeframe do you expect students to respond to them?

Wednesday is the day when all assignments will be posted. Students are expected to complete the assignments (readings, activities, and discussion) by Tuesday at 9:00 AM.

? **When will class chats Wednesday** evenings from 7 - 8 pm ET. You must participate in at least 2/3 scheduled chats. During the chat issues related to readings, activities, assignments, or logistic can be addressed.

How do I ensure a good evaluation of my online participation?

Strong evaluations are associated with frequent and regular posts—both original ideas and responses to others. There is no set number of posts since it is dependent on the particular week's discussion and the number of students in class. A good general rule of thumb is to average at least 1 post per day. It is good to start early and continue throughout the week. You should NOT:

- 1) Wait until the last day or two to participate.
- 2) Post all your ideas in one or two visits.

Course Policies

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- a. Assignments cannot be handed in late without prior discussion with the instructor. Unauthorized late assignments will forfeit 1 point for every day (or part of day) late (e.g. due on Tuesday morning, but passed in on Wednesday, forfeits 2 points)
- b. All assignments must be handed in to obtain a passing grade.
- c. Participation is key to your professional learning experience in an online course. Regular, consistent, and meaningful contributions to discussion board assignments and chat opportunities are expected.

- d. It is your responsibility to make sure that you have access to a web connected computer every week of the course. It is a good idea to have a primary, secondary, and tertiary computer lined up right away.
- e. If you are ill and are unable to work on line, please leave a voice mail (978 934 4644) or email [David Lustick@uml.edu](mailto:David.Lustick@uml.edu). If you miss 2 weeks due to illness you will be asked to withdraw from the class. Incompletes are granted rarely.
- f. This is a master's level class and therefore I will not be reading assignments in advance to provide you with formative feedback about your content and writing style (except for the first draft of the research paper). However, after grading certain assignments (see below), I will advise you which parts may be re-written in order to gain the minimum points needed to reach a passing grade. The re-writes must be completed and submitted by the end of the next class cycle.
- g. 'Class cycle' is defined as that period of time between the posting of one week's agenda and the deadline for that week's assignments. In this class, I will be posting the agenda Wednesday morning at 9AM. The class cycle will end Tuesday morning at 9 AM.
- h. Clarification about an assignment will be provided to a student by the instructor during chat or via the discussion board. Direct email communication should be reserved for only issues of a personal nature. If you do post a question, and (for whatever reason) it goes unanswered, please email me at David_Lustick@uml.edu right away.

Assignment Overview

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Course Assignments

Assignment	Due	Points available	Notes
1) Discussion/Participation/ Posts	Throughout	30	Follows Proper web etiquette and protocols No re-writes allowed
2) Personal History Paper	Feb 14	10	Familiarize yourself with the icon.
3) Book Report	March 20	10	Read and write about a book of your choice that examines evolution.

4) Research Project 1 st Draft	April 3	10	A written draft, outline, and/or list of references. It is an opportunity for me to provide feedback prior to the finished product.
5) Research Project	May 1	20	Due by 5 pm ET.
6) Final Exam	May 8	20	An online exam that addresses the major ideas, concepts, and issues addressed in the course.

Description of Assignments

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1) Discussion, Participation, & Posts: Contributes course related ideas, insights, comments, and questions and responses to peers.

2) Personal History Paper: An essay that describes why the study of evolution is relevant to you from both a personal and professional perspective. There is a 1000 word limit to this essay

4) Book Report: An essay that reports on a book focusing on evolution. There is a 1500 word limit to this report.

3) Research Project: This is a project that examines one weekly theme of the course more in-depth in a scholarly fashion (3000 words) or creates a pedagogical resource for teaching evolution. The required draft is an opportunity for you to gain some feedback on your work prior to the finished product. The draft should be a document that reflects the work to date on the project.

4) Final Exam: The final will be an online assessment that allows you to synthesize responses to questions related to the major issues, concepts, and ideas explored during the course. The exam will take about an hour to complete.

Communication

a) Participation/Discussion/Posts (30% of your grade): Responses to questions in the online discussion forum. These postings will address our weekly readings and on line activities. Frequently throughout the course, I will be asking for electronic items to be shared with the class. Electronic artifacts may include lesson plans, photos, URLs, multimedia clips, or other relevant artifacts. Since, discussion will be assessed at the level of the semester; individual postings will be read and tracked, but not assessed.

Assignment 1: Discussion, Participation, & Posts (30% of Grade)

Responses to Peers in the online discussion form and/or chat sessions.

You are expected to respond to a minimum of 2 classmates per week. Since, participation will be assessed at the level of the semester; individual comments will be read but not assessed. Your grade will be an overall evaluation based on the rubric below.

Discussion Rubric	3	2	1
Language	Clear, concise and proper use of language including spelling, grammar, and punctuation.	Understandable, but may have minor errors in spelling, grammar, and punctuation.	Difficult to understand because of multiple errors in spelling, grammar, and punctuation.
Ideas	Expressed Ideas are clearly stated and supported by evidence	Expressed Ideas Are not always supported by evidence.	Expressed Ideas Have little or no evidence for support.
Relevance	Comments are relevant and important to the discussion question.	Comments are inconsistent. Parts may be relevant but other parts may seem tangential.	Comments have little or no relevance to the topic under discussion.
Attachments	Attachments are appropriate and useful to the focus of the discussion.	Attachments are inconsistently appropriate and useful to the focus of the discussion	Attachments are inappropriate and not useful to the focus of the discussion
Timing	Start early in cycle and participate regularly throughout the week	Participation is good, but limited to a concentrated time frame.	Participation is either is concentrated at the end of the cycle.
Balance	Postings represent a balance between the student's own ideas, questions, and comments about focus topic and reaction/feedback to peers.	Postings represent an imbalance between the student's ideas and reactions to others.	Postings are either only one's ideas or reactions to others, but not both.

Assignment 2: Personal History Essay (10% of grade)

An essay that describes why the study of evolution is *relevant* to you from both a personal and professional perspective. There is a 1000 word limit to this essay. In this course we are examining the theory of evolution by natural selection and associated concepts in a range of different contexts. The question you need to answer is: "Why am I interested in the study of evolution on a personal and professional basis? What specific aspects of evolution are most intriguing to me?" Your paper should be no less than 500 words and no more than 1000 words. Proper APA formatting and citation protocols should be observed at all times (see [APA Guidelines](#) for online assistance). For example, maybe you have a child stricken with an infection that was resistant to the initial treatment. You might therefore be interested in how evolution explains why the initial forms of antibiotic were ineffective. Or, perhaps you have not felt satisfied with your effectiveness as a science teacher when it comes to teaching evolution. Whatever story you share, it should specify how evolution is important to you in a personal and professional way.

The assignment is due February 14th. Name your document "A1Lastname" and submit it through the assignment icon on the course homepage.

Personal History Assignment	Value/Score	Comment
Heading (Name, Date, Assignment, Class)	1	
Layout (Times NY font, 12 size, 1" margins)	1	
Technical (spelling, punctuation,)	2	
Content (ideas, evidence, reasons)	3	
Personal & Professional Addressed	3	
Total	10	

Assignment 3: Book Report (10% of your grade)

A report on a book of your choice from the list of authors found at <http://www.darwiniana.org/books.htm>.^{*} In this course we are examining the theory of evolution and associated concepts in a range of different contexts. In this assignment, I would like you to read a book about evolution that you have always wanted to read, but never had the chance or time. The questions you need to answer include: "What does this book say to me that is insightful, meaningful, or important? Why"? Your paper should be no less than 1000 words and no more than 1500 words. Whatever book you decide to read, please let me know prior to finalizing your choice. If the book you would like to read does not appear on the list, please let me know and I will decide if it is appropriate for our purposes. Proper APA formatting and citation protocols should be observed at all times. The book report file should be named "A2Lastname" and submitted through the assignment icon on the homepage before March 20th. Below is the rubric for this assignment:

Book Report	Value/Score	Comment
Heading (Name, Date, Assignment, Class)	1	
Layout (font, size, margins)	1	
Technical (spelling, punctuation,)	2	
Content (ideas, evidence, reasons)	3	
Clarity of Argument, Explanations, Critique	3	
Total	10	

***If you would like to read something not on this list, please get my approval first.**

Assignment 4: Research Project (20% of your grade)

OPTION A Research Paper: Write a scholarly 10 page double spaced paper that reports on one weekly context (theme) from the course. You are free to explore this context in a way this is personally and professionally meaningful. For example, you may use the weekly readings and activities as a starting point and provide further analysis, connections to other contexts, and criticism. The idea is to look at the weekly module as a starting point and explore the topic in greater detail and specificity by:

- 1) Asking a question tailored to the weekly topic
- 2) Finding, reading, and using additional resources
- 3) Writing a report that provides evidence of your work to answer and understand the question posed.

OPTION B Webquest: This course will give you the opportunity to learn about webquests and how to build them for your students. For this option, you will need to choose one weekly context (theme) from the course and use it as a starting point to develop a meaningful learning experience for your students. For example, if you choose "Evolution in the Context of Extremes" as your starting point, you will develop a webquest that will foster student understanding about evolution in extreme environments. The idea is to develop a teaching resource (the webquest) and a reflection that explains why you designed the resource to be effective for your students. You will need to:

- 1) Identify the main question that students will be able to answer as a result of the webquest.
- 2) Find, document, and evaluate resources from the web to include in your webquest.
- 3) Write a reflection (5-8 pages) that describes your choices in constructing the webquest and why you think it will be effective at fostering student learning.
- 4) If you decide to construct a webquest, the narrative you submit must present the URL address where the webquest can be found online.

Whatever option you choose, it is necessary to:

- 1) clear it with me before you begin.
- 2) use at least 4 of the class readings (from any weekly module)
- 3) bring in at least 4 outside readings

The Draft is due April 3rd submitted to the assignment icon with the file name "A3DraftLastname". The final project is due May 1st to the assignment icon with the file name "A3Finallast name. Below is the rubric for this assignment.

Research Report Assignment	Value/Score	Comment
Heading (Name, Date, Assignment, Class)	1/	
Layout (font, size, margins)	1/	
Technical (spelling, punctuation, APA)	3/	
Uses adequate resources properly	5/	
Develops Guiding Question	5/	
Content (ideas, evidence, reasons)	5/	
Total	20/	

OR if you opt for the webquest:

Webquest Assignment	Value/Score	Comment
Heading (Name, Date, Assignment, Class)	1/	
Layout (font, size, margins)	1/	
Technical (spelling, punctuation, APA)	3/	
Uses adequate resources properly	5/	
Develops Guiding Question	5/	
Quality of Webquest	5/	
Total	20/	