

Public and Catholic District School Board Writing Partnerships

Interdisciplinary Studies

Course Profile **Interdisciplinary Studies: Archaeological Studies**

Grade 12
University Preparation
IDC4U

- *for teachers by teachers*

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Course Overview

Archaeological Studies, IDC4U, Grade 12, University Preparation

Policy Document: *The Ontario Curriculum, Grades 11 and 12: Interdisciplinary Studies, 2002*

Prerequisite: any University or University/College Preparation course

Course Description

This course will help students develop and consolidate the skills required for and knowledge of different subjects and disciplines to solve problems, make decisions, create personal meaning, and present findings beyond the scope of a single subject or discipline. Students will apply the principles and processes of inquiry and research to use a range of print, electronic, and mass media resources effectively; to analyse historical innovations and exemplary research; and to investigate real-life situations and career opportunities in interdisciplinary endeavours. They will also assess their own cognitive and affective strategies, apply general skills in both familiar and new contexts, create innovative products, and communicate new knowledge. This course uses archaeology as a vehicle to investigate interdisciplinary approaches to a set of problems, and by interconnecting concepts and skills from a variety of diverse disciplines, it assists students in understanding the value of viewing issues from multiple perspectives. To deal with today's issues, students require skills in research, information management, collaboration, and critical and creative thinking, and they need to be able to combine diverse models of these skills which have been developed in discrete disciplines. Students learn to consciously apply the concepts, methods, and language of several disciplines as they explore topics and solve problems in the particular field of archaeology.

The course examines the history and theory of archaeology, and the methodology of surveying, excavating, collecting, and storing evidence. Students are exposed to field work and to a variety of research methods, including mapping, data management, and analysis from several points of view. Legal, ethical, and career issues related to archaeological studies are investigated.

This Interdisciplinary Studies course is appropriate for students with diverse abilities, interests and learning styles. This course has a value of one credit. The learning expectations for this course are from *The Ontario Curriculum, Grades 11 and 12: Interdisciplinary Studies, 2002* as well as from many other courses (See Appendix 6) such as: *Canada: History, Identity, and Culture (Grade 12)*, *World History to the Sixteenth Century (Grade 11)*, *Native Studies: Aboriginal Governance (Grade 12)*, *Native Studies: Current Aboriginal Issues (Grade 11)*, *Biology (Grade 12)*, *Earth and Space Science (Grade 12)*, *Classical Civilizations (Grade 12)*, *Mathematics of Data Management (Grade 12)*, *Canadian and International Law (Grade 12)* and *Introduction to Anthropology, Psychology and Sociology (Grade 11)*. It is important to note that only those expectations from the Interdisciplinary Studies document are to be assessed and evaluated by the teacher. The expectations identified for Interdisciplinary Studies describe the knowledge and skills which students are expected to develop and demonstrate in tests, classwork, and other activities on which their achievement is assessed and evaluated.

This Course Profile represents only one of many possible approaches to meeting the learning expectations for IDC4U stated in *Grade 12, Interdisciplinary Studies, 2002*. Intended for University-bound students, the course puts an emphasis on analysis from a diversity of viewpoints, research, discussion, and both oral and written reporting of research results. Three strands are woven throughout the course: Theory and Foundation; Processes and Methods of Research; and Implementation, Evaluation, Impacts, and Consequences.

The Course Profile is divided into five units which examine the concepts of time and change, how we learn about the past, how evidence from the past is handled and interpreted, legal and ethical issues, and a final culminating unit in which students collaborate to produce an interdisciplinary product which is presented both orally and in written form.

How This Course Supports the Ontario Catholic School Graduate Expectations

Archaeology is a study of the human past through its material remains. Implicit in this study of the past is the question: Where does everything that exists come from and where is it going?

This course allows Catholic School Graduates to view the origins of human beings and their development in the light of an all-loving and all-powerful Creator. As students study how human effort and intelligence continually uncover more of the material remains of the past, they acquire a greater appreciation for the greatness of the Creator.

This Course Profile gives students opportunities to develop attitudes and values based on Catholic social teaching and to make decisions in light of gospel values with an informed moral conscience. Among the themes analysed in this Course Profile are respect for the dignity of the human person, respect for the rights of minority groups, and a respect for social justice. Students come to an understanding of these concepts in their studies of past cultures and societies. Students recognize that there are certain values that transcend history and are relevant for all times. The Catholic Church's teachings about human rights, care for the environment, and respect for pluralism and ethnocultural communities are among the issues addressed in this course. Students are encouraged to approach studies of the past with the goal of promoting a just and compassionate human environment in Canada and the world.

Archaeology as an interdisciplinary course strongly encourages the Catholic School Graduate to become an effective communicator; a reflective and creative thinker; a collaborative contributor; and a self-directed, responsible, life-long learner. In their development of the skills related to a variety of disciplines, students are encouraged to integrate their faith with their life in society. In all aspects of this course, students are encouraged to develop their God-given potential and to see themselves and others as images of Jesus Christ.

Course Notes

The nature of the interdisciplinary studies curriculum calls for a variety of teaching and learning strategies to assist students in finding relationships between disciplines. It is, therefore, important for students to participate actively in, and to reflect on, the diversity of approaches used in various disciplines. The teacher needs to consider how to include variety in both content and approach. Moreover, it needs to be borne in mind that this is a course in Interdisciplinary Studies, and that archaeology is the vehicle: thus the course focus is on the variety of approaches, rather than on the discipline of archaeology itself.

The Course Profile stresses the fundamental concept of archaeology: that of "change through time." With this in mind, it examines the nature of time, and the cultural constructs with which people approach time, as the introductory unit. Unit 2 considers several examples of the sciences and techniques which the archaeologist uses to unravel the meaning of change through time. Unit 3 looks at how archaeological material is interpreted, and the ways in which bias inadvertently creeps into the interpretation of the past. In Unit 4, consideration turns to the legal and ethical constraints that bind the practice of archaeology, and the final unit provides an opportunity for students to develop a collaborative and interdisciplinary product and to apply the principles acquired in earlier parts of the course.

The approach suggested by the unit organization requires careful and structured preparation by the teacher to establish clear parameters for investigation by students. Teachers are urged to use case studies to illuminate each unit: such case studies are not only interesting in and of themselves, but they provide powerful exemplars of how a variety of disciplines integrate themselves into the study of archaeology. The use of case studies requires students to develop research skills using print resources, electronic media, and critical thinking, frame suitable research questions, assemble and evaluate information, and present in oral and written formats.

Where possible, the course would benefit from hands-on experience such as field trips to working archaeology sites and museums and classroom visits by practising archaeologists.

Students are informed during Unit 2 that in the final unit they will present a simulation in which they prepare a presentation to a university for a grant to perform a field expedition. This entire activity is to be seen as a simulation representing the real issues and activities required for such a study. Students will decide on a geographical area in which they are to conduct their field study and provide reasons for the selection of a given geographical area. They will be required to put together an interdisciplinary team and to present a rationale for the inclusion of each member of the interdisciplinary team. With this information about the culminating activity in mind, students select a book that will aid them in their preparation for the course culminating activity. Students may plan the make-up of the three-person teams for the culminating activity as they select their respective books, or the teacher may decide on the composition of the three-member teams after evaluating each of the book reports.

During Unit 2 each student selects a book that deals with the topic of archaeology and/or interdisciplinary studies. Each student reads the designated book, completes prescribed process work, and writes a report complete with proper documentation. (See Appendix 1 for the requirements of the book report. A list of sample book choices is found in a bibliography in Appendix 2. A rubric for the assessment of the book report is found in Appendix 3.)

Archaeological Studies combines the expectations for Interdisciplinary Studies, Grade 12, University Preparation with selected expectations from other courses. The expectations from the other course are listed in Appendix 6.

A glossary of terms related to the study of archaeology is provided in Appendix 7 for teacher and student use.

Cooperative Education and Work Experience

The teacher and students should be aware that a cooperative education program and/or a work experience opportunity in the community will allow students to apply and develop skills and knowledge they acquire in this Interdisciplinary Studies course. Students can combine the single-credit Archaeological studies course with a work experience component (one to four weeks) or a cooperative education course (full credit) in either the private or public sector (See *The Ontario Curriculum, Grades 11 and 12: Interdisciplinary Studies*, p. 48). Students may experience work in a museum or at a local archaeological site. The work experience component would constitute part of the student's 110-hour credit course in Archaeological studies. Cooperative education, work experience, and school-work transition programs must be designed to follow the guidelines outlined in *Cooperative Education and Other Forms of Experiential Learning: Policies and Procedures for Ontario Secondary Schools*, 2000.

Safety

The teacher who makes use of field trips to archaeological sites and/or uses mock excavations must follow safe practices and communicate safety expectations to students in accordance with school board and ministry policies. The teacher must preview and plan expeditions carefully to protect students' health and safety. Health and safety issues must also be addressed when learning involves cooperative education and other workplace experiences. Both teachers and placement supervisors must ensure that all students are thoroughly familiar with and able to put into practice all the safety precautions that may be required at the placement (*The Ontario Curriculum, Grades 11 and 12: Interdisciplinary Studies*, p. 49).

There are a host of Internet sites that may be accessed in the preparation of this course, and that may be accessed by students during the course. The teacher must familiarize students with the local board's policy regarding the safe use of the Internet and obtain the parental permission forms, if necessary. Students must be aware of what to do if they become exposed to inappropriate sites. Teachers should always verify the websites prior to assigning them for student use.

Units: Titles and Time

Unit 1*	The Nature of the Past	20 hours
Unit 2	How Do We Learn About the Past?	28 hours
Unit 3	Handling the Pieces of the Past	27 hours
Unit 4*	The Problematic Past	20 hours
Unit 5	Culminating Performance Task	15 hours

* These units are fully developed in this Course Profile.

Unit Overviews

Unit 1: The Nature of the Past

Time: 20 hours

Unit Description

This introductory unit considers the nature of the concept of time, and its relationship to the interdisciplinary study of archaeology. Students develop three separate timelines highlighting the major milestones in geological time, in evolutionary biology, and in archaeology to create an appreciation of scale, compare the marking of time in three different disciplines, and acquire a rudimentary introduction to some of the major discoveries in archaeology. This consideration of time is further refined by a personal timescale developed by each student, with major life events represented by a series of artifacts. Classmates then interpret these artifacts as they attempt to recreate a coherent life history of the individual student. Students discuss interpretation, inference, degrees of certitude, and the dangers of misinterpretation. These misinterpretations of the past may be a product of applying Western assumptions, such as the linear sense of time, to other cultures that may not have shared this view. Students discuss professional archaeologists and those who have contributed to the science – some notable examples from past and present are analysed with a focus on their backgrounds, their cultural assumptions, their discoveries, and their impact on society.

Unit Overview Chart

Activity	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
1.1 The Nature of Time 5 hours	TFV.01, TF2.01	SES4U - ES1.01, EH1.01	Knowledge/ Understanding Formative oral assessment by teacher	- create three timelines: one each for geology, evolutionary biology, and archaeology
1.2 Personalizing Time 5 hours	TF4.03, PM4.04	CHI4U - HI2.03, HI2.04, HI4.01 HSP3M - IS2.05	Application Communication Formative assessment by teacher using checklist	- construct personal timelines and bring in representative artifacts - interpret artifacts as a life story - consider misinterpretations, inferences, certitude - reflective writing

Activity	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
1.3 Paradigms of Time 5 hours	PM1.04, IE2.03, TFV.04, TF4.03, PM4.03	CHW3M - CC1.02, CC3.03	Thinking/ Inquiry Self-assessment by students using checklist	-study importance of time as determinant of worldview - compare linear “Western” time with circular, other views
1.4 The Role of Archaeology 5 hours	TF1.01, TF1.03, TF2.04, TF3.02, TF3.04, PMV.01, PMV.04, IE1.05, IE3.01, IE3.02, IE4.03, IE4.04	CHW3M - CC1.03 SBI4U - EV1.02	Knowledge/ Understanding Thinking/ Inquiry Communication Application Summative evaluation by teacher using marking scheme	- group research: case studies of major contributors to archaeological science, past or present: Schliemann, Carter, Leakey, Cavalli-Sforza, etc. - focus on their training, assumptions, discoveries, impact

Unit 2: How Do We Learn About the Past?

Time: 28 hours

Unit Description

The focus of this unit is on how a variety of approaches contribute to the unique nature of archaeology. It surveys a variety of specialized sciences and procedures which leads students to consider the mosaic-like nature of human knowledge. At the beginning of Unit 2, the teacher introduces students to the course culminating activity and assigns the book report as a partial preparation. Students research and give oral presentations on how specific sciences and techniques have helped clarify the nature of past events. Teachers are encouraged to use field trips to both working archaeological sites (where available) and virtual archaeology sites on the Internet so that students appreciate how science, history, and imagination are all used by practising archaeologists to create a coherent story of the past. Trips to museums should be utilized to encourage student consideration of the problems of defining, storing, and cataloguing artifacts. Finally, a teacher-directed case study of “The Iceman,” the Copper Age man found in the Alps in 1991, is recommended as a classic example of how different disciplines have added to the richness of knowledge about prehistoric life, and how the discovery of his body has caused a rethinking about early European cultures.

Unit Overview Chart

Activity	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
2.1 How Specialized Sciences Aid Archaeology 10 hours	TFV.02, TFV.03, TF1.02, TF3.02, IE1.02, IE4.01 CGE 2c, 2e	SBI4U - EV3.02 SES4U - ES2.02, EH1.01, EH1.02 LVV4U - AA1.04	Knowledge/ Understanding Communication Formative assessment by peers using checklist	- independent research and oral presentation of specific sciences and techniques

Activity	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
2.2 Field Work 8 hours	PMV.01, PM1.01, PM1.02, PM4.02, IE1.01 CGE 5a, 5e	MDM4U - ST1.01 SES4U - IS1.04 HSP3M - IS2.02	Application Teacher feedback provided anecdotally	- site locating, surveying, grid layout, digging, mapping - experiencing a working site
2.3 Virtual Archaeology: Using the Internet 2 hours	PMV.02, PM4.02, IE1.03, IE1.04 CGE 2e, 4f	MDM4U - OD1.02	Communication Peer feedback provided anecdotally	- locating virtual sites -writing about interactive features, and how they assist understanding
2.4 Museums 2 hours	PM1.02, PM4.02, IE1.03 CGE 4b, 7f	HSP3M - IS2.05	Knowledge/ Understanding Teacher feedback provided anecdotally	- role of curators - problems of classification, storage, display
2.5 Case Study: the Iceman 6 hours	TF4.01, PM3.05, IE2.01 CGE 3e, 3f	HSP3M - IS2.06	Knowledge/ Understanding Thinking/ Inquiry Application Communication Summative assessment by teacher using quiz	- teacher directed - how have a variety of sciences contributed to knowledge: anatomy, botany, glaciology, etc. - video: <i>Ultimate Guide: Iceman</i>

Note: See Appendix 4 for additional suggestions on the content of Activity 2.1

Unit 3: Handling the Pieces of the Past

Time: 27 hours

Unit Description

In Unit 2, students became familiar with archaeological techniques of artifact recovery and classification. Students learn to interpret the artifacts that have been recovered and classified. Students employ the analytical and research tools of a number of subjects or disciplines such as politics, religion, art, literature, technology, science, geography, economics, and anthropology. Students use the creative-thinking strategies that are effective at each stage of research in each of the subjects or disciplines studied. They identify and critically analyse ideas, arguments, bias, and stereotyping found in resources using a variety of strategies. They create interdisciplinary products based on their own plans or designs as members of a team or group. The major theme is the analysis and the interpretation of evidence; In other words, how do various groups “handle the pieces of the past?” Students take part in a mock dig exercise in which they extract teacher-created “artifacts” from a sand box and then in groups interpret the meaning of the “artifacts.” This exercise makes students aware of the many problems, questions, and biases associated with interpreting archaeological material.

Students examine how factors of religion, gender, nationality, race, and class play a role in the interpretation of the pieces of the past. Students research print and Internet sources in order to examine a variety of definitions of the following: technology, subsistence economics, social organization, and the human mind. Using the approaches familiar to a wide range of disciplines, students evaluate a variety of interpretations related to the topics and draw their own conclusions based on evidence. In groups and using graphic displays, students present their conclusions in the form of a case study. They re-examine the comprehensiveness of their interdisciplinary research to update and modify their interdisciplinary products in light of new findings and feedback.

For students in Catholic schools, the interpretations of the past are performed in the context of discovering the harmony and intelligence placed in the world by an all-loving and all-powerful Creator. At various points, teachings about human rights, care for the environment, and respect for pluralism and ethnocultural communities are addressed.

Unit Overview Chart

Activity	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Activities
3.1 Interpreting the Past from a Variety of Perspectives 5 hours	TFV.03, PMV.03, IEV.03, TF2.01, PM1.03, PM3.02, IE4.01, IE4.03 CGE 3f, 5a, 7g	CGW4U - SS1.02	Thinking/ Inquiry Teacher and peer evaluation using checklist	Mock Dig Exercise: - working in groups, use case studies to investigate political, racial, religious, cultural, and artistic bias in interpreting the past
3.2 Technology: How Did Humankind Make and Use Tools in the Past? 5 hours	TFV.02, PMV.01, IEV.03, IEV.01, TF2.03, PM1.01, PM2.02 CGE 2c, 2d, 5b, 5e	SES4U - ES1.03	Thinking/ Inquiry Formative anecdotal feedback by teacher	- formulate questions, and investigate modern laboratory technology such as microwear studies, experimental archaeology, and ethnography - theorize about the culture by examining pottery and metallurgy artifact
3.3 Subsistence Economics: How Did Humankind Make a Living in the Past? 5 hours	TFV.03, PMV.02, IEV.03, TF2.03, PM1.01, PM1.03, IE1.03 CGE 2a, 3e, 4f, 5a, 7e	CGU4U - SS3.02	Knowledge/ Understanding Thinking/ Inquiry Formative assessment by teacher using checklist	- investigate paleoethnobotany and taphonomy and relate these subjects to archaeology - theorize about and research evidence related to stomach content, human teeth, and isotopic remains of human bone collagen

Activity	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Activities
3.4 Social Organization: How Did Humankind Organize Itself in the Past? 4 hours	TFV.01, PMV.02, IEV.03, TF3.04, PM1.02, PM2.02, IE1.03 CGE 1d, 2b, 3b	LVV4U - AA1.06 CHW3M - CO2.03	Knowledge/ Understanding Communication Self-assessment by students using checklist	- brainstorm how to learn about social organization in the past - study a society's indicators of wealth, such as homes, art, artifacts, burial monuments, and grave-goods
3.5 The Human Mind: What Did Humankind Think in the Past? 4 hours	TFV.03, PMV.03, IEV.03, TF2.01, TF3.04, PM1.02, PM3.02, PM4.03 CGE 2e, 3c, 4b, 7f, 7g	CHY4U - CH2.01 AVI4M - AN1.03, AN1.04	Thinking/ Inquiry Application Teacher feedback provided anecdotally	- study samples of Palaeolithic cave art and early writing systems - examine artifacts that may have had supernatural beliefs attached to them
3.6 Unit Culminating Activity 4 hours	TFV.04, PMV.04, IEV.01, IEV.02, IEV.03, IEV.04, TF1.02, TF2.03, PM1.02, PM2.02, PM3.02, PM4.01, IE1.03 CGE 2c, 3f, 4b, 4c	LVV4U - AA1.06	Knowledge/ Understanding Thinking/ Inquiry Communication Application Summative assessment by teacher using rubric and marking scheme	- in groups, research a specific case study related to one of the topics studied in this unit - use interdisciplinary approaches to present case studies to the class

Note: See Appendix 5 for additional suggestions appropriate for Unit 3.

Unit 4: The Problematic Past

Time: 20 hours

Unit Description

The issues and conflicts surrounding archaeology and the ownership of artifacts have become more prominent in today's society. Questions such as: Who owns these pieces of the past? need to be examined to determine who legally controls the artifacts from our past. Students begin with an analysis of legal and ethical issues of ownership and control of archaeological findings. Students study the federal provincial, and international laws that govern archaeological activities; the reasons for their existence; and their impact on those people who are most influenced: professional archaeologists, landowners, farmers, developers, and Aboriginal peoples. Students propose principles that separate the ethical use of archaeological discoveries from mere plunder or exploitation, and they develop guidelines to ease the frequent conflict between individual rights and a wider public interest. Students also examine how the use of information technologies may help to address some of the concerns surrounding the storage and display of artifacts.

They examine how effective UNESCO and the maintenance of heritage sites have been in preserving the past. The unit culminates with a case study dealing with many legal and ethical issues involving control and ownership of artifacts. This case study could be an examination of the Kennewick-man controversy involving the repatriation of a 10 000-year-old skeleton to Aboriginal tribes under a 1990 United States law. It could be an examination of UNESCO's convention on the Protection of the Underwater Cultural Heritage to prevent commercial exploitation of underwater treasures – such as in the case of the Spanish ship, Atocha. It could be an examination of the Elgin or Parthenon Marbles and the question of who owns the ancient sculptures: the British Museum or the government of Greece?

Catholic students receive the opportunity to examine ethical questions in the light of gospel values. The Catholic Church's teaching on the following issues is addressed: respect for the dignity of the human body, the right of ethnocultural communities, property rights, environmental rights, and profit as a motivating force.

Unit Overview Chart

Activity	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
4.1 Legal and ethical issues 3 hours	IE1.05, PM3.02, TFV.03, TF4.04 CGE 4a, 5e, 7e	HZT4U - ET1.03 CLN4U - HT3.01	Thinking/Inquiry Self-assessment by students using checklist	- study legal and ethical issues surrounding archaeological artifacts and their storage in museums and archives
4.2 Laws and control of artefacts 4 hours	TFV.04, TF1.04, TF3.03, TF4.04, PMV.02, PMV.03 CGE 2c, 3d, 5a	CLN4U - HT3.02, HT3.03, RDV.03 CGW4U - SS1.08	Knowledge/ Understanding Summative evaluation by teacher using quiz	- examine provincial, federal, and international laws relating to the control of artifacts and archaeological sites

Activity	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
4.3 Impact of information technologies 4 hours	TVV.01, TF1.02, TF1.03, TF2.02, PM4.02 CGE 3e, 4f	MDM4U - OD1.02 NDW4M - CHV.03	Thinking/Inquiry Teacher feedback provided anecdotally	- study the role of information technologies concerning the storage and display of artifacts
4.4 International action 4 hours	TF4.05, PM2.02 CGE 1d, 2e, 7g	CGR4M - GC1.02 CGG3O - HE1.03, HE3.03	Knowledge/Understanding Peer assessment by students using checklist	- investigate the protection of significant archaeological sites by international organizations
4.5 Case Study: Unit Culminating Activity 5 hours	TF4.04, IEV.01, IEV.03, IE2.01 CGE 1d, 3f, 5e	CHI4U - HI4.04 CLN4U - RDV.05, RF5.03	Knowledge/Understanding Thinking/Inquiry Communication Application Summative evaluation by teacher using rubric	Culminating Activity: conduct a case study involving the control of artifacts and the laws that may influence their protection

Unit 5: Culminating Performance Task

Time: 15 hours

Unit Description

In this course culminating activity, students demonstrate the range of skills which have been acquired in this interdisciplinary studies course. In groups of three, students prepare a simulated presentation to a university to apply for a grant to perform a field expedition. They analyse and evaluate information from a variety of print, electronic, and mass media resources. Students research a geographical area in which they are to conduct their field study. Students provide reasons for the selection of a given geographical area. As an interdisciplinary team, they present a rationale for the inclusion of each member of the interdisciplinary team. They prepare a budget and a timeline for the proposed field expedition.

They also address the ethical implications of the proposed field expedition. A group of five students is designated as an “ethical review panel” by the teacher, and each group of students is required to answer pertinent questions posed by panel. The members of the panel focus on such values as anti-discrimination, respect for human dignity, respect for ethnocultural communities, and respect for the natural environment. The health and safety issues involved in the proposed field expedition must also be addressed by each team of students.

In composing an interdisciplinary team for the proposed field study, the students are required to become familiar with a wide range of occupations and to become more aware of careers related to the subject of archaeology. In their work, students demonstrate an understanding of the collaborative attitudes and skills that are valuable when researching and creating interdisciplinary products. The groups of students present their interdisciplinary products to the class, and each student writes an independent report describing the multi-disciplinary nature of the research.

Students in Catholic schools perform their research in the context of discovering some aspects of the wonders of God’s creation. In working on the course culminating activity, students achieve many of the skills of Catholic School Graduate Expectations such as becoming an effective communicator; a reflective and creative thinker; a collaborative contributor; and a self-directed, responsible, life long learner. Students examine, evaluate, and apply knowledge of interdependent systems in the light of gospel values and with an informed moral conscience.

Unit Overview Chart

Activity	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
5.1 10 hours	TFV.01, TFV.03, PMV.01, PMV.02, PMV.03, TF4.01, TF4.04, PM2.04, PM3.01, PM3.04 CGE 2a, 2b, 3e, 4d	LVV4U - AA1.06 CHY4U - CH2.01 SBI4U - EVV.03	Knowledge/ Understanding Thinking/Inquiry Formative oral feedback provided by teacher	- research and process work related to interdisciplinary tasks
5.2 5 hours	TFV.02, TFV.04, PMV.04, IEV.01, IEV.02, IEV.03, IEV.04, PM3.04, PM3.05, PM4.01, IE1.01, IE2.02, IE2.03, IE4.04 CGE 2c, 3f, 7f, 7g	LVV4U - AA1.06 SES4U - ES1.04 MDM4U - OD1.03	Knowledge/ Understanding Thinking/Inquiry Communication Application Summative evaluation by teacher using rubric and marking scheme	- state rationale for their proposal, and self-assess the interdisciplinary product

Teaching/Learning Strategies

The learning activities in this Course Profile are designed to help students become independent, self-motivated learners who are prepared to succeed at the university level. The nature of the interdisciplinary studies curriculum calls for a variety of teaching/learning strategies to help students find relationships among disciplines. Students perform research, think critically, communicate effectively, apply what they have learned to new situations, and compare key interpretations related to archaeological studies.

The Interdisciplinary Studies curriculum emphasizes active investigation of issues from diverse perspectives. Using a variety of research methods and a wide range of print, media, electronic, and human resources, students learn to pose questions and to investigate answers.

Students actively participate in a diversity of learning and teaching approaches used in a variety of disciplines: activity-based strategies, arts-based strategies, cooperative-learning strategies, independent-learning strategies, inquiry- and research-model strategies, and direct-instruction strategies. Teachers should use their professional judgment to decide which instructional methods would be most appropriate in promoting the learning of the knowledge and skills described in the expectations, and in meeting the needs of the students.

Through a rich variety of activities, students learn how to research, establish cause and effect, identify bias, understand different perspectives, and develop empathy. By mastering the various stages involved in the preparation of a book report, students learn to develop a cogent thesis, to organize research findings, to formulate questions for research, and to draw conclusions based on the effective evaluation of sources. Group work promotes cooperative learning, discussion, brainstorming, and interpersonal skills. The use of the Internet, videos, periodicals, journals, magazines and newspapers enhances students' media literacy.

In each unit, teachers should link the learning expectations to the appropriate category in the Achievement Chart found on pp. 52-53 in *The Ontario Curriculum, Grades 11 and 12: Interdisciplinary Studies, 2002*.

Given the nature of Interdisciplinary Studies courses, teachers will find it necessary and beneficial to reach beyond the usual sources in preparation for instruction. Strategies outlined in the activities included in this Course Profile are intended as suggestions only. The following teaching and learning activities reflect divergent approaches which the teacher will fit to the particular needs of the class and of the individual learner:

- Direct instruction – whole class and individual
- Inquiry to generate questions and communicate understanding
- Problem solving using case studies
- Cooperative groups, large and small
- Oral presentations
- Written projects and essays
- Graphic organizers, such as charts, tables, mind maps, etc.
- Multimedia presentations
- Journals and other forms of self-assessment
- Field trips
- Video information technologies: videos, digital cameras, scanners, etc.
- Interviews
- Dramatization and/or role-playing
- Think/Pair/Share exercises
- Expert groups or carousel presentations
- Debate

Assessment & Evaluation of Student Achievement

Assessing, evaluating, and communicating student achievement are essential elements of course planning and implementation. The basis for assessment and evaluation is outlined by the Achievement Chart on pp. 52-53 of *The Ontario Curriculum, Grades 11 and 12: Interdisciplinary Studies, 2000*, which outlines four major categories of expectations: Knowledge/Understanding, Thinking/Inquiry, Communication, and Application.

To measure student achievement effectively, teachers need to employ a variety of methods: paper-and-pencil tests (multiple choice or short answer), performance-based evaluation (essays, posters, videos, etc.), and orally-based assessments (debates, oral presentations, student conferences, etc.). Checklists, rubrics, self-assessment forms, and other tools are also useful in the evaluation of student achievement. Strategies must be varied in nature, clear in direction, appropriate for the learning activity used, and fair to all students including those who are exceptional learners. To assist teachers, this Course Profile identifies and recommends strategies and tools for evaluating the specific activities which have been developed.

Throughout this course there will be opportunities to evaluate any one or more of the categories within any of the clusters of expectations charted for each unit. Most of the unit culminating activities will include all of the categories of Knowledge/Understanding, Thinking/Inquiry, Communication, and Application. The teacher should provide each student with opportunities to demonstrate competency in each of the four categories of the Achievement Chart. The student's final grade should reflect work completed in each of the four categories in the Achievement Chart.

Students who choose the Interdisciplinary Studies course in Archaeology bring with them a wide diversity of interests and backgrounds. Diagnostic assessment in the first days of the course will aid the teacher in identifying student strengths. This assessment aids the teacher in recommending a possible one- to four-week work experience placement for certain students. Furthermore, diagnosis of students' previous learning is of use to the teacher in composing the three-student groups for the course culminating activity and in recommending certain books for students to read in preparation for the culminating activity.

A substantial number of tasks in this Interdisciplinary Studies course will involve group work and cooperative learning, as well as independent study. Hence, assessment of the learning skills is an important part of the overall assessment in this course where they are clearly identified in the expectations within the policy. Students are assessed on the categories of Independence, Teamwork, Organization, Work Habits, and Initiative. Unless the learning skills are included as part of a curriculum expectation, they should not be considered in the determination of the percentage grade.

To reinforce the importance of teamwork and interdependency, the teacher should provide opportunities for self- and peer assessment, especially in those areas of the course that involve group work and culminating performance tasks.

Throughout the course, students master knowledge and skills which enable them to succeed in the unit culminating activities and in the course culminating activity. Working from the first unit, students learn to demonstrate an understanding of the relationships between concepts and/or disciplines. They use thinking skills that go beyond the scope of a single discipline and they apply creative-thinking skills. In Unit 1, students become aware that there are many ways of understanding time. In Units 2 and 3, students become aware of the many disciplines involved in recovering, classifying, and interpreting archaeological data. In each unit, students use various communication forms and technologies, and they apply ideas and skills in both familiar and new contexts.

Note: Only the expectations for Interdisciplinary Studies, Grade 12, University Preparation are assessed and evaluated by the teacher. Formative assessment and evaluation takes place through the use of teacher checklists and observations, as well as the teacher's oral and written feedback to students. Summative evaluations are used in each unit's culminating task, as well as in the course-culminating task. The book report is also part of the formative evaluation, as this task helps to prepare the students for the course culminating activity.

According to *The Ontario Curriculum, Grades 9 to 12, Program Planning and Assessment*, "the primary purpose of assessment and evaluation is to improve student learning" (p. 13). The information gathered through assessment helps teachers to adapt their instructional approaches to the needs of students who have chosen a university destination. If some of the assessment practices described in this Course Profile do not meet the needs of students, those assessment practices should be altered.

The Ministry of Education has specified that seventy percent of the grade will be based on assessment and evaluations conducted throughout the course. In those cases where the students have the opportunity to engage in substantial field work, (whether in excavating, cleaning, and classifying, or engaging in museum activities), student accomplishment and hands-on learning should be reflected in a modification of the evaluation scheme. Thirty percent of the grade will be based on a final evaluation in the form of an examination, performance, essay, and/or other means of evaluation. The final evaluation may, at the discretion of the teacher, include more than one activity.

Accommodations

Interdisciplinary Studies reflects a wide range of knowledge and work, and so provides numerous opportunities for meeting the needs of exceptional students to recognize and develop their personal learning styles, to practise the application of concepts and skills, and to engage in learning that promotes personal growth.

The teacher needs to consult the students' Individual Education Plans (IEPs) to determine what particular accommodations need to be incorporated into the classroom activities. Accommodations need to be in place to promote educational success for students with learning challenges. Enrichment for gifted students is built into various extended activities. This interdisciplinary course offers a multitude of opportunities to explore issues using the creative-thinking strategies that are effective in each of the subjects or disciplines studied.

In planning for accommodations, the teacher needs to consider the particular needs and interests of ESL/ELD students. The teacher can consult the English As a Second Language and English Literacy Development curriculum policy document. For ESL/ELD students, teachers should encourage the use of bilingual dictionaries, if necessary, and allow students to use their first language to plan, organize, and write a first draft of either the written or performance product.

The following adaptations in instruction, assessment, and evaluation may be required for students with specific needs:

- simplify complex tasks;
- adjust workload;
- extend time for learning or for completion of tasks;
- include a visual component in reporting or presentation of student work;
- use videos, computers, or magazines to represent course content visually;
- use teacher-developed organizers to record course content;
- encourage the use of mind-maps to present events or concepts.

Those students who require enrichment can often be assigned independent activities to reflect a greater understanding and application of events and concepts by the creation of innovative interdisciplinary products.

Resources

Because of the nature of Interdisciplinary Studies, teachers are unlikely to find a single text that can meet the content needs of this course. Video resources often prove useful and stimulating, and offer insight into both a variety of types of archaeology: classical, North American, marine, industrial, etc., and a variety of interdisciplinary approaches to analysing the past. Teachers are also advised to consult television listings, for example, the Discovery Channel and the History Channel for a wide choice of archaeological documentaries.

It is recommended that, prior to implementation, the teacher familiarize him/herself with many of the sources.

Units in this Course Profile make reference to the use of specific texts, magazines, films, videos, and websites. Teachers need to consult their board policies regarding use of any copyrighted materials. Before reproducing materials for student use from printed publications, teachers need to ensure that their board has a Cancopy licence and that this licence covers the resources they wish to use. Before screening videos/films with their students, teachers need to ensure that their board/school has obtained the appropriate public performance videocassette licence from an authorized distributor; for example, Audio Cine Films Inc. Teachers are reminded that much of the material on the Internet is protected by copyright. The copyright is usually owned by the person or organization that created the work. Reproduction of any work or substantial part of any work on the Internet is not allowed without the permission of the owner.

Human Resources

Practising archaeologists, school guidance personnel, a representative from a university faculty or college, a representative from a museum, a spokesperson for an international agency, or an Aboriginal community representative would all be able to provide classroom enrichment.

Video

The Ancient Mariners (PBS Odyssey Series). Marlin Motion Pictures, 1980, 58 min.

Archeomatique: Un Archeologie Virtuelle (Video Femmes and Sens Cruple, Quebec, QC) 1999, 53 min.

Basque Whalers of Labrador. NFB, 1985, 57 min.

Cahokia Mounds: Ancient Metropolis (Cahokia Mounds Museum Society, Collinsville, IL) 1994, 60 min.

Chaco Legacy (PBS Odyssey Series). Marlin Motion Pictures, 1980, 58 min.

Crete and Mycenae: Museum Without Walls. Hans-Joachim Horsfeld, producer and director. Barr Entertainment, 1991.

Decoding Danebury (BBC Horizon Series). 1986, 50 min.

The Dig. National Film Board, 1989, 23 min.

Digging for Slaves: The Excavation of American Slave Sites. BBC-TV, 1989, 50 min.

Discovery. NFB, 1979, 15 min.

First Emperor of China. NFB, 1989, 42 min.

Iceman (PBS Nova Series) 1992, 54 min.

The Incas (PBS Odyssey Series). Marlin Motion Pictures, 1980, 58 min.

In Search of Human Origins (PBS Nova Series) 3 parts. Marlin Motion Pictures, 1994, 180 min.

The Land That Devours Ships. NFB, 1999, 37 min.

The Lost Pharaoh: The Search for Akhenaton. NFB, 1980, 56 min.

Louisbourg. NFB, 1972, 20 min.

The Man Who Discovered America. NFB, 1981, 12 min.

Maya: The Blood of Kings (Lost Civilizations Series). Time-Life Education, 1998.

Messages in Stone. McIntyre Media, 1996, 26 min.

Mystery of the First Americans (PBS Nova Series). Marlin Motion Pictures, 2000, 60 min.

Mystery of the Maya. NFB, 1995, 38 min.

The Myth of Masada (Films for the Humanities and Sciences) 1993, 22 min.

Myths and the Moundbuilders (PBS Odyssey Series). Marlin Motion Pictures, 1980, 59 min.

Other People's Garbage (PBS Odyssey Series) 1980, 59 min.

Pella in Jordan: A Window to the Past (Astarte Resources www.astarte.com.au) 1995, 55 min.

River Through Time. NFB, 1979, 17 min.

Seeking the First Americans (PBS Odyssey Series). Marlin Motion Pictures, 1980, 58 min.

To Know the Hurons. NFB, 1977, 28 min.

Treasures of the Sunken City (PBS Nova Series). Marlin Motion Pictures, 1997, 60 min.

Ultimate Guide: Iceman (Discovery Channel) 2002, 56 min.

Uncovering Ontario's Past. NFB, 1983, 11 min.

Viking Visitors to North America. NFB, 1979, 22 min.

The Vinland Mystery. NFB, 1984, 28 min.

Print

- Anderson, A. *Interpreting Pottery*. London: Batsford, 1984. ISBN 0713436476
- Baillie, M.G. *A Slice Through Time: Dendrochronology and Precision Dating*. London: Batsford, 1995. ISBN 0713476540
- Bergounioux, F.M. and S.J. Goetz. *Primitive and Prehistoric Religions*. New York: Hawthorne Books Publishing, 1966. ISBN 58 14327 14166
- Brodie, Neil and Katherine Tubb (eds.). *Illicit Antiquities: The Theft of Culture and the Extinction of Archaeology*. New York: Routledge, 2002. ISBN 0415233887
- Butzer, K.W. *Archaeology as Human Ecology*. New York: Cambridge University Press, 1982. ISBN 0521246520
- Cavalli-Sforza L.L., et al. *The History and Geography of Human Genes*. Princeton: Princeton University Press, 1994. ISBN 0691087504
- Chaplin, R.E. *The Study of Animal Bones from Archaeological Sites*. New York: Seminar Press, 1971. ISBN 0128160500
- Clark, A. *Seeing Beneath the Soil: Prospecting Methods in Archaeology*. London: Batsford, 1990. ISBN 0713458585
- Clark, J.G.D. *Archaeology and Society*. New York: Barnes and Noble, 1960.
- Coles, J.M. *Experimental Archaeology*. New York: Academic Press, 1979. ISBN 0121797503
- Daniel, Glyn. *Short History of Archaeology* London, Thames & Hudson, 1981. ISBN 0500021015
- Davis, S.J.M. *The Archaeology of Animals*. New Haven: Yale University Press, 1987. ISBN 0300040652
- De Montmollin, O. *The Archaeology of Political Structures: Settlement Analysis in a Classic Maya Polity*. Cambridge University Press, 1989. ISBN 0521362326
- Dimbleby, G. *Plants and Archaeology*. London: Paladin, 1978.
- Ellis, Chris and Neal Ferris (eds.). *Archaeology of Southern Ontario to AD 1650*. London, ON: Ontario Archaeological Society, 1990. ISBN 09193501
- Ericson, J.E. and T.K. Earle (eds.). *Contexts for Prehistoric Exchange*. New York: Academic Press, 1977. ISBN 0122415809
- Fagan, Brian (ed.). *Eyewitness to Discovery: First Person Accounts of More Than Fifty of the World's Greatest Archaeological Discoveries*. New York: Oxford University Press, 1997. ISBN 01950811412
- Fox, Michael and Peter Wilkerson. *Introduction to Archival Organization and Description*. Getty Information Institute, 1998. ISBN 0892365455
- Gero, J.M. and M.W. Conkey (eds.). *Engendering Archaeology. Women and Prehistory*. Cambridge: Basil Blackwell, 1991. ISBN 0631175016
- Gilbert, R.I. and J.H. Mielke (eds.). *The Analysis of Prehistoric Diets*. New York: Academic Press, 1985. ISBN 0122832604
- Green, E.L. (ed.). *Ethics and Values in Archaeology*. New York: Free Press, 1984. ISBN 0029127505
- Greenfield, J. *The Return of Cultural Treasures*. Cambridge: Cambridge University Press, 1989. ISBN 0521477468
- Hassan, F.A. *Demographic Archaeology*. New York: Academic Press, 1981. ISBN 0123313503
- Hodges, H. *Artifacts: an Introduction to Early Materials and Technology*. London: John Baker, 1964.
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- Kennedy, Roger. *Hidden Cities: The Discovery and Loss of Ancient North American Civilization*. London: Penguin, 1994. ISBN 002917307B
- Klein, R.G. and K. Cruz-Uribe. *The Analysis of Animal Bones from Archaeological Sites*. Chicago: University of Chicago Press, 1984. ISBN 0226439585

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- Orton, C., P. Tyers, and A. Vince. *Pottery in Archaeology*. Cambridge: Cambridge University Press, 1993.
- Parkes, P.A. *Current Scientific Techniques in Archaeology*. London: Croom Helm, 1986. ISBN 0312000979
- Poirier, David and Kenneth Feder (eds.). *Dangerous Places: Health, Safety and Archaeology*. London: Westport & Garvey, 2001. ISBN 01897896327
- Renfrew, C. *Approaches to Social Archaeology*. Edinburgh: Edinburgh University Press, 1984. ISBN 0852244227
- Renfrew, Colin. *Loot, Legitimacy, and Ownership*. London: Duckworth, 2000. ISBN 0715630342
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- Renfrew, J. *Paleoethnobotany: Prehistoric Food Plants of the Near East and Europe*. London: Methuen, 1973. ISBN 0231037457
- Roberts, C. and K. Manchester. *The Archaeology of Disease*. Ithaca, NY: Cornell University Press, 1995. ISBN 0801432200
- Roscams, Steve. *Excavation*. Cambridge University Press, 2001. ISBN 0521798019
- Shackley, M. *Environmental Archaeology*. London: Allen and Unwin, 1981. ISBN 0049130218
- Thomas, David. *Hurst Archaeology Down to Earth*, 2nd ed. Toronto: Wadsworth, 2001. ISBN 015505189X
- Thomas, David Hurst. *Exploring Native America*. New York: Oxford University Press 2000. ISBN 019511857X
- Thomas, David Hurst. *Refiguring Anthropology: First Principles of Probability and Statistics*. Prospect Heights, Ill.: Waveland Press, 1986.
- Wade, Nicholas (ed.). *New York Times Book of Archaeology*. New York: Lyons Publishing, 2001. ISBN 1585743925
- White, K. D. *Greek and Roman Technology*. Ithaca, NY: Cornell University Press, 1984. ISBN 0801414393

Magazines

Archaeology Magazine (or see www.archaeology.org)

Internet

The URLs for the websites were verified by the writers prior to publication. Given the frequency with which these designations change, teachers should always verify the websites prior to assigning them for student use.

<http://www.archaeology.org/online/news/headlines.html>

<http://www.anthro.net>

The Royal Ontario Museum – <http://www.rom.on.ca/>

Canadian Museum of Civilization – <http://www.civilization.ca/archaeo/archaeoe.asp>

http://www.parcscanada.gc.ca/parks/main_e.htm

Canadian Conservation Institute – http://www.cci-icc.gc.ca/welcome_e.shtml

Lawson Museum of Archaeology – <http://www.uwo.ca/museum/index.html>
<http://ontarioarchaeology.on.ca>
<http://canadianarchaeology.com>
<http://dsc.discovery.com/search> – the Discovery Channel search feature
<http://www.pbs.org/wgbh/nova/search.html> (useful search engine)
Kennewick Man - Tri-City Herald's Interpretive Center at www.tri-cityherald.com/bones
<http://www.greatserpentmound.org/features/links.html>
Parthenon Marbles at www.greece.org/parthenon/marbles
UNESCO Sources: Treasure Hunters Beware!
www.unescosources.org/news/fullstory.php/aid/378/Treasure_Hunters_Beware!
Archaeological Careers Information:
<http://www.saa.org/>
<http://www.museum.state.il.us/ismdepts/anthro/dlcfqa.html>
http://arch.about.com/library/jobs/b/job_editor.htm

Catholic Resources

Catechism of the Catholic Church, Toronto, Doubleday, 1995.

Christian Justice. Minnesota: St. Mary's Press, 1995.

Do Justice! The Social Teachings of the Canadian Catholic Bishops. Editor E.F. Sheridan. Toronto: Pauline Press, 1987.

Gaudium et Spes. Second Vatican Council document.

Love Kindness. Jesuit Centre for Social Justice.

Rerum Novarum. Papal Encyclical, 1890.

OSS Considerations

The Archaeological Interdisciplinary Studies, Grade 12, University Preparation course provides students with the opportunity to acquire skills and knowledge that they need in order to pursue education and career goals and to become socially responsible adults. This course provides students with learning experiences that are consistent with program goals outlined in *Choices into Action, Guidance and Career Education Program Policy for Ontario Elementary and Secondary Schools, 1999*. Students relate what they are learning in this course to personal aspirations and interests and to possible work and life roles. To reach this objective, teachers should offer a range of career exploration activities. See, for example, the activities related to careers in archaeology and other disciplines in Units 1 and 5.

In some cases, students may benefit from co-operative education and work experience. If teachers choose to add this component to the course, examples of ways of providing these opportunities for students are suggested in the *Ontario Schools, Grade 9 to Grade 12, Program and Diploma Requirements, 1999*, section 7.5, co-operative education and work experience (pp. 52-54)

This course also gives consideration to integrating technology across the curriculum (for example, the use of Internet in research or multimedia presentation of student products), aiding students with special needs (adapting assignments when necessary), using the community as a resource (visits, if possible, from university faculty representatives and visits, if possible, to local archeological sites or museums), and using the library/resource centre. Teachers should also integrate the values of anti-discrimination, respect for human dignity, and violence prevention into the course of study.

Appendix 1

The Book Report

Each student in this Interdisciplinary Studies Grade 12, University Preparation course is required to complete a written book report as a partial preparation for the course culminating activity. By completing this assignment the student meets several of the course expectations related to research, communication, interpretation, and analysis.

In the final unit students will be required to prepare a simulated presentation to a university for a grant to perform a field expedition. They decide on a geographical area in which they will conduct their field study and will provide reasons for the selection of that geographical area. They organize an interdisciplinary team and present a rationale for the inclusion of each member of the interdisciplinary team.

With this information about the culminating activity in mind, students select a book that will aid them in their preparation for the course culminating activity. Each student selects an academically appropriate book dealing with the topic of archaeology and/or interdisciplinary studies. The selected book should be in the student's special area of interest and the subject of the book should be applicable to the course culminating activity.

Each book must be approved by the teacher. The student is required to submit process work in the form of three pages of point-form notes ten days before the submission of the final report.

In selecting information for the written book report, the student should focus on four or five significant incidents or topics in the book that illuminate the theme and message of the book. These incidents or topics should be examined in some detail and with proper documentation. Other topics in the book may be dealt with in a more general manner. In writing about the selected topic of archaeology and/or interdisciplinary studies, the student should, of course, focus on some of the most significant aspects of the subject area.

At one point in the written report the student explains the nature and use of methods beyond the scope of a single subject or discipline: in other words, describes some aspect of interdisciplinary studies in action.

Archaeology is a study of the human past through material remains, and at times there are different opinions about what occurred in the past and why it occurred. The student compares the author's opinion regarding the interpretation of an artifact or event with a second author's opinion of the same artifact or event. This exercise requires the investigation of the work of another author in addition to the one whose book the student is reading. The two authors' opinions may coincide, they may differ a great deal, or they may differ only slightly. The student makes specific reference to each author's opinion by means of a partial quotation, mentions the authors and their books or articles by name in the body of the written report, and correctly documents the opinions presented.

Aside from presenting a review of the most important material in the book, the student also performs a critical analysis of the author and/or the subject matter in the book. The report should comment on the major arguments of the author and the issues presented in the book, as well as make reference to the author's biases and the author's use of a multidisciplinary approach.

The book review should be organized into thematic paragraphs. The introductory paragraph, should introduce the book, its author, and the major topics which will be discussed in the book report. The concluding paragraph may summarize the student's opinions of the book and the use of interdisciplinary approaches.

The student uses a minimum of seven citations in the report. At least one of the citations must come from a second author at the point in the report where the authors' opinions are compared. The use of correct documentation should be reviewed by the teacher.

Appendix 2

Book Report Bibliographic Suggestions

- Baigent, Michael. *Ancient Traces: Mysteries in Ancient and Early History*. London: Penguin Books, 1998. ISBN 06708745
- Barry, Clifford. *The Lost Fleet: The Discovery of a Sunken Armada From the Golden Age of Piracy*. New York: Morrow, 2002. ISBN 0060198184
- Berger, Lee. *In the Footsteps of Eve*. Washington, National Geographic Society, 2000. ISBN 0792276825
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- Brothwell, D. *The Bog Man and the Archaeology of People*. Cambridge, Mass.: Harvard University Press, 1986. ISBN 0714113840
- Ceram, C.W. *Gods, Graves, and Scholars: The Story of Archaeology*. New York: Vintage Books, 1986. ISBN 0394743199
- Chatters, James. *Ancient Encounters: Kennewick Man and the First Americans*. New York: Simon & Schuster, 2001. ISBN 068485936X
- Classen, Cheryl (ed.). *Women in Archaeology*. Philadelphia: University of Pennsylvania Press, 1994. ISBN 0812215095
- Coe, M.D. *Breaking the Maya Code*. London: Thames & Hudson, 1992. ISBN 0500281335
- Davis-Kimball, Jeannine. *Warrior Women: An Archaeologist's Search for History's Hidden Heroines*. Warner Publishing, 2002. ISBN 0140280979
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- Gould, Stephen J. *The Panda's Thumb*. New York: Norton, 1980. ISBN 8472142728
- Harris, Marvin. *The Sacred Cow and the Abominable Pig: Riddles of Food and Culture*. New York: Simon & Schuster, 1987. ISBN 0671633082
- Heyerdahl, Thor. *The Ra Expeditions*. New York: Doubleday, 1971. ISBN 0385000987
- Johanson, D. *Ancestors: In Search of Human Origins*. New York: Villard, 1994. ISBN 0679420606
- Kalb, Jon. *Adventures in the Bone Trade*. New York: Copernicus, 2001. ISBN 0387987428
- Lapatin, Kenneth. *Mysteries of the Snake Goddess: Art, Desire and the Forging of History*. Boston: Houghton Mifflin, 2002. ISBN 0618144757
- Leakey, Richard. *Origin of Humankind*. London: Wiedenfeld and Nicolson, 1994. ISBN 0297815032
- Lewin, Roger. *Bones of Contention: Controversies in the Search for Human Origins*. Chicago: University of Chicago Press, 1997. ISBN 067152688X
- Marshack, A. *The Roots of Civilization*. New York: Moyer Bell, 1991.
- McGowan, Christopher. *The Dragon Seekers: How an Extraordinary Circle of Fossilists Discovered the Dinosaurs and Paved the Way for Darwin*. Cambridge, Mass: Perseus, 2001. ISBN 0738202827
- McIntosh, Jane. *A Peaceful Realm: The Rise and Fall of the Indus Civilization*. Westview Publishers, 2001. ISBN 0813335329
- Norman, Bruce. *Footsteps: Nine Archaeological Journeys of Romance and Discovery*. London: BBC Books, 1987. ISBN 0563205520

Appendix 2 (Continued)

- Pryor, Francis. *Seahenge: The Quest for Life and Death in Bronze Age Britain*. Harper Collins, 2002. ISBN 007181929
- Rash, Stephen. *It's About Time: A History of Archaeological Dating in North America*. Salt Lake City: University of Utah Press, 2000. ISBN 0874806216
- Romain, William. *Mysteries of the Hopewell: Astronomers, Geometers and Magicians of the Eastern Woodlands*. Akron: University of Akron Press, 2000. ISBN 1884836615
- Rudgley, Richard. *Lost Civilizations of the Stone Age*. London: Century, 1998. ISBN 0712677585
- Schele, Linda and David Freidel. *A Forest of Kings: The Untold Story of the Maya*. New York: Morrow, 1990. ISBN 0688074561
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- Severin, Tim. *The Brendan Voyage*. New York: McGraw-Hill, 1978. ISBN 0070563357
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- Wells, C. *Bones, Bodies and Disease*. London: Thames and Hudson, 1964. ISBN 0500020345
- Tyldesley, Joyce. *Rameses: Egypt's Greatest Pharaoh*. Toronto: Penguin, 2001. ISBN 0140280979
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- Webster, David. *Fall of the Ancient Maya: Solving the Mystery of the Maya Collapse*. London: Thames and Hudson, 2002. ISBN 0500051135
- Winchester, Simon. *The Map That Changed the World: William Smith and the Birth of Modern Geology*. New York: Harper Collins, 2001. ISBN 0060193611
- Yadin, Yigael. *Masada: Herod's Fortress and the Zealots' Last Stand*. London: Wiedenfeld & Nicolson, 1966.

Appendix 3

Rubric for Book Report

Student name: _____

Criterion	Level 1 (50–59%)	Level 2 (60-69%)	Level 3 (70-79%)	Level 4 (80-100%)
Thinking/Inquiry PM1.04, PM2.03, PM2.04, PM3.01, PM4.01	- a limited amount of correct and comprehensive research	- a moderate amount of correct and comprehensive research	- a considerable amount of correct and comprehensive research	- a high degree of correct and comprehensive research
Thinking/Inquiry PM2.03, PM3.04	- limited evidence of correct and effective documentation	- moderate evidence of correct and effective documentation	- considerable evidence of correct and effective documentation	- a high degree of evidence of correct and effective documentation
Knowledge/ Understanding Application PM3.02, PM3.05	- limited evidence of a valid comparison of viewpoints	- moderate evidence of a valid comparison of viewpoints	- considerable evidence of a valid comparison of viewpoints	- a high degree of evidence of a valid comparison of viewpoints
Application IE1.03, TF1.01, PM3.02	- limited evidence of critical analysis	- moderate evidence of critical analysis	- considerable evidence of critical analysis	- a high degree of evidence of critical analysis
Communication PM3.03, PM3.05, IE1.01, IE1.02	- information and ideas are communicated with limited clarity	- information and ideas are communicated with moderate clarity	- information and ideas are communicated with considerable clarity	- information and ideas are communicated with a high degree of clarity
Thinking/Inquiry Application IEV.03, IE3.04	- limited application to interdisciplinary studies	- some application to interdisciplinary studies	- considerable application to interdisciplinary studies	- high degree of application to interdisciplinary studies

Overall level:

Appendix 4

Additional Teaching Learning Strategies for Activity 2.1

The possible number of scientific disciplines which may be of use to the archaeologist is large. Depending on class size, the teacher may wish to assign a separate science to each student, to research, assess, and report on the impact of that particular specialty. Students would benefit from conversations with scientists in that particular field – either through personal interviews, or through telephone or e-mail. Students are expected to clearly explain the scientific procedure involved. Charts, graphs, and other visual aids are encouraged when appropriate. The following questions can guide their analysis:

- What are the assumptions made by the scientist? What is the point of view of that discipline?
- On what types of materials, or under what conditions is this procedure used?
- How reliable do you consider the results to be?
- Has the use of this procedure or discipline upset previously held ideas? Are there disadvantages to its use?
- In general, do you consider that this procedure or discipline has had significant impact in decoding events of the past?

Note: It will be necessary for teachers to establish clear guidelines for these interviews that include board and school policies and protocols covering contacts with members of the community.

The teacher might prefer to provide additional focus on the science by assigning a question to each student, so that the presentation might be seen to have a practical application in the world of archaeology. Sample questions include:

Biology

- How can archaeological analyses of medieval middens and garbage dumps benefit from the work of nutritionists?
- By studying elephants, can zoologists draw useful conclusions about the social behaviour of mammoths? Explain.
- In what way is the collapse of the Aztec empire made more understandable by the work of epidemiologists, and other specialists in infectious diseases?
- What has gene mapping told us about the ancestry of the Aboriginal peoples of Australia and Micronesia?
- Occasionally a body may be discovered buried in a shallow grave in Ontario. Why are anatomists useful in determining whether or not it was an Aboriginal burial?
- Why would a solid knowledge of dentistry be a useful skill on an archaeological expedition to East Africa?

Botany

- How has dendrochronology helped unravel the mysteries of the Anasazi cliff-dwellers of the American Southwest?
- How did pollen analysis from the graves in the cave of Shanidar in Iraq open new avenues of thought on Neanderthal life?
- In what ways can botanists contribute to our understanding of the domestication of food plants?

Appendix 4 (Continued)

Physics

- How important is the study of the magnetic dip of pottery shards in understanding the trade patterns in America before the Europeans?
- How can vulcanology help us understand the surprising fate of Pompeii?
- What are the limits on the usefulness of radiocarbon dating using C14?
- Explain how ground-penetrating radar might be employed in discovering previously unknown settlements and villages of Aboriginal peoples. Where might this technology be of most use?
- Does knowledge of astronomy help us date the construction of the Great Pyramid of Giza?

Geology

- How did seriation help archaeologists discover which city in the hill of Hissarlik was the Troy described in the Iliad?
- Why is the presence of iridium in geological strata crucial in the current explanation of the extinction of the dinosaurs?

Geography

- Does geography adequately explain the form and location of the cities of the Mississippian people?
- How might an experienced Caribbean sailor use his/her knowledge to help locate sunken Spanish galleons?
- Can climatologists help explain the extinction of the dinosaurs?

Other

- How have modern attempts to recreate their stone tools changed our opinion of the Folsom people of the U.S. Southwest?
- How did cryptology prove useful in the unlocking of the Minoan B script of early Crete?
- Would the expertise of a stonemason be of use in analysing how a city such as Machu Picchu was constructed?
- What particular sciences would you predict would be most useful in studying the extinction of North American megafauna such as mammoths, ground sloths, and Taylor's bison?

Appendix 5

Additional Teaching Learning Suggestions for Unit 3

The following activity is intended to introduce students to the problems of interpreting “pieces from the past,” and to make them aware of the number of unanswered questions about the past. The “artifacts” in this activity do not need to be authentic or related to each other. They serve mainly as a source of discussion about interpreting the past.

The teacher divides the class into groups of four students and presents each group with a series of artifacts. The “artifacts” can be collected and/or produced by the teacher. Among the possible artifacts to be examined in each group are: a piece of pottery, a piece of glass, a bone, an axe head or other primitive tool, a statue of a female, a reproduction of hieroglyphics, Maya glyphs, or Aztec script. Students are informed that they are not attempting to identify a specific civilization; they are attempting to place interpretations on specific artifacts.

To create greater “authenticity” the artifacts may be buried in a sand box and then each group is asked to find one artifact in the box. In turn, the members of each group are asked to “interpret” the artifact in their possession. A recorder in each group writes down the interpretations of the group for each artifact and the reasons for the interpretations. Each group is also required to record a series of unanswered questions about each artifact.

The groups present their interpretations of the artifacts to the class. The teacher records the similarities and differences in the groups’ interpretations on the board or overhead. The class as a whole discusses the validity or lack of validity of the various interpretations.

The teacher asks the class to identify examples of bias in the interpretations related to the artifacts. The teacher asks the class to hypothesize about the reasons for the various biases.

Next, the groups present their unanswered questions about each artifact and the teacher records the questions on the board or overhead. The class discusses the significance of each of the unanswered questions.

In the next activity, students investigate how evidence from the past is interpreted from a variety of perspectives – political, racial, religious, cultural, and artistic. Working in groups, students investigate the following problems in interpreting the past. Students research print and Internet sources.

Students pose further questions about each subject area such as:

- Is the picture of Minoan Crete presented by Sir Arthur Evans a reflection of the values of his own time period?
- What group of people created the sophisticated and beautiful monument of Great Zimbabwe, near Masvingo in the country of Zimbabwe? –Was this 19th century archaeological find the work of “outside” influences such as Phoenicians, Arabs, or Portuguese? Or was this the work of the indigenous peoples, the Bantu?
- Writers such as Janet Spector and Margaret Conkey have drawn attention to the androcentrism (male bias) of the discipline of archaeology. Can you find evidence to support or dispute this concern in assumptions archeologists have made about the creation of artifacts such as Paleolithic stone tools, Neolithic female figurines, or other items you can study?
- Who created, and for what purpose, the megalithic (*megas* - great; *lithos* - stone) tombs of Neolithic date (4000-3000 BCE) along the Atlantic seaboard of Europe? –Were the large stone structures created by sea-faring Aegean peoples or by the indigenous people of the region? Were the structures related to the occupation of fishing or were they territorial markers for agriculturalists? How were the stones moved, and why was there such a large investment of labour into these activities?

Appendix 5 (Continued)

The groups report their findings and conclusions to the class. Students write journal reflections on each of the categories of findings.

The teacher leads students in an investigation of the following categories of archaeology:

- a) Technology,
- b) Subsistence Economics,
- c) Social Organization
- d) The Human Mind.

Students research print and Internet sources and teacher-generated documents. In the unit culminating activity, students in groups present their findings to the class in oral reports and they present conclusions in concrete form either by sketches, diagrams, photographs, or maps.

a) Technology: how did humankind make and use tools in the past?

Students examine artifacts that were used as tools in antiquity. Students research stone, pebble, flint, and wood artifacts. Students formulate questions that archaeologists would ask about artifacts that may have been used as tools. Students study mines and quarries such as the one at Rijckholt, Netherlands (flint and axe heads), and the statue-quarry on Easter Island (many unfinished statues at various stages of manufacture).

Students investigate how tools may have been utilized in the past. They examine Jean-Pierre Protzen's work with hammerstones to explain the accuracy of Inca stonework. They investigate the use of modern laboratory technology by modern archaeologists. Tests with electron spin resonance (ESR) have proved that heat treatment of flint tools was present in the French Paleolithic culture about 19 000 years ago. The use of the scanning electron microscope has allowed archaeologists to perform accurate microwear studies on artifacts to determine the purpose for which some tools were used.

Experimental archaeology includes the manufacture of exact copies of different types of stone tools using only the technology available to the original makers. In another case of experimental archaeology, Norwegian anthropologist, Thor Heyerdahl, used a balsa wood raft reconstruction (the Kon-Tiki) to demonstrate that the grounds usually cited when discounting South American colonization of Polynesia were invalid. The use of underwater archaeology has revealed that Greek ships from the 5th century BCE were built with planks held together by mortise-and-tenon joints

Students theorize about the importance of pottery in antiquity and theorize about what pottery artifacts tell us about a group of people. Pottery was first made by hand in a series of coils of clay. Later (3400 BCE in Mesopotamia) the making of pots on a wheel was introduced. Students examine theories of firing methods and their respective temperatures, use of pottery kilns, and degrees of oxidization.

Ethnography involves the study of contemporary cultures from an archaeological viewpoint.

Contemporary cultures that still make pottery by traditional methods can be observed to provide possible answers to questions such as when, why, by whom, what amount of time and effort was invested in creating different vessels, and what happens to broken vessels. A teacher from the school's technology department and/or a pottery-maker may be used in this area of interdisciplinary study. Students research the significance of the production of glass and alloys in the making of tools. The production of glass (first achieved in Mesopotamia about 2500 BCE) required the generation of very high temperatures to achieve the melting point of silica (sand) and the use of a flux such as potash. The alloying of copper with arsenic or tin to produce bronze allowed for the production of better weapons and tools.

Appendix 5 (Continued)

b) Subsistence Economics: how did humankind make a living in the past?

Students theorize about how archaeologists interpret subsistence economics in antiquity.

Students examine what conclusions may be drawn from botanical and animal remains.

Students become familiar with the term, *paleoethnobotany: the recovery and identification of plant remains from archaeological contexts*, which is important in the reconstruction of past environments and economies.

Students research answers to the questions:

What type of evidence may be gathered from the remains of individual meals as funerary offerings?

What type of evidence may be gathered from the content of stomachs or coprolites (fossilized feces)?

What can human tooth wear tell the archaeologist about human diet?

What can isotopic analysis of human bone collagen reveal about long-term food intake?

What can teeth and bones tell us about animal domestication?

What evidence about food can be gathered from art and literature?

In examining food evidence at a site, to what extent is the evidence representative of total diet?

What can food evidence tell us about the site's function and whether it was inhabited for short periods or long periods of time?

Taphonomy is the assessment of what has happened to a bone between its deposition and its discovery. Students may examine the work of C.K. Brain who has attempted to demonstrate that early hominids (australopithecines) were not hunters, but victims of carnivores at cave sites such as Swartkrans, South Africa.

c) Social Organization: how did humankind organize itself in the past?

Students brainstorm how archaeologists learn about humankind's social organization in the past.

Students formulate questions related to the social structure evident from the archaeology of a particular site, and investigate a number of questions related to social organization: Was the site part of a larger social system? Were there social gradations in the society?

When an archaeologist is excavating a single site, is it an independent political unit, such as a Maya city-state, or a smaller-scale base camp of a hunter-gatherer group?

Why is it important to find the remains of the largest centre in a society? How may this be accomplished?

In what ways is an investigation of the following factors important: kingship, bureaucratic organization, redistribution and storage of goods, craft specialization, and external trade?

Students identify a society's indicators of wealth such as residences, artifacts, art, burial monuments, and grave-goods.

Appendix 5 (Continued)

d) The Human Mind: what did humankind think in the past?

Students theorize about how archaeologists may be able to interpret what human beings thought in the past.

Through the pre-history period, when written sources are entirely absent, there are some methods for analysing the way people thought. Students investigate the possibility that prehistoric cultures created units of time, length, and weight. How convincing are Alexander Marshak's assertions that groups of markings on bones are suggestive that Neanderthals understood numbers?

Students examine the Paleolithic (as early as 15 000 BCE) cave art found in southwest France and northern Spain and speculate about its significance. Students study early writing systems such as cuneiform script in Mesopotamia, the evolution of the Chinese script, and Maya glyphs. Why did these writing systems evolve where and when they did?

What do human burial sites and burial monuments tell us about human thought? What conclusions may be drawn from a Neanderthal burial at Shanidar Cave in Iraq where the presence of pollen indicated a presence of flowers?

What inferences about religious and supernatural beliefs can be drawn from certain artifacts?

Unit Culminating Activity

For the unit's culminating activity, students are organized into groups of three by the teacher. Each group selects a topic related to the analysis and interpretation of one of: technology, subsistence economics, social organization, and the human mind. Each group finds a case study related to their selected topic. All case studies need to be approved by the teacher to avoid duplication. Students are required to identify the site and material used for their selected case study. The groups complete the research related to their respective case studies using both print and Internet sources.

The groups present their findings to the class in oral reports and present their conclusions in concrete form either by sketches, diagrams, photographs, or maps.

In the oral presentations, groups explain what subject disciplines were used in their interpretation of the past.

Each team member also produces a written report in which the main conclusions of the interdisciplinary product are summarized from a personal point of view.

Appendix 6

Learning Expectations from Other Courses

AVI4M: Visual Arts, Grade 12, University/College Preparation

AN1.03 – explain the visual and conceptual aspects of art works in terms of the context (e.g., historical, social, political, economic) in which the works were created;

AN1.04 – produce well-reasoned interpretations of art works based on information distilled from analyses of the works and from research on the works.

CGG3O: Regional Geography: Travel and Tourism, Grade 11, Open

HE1.03 – identify selected natural and cultural World Heritage Sites and the factors responsible for their selection;

HE3.03 – evaluate the role of UNESCO in protecting significant natural and cultural sites around the world.

CGR4M: The Environment and Resource Management, Grade 12, University/College Preparation

GC1.02 – explain the requirements for including natural sites on the World Heritage List;

HE3.03 – research and report on the relationship between environmental degradation and human health concerns.

CGU4U: World Geography: Human Patterns and Interactions, Grade 12, University Preparation

SS3.02 – explain selected movements of goods and people, using concepts of spatial interaction.

CGW4U: Canadian and World Issues: A Geographic Analysis, Grade 12, University Preparation

SS1.02 – explain why places and regions are important to the identities of selected human groups (e.g., Jerusalem as a holy city for Christians, Jews, and Muslims);

SS1.08 – demonstrate an understanding of the need to respect the cultural and religious traditions of others.

CHI4U: Canada: History, Identity and Culture, Grade 12, University Preparation

HIV.03 • communicate opinions and ideas based on effective research clearly and concisely;

HI2.03 – explain relationships and connections in the data studied (e.g., chronological ties, cause and effect, similarities and differences);

HI2.04 – draw conclusions based on the effective evaluation of sources, analysis of information, and awareness of diverse historical interpretations;

HI2.05 – demonstrate an ability to develop a cogent thesis substantiated by effective research;

HI3.03 – express ideas, opinions, and conclusions clearly, articulately, and in a manner that respects the opinions of others;

HI4.01 – demonstrate an ability to think creatively in reaching conclusions about both assigned questions and issues and those conceived independently;

HI4.04 – identify various career opportunities related to the study of history (e.g., researcher, museum or archive curator, teacher, journalist, writer).

Appendix 6 (Continued)

CHW3M: World History to the Sixteenth Century, Grade 11, University/College Preparation

- CC1.02 – identify forces that tended to promote and facilitate change (e.g., religious proselytizing, migration of peoples, Humanism);
- CC1.03 – demonstrate an understanding of the roles of selected individuals and groups in the process of change (e.g., Socrates, the Mongols, Jeanne d’ Arc);
- CC3.03 – identify cause-and-effect relationships within the chronology of significant historical events;
- CO2.03 – evaluate the criteria that a society must meet to be regarded as a “civilization” (e.g., longevity, lasting influence of cultural contribution, significance of role in events of the period).

CHY4U: World History: The West and the World, Grade 12, University Preparation

- CH2.01 – demonstrate an understanding of key characteristics of and significant ideas emerging from various cultures around the world (e.g., tribalism in indigenous societies, Chinese and Indian dynastic absolutism, characteristics of Latin American Creole and mestizo culture).

CLN4U: Canadian and International Law, Grade 12, University Preparation

- HT3.01 – explain the interrelation of law, morality, and religion;
- HT3.02 – analyse how society uses law to express its values;
- HT3.03 – identify and analyse contemporary events and issues that demonstrate a possible conflict between the law and societal values;
- RDV.03 • demonstrate an understanding of the major concepts, principles, and purposes of international law;
- RDV.05 • demonstrate an understanding of the complexity of making, interpreting, and enforcing law on a global scale;
- RF5.03 – evaluate the political and legal avenues available for resolving conflicts (e.g., the courts, tribunals, referendums).

HSP3M: Introduction to Anthropology, Psychology, and Sociology, Grade 11, University/College Preparation

- IS2.01 – describe the steps involved in social science research and inquiry, including developing and testing a hypothesis;
- IS2.02 – demonstrate an understanding of various research methodologies for conducting primary research (e.g., interviews, surveys and questionnaires, observations);
- IS2.04 – demonstrate an ability to locate and select relevant information from a variety of print and electronic sources (e.g., books, periodicals, television, Internet sites, CD-ROMs);
- IS2.05 – evaluate the relevance and validity of information gathered through research;
- IS2.06 – demonstrate an ability to organize, interpret, and analyse information gathered from a variety of sources.

Appendix 6 (Continued)

LVV4U: Classical Civilization, Grade 12, University Preparation

AA1.04 – describe various pottery styles (e.g., black figure, red figure, krater, kylix) and explain the uses of the artifacts that exemplify them in projects and presentations involving the use of slides or photographs;

AA1.06 – explain aspects of life in ancient times (e.g., the existence of a trade system involving other civilizations; the level of wealth in the society; the social order; burial customs; the level of literacy) by making inferences from artifacts and sites discovered through archaeological exploration.

MDM4U: Mathematics of Data Management, Grade 12, University Preparation

OD1.02 – use the Internet effectively as a source for databases;

OD1.03 – create database or spreadsheet templates that facilitate the manipulation and retrieval of data from large bodies of information that have a variety of characteristics (e.g., a compact disc collection classified by artist, by date, by type of music);

ST1.01 – demonstrate an understanding of the purpose and the use of a variety of sampling techniques (e.g., a simple random sample, a systematic sample, a stratified sample).

NDG4M Aboriginal Governance: Emerging Directions, Grade 12, University/College Preparation

ID1.03 – identify approaches suggested by Aboriginal peoples to help Canadian society better understand the concept of Aboriginal identity and self-determination.

NDW4M: Issues of Indigenous Peoples in a Global Context, Grade 12, University Preparation

CHV.03 • describe a variety of approaches that indigenous peoples are taking to preserve and maintain indigenous knowledge as it relates to such things as culture, language, and the environment.

SBI4U: Biology, Grade 12, University Preparation

EVV.03 • analyse how the science of evolution can be related to current areas of biological study, and how technological development has extended or modified knowledge in the field of evolution;

EV1.02 – describe, and put in historical and cultural context, some scientists' contributions that have changed evolutionary concepts (e.g., describe the contributions – and the prevailing beliefs of their time – of Lyell, Malthus, Lamarck, Darwin, and Gould and Eldridge);

EV3.01 – relate present-day research and theories on the mechanisms of evolution to current ideas in molecular genetics (e.g., relate current thinking about adaptations to ideas about genetic mutations);

EV3.02 – describe and analyse examples of technology that have extended or modified the scientific understanding of evolution (e.g., the contribution of radiometric dating to the palaeontological analysis of fossils).

Appendix 6 (Continued)

HZT4U: Philosophy: Questions and Theories, Grade 12, University Preparation

ET1.03 – use critical and logical thinking skills to defend their own ideas about ethical issues (e.g., the nature of the good life) and to anticipate counter-arguments to their ideas.

SES4U: Earth and Space Science, Grade 12, University Preparation

EH1.01 – demonstrate an understanding of the differences between relative and absolute dating techniques as they apply to natural systems;

EH1.02 – describe and explain the various methods of isotopic age determination, giving for each the name of the isotope, its half-life, its effective dating range, and some of the materials (e.g., minerals and rocks) that it can be used to date;

EH3.02 – demonstrate an understanding of the significance of paradigm shifts in the development of geological thinking (e.g., contrast the principles of uniformitarianism and catastrophism);

ES1.01 – demonstrate an understanding of the range of physical scales that apply in the Earth sciences (e.g., from those that apply to the planet as a whole to those used at the atomic level);

ES1.03 – demonstrate an understanding of the continuous recycling of major rock types throughout Earth history, of the evidence that this process provides with respect to the length and complexity of Earth history, and of the very late appearance of human beings in the geological record;

ES1.04 – describe various kinds of evidence that suggests that life forms, climate, continental positions, and the Earth's crust have changed over time (e.g., the extinction of the dinosaurs, evidence of past glaciations, evidence of the existence of Pangaea and Gondwanaland);

ES2.02 – demonstrate an understanding of the major tools and techniques (e.g., seismograph, magnetic signature of the ocean floor) that various Earth scientists (e.g., seismologists, geophysicists) use to conduct research on the basic structure and processes of the planet;

IS1.04 – distinguish between erosion and weathering, and describe the processes and effects of physical, chemical, and biological weathering.

Appendix 7

Glossary of Terms Related to Archaeology

(See also <http://archaeology.about.com/library/glossary>)

Archaeology: the study of the past through its material remains.

Artifact: any portable object used, modified, or made by human beings - for example, pottery and stone tools.

Coprolites: fossilized feces. These contain food residues that can be used to reconstruct diet.

Dendrochronology: the study of tree-ring patterns used as the basis for a chronology.

Electron spin resonance (ESR): enables trapped electrons within bone and shell to be measured. The number of trapped electrons indicates the age of the specimen.

Ethnoarchaeology: the study of contemporary cultures with a view to understanding cultures from the past.

Excavation: the principal method of data gathering in archaeology, involving the systematic uncovering of archaeological remains.

Experimental archaeology: the study of past human behaviour by means of experimental reconstruction under carefully controlled scientific conditions.

Fossil: any traces of a prehistoric animal or plant preserved in the earth or in rocks.

Iconography: the study of artistic representations that usually have religious or ceremonial significance.

Magnetic dip: the angle of alignment of iron particles in pottery, giving an indication of the distance from the earth's magnetic pole at which the pottery was fired.

Mesolithic: Old World chronological period beginning approximately 10 000 years ago, situated between the Paleolithic and Neolithic periods of time.

Microwear analysis: the study of the patterns of wear or damage on the edge of stone tools or teeth, which provides information on usage.

Midden: the accumulation of debris and domestic waste products resulting from human use.

Neolithic: an Old World chronological period characterized by the development of agriculture and settled community life.

Paleontology: the study of fossil remains.

Paleoethnobotany: the recovery and identification of plant remains from archaeological sites.

Paleolithic: the archaeological period before 10 000 BC characterized by the earliest known tool manufacture.

Palynology: the analysis of fossil pollen as an aid to the reconstruction of past vegetation and climates.

Potassium-argon dating: a method used by geologists to date rocks up to thousands of millions of years old, although it is restricted to volcanic material no more recent than 100 000 years old. The method is used frequently in the dating of hominid sites in Africa.

Radiocarbon dating: an absolute dating method that measures the decay of the radioactive isotope of carbon (C14) in organic material.

Appendix 7 (Continued)

Seriation: a relative dating technique based on the chronological ordering of a group of artifacts, where the most similar are placed most adjacent to each other in the series.

Site: a distinct spatial clustering of artifacts, features, structures, and organic and environmental remains, as the residue of human activity.

Stratification: the laying down or depositing of layers or strata of natural or artificial material one above the other. A succession of layers should provide a relative chronological sequence, with the earliest at the bottom and the latest at the top.

Taphonomy: the study of processes which have affected organic materials such as bone after death.

Uranium series dating: a dating method based on the radioactive decay of isotopes of uranium. It has proved useful for the period before 50 000 years ago, which lies outside the range of radiocarbon dating.

Coded Expectations, Interdisciplinary Studies, University Preparation IDC4U/IDP4U

Theory and Foundation

Overall Expectations

- TFV.01** • demonstrate an understanding of the key ideas and issues related to each of the subjects or disciplines studied;
- TFV.02** • demonstrate an understanding of the different structures and organization of each of the subjects or disciplines studied;
- TFV.03** • demonstrate an understanding of the different perspectives and approaches used in each of the subjects or disciplines studied;
- TFV.04** • demonstrate the skills and strategies used to develop interdisciplinary products and activities.

Specific Expectations

Ideas and Issues

- TF1.01** – critically analyse the major concepts and ideas held by pre-eminent theorists and researchers in each of the subjects or disciplines studied and describe their historical evolution (e.g., for an interdisciplinary studies course on mathematics and the arts: Pythagoras’s notion about numbers and intervals, Leonardo da Vinci’s use of perspective and ratio, and Arnold Schoenberg’s use of permutations in serial music);
- TF1.02** – describe and critically analyse the ways in which each of the related subjects or disciplines studied contributes to the understanding of key historical and contemporary issues in the interdisciplinary course (e.g., a course on the nature of work might include the history of social trends from sociology, the evolution of labour legislation from history, utopian idealism in English fiction from English, the pre-industrial focus in the Arts and Crafts movement from the arts; a course in archaeological studies might include investigation of specialized techniques from related fields, such as linguistics, palaeobotany, and palaeopathology);
- TF1.03** – analyse and explain the importance of information and communication in past and contemporary societies (e.g., to preserve and advance knowledge, to develop trade and commerce, to organize and foster art and culture), and describe their impact on the development of each of the subjects or disciplines under study;
- TF1.04** – identify and describe practices in Canada and around the world that effectively safeguard privacy and intellectual ownership of information in areas related to interdisciplinary studies (e.g., academic conventions, copyright legislation), and describes possible future changes to these practices.

Structures and Organization

- TF2.01** – analyse and describe ways in which an interdisciplinary studies approach questions assumptions about the structure and scope of the subjects or disciplines studied (e.g., “Do all the arts share common features and purposes?”, “In what ways do all areas of knowledge benefit from historical analysis?”, “How does the search for values and ethical responsibility characterize all areas of knowledge?”, “Does information technology simply organize existing information or is it an interdisciplinary way of knowing?”) and analyse the new structures that have emerged to broaden and advance the scope of the knowledge of individual subjects or disciplines;
- TF2.02** – analyse and describe the past and current importance of organizing and storing information and resources to each of the subjects or disciplines studied (e.g., to regulate copyright and patents, to preserve Aboriginal oral traditions, to share original scholarship);

TF2.03 – assess the effectiveness of a wide variety of print and electronic forms used in each of the subjects or disciplines studied to identify, classify, organize, store, and retrieve information (e.g., reference materials, government documents and archives, scientific and academic journals, web directories);

TF2.04 – describe the history and role of institutions and occupations that gather, organize, and store information (e.g., libraries and librarians, postsecondary institutions and researchers, museums and curators), and explain how they meet needs and challenges in each of the subjects or disciplines studied.

Perspectives and Approaches

TF3.01 – analyse and describe different approaches to perceiving “reality” in the subjects or disciplines studied (e.g., the role of sensory perception in the arts and in the sciences, ways in which different languages shape the cultural experiences of the people who speak them, the role of logical reasoning in matters of faith, the effect of emotion in historical inquiry, the use of intuition as a way of knowing about personal health);

TF3.02 – analyse and describe the different perspectives of various disciplines on the same topic as exemplified in key interdisciplinary texts (e.g., the different viewpoints of evolutionary biology, geography, and demography in *Guns, Germs, and Steel: The Fates of Human Societies* by Jared Diamond; the varying perspectives of media study, linguistics, and sociology [social trends] in *The Gutenberg Galaxy* by Marshall McLuhan) and explain how these diverse perspectives further the investigation of issues and the solving of problems;

TF3.03 – analyse and describe the interdisciplinary approaches used for inquiry and research in a number of specific endeavours (e.g., experimentation and computer simulation in biotechnology; statistical analysis and case study in educational psychology) and critically analyse some of the common errors that characterize poor research (e.g., selective observation, overgeneralization, falsification of data, illogical reasoning, premature closure of inquiry);

TF3.04 – identify the historical development of the systems approach to solving problems and describe examples of how it has been successfully applied to solve problems in interdisciplinary endeavours (e.g., the application of systems models – physical, graphical, verbal, or mathematical representations of a system; systems paradigms – conceptual frameworks, filters, or theories used to interpret information; systems archetypes – diagrams that illustrate ways of identifying and solving problems found in different locations).

Skills and Strategies

TF4.01 – demonstrate an understanding of the collaborative attitudes and skills that contribute to the researching and creating of interdisciplinary products and activities (e.g., the ability to encourage multiple perspectives on human development issues, to motivate others to share ideas about personal financial management strategies, to refine positions and reach consensus in designing community-based information systems, to manage conflict and delegate tasks in joint research activities);

TF4.02 – demonstrate the ability to use linguistic devices (e.g., analogies and metaphors) and mathematical representations (e.g., symbolic language and graphs) to make connections among the subjects or disciplines studied;

TF4.03 – critically analyse and demonstrate the ability to apply a variety of critical- and creative-thinking strategies and models (e.g., conceptual frameworks; sequential thinking models; simulations; models proposed by leading interdisciplinary educators, such as Heidi Hayes Jacobs) to help develop innovative interdisciplinary products or activities;

TF4.04 – demonstrate an understanding of how to use a variety of information technologies to support interdisciplinary endeavours (e.g., online conferences and newsgroups to gather current information, advanced search engines to extend research, web-based exhibits to present multiple perspectives);

TF4.05 – identify and describe strategies that national and international groups and organizations use to address interdisciplinary issues and decisions (e.g., a multinational company and a union using mediation to resolve a labour dispute; the United Nations Educational, Scientific, and Cultural Organization (UNESCO) preparing and adopting an international agreement to promote collaboration among nations through education, science, culture, and communication).

Processes and Methods of Research

Overall Expectations

PMV.01 • be able to plan for research, using a variety of strategies and technologies;

PMV.02 • be able to access appropriate resources, using a variety of research strategies and technologies;

PMV.03 • be able to process information, using a variety of research strategies and technologies;

PMV.04 • be able to assess and extend their research skills to present their findings and solve problems.

Specific Expectations

Preparing for Research

PM1.01 – demonstrate an understanding of the purposes and types of research used in each of the subjects or disciplines studied (e.g., by describing autobiographical writings of leading researchers in a variety of fields, by analysing the limitations of research in specific areas) and describe historical examples of effective research;

PM1.02 – demonstrate an understanding of the skills and attitudes required for research in each of the subjects or disciplines studied (e.g., by analysing the purpose and scope of research tasks; by adjusting questions, focus, and thesis throughout the research process to account for changing situations; by valuing collaborative inquiry models) and analyse the skills and attitudes evident in specific examples of effective research;

PM1.03 – identify and describe the critical- and creative-thinking strategies that are effective at each stage of research in each of the subjects or disciplines studied (e.g., by identifying the ways in which similar information and assumptions from different sources are analysed, checking results under variable conditions, investigating innovative sources of information, expanding the focus of investigation at strategic stages) and analyse the strategies evident in specific examples of effective research;

PM1.04 – formulate questions for a variety of purposes in interdisciplinary research (e.g., to develop a thesis and an argument, to challenge assumptions and biases, to find new relationships, to examine multiple perspectives) and compare the significance and effectiveness of the questions posed with those from specific examples of effective research.

Accessing Resources

PM2.01 – identify and describe the difference between real and virtual libraries (e.g., in terms of access to materials under copyright, the quality control of available information, format differences that affect readability and understanding of texts) and describe the impact of these differences for interdisciplinary research;

PM2.02 – identify and describe the principles used by the creators of databases, catalogues, and indexes to organize information for retrieval (e.g., uniform entry; specific entry; and the use of broader, related, and narrower terms) and apply this knowledge to locate relevant resources for interdisciplinary research, using a variety of search strategies and features (e.g., search strings and proximate searches, controlled vocabulary searches, citation searches, bibliographies);

PM2.03 – locate relevant primary and secondary resources for interdisciplinary research, using a variety of print or electronic (online) reference materials, indexes, and databases (e.g., scientific papers and reports of conference proceedings, discipline-specific indexes, indexed abstracts);

PM2.04 – select relevant information within resources for interdisciplinary research, using a variety of reading and critical-thinking strategies (e.g., relating information from a previously known or simpler context to information in a new or more complex context; producing sectional summaries, précis, and abstracts of complex works; using knowledge of characteristic features of genres and types of books, such as history texts or scientific reports, to clarify an author’s purpose and scope).

Processing Information

PM3.01 – analyse and evaluate information from a variety of print, electronic, and mass media resources according to specific criteria, including the currency, comprehensiveness, and depth of the information (e.g., “Are the examples of genetic engineering research up to date?”, “Are the perspectives of both developed and developing nations represented in the socio-economic study on global trade?”, “How thorough or superficial is the newspaper article examining the impact of technology on archaeology?”);

PM3.02 – identify and critically analyse ideas, arguments, bias, and stereotyping found in resources, using a variety of strategies (e.g., analysing fallacies in an author’s argument, using a review of a text in a periodical to discover its omissions in data and information, conducting an Internet search to determine how representative samples in scientific studies are);

PM3.03 – record, sort, and organize information found in resources related to each of the subjects or disciplines studied, using a variety of forms and technologies (e.g., tables, concept mapping applications, bibliographic applications) and identify gaps in information requiring further research;

PM3.04 – record, sort, and organize sources of information in relevant footnotes, citations, endnotes, or bibliographies, using an accepted form of documentation (e.g., from a recognized stylebook such as that produced by the Modern Language Association or the American Psychological Association);

PM3.05 – synthesize findings from their interdisciplinary research, using a variety of strategies and technologies (e.g., combining the insights and solutions found in a variety of resources; using précis and abstracts to summarize information; finding relationships among census data on geographic, social, economic, and historical information).

Assessing and Extending Research

PM4.01 – re-examine the comprehensiveness of their interdisciplinary research to update and modify their interdisciplinary products (e.g., formal essays, dramatic presentations, web pages with directories) in light of new findings and feedback;

PM4.02 – assess their effectiveness in generating new ideas in each of the subjects or disciplines studied as a result of their research (e.g., “What new direction has my research on faith communities suggested?”, “How can my research encourage younger students to become interested in archaeology?”);

PM4.03 – develop and apply effective criteria for assessing the quality of their interdisciplinary research (e.g., identify how well their research supported multiple perspectives and inclusive solutions; test the accuracy of their data by identifying how well they replicated scientific results);

PM4.04 – identify possible topics and real-life applications for subsequent interdisciplinary research activities, and describe how the use of both traditional and innovative methods and approaches may lead to new findings or make contributions to society.

Implementation, Evaluation, Impacts, and Consequences

Overall Expectations

- IEV.01** • implement and communicate information about interdisciplinary endeavours, using a variety of methods and strategies;
- IEV.02** • evaluate the quality of interdisciplinary endeavours, using a variety of strategies;
- IEV.03** • analyse and describe the impact on society of interdisciplinary approaches and solutions to real-life situations;
- IEV.04** • analyse and describe how interdisciplinary skills relate to personal development and careers.

Specific Expectations

Implementation and Communication

- IE1.01** – create interdisciplinary products based on their own plans or designs, independently or as members of a team (e.g., a series of charts that relate demographic factors to the progress of medical care and technological advancement; a multimedia presentation that analyses changing artistic styles and social mores as portrayed in illustrations in children’s books);
- IE1.02** – demonstrate the ability to communicate and present information effectively, using a variety of methods and forms (e.g., multimedia presentations, parliamentary-style debates, formal essays);
- IE1.03** – demonstrate an understanding of the ways in which the graphic display of quantitative information can be used to foster critical analysis and problem solving related to interdisciplinary presentations (e.g., by documenting the sources and characteristics of the data, by sequencing data to show cause and effect, by patterning data to suggest trends);
- IE1.04** – use a variety of technological strategies and applications effectively to create interdisciplinary products or activities (e.g., gather multiple perspectives about human rights issues from diverse online databases and synthesize findings in a web-based presentation) and compare the advantages and disadvantages of using modern rather than traditional technologies;
- IE1.05** – explain how the manipulation of information (e.g., through the use of propaganda, bias, and stereotyping) affects society, by analysing historical and contemporary examples from each of the subjects or disciplines studied.

Evaluation

- IE2.01** – monitor the effectiveness of the plans for their interdisciplinary research, products, or activities, employing the strategies used by practitioners in different subjects and disciplines (e.g., the use of advice from experts, consultative meetings with team members, electronic time-management applications, and reviews by peers);
- IE2.02** – evaluate the effectiveness of the collaborative strategies they used in planning and implementing interdisciplinary products and activities (e.g., by identifying how well they reached consensus, fostered the leadership potential of each member, sought advice from experts in the field, and shared responsibility and recognition);
- IE2.03** – demonstrate the ability to apply self-assessment strategies to improve their interdisciplinary products and activities (e.g., by recording evidence of how their activities and projects developed, by diagnosing their learning strengths and styles, by developing metacognitive skills such as the ability to evaluate the efficiency of their learning).

Impacts

- IE3.01** – describe and critically analyse historical and contemporary examples of interdisciplinary products and activities that apply innovative approaches and solutions to a variety of real-life situations around the world (e.g., the artistic, social, and literary contributions of the Arts and Crafts movement; the development and regulation of gene mapping and therapy; the international coordination of crime prevention and criminal justice networks);

IE3.02 – describe and critically analyse the contributions to society of leading practitioners who have engaged in interdisciplinary endeavours related to the subjects or disciplines studied and describe the potential impact of their work on future society (e.g., David Suzuki, biologist; Buckminster Fuller, futurist; Margaret Mead, anthropologist; Douglas Cardinal, architect);

IE3.03 – research, analyse, and describe the personal and social impacts of the information-related work of famous individuals (e.g., Charles Babbage, designer of the first computer; Ada Lovelace, writer of the first computer program; Alexander Graham Bell, inventor of the telephone and photo-phone; Melvil Dewey, creator of the Dewey Decimal Classification System; Conrad Zuse, inventor of the first programmable digital computer; Tim Berner-Lees, inventor of the World Wide Web) and assess their contributions to the subjects or disciplines studied;

IE3.04 – plan, conduct, and present independent, interdisciplinary research, with particular reference to each of the subjects or disciplines studied, on the potential social, political, and economic impact of emerging information technologies (e.g., the impact of technology on academic freedom, the effectiveness of literacy programs around the world, the impact of gene mapping).

Personal and Career Development

IE4.01 – demonstrate an understanding of significant interdisciplinary texts related to each of the subjects or disciplines studied and present personal reading plans that identify, classify, and describe texts appropriate for further study;

IE4.02 – compare their personal information skills with those of leading practitioners in the subjects or disciplines studied (e.g., their ability to organize data from a variety of sources, to analyse an author's suppositions and premises, or to choose appropriate technology for particular purposes) and identify those skills that require development if they are to achieve success in interdisciplinary studies;

IE4.03 – research the importance of effective collaborative and communication skills in interdisciplinary careers related to the subjects or disciplines under study (e.g., in the validation and publication of scholarship in sociobiology, in the electronic sharing of data in paleopathology);

IE4.04 – identify postsecondary training requirements for and potential employment opportunities in interdisciplinary fields related to the subjects or disciplines under study (e.g., by searching trade and professional publications, consulting university calendars, or inviting guest speakers to class) and describe possible future trends and opportunities (e.g., by researching economic forecasts and futurist speculations).

Ontario Catholic School Graduate Expectations

The graduate is expected to be:

A Discerning Believer Formed in the Catholic Faith Community who

- CGE1a** -illustrates a basic understanding of the **saving story** of our Christian faith;
- CGE1b** -participates in the **sacramental life** of the church and demonstrates an understanding of the centrality of the Eucharist to our Catholic story;
- CGE1c** -actively reflects on **God’s Word** as communicated through the Hebrew and Christian scriptures;
- CGE1d** -develops attitudes and values founded on Catholic **social teaching** and acts to promote social responsibility, human solidarity, and the common good;
- CGE1e** -speaks the **language of life**... “recognizing that life is an unearned gift and that a person entrusted with life does not own it but that one is called to protect and cherish it.” (Witnesses to Faith)
- CGE1f** -seeks intimacy with God and celebrates **communion** with God, others and creation through prayer and worship;
- CGE1g** -understands that one’s purpose or **call in life** comes from God and strives to discern and live out this call throughout life’s journey;
- CGE1h** -respects the **faith traditions**, world religions, and the life-journeys of **all people of good will**;
- CGE1i** -integrates faith with life;
- CGE1j** -recognizes that “sin, human weakness, conflict and forgiveness are part of the human journey” and that the cross, the ultimate sign of forgiveness is at the heart of **redemption**. (Witnesses to Faith)

An Effective Communicator who

- CGE2a** -listens actively and critically to understand and learn in light of gospel values;
- CGE2b** -reads, understands and uses written materials effectively;
- CGE2c** -presents information and ideas clearly and honestly and with sensitivity to others;
- CGE2d** -writes and speaks fluently one or both of Canada’s official languages;
- CGE2e** -uses and integrates the Catholic faith tradition, in the critical analysis of the arts, media, technology and information systems to enhance the quality of life.

A Reflective and Creative Thinker who

- CGE3a** -recognizes there is more grace in our world than sin and that hope is essential in facing all challenges;
- CGE3b** -creates, adapts, evaluates new ideas in light of the common good;
- CGE3c** -thinks reflectively and creatively to evaluate situations and solve problems;
- CGE3d** -makes decisions in light of gospel values with an informed moral conscience;
- CGE3e** -adopts a holistic approach to life by integrating learning from various subject areas and experience;
- CGE3f** -examines, evaluates and applies knowledge of interdependent systems (physical, political, ethical, socio-economic and ecological) for the development of a just and compassionate society.

A Self-Directed, Responsible, Life Long Learner who

- CGE4a** -demonstrates a confident and positive sense of self and respect for the dignity and welfare of others;
- CGE4b** -demonstrates flexibility and adaptability;
- CGE4c** -takes initiative and demonstrates Christian leadership;
- CGE4d** -responds to, manages and constructively influences change in a discerning manner;
- CGE4e** -sets appropriate goals and priorities in school, work, and personal life;
- CGE4f** -applies effective communication, decision-making, problem-solving, time, and resource management skills;
- CGE4g** -examines and reflects on one's personal values, abilities and aspirations influencing life's choices and opportunities;
- CGE4h** -participates in leisure and fitness activities for a balanced and healthy lifestyle.

A Collaborative Contributor who

- CGE5a** -works effectively as an interdependent team member;
- CGE5b** -thinks critically about the meaning and purpose of work;
- CGE5c** -develops one's God-given potential and makes a meaningful contribution to society;
- CGE5d** -finds meaning, dignity, fulfillment, and vocation in work which contributes to the common good;
- CGE5e** -respects the rights, responsibilities and contributions of self and others;
- CGE5f** -exercises Christian leadership in the achievement of individual and group goals;
- CGE5g** -achieves excellence, originality, and integrity in one's own work and supports these qualities in the work of others;
- CGE5h** -applies skills for employability, self-employment, and entrepreneurship relative to Christian vocation.

A Caring Family Member who

- CGE6a** -relates to family members in a loving, compassionate, and respectful manner;
- CGE6b** -recognizes human intimacy and sexuality as God given gifts, to be used as the creator intended;
- CGE6c** -values and honours the important role of the family in society;
- CGE6d** -values and nurtures opportunities for family prayer;
- CGE6e** -ministers to the family, school, parish, and wider community through service.

A Responsible Citizen who

- CGE7a** -acts morally and legally as a person formed in Catholic traditions;
- CGE7b** -accepts accountability for one's own actions;
- CGE7c** -seeks and grants forgiveness;
- CGE7d** -promotes the sacredness of life;
- CGE7e** -witnesses Catholic social teaching by promoting equality, democracy, and solidarity for a just, peaceful, and compassionate society;
- CGE7f** -respects and affirms the diversity and interdependence of the world's peoples and cultures;
- CGE7g** -respects and understands the history, cultural heritage and pluralism of today's contemporary society;
- CGE7h** -exercises the rights and responsibilities of Canadian citizenship;
- CGE7i** -respects the environment and uses resources wisely;
- CGE7j** -contributes to the common good.

Unit 1: The Nature of the Past

Time: 20 hours

Unit Description

This introductory unit considers the nature of the concept of time, and its relationship to the interdisciplinary study of archaeology. Students develop three separate timelines highlighting the major milestones in geological time, in evolutionary biology, and in archaeology to create an appreciation of scale, compare the marking of time in three different disciplines, and acquire a rudimentary introduction to some of the major discoveries in archaeology. This consideration of time is further refined by a personal timescale developed by each student, with major life events represented by a series of artifacts. Classmates then interpret these artifacts as they attempt to recreate a coherent life history of the individual student. Students discuss interpretation, inference, degrees of certitude, and the dangers of misinterpretation. These misinterpretations of the past may be a product of applying Western assumptions, such as the linear sense of time, to other cultures that may not have shared this view. Students discuss professional archaeologists and those who have contributed to the science – some notable examples from past and present are analysed with a focus on their backgrounds, their cultural assumptions, their discoveries, and their impact on society.

Unit 1 Synopsis Chart

Activity & Time	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
1.1: The Nature of Time 5 hours	TFV.01, TF2.01	SES4U - ES1.01, EH1.01	Knowledge/ Understanding Formative oral assessment by teacher	- students create three timelines: one each for geology, evolutionary biology, and archaeology
1.2: Personalizing Time 5 hours	TF4.03, PM4.04	CHI4U - HI2.03, HI2.04, HI4.01 HSP3M - IS2.05	Application Communication Formative assessment by teacher using checklist	- students construct personal timelines, and bring in representative artifacts - classmates interpret artifacts as a life story - class considers misinterpretations, inferences, and certitude - reflective writing
1.3: Paradigms of Time 5 hours	TFV.04, TF4.03, PM1.04, PM4.03, IE2.03	CHW3M - CC1.02, CC3.03	Thinking/ Inquiry Self-assessment by students using checklist	- students consider the importance of time as determinant of worldview - students compare linear “Western” time with circular and other views

Activity & Time	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
1.4: The Role of Archaeology 5 hours	TF1.01, TF1.03, TF2.04, TF3.02, TF3.04, PMV.01, PMV.04, IE1.05, IE3.01, IE3.02, IE4.03, IE4.04	CHW3M - CC1.03 SBI4U - EV1.02	Knowledge/ Understanding Thinking/ Inquiry Communication Application Summative evaluation by teacher using marking scheme	- in groups, students research: case studies of major contributors to archaeological science, past and present (e.g., Schliemann, Carter, Leakey, Cavalli-Sforza, etc.), focusing on their training, assumptions, discoveries, impact

Activity 1.1: The Nature of Time

Time: 5 hours

Description

Students research, evaluate, and create timelines to mark the progress and current state of knowledge in three disciplines in which the accurate charting of the passage of time is of great consequence, namely: archaeology, evolutionary biology/biogeography, and geology. Using major events in the cultural history of humanity, students construct trial narratives. Students come to understand that time can be organized in a variety of scales and for a multitude of purposes.

Strand(s) & Learning Expectations

Strand(s): Theory and Foundation

Overall Expectations

TFV.01 • demonstrate an understanding of the key ideas and issues related to each of the subjects or disciplines studied.

Specific Expectations

TF2.01 – analyse and describe ways in which an interdisciplinary studies approach questions and assumptions about the structure and scope of the subjects or disciplines studied and analyse the new structures that have emerged to broaden and advance the scope of the knowledge of individual subjects or disciplines.

Learning Expectations from Other Courses

SES4U: Earth and Space Science

ES1.01 – demonstrate an understanding of the range of physical scales that apply in the Earth sciences (e.g., from those that apply to the planet as a whole to those used at the atomic level);

EH1.01 – demonstrate an understanding of the differences between relative and absolute dating techniques as they apply to natural systems.

Prior Knowledge & Skills

Students should have significant prior experience doing research and organizing retrieved information to support theses and ideas in a variety of disciplines, both from science and social studies. Students should be able to apply research skills in both independent and collaborative environments.

Planning Notes

- Construct an archaeological timeline for student examination. Most introductory texts in the field of archaeology or world studies can provide the data for creating this model, if not the timeline itself. Record the process utilized in developing the timeline as a powerful modelling tool for students. It is important to expose students to the global diversity and breadth of archaeological study, so include timeline markers from around the world.
- Ensure that research materials necessary for development of the timelines in the other disciplines are available. Adequate research resources in the areas of biology (history of life) and geology, both text- and Internet-based, should be gathered to facilitate student independent research time.

Teaching/Learning Strategies

1. In a whole-class discussion format, students describe their present understanding as to what constitutes the discipline of archaeology. They include the source of information that led them to develop this understanding, e.g., popular culture, prior courses, educational television, etc. Address and discuss misconceptions about this field of study that arise in the course of the discussion.
2. Show students definitions that have been developed to describe the discipline of archaeology. (Definitions are available on the Internet or in texts.) Point out how “describing change over time” is a constant feature of each definition.
3. Discuss with students the idea that archaeology has contributed to the awareness and shared understanding of the human “story” over time. John Miller, in *The Holistic Teacher*, explains that “stories are vehicles that allow us to reflect on and interpret events” (p. 123). *Teaching as Storytelling* by Egan demonstrates how storytelling can be used to organize and present subject material (see Resources).
4. Using overhead, poster paper, board notes, handouts, etc., present students with a teacher-developed archaeological timeline. The timeline should be in linear form, with major world cultures noted and concisely described. The dates for these civilizations should be prominently identified. When explaining the timeline, include information that will help students to understand the historical evolution of the discipline of archaeology, e.g., the 19th-century focus on classical civilizations and the current more global perspective in the field. To help students understand the process of research and evaluation, share with them the various skills, tasks, and sub-tasks you undertook when developing the timeline, e.g., How did the Internet contribute to the timelines development? How did you determine what ancient civilizations to include?
5. Once the timeline has been presented and interpreted by the teacher in conjunction with the class, groups of two or three students develop a brief story based on this information. Focus on the process of converting historical and archaeological data into narrative form and the uncertainty that this entails. To illustrate the kind of narrative flow expected from this created story, refer to *My Ishmael*, by Daniel Quinn, in which a wise and benevolent gorilla asks a young teenage girl to recount her understanding of the story of human culture (see Resources or use a similar text).
6. Groups then relate their stories and the teacher and class comment on the similarities, differences, and uncertainties. Each oral story presentation should take five minutes. As the class discusses the presentations, take the opportunity to remark on the variety of approaches, the tentative nature of the narrative, and the need to be somewhat wary of archaeological certitudes: not only is there change over time, but there are changes in the perceptions of those changes.

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7. Students are provided with research and collaborative time to develop timelines that reflect the growth of knowledge in the disciplines of evolutionary biology and geology. These tasks could be done individually, in pairs, or in small groups. Students utilize the process model shared by the teacher in Teaching/Learning Strategy #4.
 8. Relate to students that the creation of the timelines will help them recognize the importance of accurately charting change over time in other disciplines.
 9. Once the two timelines have been developed, take up the results in a whole-class format. Highlight both the differences (e.g., scale, content) and the similarities. In advance of this point in the activity, develop a sense for what the timelines should include. (Secondary school or first-year university texts in these disciplines should provide ready models).
 10. Students use the data from the three timelines independently and develop an informal written opinion that provides ideas and suggestions as to how the events in one timeline could (or have) impacted on events in another, e.g., how does the Pleistocene glaciation and geology affect mammalian evolution? evolutionary biology? human migration patterns? Students brainstorm and discuss their ideas with each other prior to beginning the assignment.
 11. To assist students in understanding the type of interdisciplinary connections for which they should be looking, show them how a leading interdisciplinary scholar has brought together knowledge in different disciplines. An example of this approach can be found in *Guns, Germs and Steel*, by Jared Diamond. Students view the chain of causation and the schematic overview diagram he presents on p. 87. Point out how he integrates the east/west orientation of the continents (geology) and the presence of those wild species suitable for domestication (evolutionary biology) into a coherent explanation of the observed patterns of cultural interaction in the past and present (archaeology).

Assessment & Evaluation of Student Achievement

Assessment should focus on students' demonstrations of their understanding of the significance of the key points for each timeline (Knowledge/Understanding). Students in their groups should also highlight connections that exist between the three disciplines (Application). The work that students completed in developing the timelines provides the teacher with the opportunity to review and comment on students' application of research and inquiry skills (Thinking/Inquiry) as well as their collaboration skills (Communication). Oral feedback from the teacher should be supportive and ongoing throughout the activity as students adjust to an interdisciplinary approach to learning.

Accommodations

In Teaching/Learning Strategy #5, students work together to develop a story. This peer-assisted, collaborative approach can be used for most of the activities. For enrichment, students investigate Diamond's book independently and present a detailed synopsis of the thesis and supporting evidence to the rest of the class. For a second enrichment option, students review Quinn's book or similar texts for a different view of the history of human culture.

Resources

Diamond, Jared. *Guns, Germs and Steel*. New York: W.W. Norton & Co., 1997. ISBN 0-393-03891-2

Egan, K. *Teaching as Storytelling: An Alternative Approach to Teaching and Curriculum in the Elementary School*. London, ON: Althouse Press, 1986. ISBN 0920354173

Miller, J.P., Bruce Cassie, and Susan Drake. *Holistic Learning: A Teacher's Guide to Integrated Studies*. Toronto: OISE Press, 1990. ISBN 0774403586

Quinn, Daniel. *My Ishmael*. New York: Bantam, 1998. ISBN 0553379658

Activity 1.2: Artifacts in Time – Creating a Personalized Timeline

Time: 5 hours

Description

Synthesis and evaluative-thinking skills are challenged as the teacher directs students to develop an individualized timeline based on personal artifacts. Students then “interpret” the stories behind the artifacts brought in by their classmates. This task highlights in a practical way the difficulty archaeologists face when drawing interpretations and inferences from ancient artifacts. Student groups create artifact assemblages that would support broad statements about cultural norms and societal organization. The focus throughout the activity is on the need for logical consistency in developing a narrative.

Strand(s) & Learning Expectations

Strand(s): Theory and Foundation; Processes and Methods of Research

Specific Expectations

TF4.03 – critically analyse and demonstrate the ability to apply a variety of critical- and creative-thinking strategies and models to help develop innovative interdisciplinary products or activities;

PM4.04 – identify possible topics and real-life applications for subsequent interdisciplinary research activities, and describe how the use of both traditional and innovative methods and approaches may lead to new findings or make contributions to society.

Learning Expectations from Other Courses

CHI4U: Canada: History, Identity, and Culture

HI2.03 – explain relationships and connections in the data studied (e.g., chronological ties, cause and effect, similarities and differences);

HI2.04 – draw conclusions based on the effective evaluation of sources, analysis of information, and awareness of diverse historical interpretations;

HI4.01 – demonstrate an ability to think creatively in reaching conclusions about both assigned questions and issues and those conceived independently.

HSP3M: Introduction to Anthropology, Psychology and Sociology

IS2.05 – evaluate the relevance and validity of information gathered through research.

Prior Knowledge & Skills

Students should have experience working collaboratively in groups and be comfortable dividing up a complex task.

Planning Notes

- Students use personal artifacts to create an individual timeline. The request for students to bring in artifacts should occur near the close of Activity 1.1 so that students have their artifacts with them at the start of this activity. Be aware of the potential for items that reflect an emotionally distressing event or inappropriate activity to be selected; teachers should preview the artifacts before they are introduced in the classroom to determine appropriateness for classroom use.
- For the poster assignment on imagined civilizations, locate and have available pictures of artifacts from a wide range of global cultures and archaeological sites. Magazines, such as old copies of *National Geographic*, may be the most readily available and economical means of providing these images. Poster paper and markers are needed.

Teaching/Learning Strategies

1. Define the meaning of the term *artifact* from an archaeological perspective, providing examples. A selection of magazines that contain archaeological articles could be utilized to show students pictures of artifacts. (An artifact may be defined as any object that is made by or shaped by a human).
2. Explain how artifacts are the *empirical indicators* of archaeological science and are the basis for further interpretive work. Relate examples that illustrate instances where the discovery of a single artifact altered the perception of a particular site, e.g., the discovery of a bone sewing implement known to be used exclusively by Viking women led archaeologists at the L'Anse aux Meadows site to conclude that the site was not a temporary or seasonal hunting camp occupied by sea-faring warriors (men only), but instead was a permanent outpost and an attempt at colonization which ultimately failed.
3. Describe the task of constructing a personal timeline supported by artifacts. The artifacts should reflect the span of time of the student's life. They should reflect events or routines of significance in students' lives. Because this activity is designed to highlight the problematic nature of artifact interpretation, instruct students from the outset that they are not to discuss their artifacts or interpretation of them with anyone else in the class prior to this activity. To head off the concern regarding inappropriate artifactual materials being brought in, spend time discussing what is appropriate for this simulation. Students should provide a list of artifacts to the teacher for preview prior to the activity.
4. Students construct a narrative story supported by the artifacts brought in. The teacher should keep in mind that the story approach (see Activity 1.1) can be meaningful to students on many different levels. The use of story can range from an exploration of the link between the artifact and personal interpretation (as in this activity) to a fuller exploration of the transformational potential of personal story reconstruction. Materials to support the latter use can be found in Resources.
5. Bring in a real-life artifact and model an example of the type of narrative that is expected.
6. Students complete their written narrative timelines, explaining the significance of each artifact they bring in.
7. Take the artifact collections and distribute the collections among student groups of two or three. Always get prior permission of the student before allowing the artifact collection to be distributed among the class groups; artifacts that are emotion-laden should not be passed out. Make sure artifact collections are numbered and keep a list that matches the artifact collection to the student. If possible, the student group should not be aware of who provided the artifact collection.
8. Student groups create a story that fits the artifact collection they have.
9. In a class discussion, compare the recreated story to the real story developed by the artifact owner. What assumptions and inferences proved to be faulty and which ones were accurate? Students examine the comparison to determine if there is a pattern to the faulty assumptions.
10. As a final assignment, groups of two or three students create an artifact assemblage on a poster board (the option exists for the inclusion of 3-D student-created artifacts) that is logically consistent with an imagined civilization which is developed based only on the very broadest of teacher prompts/outlines, e.g., "Artifacts from a society that was aggressive and war-like", "Artifacts from a society that had a restricted, vegetarian diet", "Artifacts from a lost aquatic civilization", "Artifacts from a rigidly hierarchical society." Under each drawn artifact, students write down a discipline that would examine the artifact, e.g., the operational efficiency of a catapult artifact might be analysed by mechanical engineers, while the nutritional effects on anatomical remains in the restricted vegetarian society might be analysed by a palaeo-pathologist. While students may use resources (such as *National Geographic* magazines), students' critical- and creative-thinking skills are probably best challenged if they are required to invent a civilization.

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11. Students present their poster artifact assemblage and orally defend the interpretation of each artifact and their overall conclusions in respect to the assemblage. Encourage other class members to offer alternative interpretations. Students should complete this lesson with an awareness of the need to proceed carefully when making archaeological inferences and interpretations.
 12. Discuss with students how selective focus on particular artifacts or the development of inferences without adequate evidence can introduce bias or stereotyping into the interpretation of archaeological artifacts.

Assessment & Evaluation of Student Achievement

The artifact assemblage in Teaching/Learning Strategy #10 requires that student groups employ a variety of critical- and creative-thinking skills. Creative response can be further enhanced if the teacher specifically instructs groups not to base the artifact assemblage on an actual civilization, but rather to invent a hitherto unknown civilization that their archaeological team has just discovered. In the area of critical thinking, classification, labelling, logical, inferential, and creative-thinking skills should all feature prominently in the evaluation of this task. A checklist, developed and shared in advance with the class, would clarify expectations and focus student efforts on the important aspects of the poster assemblage.

Accommodations

Students with written language challenges will find the narrative timeline story they are asked to write within their capability if they are provided with a teacher-developed structure and outline. In some cases, a choice of assignment format may be the best accommodation, e.g., oral. Task success for students challenged by written assignments can be increased if the teacher requires these students to submit draft(s) that can be evaluated formatively prior to the final summative mark. It may be valuable for accommodated students if they have in-class time, with teacher guidance, when starting work on written assignments. Modelling (see Teaching/Learning Strategy #5) can be critical for students. The teacher can increase the value of this strategy by “thinking-out-loud” during the modelling process.

Resources

Egan, Kieran. *Teaching as Storytelling: An Alternative Approach to Teaching and Curriculum in the Elementary School*. London, ON: Althouse Press, 1986. ISBN 0920354173

Miller, J.P., J.R., B. Cassie, and S.M. Drake. *Holistic Teaching*. Toronto: OISE Press, 1990. ISBN 0-7744-0358-6

Activity 1.3: Paradigms of Time

Time: 5 hours

Description

The purpose of this activity is to allow students the opportunity to discuss and discover the multiplicity of interpretations of the meaning of time. In particular, students examine how the Western paradigm, the notion of linear time, is only one way of examining temporality. Students deconstruct linear time and have the opportunity to explore other notions of temporality, including poetic, cyclical, spiritual, and ancestral. Archaeologists need to understand other cultures and societies on their own terms, not through the prism of Western eyes. The activity builds toward a consideration of the concept of progress, and its impact on the thinking of archaeologists. Students design the assessment criteria for their group presentation.

Strand(s) & Learning Expectations

Strand(s): Theory and Foundation; Processes and Methods of Research; Implementation, Evaluation, Impacts, and Consequences

Overall Expectations

TFV.04 • demonstrate the skills and strategies used to develop interdisciplinary products and activities.

Specific Expectations

TF4.03 – critically analyse and demonstrate the ability to apply a variety of critical- and creative-thinking strategies and models to help develop innovative interdisciplinary products and activities;

PM1.04 – formulate questions for a variety of purposes in interdisciplinary research and compare the significance and effectiveness of the questions posed with those from specific examples of effective research;

PM4.03 – develop and apply effective criteria for assessing the quality of their interdisciplinary research;

IE2.03 – demonstrate the ability to supply self-assessment strategies to improve their interdisciplinary products and activities.

Learning Expectations from Other Courses

CHW3M: World History to the Sixteenth Century

CC1.02 – identify forces that tended to promote and facilitate change (e.g., religious proselytizing, migration of peoples, Humanism);

CC3.03 – identify cause-and-effect relationships within the chronology of significant historical events.

Prior Knowledge & Skills

Students who have studied philosophy, classical studies, physics, or world history can extend many of the concepts that they learned in those courses. Students possess research, writing, and presentation skills and have the ability to engage in critical thought reflection: all qualities expected in a university-destination course.

Planning Notes

- It is essential that students play a role in providing information and participating in instruction and discussion. All of the suggested tasks cannot be covered in the allotted time. Consider which of the suggestions best fit the needs and interests of students and give students a degree of choice. While the activity is rich in interdisciplinary content and insights, the teacher needs to connect the chosen topic to the general framework of archaeological science.
- Arrange time for collaborating with colleagues from other departments to enhance the curriculum.
- Review expectations for written work.
- Verify websites prior to assigning them for student use.
- Locate selected books, magazines, and newspaper articles.
- Review key terms prior to class.
- Arrange time in the library/resource centre and computers with Internet access for student research.

Teaching/Learning Strategies

1. The Western View of Time

- a) Brainstorm with the class for sayings or maxims that use the word *time* (e.g., Time is money; I haven't got time; Time waits for no man; The time is right; A stitch in time saves nine; It's about time; etc.). The class should be able to suggest enough sayings to fill the board. Students then draw conclusions about the nature of time.

- b) Does school teach us about time? Students fill out a chart and answer questions.

What Happens in School?	Why?
Lateness	
Detentions	
Bells ringing	
“Time outs”	
Two-hour exams	
Segmented learning	

- i) What does this tell us about schools?
- ii) How important is time to schools?
- iii) Who benefits from this concern?
- iv) Write a paragraph on the relationship between *time management* and *success*.
- v) Pose the question: “Do you think that contemporary society, from the standpoint of time, is “richer” than previous societies?”
 Students could discuss how individuals today are increasing their aggregate number of hours of work despite our material affluence. By contrast, anthropologists suggest that hunters and gatherers spent an estimated 3.5 hours of work per day. The Inuit in Canada’s north consider themselves to be “rich in knowledge, meat, and time.” In fact, many anthropologists are beginning to refer to hunting and gathering societies as “the original affluent society,” reflecting the relatively modest amount of formal work that is required in that type of a society.
- vi) Ask: “How could Western society’s belief in linear time influence the assumptions made by archaeologists?” Possible answers include:
 - Previously, archaeologists believed that they could place societies along an evolutionary timeline.
 - There was a belief that the “enlightened present” could be contrasted with the “savage past” – we are civilized, they were primitive.

2. Other Views of Time

- a) Students are given about 1½ hours in small groups to research alternative ideas on time. Research may involve Internet research, encyclopaedias, or other reference books. The teacher may recommend written sources or websites to expedite student research. Before the research begins, however, groups provide answers to the following questions:
 - i) What are the three key questions which you would ideally want your research to answer?
 - ii) What are the five criteria which you wish to be used in the evaluation of your oral presentation?
- b) After researching, groups should be able to make oral presentations of 5-10 minutes in length. In this presentation, they should deal with the following issues:
 - i) What were the three key questions to which your group sought answers?
 - ii) How useful were the sources you used in answering the three key questions?
 - iii) If the sources were not very useful, explain possible reasons why. (For example: a poor selection of sources was used, the source was focusing on answering other questions, the questions were phrased poorly, or the answers to the questions remain unknown.)
 - iv) After explaining their research findings, the group should provide a one- or two-sentence summary of the findings for the class.

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- c) Topics might include the views of time held by Hindus, Mayas, Darwinian biologists, Impressionist painters, ancient Greek philosophers, St. Augustine, Iroquoian (or other Aboriginal peoples), “Whig” historians, etc.

i) ***Hindu Time Reckoning***

- a. Explore the implications of the Hindu deity Shiva, a symbol of time and timelessness.
- b. Describe the notion of an absolute circularity of time, without beginning or end.
- c. What are the four repeating epochs of time?
- d. Does the Hindu concept of time differ from your own beliefs?

Resources

www.geocities.com/profvk/gohitvip/41.html

www.indiansphere.com/astrology/Lecture2.html

www.sewickley.org/~hinduism/time.html

<http://hinduism.about.com/library/weekly/aa012101a.htm>

<http://hinduism.about.com/library/weekly/aa012101a.htm?rnk=r3&terms=yuga>

ii) ***The Interlocking Mayan Calendar: The Meaning of Solar, Lunar, and Ceremonial Time***

- a. Why did the Mayans have both 365-day (solar) and 260-day (lunar) calendars?
- b. In what ways were Mayan spirituality, rituals, and civic activities linked to the time reckoning system?
- c. Why did Mayan society, which had such a complicated calendar, not develop a clock to measure time?
- d. Do you feel that the Mayan system of time reckoning is as sophisticated as the one we have today? Justify your opinion.

Resources (see activity Resources for complete bibliographic information)

Aveni. *Empires of Time: Calendars, Clocks, and Cultures*.

Whitrow. *Time in History: Views of Time from Prehistory to the Present Day*.

www.uwec.edu/academic/curric/greidebe/hos/Hist/dlcreation.htm

www.michielb.nl/maya/astro.html

<http://mayacalendar.com/mayacalendar.html>

Mystery of the Maya – www.civilization.ca/civil/maya/mminteng.html

iii) ***Western Science and the Exploration of Linear Time***

- a. How has Western science perceived time?
- b. What influence did Newton’s belief in a mechanical universe have on society’s perception of time?
- c. What influence did Darwin’s theory of evolution have on our perception of time?
- d. How were Darwin’s ideas reinforced by the work of subsequent scientists, such as Lyell and Wallace?
- e. In your opinion is the scientific approach the best way of understanding the meaning of time? Defend your answer.

Resources (see activity Resources for complete bibliographic information)

Aveni. *Empires of Time: Calendars, Clocks, and Cultures*.

Gould. *Time’s Arrow, Time’s Cycle: Myth and Metaphor in the Discovery of Geological Time*.

Whitrow. *Time in History: Views of Time from Prehistory to the Present Day*.

iv) ***Artistic Renderings of Time***

- a. Explore Claude Monet’s painting *Fleeting Time* and his efforts to capture one particular moment in time, exemplified by flickering lights, atmospheric mists, and distinctive brushwork used to elicit movement.

- b. Explore the “Poetic Time” expressed in Chinese handscrolls, artwork in which the viewer is intended to interface with the painting and travel through poetic space and time.
- c. Explore the way Andy Warhol’s artwork attempts to capture “Ephemeral Time” through repeating images frozen in time.
- d. Do you think that art has the ability to depict and render time? Justify your answer.

Resources

Time Flies – www.nelson-atkins.org/tempusfugit/
www.adh.brighton.ac.uk/schoolofdesign/MA.COURSE/LTime.html

v) ***Philosophy and the Meaning of Time (Part I)***

- a. What is Zeno’s paradox of the flying arrow?
- b. What is Plato’s theory of time (See Plato’s *Timaeus*)? What was the relationship between time and timelessness?
- c. How did Aristotle view time? What was the relationship between time and motion?
- d. Explore how Immanuel Kant viewed time as a prior condition of our mind, “The idea of time does not originate in the senses but is presupposed by them ... Time is not something objective. It is neither substance nor accident nor relation, but a subjective condition, necessary owing to the nature of the human mind, of the coordination of all sensibles [experienced stimuli] according to fixed laws ...”
- e. Write your own explanation of the meaning of time.

Resources (see activity Resources for complete bibliographic information)

Aveni. *Empires of Time: Calendars, Clocks, and Cultures*.

Whitrow. *Time in History: Views of Time from Prehistory to the Present Day*.

vi) ***St. Augustine and the Christian Concept of Time***

- a. How has the Christian worldview influenced Western perceptions about time?
- b. What is an eschatological concept of time?
- c. Do you think that Augustine’s assertion that only the present exists is true? Does this mean that the past and the future do not exist?
- d. How influential was Christianity in the development of western notions of time?
- e. Consider Augustine’s famous quote: “What then, is time? If no one asks me, I know. If I wish to explain it to someone who asks, I know not.” How would you answer the question “What then, is time?”

Resources (see activity Resources for complete bibliographic information)

Whitrow. *Time in History: Views of Time from Prehistory to the Present Day*.

www.stfx.ca/people/jmensch/II._Time_and_Augustine's_Metaphysics.doc

<http://ccat.sas.upenn.edu/jod/augustine.html>

<http://homepages.ed.ac.uk/hprice/teaching/time/Time%26SpaceLecture1.pdf>

vii) ***“Time is Money”: Frederick Taylor’s Scientific Management and Henry Ford’s Assembly Line***

- a. What was the purpose of Taylor’s time motion studies? What effect did these studies have on the manner in which time was managed in the workplace?
- b. Henry Ford asserted that the purpose of the assembly line “is that a man must not be hurried in his work—he must have every second necessary but not a single unnecessary second.” Comment on the effect of the assembly line and its effect on allowing workers to control the pace of their work.
- c. Do you trade your time for money? (After-school job, doing chores for allowance) Do you feel this is a fair exchange?
- d. How much is your time worth? What makes one person’s time more valuable than another person’s time?

Resources

Braverman, H. *Labor and Monopoly Capital*. New York: Monthly Review, 1999.

Thompson, E.P. "Time Discipline and Industrial Capitalism," in *Past and Present*, vol 38, pp. 56-97.

The opening sequence from Charlie Chaplin's classic film *Modern Times* provides a powerful illustration of Taylorism.

viii) ***Waiting for the Weekend—Leisure and Overwork in North American Society***

- a. What value does our society place on leisure?
- b. Do we have more leisure time in North American society compared to other societies in the present or past?
- c. Are North Americans today working harder than previous generations? Do we have more or less time than previous generations? Why do we wait for the weekend? In other words, what is the relationship between work and leisure in our society?
- d. Would you rather have more money or more leisure time? Justify your answer.

Resources (see activity Resources for complete bibliographic information)

Gleick. *Faster: The Acceleration of Almost Everything*.

Hochschild. *The Time Bind: When Work Becomes Home and Home Becomes Work*.

Rifkin. *Time Wars*.

Rybczynski. *Waiting for the Weekend*.

Schor. *The Overworked American: The Unexpected Decline of Leisure*.

www.lclark.edu/~goldman/wmw2web.html (The development of leisure)

ix) ***Historical and Contemporary Responses to the Issue of Time***

- a. In what ways have individuals actively resisted the imposition of time-discipline?
- b. What were the concerns of the Luddites? What are some contemporary responses to the issue of time?
- c. During the past 40 years there have been a number of individuals and groups, such as the hippies, the back-to-the-land movement of the 1970s, and the present-day slow-food movement, that have tried to rebel against the imposition of time-discipline. What is the aim of these organizations? Will these organizations be successful? What obstacles do these organizations face?
- d. Do you feel that you could slow down your life? If so, in what ways? Are you spending your time doing the things that you wish? If not, what would you rather be doing?

Resources

Naylor, Thomas, William Willimon, and Rolf Osterberg. *The Search for Meaning in the Workplace*. Nashville: Abingdon Press, 1996. ASIN 0687015480

Luddism – www.thehistorychannel.co.uk/classroom/alevel/luds.htm

The Slow Food Movement – www.slowfood.com

The Slow Cities Movement – www.matogmer.no/slow_cities_citta-slow

www.caw.ca/ptime.html (more time for ourselves, our children, and our community)

www.geocities.com/shorterworkweek (reduced work)

www.pbs.org/kcts/affluenza/escape/guides/teach/3.html (Reduced work-Affluenza)

x) ***Philosophy and the Meaning of Time (Part II)***

- a. Why does Henri Bergson argue that time cannot be understood scientifically? Why does he believe that time resists measurement and quantification?
- b. How does Husserl compare our understanding of time to that of a musical melody? How do Husserl's theories upset the notion of linear time?

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- c. Explain Heidegger's concept of Dasein and how it relates to our understanding of past, present, and future.
 - d. Explore McTaggart's concept of the "unreality of time."
 - e. In your opinion, do you think that time is merely a subjective construct?

Resources

Heidegger – www.philosophycircle.com/features/features12.html

Le Poidevin, R. and M. MacBeath, eds. *The Philosophy of Time*. Oxford, 1993.

ISBN 019823998

xii) ***The New Physics and the Discovery of Space-Time***

- a. How have Einstein's theories completely altered our viewpoint of time? What is the relationship between time and observer dependency?
- b. How has the work of Stephen Hawking increased our understanding of time?
- c. Does physics allow time travel? Does logic permit time travel?
- d. What is entropy and why does it occur?
- e. Do you think that theoretical physics provides useful insights into the meaning of time?

Resources

Barbour, Julian. *The End of Time: The Next Revolution in Physics*. New York: Oxford University Press, 1999. ISBN 0195117298

Coveney, Peter. *The Arrow of Time: A Voyage through Science to Solve Time's Greatest Mystery*. New York: Fawcett Columbine, 1990. ISBN 1852271973

Davies, Paul. *About Time: Einstein's Unfinished Revolution*. Simon & Schuster, 1995.

ISBN 0671799649

Time Travel – www.usc.edu/dept/LAS/english/courses/dilligan/projectsSp2000/timetravel

xiii) ***Time in Literature***

- a. Explore the theme of time (e.g., an analysis of the direction of time, cyclical time, seasons, calendars, clocks, time travel, or the beginning of time) as described in literature. Selected authors could include: Shakespeare, Milton, H.G. Wells, Beckett, and Soppard.
- b. In your opinion, why is time such an important feature in our collective literature?

Resources

Davis, Edward. *The Concept of Time in Literary Studies*. Port Elizabeth: University of Port Elizabeth, 1973. ASIN 0869880470

Meyerhoff, Hans. *Time in Literature*. Berkeley: California UP, 1960.

Ricoeur, Paul. *Time and Narrative*. Chicago: University of Chicago, 1984.

ISBN 0226713318

xiv) ***Time in Contemporary Movies***

- a. The concept of time, particularly the notion of time-travel, is explored in a number of films. Some films to consider are: *Slaughterhouse-five*, *Back to the Future*, *Twelve Monkeys*, *The Time Machine*, and *Clockstoppers*.
- b. Explore the various ways in which films alter temporality through flashbacks, slow motion, and accelerated action.
- c. Do you think that films have the capability of offering a realistic rendering of time?

xv) ***Biology and Time***

- a. Explore and list the multitude of ways the human body shows a sense of inner time.
- b. Explore the ways in which other life forms possess a notion of time.
- c. In what personal ways are you aware of your inner time?

Resources (see activity Resources for complete bibliographic information)
Aveni. *Empires of Time: Calendars, Clocks, and Cultures*.
Orlock. *Inner Time: The Science of Body Clocks and What Makes Us Tick*.

3. **Cyclic Views of Time**

Students are assigned one of three categories (animals and birds; plants; human beings) and make a list of the natural cycles that apply to their lives. After a brief class discussion, students write a paragraph on the question “Is life on Earth a series of cycles?”

4. **The Idea of Progress**

- a) Students brainstorm the meaning of the word progress. Several student definitions are listed on the board and are then compared to the dictionary definition.
- b) In pairs, students try to decide whether the connotation of the following words is positive or negative:

Traditional	Innovative
Technical	Ancient
New	Neanderthal
Simple	Tribal
Old	Primitive
Elderly	Complex

- c) As the implications of these words are discussed, raise the questions: Are we biased against the past? Does our attitude affect our objectivity?
- d) Having considered the importance of time and a variety of attitudes toward it, students now write out three key pieces of advice for archaeologists who are studying an unknown society for the first time. These pieces of advice are posted, discussed by the class, and voted on. The best five are posted high on the walls of the classroom as reminders of the dangers of ethnocentrism.

Assessment & Evaluation of Student Achievement

The teacher should encourage positive participation in group discussions by using formative assessment: an observational checklist would be useful here. Groups have input in deciding on the evaluative criteria for the oral reporting of the group project. Alternatively, a teacher-designed rubric outlining requirements and student performance in the oral presentation component would assist students in understanding the components of research reporting. Finally, a self-assessment checklist which included some components of interdisciplinary learning outcomes would encourage the setting of high personal learning standards in the culminating activities of the unit and the course.

Accommodations

In choosing topics for Teaching/Learning Strategy #2: Other Views of Time, students may require teacher guidance, since some options assume high levels of research ability and /or abstraction. Other students may find that, because of their cultural backgrounds, oral research using family and friends is rewarding. The teacher should be prepared to support these endeavours. The teacher should also make an attempt to encourage broad participation among the less extroverted students; much of the content can become abstract unless the teacher is vigilant. The teacher can provide extra time to students who have reading and writing difficulties. The teacher should conference with students with Individual Education Plans in order to individualize instruction and assignments when necessary in order to ensure success. When students are expected to draw inferences, make conclusions, or assess the implications of case-study material, the teacher could provide a model answer, response, or other pattern of exemplary behaviour. For enrichment, students explore related topics.

Resources

Print

- Audoin, Claude and Bernard Guinot. *The Measurement of Time: Time, Frequency, and the Atomic Clock*. Cambridge: Cambridge University Press, 2001. ISBN 0521800803
- Aveni, Anthony F. *Empires of Time: Calendars, Clocks, and Cultures*. New York: Basic Books, 1989. ISBN 0465019501
- Barnett, Jo Ellen. *Time's Pendulum: The Quest to Capture Time – from Sundials to Atomic Clocks*. New York: Plenum Press, 1998. ISBN 0156006499
- Boslough, John. "The Enigma of Time." *National Geographic* (1990): pp. 109-132.
- Brodie, Hugh. *The Other Side of Eden: Hunters, Farmers, and the Shaping of the World*. Vancouver: Douglas & McIntyre, 2000. ISBN 1550548069
- Burns, Leland Smith. *Busy Bodies: Why Our Time-obsessed Society Keeps Us Running in Place*. New York: Norton, 1993. ISBN 0393033627
- Butterfield, Herbert. *The Whig Interpretation of History*. London: Bell, 1968. ISBN 0393003183
- Callender, Craig. *Introducing Time*. Cambridge: Icon Books, 2001. ISBN 1840462639
- Duncan, David Ewing. *Calendar: Humanity's Epic Struggle to Determine a True and Accurate Year*. New York: Avon Books, 1998. ISBN 0380793245
- Fraser, J.T. *Time: The Familiar Stranger*. Amherst: University of Massachusetts Press, 1987. ISBN 0870235761
- Gleick, James. *Faster: the Acceleration of Just About Everything*. New York: Pantheon, 1999. ISBN 0679408431
- Gould, Stephen Jay. *Time's Arrow, Time's Cycle: Myth and Metaphor in the Discovery of Geological Time*. London: Harvard University Press, 1987. ISBN 0674891989
- Hochschild, Arlie Russell. *The Time Bind: When Work Becomes Home and Home Becomes Work*. New York: Metropolitan Books, 1997. ISBN 0805044701
- Howse, Derek. *Greenwich Time and the Discovery of the Longitude*. London: Philip Wilson Publishers, Ltd., 1997. ISBN 0192159488
- Landes, Davis S. *A Revolution in Time: Clocks and the Making of the Modern World*. Cambridge, Massachusetts: Harvard University Press, 1985. ISBN 0674768000
- Levine, Robert. *A Geography of Time: the Temporal Misadventures of a Social Psychologist, or How Every Culture Keeps Time Just a Little Bit Differently*. New York: Basic Books, 1997. ISBN 0465028292
- Macey, Samuel L., ed. *Encyclopedia of Time*. New York: Garland, 1994. ISBN 0815306156
- Morris, Richard. *Time's Arrows*. New York: Simon and Schuster, 1985. ISBN 0671501585
- Orlock, Carol. *Inner Time: The Science of Body Clocks and What Makes Us Tick*. New York: A Birch Lane Press Book, 1993. ISBN 1559721944
- Richards, E.G. *Mapping Time: the Calendar and Its History*. New York: Oxford University Press, 1999. ISBN 0198504136
- Rifkin, Jeremy. *Time Wars: The Primary Conflict in Human History*. New York: Holt, 1987. ISBN 0805003770
- Rybczynski, Witold. *Waiting for the Weekend*. New York: Penguin Books, 1991. ISBN 0670830011
- Schor, Juliet B. *The Overworked American: The Unexpected Decline of Leisure*. New York: Basic Books, 1992. ISBN 0465054331
- Sobel, Dava. *Longitude: the True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time*. New York: Walker, 1995. ISBN 0802713122
- Teichmann, Roger. *The Concept of Time*. Basingstoke: Macmillan, 1995. ISBN 0312127030

Thomas, Julian. *Time, Culture and Identity: An Interpretive Archaeology*. London: Routledge, 1996. ISBN 0415118611

Waugh, Alexander. *Time: From Micro-seconds to Millennia – A Search for the Right Time*. London: Headline, 1999. ISBN 0747221782

Whitrow, G.J. *Time in History: Views of Time from Prehistory to the Present Day*. New York: Oxford University Press, 1988. ISBN 0192153617

Internet

Calendars through the Ages – <http://webexhibits.org/calendars/index.html>

Clockworks: From Sundials to the Atomic Second (Encyclopaedia Britannica)
– www.britannica.com/clockworks/main.html

Internet Encyclopedia of Philosophy – www.utm.edu/research/iep/t/time.htm

It's About Time – www.internetttime.com/itimegroup/time.htm

James Gleick's "Faster" – <http://fasterbook.com/>

Natural Cycles – www.trinity.edu/mkearl/time-1.html

Seneca (Iroquoian) View of Time –

www.google.ca/search?q=cache:4t3eoax3zpcC:www.brandonu.ca/library/cjns/7.2/mcelwain.pdf+%22cyclical+time%22+native&hl=en&ie=UTF-8

Time Exhibits – www.bldrdoc.gov/timefreq/general/exhibits.html

Time Flies – www.nelson-atkins.org/tempusfugit/

Time Images – www.adh.brighton.ac.uk/schoolofdesign/MA.COURSE/LTime.html

Time's Empire – <http://wwics.si.edu/OUTREACH/WQ/WQSELECT/AVENI.HTM>

The Winged Chariot of Time – http://library.thinkquest.org/28906/what_is_time.htm

Activity 1.4: The Role of Archaeologists

Time: 5 hours

Description

In groups, students research and interpret selected case studies of major contributors to archaeological science, charting their training, cultural assumptions, discoveries, and impact on society. The research requires inferential thinking as students complete an organizing chart. The activity builds to a critical analysis of the major concepts and ideas held by professional archaeologists and a description of the historical evolution of the profession in both attitude and available supporting sciences.

Strand(s) & Learning Expectations

Strand(s): Theory and Foundation; Processes and Methods of Research; Implementation, Evaluation, Impacts, and Consequences

Overall Expectations

PMV.01 • be able to plan for research, using a variety of strategies and techniques.

PMV.04 • be able to assess and extend their research skills to present their findings and solve problems.

Specific Expectations

TF1.01 – critically analyse the major concepts and ideas held by pre-eminent theorists and researchers in each of the subjects or disciplines studied, and describe their historical evolution;

TF1.03 – analyse and explain the importance of information and communication in past and contemporary societies (e.g., to preserve and advance knowledge, to develop trade and commerce, to organize and foster art and culture), and describe their impact on the development of each of the subjects or disciplines under study;

TF2.04 – describe the history and role of institutions and occupations that gather, organize, and store information, and explain how they meet needs and challenges in each of the subjects or disciplines studied;

TF3.02 – analyse and describe the different perspectives of various disciplines on the same topic as exemplified in key interdisciplinary texts (e.g., the different viewpoints of evolutionary biology, geography, and demography in *Guns, Germs and Steel; The Fates of Human Societies* by Jared Diamond) and explain how these diverse perspectives further the investigation of issues and the solving of problems;

TF3.04 – identify the historical development of the systems approach to solving problems, and describe examples of how it has been successfully applied to solve problems in interdisciplinary endeavours (e.g., the application of systems models - physical, graphical, verbal, or mathematical representations of a system; systems paradigms - conceptual frameworks, filters, or theories used to interpret information; systems archetypes - diagrams that illustrate ways of identifying and solving problems found in different locations);

IE1.05 – explain how the manipulation of information (e.g., through the use of propaganda, bias, and stereotyping) affects society by analysing historical and contemporary examples from each of the subjects or disciplines studied;

IE3.01 – describe and critically analyse historical and contemporary examples of interdisciplinary products and activities that apply innovative approaches and solutions to a variety of real-life situations around the world (e.g., the artistic, social, and literary contributions of the Arts and Crafts movement; the development and regulation of gene mapping and therapy; the international coordination of crime prevention and criminal justice networks);

IE3.02 – describe and critically analyse the contributions to society of leading practitioners who have engaged in interdisciplinary endeavours related to the subjects or disciplines studied, and describe the potential impact of their work on future society (e.g., David Suzuki, biologist; Buckminster Fuller, futurist; Margaret Mead, anthropologist; Douglas Cardinal, architect);

IE4.03 – research the importance of effective collaboration and communication skills in interdisciplinary careers related to the subjects or disciplines under study (e.g., in the validation and publication of scholarship in socio-biology, in the electronic sharing of data in palaeopathology);

IE4.04 – identify post-secondary training requirements for and potential employment opportunities in interdisciplinary fields related to the subjects or disciplines under study, (e.g., by searching trade and professional publications, consulting university calendars, or inviting guest speakers to class) and describe possible future trends and opportunities (e.g., by researching economic forecasts and futurist speculations).

Learning Expectations from Other Courses

CHW3M: World History to the Sixteenth Century

CC1.03 – demonstrate an understanding of the roles of selected individuals and groups in the process of change (e.g., Socrates, the Mongols, Jeanne d’Arc).

SBI4U: Biology

EV1.02 – describe, and put in historical and cultural context, some scientists’ contributions that have changed evolutionary concepts (e.g., describe the contributions – and the prevailing beliefs of their time – of Lyell, Malthus, Lamarck, Darwin, Gould, and Eldridge).

Prior Knowledge & Skills

Students require research skills, particularly computer research skills, which they have acquired from a variety of senior courses. They also require collaborative and self-assessment skills.

Planning Notes

- The use of an electronic presentation format (e.g., *PowerPoint*, *Corel Presentations*) may be effective. Search Internet sites and right click on photos to save and import them for classroom presentation. Many of the suggested case studies have excellent online pictures which contain clear specimen or site detail. The technique virtually brings the artifact into the classroom for examination. Some technical ability and preparation is required. Be aware that most Internet information is copyrighted and, as in using any information source, be careful not to violate copyright law.
- Students should be advised that a high degree of inferential thinking may be necessary as they use the videos or print sources to complete the organizer - they may need to make informed guesses, and in some cases may have to leave blanks. Remind students that a lack of clear answers is a common problem in real-life research.

Teaching/Learning Strategies

1. Give a brief overview of examples of milestone discoveries in archaeology and distributes a list of case studies for student research. Students are encouraged to include at least one case study based on North American archaeology. Students may prefer to do video research for one of their case studies (see Resources). Archaeologists (and their area of expertise) who might be considered are: Heinrich Schliemann (Homeric Troy); Flinders Petrie (Egypt); Arthur Evans (Minoan Knossos); Leonard Woolley (Ur); A.H. Layard (Nineveh); Howard Carter (the tomb of Tutankhamon); Mary and Louis Leakey (Olduvai Gorge); Mary Leakey (Laetolil); Don Johansen (Lucy); Yigael Yadin (Masada); Kathleen Kenyon (Jericho); Spiros Marinatos (Santorini); Frederick Catherwood (Mayan cities); Hiram Bingham (Maccu Picchu); Jacquetta Hawkes (prehistoric Britain); R.S. MacNeish (Tehuacan); Gertrude Caton-Thompson (Great Zimbabwe); Thor Heyerdahl (Kon-Tiki and Ra); Andrew Douglass (dendrochronology); W.F. Libby (carbon 14); L.L. Cavalli-Sforza (gene mapping); Mel Fisher (the Atocha treasure); Robert Ballard (Titanic).

Other Topics

These additional topics may be of interest to students because they are current; research would provide insight into contemporary archaeological methodology:

- the dispute over Kennewick Man;
 - the Vikings at L'Anse aux Meadows;
 - Anasazi cliff-dwellers;
 - Inca and pre-Inca sites in northern Peru;
 - the terra-cotta army of Emperor Qin Shihuang;
 - excavations at local Ontario sites.
2. The research component requires students to search websites, print materials, and video materials. Assign the research and explain that the group research activity is centred on the accomplishments of noted archaeologists or their finds. Distribute the following organizer chart.

Case Study Analysis Organizer

Discovery	Case 1	Case 2	Case 3	Case 4
Scientific Training				
Motivation for Study				
Prevalent Cultural Assumptions re: gender roles, minorities				
Degrees of Certitude				
Impact on Society				

-
3. After groups have researched and filled out their charts, review the following focal points for investigation.
 - a) How has the science of archaeology developed over time as shown in these examples?
 - b) What kind of training is required to do archaeological field work today?
 - c) Compare the cultural assumptions found in these cases. Were there assumptions made in the past that are unacceptable to you today? Are there assumptions made by modern archaeologists that future generations may object to?
 - d) How has the science of archaeology affected society?
 - e) Consider how clearly the videos presented the information needed to fill in your organizer. Did the videos provide more (or less) straightforward answers than print sources? What is the strongest advantage of video research? What is its greatest weakness?

Assessment & Evaluation of Student Achievement

- Assessment of class participation, completion of organizers, and other tasks in the initial stages of this activity should include aspects of knowledge, communication, inquiry, and application as formative scores.
- When assigning the case study project, the teacher provides students with clear expectations in the form of a checklist (see Appendix 1.4.1) from which students can monitor their own progress.
- Each student completes a group assessment sheet (see Appendix 1.4.2) on the case study project, reporting on the contribution of each member to the task as well as their own. The case study project is evaluated by the teacher, based on all four areas of learning as demonstrated by the student.

Accommodations

The teacher should monitor the student checklist on an ongoing basis and provide assistance or modifications based on individual student ability to complete the required tasks. The teacher may assign particular cases to students whose research skills are weak: for example, information on Schliemann, Johansen, and Carter is straightforward and readily available. Students may choose to take an experiential approach to case analysis (by attempting to reconstruct a working model of a tool, for example) as long as the requirements of the group activity are met.

Resources

Print

Brown, Dale, ed. *Lost Civilizations: Mound Builders & Cliff Dwellers*. Virginia: Time-Life Books, 1992. ISBN 0809498588

Davis, Wade. *One River: Explorations and Discoveries in the Amazon Rain Forest*. New York: Simon & Schuster, 1997. ISBN 0684808862

Fagan, Brian, ed. *Eyewitness to Discovery: First Person Accounts of More than Fifty of the World's Greatest Archaeological Discoveries*. Oxford University Press, 1996. ISBN 01950081412

Fagan, B. *In the Beginning: An Introduction to Archaeology, 9th edition*. New York: Longman, 1997. ISBN 0673397203

Haviland, W. *Human Evolution and Prehistory*. New York Holt Rinehart, 1983. ISBN 00320621291

Heyerdahl, T. and C. Ralling. *Kon-Tiki Man: An Illustrated Biography of Thor Heyerdahl*. San Francisco: Chronicle Books, 1991. ISBN 1850892970

Sabloff, Jeremy. *The New Archaeology and the Ancient Maya*. New York: Scientific American Library, 1990. ISBN 0716750546

Spector, Janet D. *What This Awl Means: Feminist Archaeology at Wahpeton Dakota Village*. Minnesota Historical Society Press, 1993. ISBN 0873512782

Stanton, A. and D. Stewart, eds. *Feminisms in the Academy*. The University of Michigan Press, 1998. ISBN 0472065661

Trigger, Bruce. *Time and Traditions: Essays in Archaeological Interpretation*. Edinburgh: Edinburgh University Press, 1978. ISBN 0852243294

Video

“Maya: The Blood of Kings,” *Lost Civilizations Series*. Time-Life Education, 1998, 56 min.

Ancient Americas: Eastern Woodlands. Camera One, 1997, 60 min.

Cahokia Mounds: Ancient Metropolis. Collinsville, IL: Cahokia Mounds Museum Society, 1994, 60 min.

First Emperor of China. NFB, 1989, 42 min.

The Lost Pharaoh: The Search for Akhenaton. NFB, 1980, 56 min.

Messages in Stone. McIntyre Media, 1996, 26 min.

Mystery of the Maya. NFB, 1995, 38 min.

The Myth of Masada. Films for the Humanities and Sciences, 1993, 22 min.

PBS. “Chaco Legacy,” *Odyssey Series*. Marlin Motion Pictures, 1980, 58 min.

PBS. “Mystery of the First Americans,” *Nova Series*. Marlin Motion Pictures, 2000, 60 min.

PBS. “Myths and the Moundbuilders,” *Odyssey Series*. Marlin Motion Pictures, 1980, 59 min.

PBS. “Seeking the First Americans,” *Odyssey Series*. Marlin Motion Pictures, 1980, 58 min.

PBS. “The Ancient Mariners,” *Odyssey Series*. Marlin Motion Pictures, 1980, 58 min.

PBS. “The Incas,” *Odyssey Series*. Marlin Motion Pictures, 1980, 58 min.

PBS. “Treasures of the Sunken City,” *Nova Series*. Marlin Motion Pictures, 1997, 60 min.

Viking Visitors to North America. NFB, 1979, 22 min.

The Vinland Mystery. NFB, 1984, 28 min.

Internet

Archaeology – www.archaeology.com (brief biographies of many famous archaeologists)

Archaeology on the Net (a useful and comprehensive site) – www.serve.com/archaeology

Discovery Channel – <http://dsc.discovery.com/search> (useful search feature)

Kennewick Man: Tri-City Herald’s Interpretive Center – www.tri-cityherald.com/bones

www.greatserpentmound.org/features/links.html

Novalink – Teacher’s guide Inca high hill burials- interactive site

PBS – www.pbs.org/wgbh/nova/search.html (useful search engine)

Canadian Print and Internet Sources

Ellis, Chris and Neal Ferris, eds. *Archaeology of Southern Ontario to AD 1650*. London, ON: Ontario Archaeological Society, 1990. ISBN 09193501

Finlayson, William. *Iroquoian People of Rocks and Water A.D. 1000-1650: A Study in Settlement Archaeology*. London, ON: London Museum of Archaeology, 1998. ISBN 0771420722

Gordon, Kate. *The Vikings and Their Predecessors*. Ottawa: National Museums of Canada, 1981. ISBN 0660107511

McGhee, Robert. *Ancient Canada*. Ottawa: Canadian Museum of Civilization, 1989. ISBN 0660107953

McGhee, Robert. *Ancient People of the Arctic*. Vancouver: UBC Press, 1996. ISBN 0774805536

Wright, J.V. *Ontario Prehistory*. Ottawa: National Museums of Canada, 1972. ISBN 0660000652

– www.archaeolink.com/canadian_archaeology.htm#Canada

– www.civilization.ca/orch/www05c_e.html

– www.uwo.ca/museum/virtual_tour/index.html

Appendix 1.4.1

Comparison of Major Discoveries Study Checklist

Stage 1 I have received and I understand:	
	the overview of the assignment.
	the outline of the group responsibilities and timeframe.
	the list of selected case studies for research.
Stage 2 I have:	
	become a part of a group.
	a clear understanding of my contribution to the task.
	begun researching the issues identified in the task.
Stage 3 I have:	
	compiled written notes from references researched and recorded each source.
	discussed my findings with the group and entered my findings on the organizer.
	submitted my contribution to the group task by the due date.
Stage 4 I have:	
	contributed to the group analysis of the four cases studies.
	taken part in presenting our work to the class.
	signed and dated the final copy of the completed group assignment.
	completed the group task evaluation form.

Appendix 1.4.2

Group Task Assessment Form

Student Name:

Date:

Group Members:

- a)
- b)
- c)
- d)

			Yes	No
1.	The tasks were evenly divided among group members.	a)		
		b)		
		c)		
		d)		
2.	The research task was completed by each member.	a)		
		b)		
		c)		
		d)		
3.	The chart was completed by the due date.	a)		
		b)		
		c)		
		d)		
4.	The questions were answered collaboratively and recorded.	a)		
		b)		
		c)		
		d)		
5.	The objectives of the assignment were met by the group. (List objectives as they appear on the task outline.)			
	• Include research on five significant cases.			
	• Make comparisons of cultural assumptions.			
	• Demonstrate the historical evolution of the science of archaeology over time.			
	• Identify post-secondary training required and employment opportunities in this discipline.			

Unit 4: The Problematic Past

Time: 20 hours

Unit Description

The issues and conflicts surrounding archaeology and the ownership of artifacts have become more prominent in today's society. Questions such as: Who owns these pieces of the past? need to be examined to determine who legally controls the artifacts from our past. Students begin with an analysis of legal and ethical issues of ownership and control of archaeological findings. Students study the federal and provincial laws that govern archaeological activities; the reasons for their existence; and their impact on those people who are most influenced: professional archaeologists, landowners, farmers, developers, and Aboriginal peoples. Students propose principles that separate the ethical use of archaeological discoveries from mere plunder or exploitation, and they develop guidelines to ease the frequent conflict between individual rights and a wider public interest. Students also examine how the use of information technologies may help to address some of the concerns surrounding the storage and display of artifacts. They examine how effective UNESCO and the maintenance of heritage sites have been in preserving the past. The unit culminates with a case study dealing with many legal and ethical issues involving control and ownership of artifacts. This case study could be an examination of the Kennewick-man controversy involving the repatriation of a 10 000-year-old skeleton to Aboriginal tribes under a 1990 United States law. It could be an examination of UNESCO's convention on the Protection of the Underwater Cultural Heritage to prevent commercial exploitation of underwater treasures – such as in the case of the Spanish ship, Atocha. It could be an examination of the Elgin or Parthenon Marbles and the question of who owns the ancient sculptures: the British Museum or the government of Greece?

Catholic students receive the opportunity to examine ethical questions in the light of gospel values. The Catholic Church's teaching on the following issues is addressed: respect for the dignity of the human body, the right of ethnocultural communities, property rights, environmental rights, and profit as a motivating force.

Unit 4 Synopsis Chart

Activity & Time	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
4.1 Legal and ethical issues 3 hours	IE1.05, PM3.02, TFV.03, TF4.04 CGE 4a, 5e, 7e	HZT4U - ET1.03 CLN4U - HT3.01	Thinking/Inquiry Self-assessment by students using checklist	- study legal and ethical issues surrounding archaeological artifacts and their storage in museums and archives
4.2 Laws and control of artefacts 4 hours	TFV.04, TF1.04, TF3.03, TF4.04 CGE 2c, 3d, 5a	CLN4U - RDV.03, HT3.02, HT3.03 CGW4U - SS1.08	Knowledge/ Understanding Summative evaluation by teacher using quiz	- examine provincial, federal, and international laws relating to the control of artifacts and archaeological sites

Activity & Time	IDS Learning Expectations	Learning Expectations from Other Courses	Assessment & Evaluation	Focus & Student Tasks
4.3 Impact of information technologies 4 hours	TF1.02, TF1.03, TF2.02, PMV.02, PMV.03, PM2.02, PM4.02 CGE 3e, 4f	MDM4U - OD1.02 NDW4M - CHV.03	Thinking/Inquiry Teacher feedback provided anecdotally	- study the role of information technologies concerning the storage and display of artifacts
4.4 International action 4 hours	TFV.01, TF4.05 CGE 1d, 2e, 7g	CGR4M - GC1.02 CGG30 - HE1.03, HE3.03	Knowledge/Understanding Peer assessment by students using checklist	- investigate the protection of significant archaeological sites by international organizations
4.5 Case Study: Unit Culminating Activity 5 hours	IEV.01, IEV.03, TF4.04, IE2.01 CGE 1d, 3f, 5e	CHI4U - HI4.04 CLN4U - RF5.03, RDV.05	Knowledge/Understanding Thinking/Inquiry Communication Application Summative evaluation by teacher using rubric	Culminating Activity: conduct a case study involving the control of artifacts and the laws that may possibly influence their protection

Activity 4.1: Legal and Ethical Issues

Time: 3 hours

Description

Students examine a variety of scenarios that raise ethical and legal issues about the ownership of artifacts. They determine the issues and some possible solutions. Students create a Code of Ethics for one of the following groups: archaeologists, anthropologists, museum curators, historians, or conservators.

Strand(s) & Learning Expectations

Strand(s): Theory and Foundation; Processes and Methods of Research; Implementation, Evaluation, Impacts, and Consequences

Overall Expectations

TFV.03 • demonstrate an understanding of the different perspectives and approaches used in each of the subject or disciplines studied.

Specific Expectations

TF4.04 – demonstrate an understanding of how to use a variety of information technologies to support interdisciplinary endeavours;
PM3.02 – identify and critically analyse ideas, arguments, bias and stereotyping found in resources, using a variety of strategies;
IE1.05 – explain how the manipulation of information affects society, by analysing historical and contemporary examples from each of the subjects or disciplines studies.

Ontario Catholic School Graduate Expectations

CGE4a – demonstrate a confident and positive sense of self and respect for the dignity and welfare of others;

CGE5e – respect the rights, responsibilities, and contributions of self and others;

CGE7e – witness Catholic social teaching by promoting equality, democracy, and solidarity for a just, peaceful, and compassionate society.

Learning Expectations from Other Courses

HZT4U: Philosophy: Questions and Theories

ET1.03 – use critical, logical thinking skills to defend their ideas about ethical issues and anticipate counterarguments to their ideas.

CLN4U: Canadian and International Law

HT3.01 – explain the interrelation of law, morality, and religion.

Prior Knowledge & Skills

- Internet research skills are needed for this activity.

Planning Notes

- Prepare copies of Appendix 4.1.1 – Legal and Ethical Scenarios.
- Locate and provide samples of a Code of Ethics. (See Resources for websites.)
- Provide materials for students to create their Code of Ethics.

Teaching/Learning Strategies

1. Place the words *law* and *ethics* on the board. Students brainstorm what these words have to do with archaeology. Students' ideas are listed on the board.
2. In small groups, students examine several scenarios (Appendix 4.1.1 – Legal and Ethical Scenarios). They explore the legal and ethical issues that arise from these scenarios and offer suggestions about how these issues may be resolved. Next hold a class discussion on the issues and possible solutions.
3. Students re-examine the scenarios and identify the different interests that may be involved in the scenarios (e.g., cultural groups, heritage associations, private enterprise, governments, museums) and describe what their concerns would be. In this activity, the teacher may reassemble the original groups, assign one of the five legal and ethical scenarios (from Appendix 4.1.1 – Legal and Ethical Scenarios) to each student group, and request certain students in each group to role-play the different interest groups that may be involved in the assigned scenario. For example, one or two students may role-play the representatives of a cultural group, and one or two students may role-play representatives of a private enterprise company. Students in each group present their opinions in role-playing form to the entire class. At the conclusion of the student role-playing presentations, lead the class in a discussion about concerns and issues raised in the groups.
4. In groups, students research the nature of the profession and create a Code of Ethics. Using Internet sources (see Resources) and/or teacher-provided samples, students perform research to become familiar with what constitutes a code. The Code of Ethics should be created on a sheet of bristol board to be displayed. Consideration of legal, moral, and religious aspects should be the focus.
5. Groups present their Codes of Ethics to the class.

Assessment & Evaluation of Student Achievement

- Roving conference by the teacher to monitor student understanding of the concepts under consideration. (Teaching/Learning Strategies #2, 3, and 4)
- Formative assessment of Appendix 4.1.1 – Legal and Ethical Scenarios by the teacher for details and accuracy. (Teaching/Learning Strategies #2 and 3)
- Formative assessment of the oral presentation of the code of ethics by the teacher using a checklist. (Teaching/Learning Strategy #5)

Oral Presentation Checklist

Names of Group Members	Logical sequence of arguments	Eye contact with audience	Voice projection	Answers to questions

Accommodations

- Provide a checklist of unit activities, key vocabulary, and assignments for students to monitor their progress.
- Organize groups to ensure a balance of strengths, skills, and needs.
- ESL/ELD students should be encouraged to develop a personal dictionary or glossary of new vocabulary.
- Provide examples of Codes of Ethics.
- Have ESL students rehearse the presentation with a native speaker, practising pronunciation and intonation.

Resources

Print

Green, Ernestine L., ed. *Ethics and Values in Archaeology*. New York: The Free Press, 1984.

(A collection of essays written by experts in the field of archaeology discussing the conflicts and dilemmas that have developed in their field over the past 15 years.)

Lynott, M.J. and A. Wylie, eds. *Ethics in American Archaeology 2nd Edition*. Washington, DC: Society for American Archaeology Special Report, 2000.

Messenger, Phyllis Mauch, ed. *The Ethics of Collecting Cultural Property: Whose Culture? Whose Property?* Albuquerque: University of New Mexico Press, 1989.

Merryman, John H. and Albert E. Elsen, eds. *Law, Ethics, and the Visual Arts*. Philadelphia, PA: University of Philadelphia Press, 1987. This two-volume set covers how law and ethics apply to people and institutions in the art world.

Renfrew, Colin. *Loot, Legitimacy and Ownership: The Ethical Crisis in Archaeology*. Duckworth Debates in Archaeology. London: Duckworth, 2000.

Rosenwig, Robert M. "Ethics in Canadian archaeology: an international, comparative analysis." *Journal of Canadian Archaeology*, 21: pp. 99-114, 1997.

Internet

American Anthropological Association Code of Ethics – www.aaanet.org/committees/ethics/ethcode.htm

Archaeological Institute of America – www.archaeological.org/pdfs/AIA_Code_of_EthicsA5S.pdf

Cassell, Joan and Sue-Ellen Jacobs (eds.) *Handbook on Ethical Issues in Anthropology*. 1987

– www.aaanet.org/committees/ethics/toc.htm Special Publication 23.

Codes of Ethics Online Project – www.iit.edu/departments/csep/PublicWWW/codes. Center for the Study of Ethics in the Professions at the Illinois Institute of Technology provides an online index of the official codes of ethics for more than 850 professional societies, corporations, government agencies, and academic institutions worldwide.

Ethical Issues in Conservation – <http://palimpsest.stanford.edu/bytopics/ethics#codes>

Ethics and the Archaeologist (links to sites) – <http://archaeology.about.com/msubethics.htm?once=true&>

Final Report of the Commission to Review the AAA Statements on Ethics

– www.aaanet.org/committees/ethics/ethrpt.htm

Society for American Archaeology: Principles of Archaeological Ethics

– www.saa.org/AboutSAA/Ethics/prethic.html

Stewardship of Cultural Resources – www.saa.org/PubEdu/sampler/lesson7.html (scenarios)

University of British Columbia: Professional Ethics – www.ethics.ubc.ca/resources/professional/

Appendices

Appendix 4.1.1 – Legal and Ethical Scenarios

Activity 4.2: Laws and Control of Artifacts

Time: 4 hours

Description

In jigsaw format, students research and analyse the efforts of various governing bodies in protecting archaeological artifacts and sites. Students share their research with each other and determine the effectiveness of the policies that are currently in place for the protection of cultural heritage. Students submit a short opinion paper.

Strand(s) & Learning Expectations

Strand(s): Theory and Foundation

Overall Expectations

TFV.04 • demonstrate the skills and strategies used to develop interdisciplinary products and activities.

Specific Expectations

TF1.04 – identify and describe practices in Canada and around the world that effectively safeguard privacy and intellectual ownership of information in areas related to interdisciplinary studies and describe possible future changes to these practices;

TF3.03 – analyse and describe the interdisciplinary approaches used for inquiry and research in a number of specific endeavours and critically analyse some of the common errors that characterize poor research;

TF4.04 – demonstrate an understanding of how to use a variety of information technologies to support interdisciplinary endeavours.

Ontario Catholic School Graduate Expectations

CGE2c – present information and ideas clearly and honestly and with sensitivity to others;

CGE3d – make decisions in light of gospel values with an informed moral conscience;

CGE5a – work effectively as an interdependent team member.

Learning Expectations from Other Courses

CLN4U: Canadian and International Law

HT3.02 – analyse how society uses law to express its values;

HT3.03 – identify and analyse contemporary events and issues that demonstrate a possible conflict between the law and societal values;

RDV.03 – demonstrate an understanding of the major concepts, principles, and purposes of international law.

CGW4U: Canadian and World Issues: A Geographic Analysis

SS1.08 – demonstrate an understanding of the need to respect the cultural and religious traditions of others.

Prior Knowledge & Skills

- Students are familiar with the workings of the jigsaw approach.
- Students have experience in searching online databases.
- Students understand the format for writing an opinion paper.

Planning Notes

- Study the backgrounds of the various governing bodies protecting archaeological interests (see Resources for online information).
- Provide students with copies of Appendix 4.2.1 – Internet Sites of Governing Bodies and Appendix 4.2.2 – Guiding Questions.
- Book time in the library/resource centre and computers with Internet access for student research.
- Compose home groups prior to beginning the activity.

Teaching/Learning Strategies

1. Teach a Socratic lesson on the actions of various levels of governing bodies in protecting archaeological artifacts and sites. Using a country (e.g., Greece), explain the agencies/bodies active within the country as an example for students to model.
2. Students participate in a jigsaw activity. Each home group is composed of six students. Each student in the home group chooses a different governing body to research from the following list:
 - a) Provincial Government – Ontario;
 - b) Federal Government – Canada;
 - c) International – UNESCO;
 - d) International – UNIDROIT;
 - e) Pontifical Commission for the Preservation of the Artistic and Historical Patrimony of the Church;
 - f) a foreign country.
3. Students leave their home group and join their expert group (where all a's, b's, c's, etc. meet) to research the laws of the particular governing body. To assist in their research, students receive Appendix 4.2.1 – Internet Sites of Governing Bodies and Appendix 4.2.2 – Guiding Questions.
4. Students return to their home groups, discuss their findings from the expert groups, and share the information with the group members.
5. Review the skills involved with critically evaluating policies and laws. Individually, students write an opinion paper of 300-400 words critically evaluating the effectiveness of the various governing bodies in protecting archaeological interests.

Assessment & Evaluation of Student Achievement

- Roving conference by the teacher to monitor student understanding of the concepts under consideration. (Teaching/Learning Strategy #3)
- Self- and peer assessment of the opinion paper using a rubric (Appendix 4.2.3). (Teaching/Learning Strategy #5)

Accommodations

- The teacher selectively groups students to ensure a balance of individual skills, strengths, and needs.
- The teacher may provide visual reinforcement of concepts presented in the lecture.
- The teacher may provide technical support for Internet research.
- The teacher may provide an example of “plain language” translation of a document.
- Peer tutor support may be used.

Resources

Print

Burnham, Bonnie. *The Protection of Cultural Property: Handbook of National Legislations*. Paris, France: International Council of Museums, 1974. (The purpose of this resource was to present “the national laws for the protection of cultural property which relate to the illicit destruction of cultural heritage.”)

DuBoff, Leonard D. and Mary Ann Crawford DuBoff. *Law and the Visual Arts*. Portland, Oregon: Lewis and Clark College, 1974.

DuBoff, Leonard D. *Art Law in a Nutshell*. St Paul, Minnesota: West Publishing Company, 1993.

Internet

See Appendix 4.2.1.

Appendices

Appendix 4.2.1 – Internet Sites of Governing Bodies

Appendix 4.2.2 – Guiding Questions

Appendix 4.2.3 – Rubric for Assessing Opinion Paper

Activity 4.3: Impact of Information Technologies

Time: 4 hours

Description

Students discuss how information has been stored and passed on through time, which leads to an understanding of how the storage of information has changed. They examine some of the difficulties and potential risks associated with the storage of artifacts. Students develop criteria for assessing the methods of displaying artifacts through electronic media and visit online museums to measure their effectiveness.

Strand(s) & Learning Expectations

Strand(s): Theory and Foundation; Processes and Methods of Research

Overall Expectations

PMV.02 • be able to access appropriate resources, using a variety of research strategies and technologies;
PMV.03 • be able to process information, using a variety of research strategies and technologies.

Specific Expectations

TF1.02 – describe and critically analyse the ways in which each of the related subjects or disciplines studied contributes to the understanding of key historical and contemporary issues in the interdisciplinary course;

TF1.03 – analyse and explain the importance of information and communication in past and contemporary societies and describe their impact on the development of each of the subjects or disciplines under study;

TF2.02 – analyse and describe the past and current importance of organizing and storing information and resources to each of the subjects or disciplines studied;

PM2.02 – identify and describe the principles used by creators of databases, catalogues, and indexes to organize information for retrieval and apply this knowledge to locate relevant resources for interdisciplinary research using a variety of search strategies and features;

PM4.02 – assess their effectiveness in generating new ideas in each of the subjects or disciplines studied as a result of their research.

Ontario Catholic School Graduate Expectations

CGE3e – adopt a holistic approach to life by integrating learning from various subject areas and experience;

CGE4f – apply effective communication, decision-making, problem-solving, time, and resource management skills.

Learning Expectations from Other Courses

NDW4M: Issues of Indigenous Peoples in a Global Context

CHV.03 – describe a variety of approaches that indigenous peoples are taking to preserve and maintain indigenous knowledge as it relates to such things as culture, language, and the environment;

MDM4U: Mathematics of Data Management

OD1.02 – use the Internet effectively as a source for databases.

Prior Knowledge & Skills

- In previous units, students have looked at how information about the past is pieced together.
- Students have experience in the use of online resources and the Internet.

Planning Notes

- Ensure computer access for student research.
- Become familiar with Appendix 4.3.1 as an exemplar for the student organizer found in Appendix 4.3.2 – Risks Encountered in Storing Information.
- Provide copies of Appendix 4.3.2 – Risks Encountered in Storing Information.
- Become familiar with the online museums listed in Resources.

Teaching/Learning Strategies

1. Lead a class discussion and have students brainstorm about how knowledge of the past has been passed on through time. As students offer suggestions (e.g., oral tradition, paper, computer), record them on the board. Students arrange the completed items in chronological order. Verify the timeline by displaying the following information.

Timeline of Recording Methods

<i>Oral Tradition:</i>	Stories, folklore, songs, poetry (circa 10000 BC)
<i>Carvings and Paintings:</i>	Cave walls, tablets, papyrus (circa 8000-2000 BC)
<i>Written Word:</i>	Parchment (200 BC) Paper (1400 BC) Printing Press (1450 AD)
<i>Non-Paper:</i>	Microfilm, microfiche, phono records, audio tape, film strips, video tape (20th century)
<i>Electronic Media:</i>	Computers, electronic databases (1940s)
<i>Hypertext:</i>	Internet browsers (1970s)

2. Continue the discussion, using the following questions as a guide:
 - a) What sources would you access to learn about ancient civilizations, e.g., books, Internet, museums?
 - b) How has this changed over time?
 - c) What governing bodies are responsible for storing information/artifacts about the past (refer to information gathered in Activity 4.2)?
 - d) Is there a moral obligation for storing and preserving artifacts (refer to information gathered in Activity 4.1)?
 - e) Why has there been a tremendous growth in the use of museums?
 - f) What risks are there in storing information and artifacts?
3. Using the Internet, students visit sites dealing with preservation of artifacts such as The Canadian Conservation Institute (see Resources), which has a preservation framework on-line. Students complete an organizer (Appendix 4.3.2 – Risks Encountered in Storing Information). Appendix 4.3.1 is included as an exemplar for teacher use.
4. To gain insight into the features that are found in effective museum websites, students conduct research using a site such as Managing Your Museum (see Resources). Students list criteria for an effective museum website.
5. In small groups, students then use their criteria (from Teaching/Learning Strategy #4) to create a rating scale to evaluate museum websites.
6. Students visit three or four teacher-selected museum sites and evaluate their effectiveness using their created rating scale (from Teaching/Learning Strategy #4). Debrief the ratings of the museum websites with the class.

Assessment & Evaluation of Student Achievement

- Assessment of the organizer (Appendix 4.3.2) by the teacher for knowledge of the importance of storing and organizing information appropriately (TF2.02). (Teaching/Learning Strategy #3)
- Formative assessment by teacher of the appropriateness of the criteria for an effective museum website, using a checklist. (Teaching/Learning Strategies #4 and 5)
- Formative assessment by teacher of student analysis of three or four museum sites, using anecdotal comments. (Teaching/Learning Strategy #6)

Accommodations

- Provide an outline to assist students with note-taking.
- Provide a visual reinforcement of concepts generated through discussion.
- Use a partially completed organizer to guide students.
- Organize groups to ensure a balance of strengths, skills, and needs.
- Provide technical support for Internet use.
- For enrichment, students could do a detailed study of certain museum sites and report the results to the class.

Resources

Internet

The Canadian Conservation Institute – www.cci-icc.gc.ca/framework/index_e.shtml

Managing Your Museum site – www.ed-resources.net/mw99/.

Museums

International Council of Museums – www.icom.org

Museums in Canada – <http://vlmp.museophile.com/canada.html>

Smithsonian Institution – www.si.edu

Virtual Library Museums pages – <http://vlmp.museophile.com>

WWW Virtual Library: Museums around the World

– <http://archive.comlab.ox.ac.uk/other/museums/world.html>

Appendices

Appendix 4.3.1 – Risks Encountered in Storing Information (exemplar)

Appendix 4.3.2 – Risks Encountered in Storing Information

Activity 4.4: International Action

Time: 4 hours

Description

Given a set of conventions as set out by UNESCO for determining World Heritage Sites, students determine which criteria were used to designate those located in Canada. Students evaluate the strategies employed by UNESCO in protecting significant natural and cultural sites around the world.

Strand(s) & Learning Expectations

Strand(s): Theory and Foundation; Processes and Methods of Research

Overall Expectations

TFV.01 • demonstrate an understanding of the key ideas and issues related to each of the subjects or disciplines studied.

Specific Expectations

TF4.05 – identify and describe strategies that national and international groups and organizations use to address interdisciplinary issues and decisions.

Ontario Catholic School Graduate Expectations

CGE1d – develop attitudes and values founded on Catholic social teaching and act to promote social responsibility, human solidarity, and the common good;

CGE2e – use and integrate the Catholic faith tradition in the critical analysis of the arts, media, technology, and information systems to enhance the quality of life;

CGE7g – respect and understand the history, cultural heritage, and pluralism of today’s contemporary society.

Learning Expectations from Other Courses

CGR4M: The Environment and Resource Management

GC1.02 – explain the requirements for including sites on the World Heritage List.

CGG3O: Regional Geography: Travel and Tourism

HE1.03 – identify selected natural cultural World Heritage sites and the factors responsible for their selection;

HE3.03 – evaluate the role of UNESCO in protecting significant natural and cultural sites around the world.

Prior Knowledge & Skills

- Students have some familiarity with the role of the United Nations from previous courses.
- Students should be familiar with writing a personal response.
- Students have the skills to conduct research from previous activities.

Planning Notes

- Provide students with information on the Canadian World Heritage Sites or provide computers with Internet access to use http://parkscanada.pch.gc.ca/unesco/canmap/Canmap_e.htm.
- Provide students with copies of Appendix 4.4.1 – World Heritage Convention, Appendix 4.4.2 – Canadian World Heritage Sites, and Appendix 4.4.3 – Rubric for Evaluating Personal Response.

Teaching/Learning Strategies

1. Students view a video, such as *Treasures of the Deep*. After viewing the video, ask the question: Which organization in the world is best suited to preserve/conservate world heritage? Guide the discussion as students give suggestions with rationales. Conclude by stressing the importance of the mandate of the organizations.
2. Introduce UNESCO as a world organization that has played a significant role in the area of world heritage – UNESCO’s mandate incorporates the preservation and restoration of heritage sites. Supply students with a brief summary of UNESCO and its mandate.
3. Using the criteria for a World Heritage Site (Appendix 4.4.1 – World Heritage Convention), students first examine Canadian sites. After appropriate research, students complete an organizer (Appendix 4.4.2 – Canadian World Heritage Sites), which asks them to determine which criteria were used in designating any five Canadian World Heritage Sites.
4. Students examine UNESCO’s overall effort in protecting significant natural and cultural sites around the world using UNESCO’s webpage (<http://whc.unesco.org/nwhc/pages/sites/main.htm>) and library resources. Students use the following to guide their inquiries:
 - a) What is UNESCO’s goal regarding world heritage?
 - b) What is the magnitude of UNESCO’s efforts in preserving world heritage?
 - c) After examining the identified sites in danger, assess the effectiveness of UNESCO’s activities in protecting these sites.
 - d) Briefly describe a conservation method utilized by UNESCO.
5. Students write a 250-word personal response to the question: Has UNESCO been successful in protecting significant natural and cultural sites around the world?

Assessment & Evaluation of Student Achievement

- Formative assessment of the completed organizer by the teacher to ensure understanding and application of the criteria for declaring World Heritage Sites. (Teaching/Learning Strategy #3)
- Evaluation by the teacher of the opinion paper using a rubric Appendix 4.4.3 – Rubric for Evaluating Personal Response. (Teaching/Learning Strategy #5)

Accommodations

- Provide visual reinforcement of concepts developed through class discussion (using board or overhead).
- Provide a partially completed organizer.
- One-on-one teacher assistance may be used in navigating the UNESCO website.
- For enrichment, students could do a detailed study of a UNESCO initiative, e.g., the planned restoration of the lighthouse at Alexandria and the accompanying underwater museum.

Resources

Internet

Canadian World Heritage Sites – http://parksCanada.pch.gc.ca/unesco/canmap/Canmap_e.htm

UNESCO – <http://whc.unesco.org>

Video

Treasures of the Deep. National Geographic, 60 min. The video explores the debate over who may stake claim to centuries-old Roman ships, Spanish galleons, and luxury liners. The arguments of treasure hunters, entrepreneurs, and salvagers are presented, as well as the rationales of archaeologists who attempt to protect the sunken history.

Appendices

Appendix 4.4.1 – World Heritage Convention

Appendix 4.4.2 – Canadian World Heritage Sites

Appendix 4.4.3 – Rubric for Evaluating Personal Response

Activity 4.5: Case Study: Unit Culminating Activity

Time: 5 hours

Description

In this unit culminating activity, students form interdisciplinary teams with the task of preparing a case on who should have legal possession of an archaeological artifact. Each team is composed of an historian/geographer, an anthropologist/illustrator, a museum curator/conservator, and a lawyer/theologian. Students in their assigned roles conduct research and then as a group prepare a presentation of their case to the “world court,” in this case, the rest of the class. Finally, students are asked to write a one- to two-page reflection on the issues surrounding the ownership of artifacts.

Strand(s) & Learning Expectations

Strand(s): Theory and Foundation; Implementation, Evaluation, Impacts, and Consequences

Overall Expectations

IEV.01 • implement and communicate information about interdisciplinary endeavours using a variety of methods and strategies;

IEV.03 • analyse and describe the impact on society of interdisciplinary approaches and solutions to real-life situations.

Specific Expectations

TF4.04 – demonstrate an understanding of how to use a variety of information technologies to support interdisciplinary endeavours;

IE2.01 – monitor the effectiveness of the collaborative strategies they used in planning and implementing interdisciplinary products and activities.

Ontario Catholic School Graduate Expectations

CGE1d – develop attitudes and values founded on Catholic social teaching and act to promote social responsibility, human solidarity, and the common good;

CGE3f – examine, evaluate, and apply knowledge of interdependent systems for the development of a just and compassionate society;

CGE5e – respect the rights, responsibilities, and contributions of self and others.

Learning Expectations from Other Courses

CLN4U: Canadian and International Law

RDV.05 • demonstrate an understanding of the complexity of making, interpreting, and enforcing law on a global scale;

RF5.03 – evaluate the political and legal avenues available for resolving conflicts.

CHI4U: Canada: History, Identity, and Culture

HI4.04 – identify various career opportunities related to the study of history (e.g., researcher, museum or archive curator, teacher, journalist, writer).

Prior Knowledge & Skills

- Students have acquired research skills in previous activities.
- Organization and co-operation skills are integral for the group work.
- Students have knowledge of laws at various levels from Activity 4.2.
- Students have knowledge of the elements of a successful presentation.

Planning Notes

- Ensure that students have computer access and that library/resource centre time is arranged.
- Make copies of student assignment and assessment sheets.
- Become familiar with potential case study topics.

Teaching/Learning Strategies

1. Students, in groups of four, research an individual case. Each person in the group is a professional investigator and has separate tasks to complete.
2. Cases to be examined could include the following:
 - a) The Elgin Marbles: 253 marble sculptures taken from the Parthenon in Greece by Lord Elgin in the early 19th century and now housed in the British Museum. The government of Greece wishes the Elgin Marbles to be returned to Greece.
 - b) The Koh-i-Noor Diamond: the maharaja of Punjab's eight-year-old son handed the egg-sized diamond to the conquering British at the time of the annexation of Punjab in 1840. The Koh-i-Noor diamond became part of British monarchy's possessions in 1849, but many Sikh people see the diamond as part of their national heritage.
 - c) The Benin Bronzes: bronze and ivory masks and other religious and cultural objects taken from Benin City, Nigeria in 1897 by the British conquerors are now housed in the Glasgow Art Gallery and Museum, Scotland.
 - d) Priam's Gold: archaeologist Heinrich Schliemann took gold from Greece and gave it to the National Museum in Berlin, Germany; it was taken to Russia after the wartime defeat of Germany in 1945.

-
- e) The government of Greece in 1993 sued Michael Ward Gallery in New York for the return of rare Mycenaean gold jewellery and ornaments dating from the 15th century BC. The suit contended that the artifacts were taken from recently discovered tombs in violation of a 1932 Greek law that states that all antiquities – discovered and undiscovered – are the property of the Greek state.
 - f) Kennewick Man: the skeleton of a 9000-year-old man found in Washington State was wanted by scientists for study, but contested by Northwest Indian tribes who wanted to rebury the body under the provisions of the 1990 Native American Graves Protection Act.
 - g) In 1990, a Kanesatake Mohawk burial site and ancestral territory were threatened by the expansion of a golf course near the small town of Oka, Quebec. This case may also examine the issue of who should safeguard Aboriginal artifacts in Canada.
 - h) In 1985 American salvager Mel Fisher discovered the wreck of the Atocha, a Spanish galleon that sunk off the coast of Florida in 1622 with a cargo of gold, silver, and jewellery worth US\$400 million. Fisher's underwater treasure has been challenged by the state of Florida and UNESCO's convention on the Protection of the Underwater Cultural Heritage.
3. Within each group, the following roles are to be taken. (See Appendix 4.5.1 for a list of possible questions the student should consider)
 - a) Historian/geographer: the person who provides the background information on the case, the history surrounding the case. This person is also responsible for creating a map or maps to illustrate the geographical location of the artifact.
 - b) Anthropologist/illustrator: the person who is responsible for creating a likeness of the artifact, either in pictorial form or sketch form. This person also explains why the artifact in question is of cultural significance.
 - c) Museum curator/conservator: the person who is responsible for describing the artifact. This person speaks about the condition of the artifact and possible restoration to the object. The curator/conservator also speaks about the value of the artifact.
 - d) Lawyer/theologian: the person who presents the legal and ethical issues in the case. This person may make reference to national and international law. She/he may make reference to similar legal cases and she/he may make reference to moral laws.
 4. Students examine the quotations presented in Catholic Church Perspectives (Appendix 4.5.2) and in their respective groups attempt to relate the teachings of the Catholic Church to the issues involved in their particular case study. Direct students to examine the meaning of such terms as *stewardship*, *colonialism*, *common good*, *theft*, *reparation*, *restitution*, and *natural law*. Ask students to examine the Catholic Church's perspective on these concepts. Students attempt to relate the relevant Catholic Church teaching to the case they are researching and studying.
 5. Once students have completed their individual research, they prepare their final presentation to the world court. The world court is composed of the remaining students in the class. Hand out cards which designate students in the class as representatives from different countries. Countries to be represented include: Greece, India, Pakistan, Britain, Nigeria, Scotland, United States, and Canada (depending on the size of the class there will be two or three representatives from each country). The role of judge in the world court is played by the teacher.
 6. In their presentations, students are to take a position about the final ownership of the artifact: will it stay with the present owner or will it be returned to the person(s) or country claiming rightful ownership? Members of the world court are encouraged to ask questions of the presenters. After the presentations, the members of the world court vote on the rightful ownership of the artifacts in question (the teacher decides on the percentage of votes needed for a decision to be final).

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7. As a follow-up activity, students submit a one- to two-page reflection in which they consider the following:
- What they have learned about the competing forces in the process of safeguarding cultural artifacts.
 - What they have learned about the legal and ethical issues of ownership and control of archaeological findings.

Note: some ideas and reference material for the unit culminating activity were adapted from the website “Stolen Property or Finders Keepers” by Dede Tisone-Bartels at <http://home.att.net/~tisone/problem.htm>. The ideas and reference materials are used with the author’s permission.

Assessment & Evaluation of Student Achievement

- Assessment of student research by the teacher using roving conferences to monitor research skills and understanding of the designated material. (Teaching/Learning Strategy #3)
- Evaluation of student presentations using a rubric (Appendix 4.5.4 – Evaluation of Presentation). (Teaching/Learning Strategy #4)
- Evaluation of student reflection paper using a rubric (Appendix 4.5.5 – Reflection Paper Rubric). (Teaching/Learning Strategy #5)

Accommodations

- Organize groups to ensure a balance of strengths, skills, and needs.
- Provide technical support for Internet use.
- Peer tutor support may be used to support special needs students.
- For enrichment, students explore a case similar to the case analysed by their group.

Resources

Internet

See Appendix 4.5.3.

Appendices

Appendix 4.5.1 – Unit Culminating Activity – Student Instructions

Appendix 4.5.2 – Catholic Church Perspectives

Appendix 4.5.3 – Internet Resources for Culminating Activity

Appendix 4.5.4 – Oral Presentation Rubric for Culminating Activity

Appendix 4.5.5 – Evaluating Personal Response

Appendix 4.1.1

Legal and Ethical Scenarios

1. During the construction of a condominium complex in Ontario, a 600-year-old Aboriginal burial ground is discovered. The construction company wants to give the uncovered artifacts to a local museum. Aboriginal groups wish to have the complex stopped and the grounds declared sacred.
2. After World War II, Russian soldiers carry valuable archaeological treasures from Germany to Russia. Russia claims the treasures as the victor's "spoils of war." Germany claims the treasures are German and have been illegally taken.
3. Terracotta statuettes are taken from their natural habitat in the African country of Chad by impoverished villagers. The statuettes are sold by the villagers to a middle person who sells them to a private collector. The private collector claims she is safeguarding valuable archaeological artifacts. The country of Chad argues that the statuettes are protected by legislation and must never be offered for sale. The government of Chad claims that the artifacts should be returned because they are a part of Africa's cultural heritage.
4. Jim Fish, an American salvager, finds a hundred-year-old British sunken ship in international waters. Fish argues that he spent five years finding the treasure and he wants a monetary return on his investment. He plans to sell artifacts found on the ship for profit. The government of Britain and the families of passengers on the ship do not want the sunken ship exploited for private gain.
5. In the 19th century, Britain has political and military control of the African country of Nigeria. British officials find that certain stone statues are in danger of being destroyed. They take the statues to England and donate them to a British museum, which sets up a Nigerian cultural heritage display. In the late 20th century, Nigeria wants the statues returned to be displayed in a Nigerian museum.

Appendix 4.2.1

Internet Sites for Governing Bodies

Provincial Sites

Ontario Heritage Act R.S.O., 1990 – www.culture.gov.on.ca/culture/english/culdiv/heritage/act.htm
Archaeology in Ontario, Ministry of Culture
– www.culture.gov.on.ca/culture/english/culdiv/heritage/arch.htm

Federal Sites

Department of Canadian Heritage Act – <http://lois.justice.gc.ca/en/C-17.3/44193.html>
Parks Canada: Historic Sites and Monuments Act – www.parksCanada.gc.ca/Library/acts/acts_e.htm

International Sites

Unidroit Convention on Stolen or Illegally Exported Cultural Objects. Rome, June 24, 1995
– www.unidroit.org/english/conventions/c-cult.htm
Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict. 1954
– www.icomos.org/hague/hague.convention.html
Recommendation for the Protection of Movable Cultural Property. UNESCO, 1978
– www.icomos.org/unesco/moveable78.html
Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of
Ownership of Cultural Property. UNESCO, 1970
– www.tufts.edu/departments/fletcher/multi/www/bh572.html

Catholic Church Sites

The Pastoral Function of Ecclesiastical Museums – www.petersnet.net/browse/4187.htm
Pontifical Commission for the Preservation of the Artistic and Historical Patrimony of the Church
– www.vatican.va/roman_curia/pontifical_commissions/pcch/index.htm

Foreign Country Websites

Australia: Queensland Heritage Act 1992
– www.legislation.gld.gov.au/Legislation%20Docs/SUPERS_Q/QldHeritageA92
China: Regulations of the People's Republic of China Concerning the Administration of the Work for the
Protection of Underwater Cultural Relics – www.sunyou.com/c/law/part12%5Cg12004e.htm
China: The Confusciusornus Sanctus: An Examination of Chinese Cultural Property Law and Policy in
Action – www.bc.edu/bc_org/avp/law/lwsch/journals/bciclr/23_2/02_txt.htm
Europe: European Convention on the Protection of the Archaeological Heritage
– <http://archaeology.about.com/cs/globallegislation>
Finland, Greece, Israel, Cambodia, Lithuania, etc.
– <http://home.uchicago.edu/~tmferry/pages/LawsNation.htm>
Malaysia: Extraction of the Antiquities Act
– www.hbp.usm.my/conservation/laws/antiquities%20act.html
Tibet: Protection of Tibetan Cultural Relics – [www.chinaembassy-
india.org/eng/premade/10703/Protection%20of%20Tibetan%20Cultural%20Relics](http://www.chinaembassy-india.org/eng/premade/10703/Protection%20of%20Tibetan%20Cultural%20Relics)
United States: Laws, Regulations, and Standards Related to Cultural Resources
– www2.cr.nps.gov/laws/laws.htm

Appendix 4.2.2

Guiding Questions

The following questions are to be used to guide your research of the laws protecting archaeological interests created by a particular governing body.

- Where are the laws/policies found? Make a brief list of them.
- Are they worded as laws, policies, guidelines, or in another way?
- When were the laws/policies designed?
- Who and what do these laws protect?
- Are the laws/policies part of a larger section or are they serving a specific purpose?
- Do the laws/policies address specific groups of people?
- Are the laws/policies general in nature and open to interpretation or are they very specific?
- Do the laws/policies address specific types of artifacts?
- Are the laws/policies regional, national, or international in nature?

Appendix 4.2.3

Assessment of the Opinion Paper

Criteria	Level 1 (50-59%)	Level 2 (60-69%)	Level 3 (70-79%)	Level 4 (80-100%)
Knowledge/ Understanding - understanding of the effectiveness of the various governing bodies in protecting archaeological interests	- demonstrates limited understanding of the effectiveness of the various governing bodies in protecting archaeological interests	- demonstrates some understanding of the effectiveness of the various governing bodies in protecting archaeological interests	- demonstrates considerable understanding of the effectiveness of the various governing bodies in protecting archaeological interests	- demonstrates thorough understanding of the effectiveness of the various governing bodies in protecting archaeological interests
Thinking/Inquiry - use of critical thinking skills	- uses a limited range of critical-thinking skills	- uses a moderate range of critical-thinking skills	- uses a considerable range of critical-thinking skills	- uses a wide range of critical-thinking skills confidently and effectively
Communication - appropriate writing conventions (e.g., analytical style, grammar, organization, diction); - clarity of position	- rarely uses appropriate writing conventions; - rarely clarifies her/his position	- usually uses appropriate writing conventions; - sometimes clarifies her/his position	- often uses appropriate writing conventions; - often clarifies her/his position	- consistently uses appropriate writing conventions; - clarifies her/his position consistently
Application - provision of explanations that incorporate new understandings of the roles of governing bodies in protecting archaeological interests	- provides explanations that incorporate a few new personal understandings of the roles of governing bodies in protecting archaeological interests	- provides explanations that incorporate some new personal understandings of the roles of governing bodies in protecting archaeological interests	- provides explanations that incorporate a considerable number of new personal understandings of the roles of governing bodies in protecting archaeological interests	- provides explanations that incorporate a significant number of new personal understandings of the roles of governing bodies in protecting archaeological interests

Note: A student whose achievement is below Level 1 (50%) has not met the expectations for this assignment or activity.

Appendix 4.3.1

Risks Encountered in Storing Information

	Risk/Potential Problem	Explanation of Risk	Museum Response to Risk
1	<i>Agents of Deterioration</i> Thieves, Vandals, Displacers	<i>Intentional</i> (criminals) - steal small or portable artifacts - disfigure valuable, popular or symbolic artifacts <i>Unintentional</i> (staff, users): - lose or misplace any type of artifact	<i>Building Features – Storage</i> - avoid high risk building sites - block access by having a strong roof and strong exterior and interior walls - detect intruders by ensuring clear sight and appropriate lighting
2	<i>Agent of Deterioration</i> Fire	- destroys, scorches, or deposits smoke on all types of art, particularly those that contain organic materials	<i>Building Features – Display</i> - avoid unnecessary electricity in display areas - block fire with fire-resistant compartments of moderate size
3	<i>Agent of Deterioration</i> Water	- causes efflorescence or tide marks in porous materials - swells organic materials corrodes metals - delaminates, tents, and/or buckles layered components of an artifact	<i>Portable Fittings – Storage</i> - avoid placing shelves within 10 cm of the floor - detect water by using water detectors connected to a central annunciator panel
4	<i>Agents of Deterioration</i> Pests	<i>Insects:</i> - consume, perforate, cut, graze, tunnel and/or excrete which destroys, weakens, disfigures or etches material <i>Vermin, birds and other animals:</i> - gnaw organic materials and displace smaller items <i>Mould and microbes:</i> - weaken or stain organic and inorganic materials	<i>Portable Fittings – Display</i> - avoid using infested materials for display cases - block pests by using well-sealed insect resistant, vermin-resistant display case and cabinets - provide conservation laboratory equipment to treat damaged artifacts
5	<i>Agents of Deterioration</i> Contaminants	<i>Indoor and outdoor gases</i> (e.g., pollution, oxygen) <i>Liquids</i> (e.g., plasticizer, grease) <i>Solids</i> (e.g., dust, salt) - disintegrate, discolour, or corrode all artifacts, especially reactive or porous materials	<i>Portable Fittings – Transit</i> - use only clean, non-dusting packing case materials that are approved for museum use - block contaminants by using inert, clean wrapping materials

Appendix 4.3.2

Risks Encountered in Storing Information

	Risk/Potential Problem	Explanation of Risk	Museum Response to Risk
1			
2			
3			
4			
5			

Appendix 4.4.1

World Heritage Convention

Recognizing that the world's cultural and natural heritage transcends national boundaries and must be preserved for future generations, the Member States of UNESCO in 1972, unanimously adopted a Convention concerning the Protection of the World Cultural and Natural Heritage, known in short as the World Heritage Convention.

As of July 1997, 150 states had adhered to the Convention. Canada adhered in 1976.

The Convention provides for:

- Establishment of a World Heritage Committee.
- Compilation of a World Heritage List to include cultural and natural properties throughout the world that are considered to be of outstanding universal value according to criteria drawn up by the World Heritage Committee. As of July 1997, the committee, comprised of experts in cultural and natural conservation from 21 states, had named 506 sites to the List.
- Preparation of a List of World Heritage in Danger.
- Establishment of a World Heritage Fund to provide aid to Member States for World Heritage Sites. Each state adhering to the Convention pays one per cent of its contribution to the Regular Budget of UNESCO to the World Heritage Fund.
- Provision of technical and emergency assistance, upon request, to Member States.
- General promotion throughout the world of the importance of heritage conservation.

Criteria for the inclusion of cultural properties

Each property nominated should:

- (i) represent a masterpiece of human creative genius; or
- (ii) exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design; or
- (iii) bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared; or
- (iv) be an outstanding example of a type of building or architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history; or
- (v) be an outstanding example of a traditional human settlement or land-use which is representative of a culture (or cultures), especially when it has become vulnerable under the impact of irreversible change; or
- (vi) be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance (the Committee considers that this criterion should justify inclusion in the List only in exceptional circumstances or in conjunction with other criteria, cultural or natural).

Appendix 4.4.2

Canadian World Heritage Sites

Canadian Site	Description	Natural or Cultural	Criteria Used

Appendix 4.4.3

Evaluating Personal Response

Category/ Criteria	Level 1 (50-59%)	Level 2 (60-69%)	Level 3 (70-79%)	Level 4 (80-100%)
Knowledge/ Understanding - selects and includes relevant information on the role of UNESCO in protecting natural and cultural sites	- selects and includes limited relevant information on the role of UNESCO in protecting natural and cultural sites	- selects and includes some relevant information on the role of UNESCO in protecting natural and cultural sites	- selects and includes accurate relevant information on the role of UNESCO in protecting natural and cultural sites	- selects and includes accurate, relevant, and complete information on the role of UNESCO in protecting natural and cultural sites
Communication - clarity of position taken with regards to UNESCO's effectiveness	- rarely clarifies her/his position	- sometimes clarifies her/his position	- often clarifies her/his position	- clarifies her/his position consistently
Application - applies relevant knowledge of information on the role of UNESCO in protecting natural and cultural sites - provision of expectations that incorporate new understandings of UNESCO's role in preservation efforts	- rarely applies relevant knowledge of information on the role of UNESCO in protecting natural and cultural sites - provides explanations that incorporate a few new personal understandings	- sometimes applies relevant knowledge of information on the role of UNESCO in protecting natural and cultural sites - provides explanations that incorporate some new personal understandings	- usually applies relevant knowledge of information on the role of UNESCO in protecting natural and cultural sites - provides explanations that incorporate a considerable number of new personal understandings	- consistently applies relevant information on the role of UNESCO in protecting natural and cultural sites - provides explanations that incorporate a significant number of new personal understandings

Note: A student whose achievement is below Level 1 (50%) has not met the expectations for this assignment or activity.

Comments:

Appendix 4.5.1

Unit Culminating Activity – Student Instructions

You will be divided into groups of four students. Each group will be asked to research an individual case involving conflict over the ownership of an archaeological finding. Each person in the group will become a professional investigator and will have separate tasks to complete. After appropriate research in print and Internet sources, the group will prepare a final presentation to the “world court” or to your fellow students. Members of the “world court” will be invited to ask questions of the presenters. Based on your presentation, the “world court” will decide the fate of the archaeological findings. Will they stay with the present owner, or will they be returned to the country, person, or group seeking guardianship?

Roles

Historian/Geographer

The historian provides the background information on the case and the history surrounding the case. This person is also responsible for creating a map or maps to illustrate the geographical location of the artifact.

Questions to consider:

- What is the historical background to this case?
- What are the two competing historical arguments in this case?
- Have political boundaries changed since this case started, and what problems may have resulted from the change?

Anthropologist/Illustrator

The anthropologist is responsible for creating a likeness of the artifact either in pictorial form or sketch form. This person also explains why the artifact in question is of cultural significance.

Questions to consider:

- What is the cultural value of this artifact?
- In what parts of the world is this artifact highly significant?

Museum Curator/Conservator

The curator is responsible for describing the artifact. This person speaks about the condition of the artifact and possible restoration to the object. The curator/conservator also speaks about the value of the artifacts.

Questions to consider:

- What is the physical condition of this work of art?
- What restorations, if any, has the artifact(s) undergone?
- What is the value of this archaeological finding and to whom is this finding valuable?

Lawyer/Theologian

The lawyer presents the legal and ethical issues in the case. This person may make reference to national and international law. She/he may make reference to similar legal cases and she/he may make reference to moral laws.

Questions to consider:

- What national and international laws are involved in this case?
- Are there legal cases similar to this case? If so, describe one of those cases?
- What moral law is involved in this case?

Appendix 4.5.2

Catholic Church Perspectives

The concept of an ordered universe and a common heritage both point to the necessity of developing in the heart of every individual and in the activities of every society a true sense of stewardship and of solidarity. It is the obligation of a responsible steward to be one who cares for the goods entrusted to him and not one who plunders, to be one who conserves and enhances and not one who destroys and dissipatesResponsible stewardship demands a consideration for the common good.

Archbishop Renato Martino, *Responsible Stewardship: Ecology as a Moral Task*.

For many church people in recent years, the re-examination of Canadian history with a particular focus on the damage done to Aboriginal peoples by European colonialism has involved an unveiling of evil in ourselves and in our institutions for which we were not prepared. The process has been painful and humbling. It has also been a grace, making possible a kind of collective repentance. This has been expressed, for example, in the public apologies offered by the four churches which were historically involved in administering Indian residential schools on behalf of the federal government. We grieve that the churches were aligned with the damaging and misguided assimilationist policies of Canadian governments and Canadian society as a whole.

Aboriginal Land Rights, *Canadian Conference of Catholic Bishops*, September 25, 2000.

Catholics see creation in a sacramental way. The abundance and beauty of God's creation reveals to us something of the generosity of the Creator. God is present and speaks in the dynamic life forces of our universe and planet as well as in our own lives. Respect for life needs to include all creation.

Our private property and accumulated wealth are not an absolute right because these carry a social mortgage at the service of the global common good.

Alberta Bishops' Statement on the Care of God's Creation, October 4, 1998.

"In his use of things man should regard the external goods he legitimately owns not merely as exclusive to himself but common to others also, in the sense that they can benefit others as well as himself." The ownership of any property makes its holder a steward of Providence, with the task of making it fruitful and communicating its benefits to others, first of all his family.

Section 2404, *Catechism of the Catholic Church*.

The seventh commandment forbids theft, that is, usurping another's property against the reasonable will of the owner. There is no theft if consent can be presumed or if refusal is contrary to reason and the universal destination of goods.

Section 2408, *Catechism of the Catholic Church*.

In virtue of commutative justice, reparation for injustice committed requires the restitution of stolen goods to their owner.

Section 2412, *Catechism of the Catholic Church*.

The natural law, present in the heart of each man and established by reason, is universal in its precepts and its authority extends to all men. It expresses the dignity of the person and determines the basis for his fundamental rights and dutiesNevertheless, in the diversity of cultures, the natural law remains as a rule that binds men among themselves and imposes on them, beyond the inevitable differences, common principles.

Sections 1956-1957, *Catechism of the Catholic Church*.

Appendix 4.5.3

Internet Resources for Culminating Activity

The Elgin/Parthenon Marbles

The British Committee for the Restitution of the Parthenon Marbles

– www.parthenonmarblesuk.org/index.php

Museum Security – www.museum-security.org/elginmarbles.html

The Parthenon Marbles – www.uk.digiserve.com/mentor/marbles

Return of the Marbles – www.urich.edu/~wolf/auto.htm

The Sad Story of the Parthenon Marbles – www.greece.org/parthenon/marbles/story.htm

Website dedicated to the return of the Parthenon Marbles

– www.museum-security.org/eleginmarbles.html

Koh-i-noor Diamond Royal Crown Jewels and India/Pakistan

History of the Kohinoor Diamond – www.indian-express.com/ie/daily/20000630/ied30057.html

Koh-i-noor History – www.time.com/time/magazine/1997/int/971013/diamond.html

Benin Bronzes – Nigeria and Glasgow Museum

CNN. Africa losing priceless relics, Oct. 10, 1995 – www.arm.arc.co.uk/CRBBletter1.htm

Newspaper Clipping: Benin Bronzes – www.arm.arc.co.uk/art/beninNewsClip.gif

Letter from Bernie Grant, MP to Julian Spalding – www.arm.arc.co.uk/CRBBletter1.html

Letter from Juilan Spalding in response to Bernie Grant – www.arm.arc.co.uk/CRBBletter3.html

Letter from Emmanula N Arinze to Julian Spalding – www.arm.arc.co.uk/CRBBletter2.html

List of Items in Glasgow from Benin Bronzes collection – www.arm.arc.co.uk/CRBBlist.html

Priam's Gold Collection from the Ancient City of Troy

All that Glitters – www.oxfordstudent.com/1999-06-10/features/1

Are Finders Keepers?

– www.law.duke.edu/curriculum/courseHomepages/Fall2001/170_01/FIND.HTML

Finders Keepers – www.uky.edu/LCC/HIS/104/s99scott.html

Heinrich Schliemann: Heroes and Myths

– www.utexas.edu/courses/wilson/ant304/biography/arybios97/kingbio.html

Magnificent collection of gold from Troy shown in Moscow

– www.chron.com/content/chronicle/world/96/04/16/gold.2-0.html

Priam's Gold Collection – www.uky.edu/LCC/HIS/104/s99scott.html

Appendix 4.5.3 (Continued)

Mycenaean Jewellery and Michael Ward

Michel Ward Gallery vs. Government of Greece – <http://home.att.net/~tisone/Mycenaeanjewelry1.htm>

Greece sues Michael Ward Gallery – <http://home.att.net/~tisone/Mycenaeanjewelry2.htm>

Kennewick Man

Bones 1 – www.bham.wednet.edu/online/kwickbones1.htm

Kennewick Man – www.cr.nps.gov/aad/kennewick/

Kennewick Man: News and Information – <http://archaeology.com/b/kennewick.htm>

Kennewick Man: Virtual Interpretive Center – www.tri-cityherald.com/bones

Meet Kennewick Man – www.pbs.org/wgbh/nova/first/kennewick.html

Reburial Dispute – www.archaeology.org/found.php?page=/online/news/kennewick.html

Spirit Cave and Kennewick – www.archaeology.org/found.php?page=/online/news/kennewick5.html

Oka

www.newsworld.cbc.ca/flashback/1990/oka2.html

www.globalserve.net/~artnet/wamoac3b.html

www.canadianaboriginal.com/sfriday1/news7.html

Atocha

www.unesco.org/opi/eng/unescopress/2001/01-118e.shtml

www.unesco.org/culture/legalprotection/water/html_eng/activity.shtml

www.ocf.berkeley.edu/~mars/

Appendix 4.5.4

Oral Presentation Rubric for Culminating Activity

Category/Criteria	Level 1 (50-59%)	Level 2 (60-69%)	Level 3 (70-79%)	Level 4 (80-100%)
Knowledge/ Understanding Knowledge of facts and ideas related to case studies	- demonstrates limited knowledge of relevant facts and ideas	- demonstrates some knowledge of relevant facts and ideas	- demonstrates considerable knowledge of relevant facts and ideas	- demonstrates thorough knowledge of relevant facts and ideas
Thinking/Inquiry Skills in planning and selecting strategies and resources	- applies few of the skills involved in an inquiry process	- applies some of the skills involved in an inquiry process	- applies many of the skills involved in an inquiry process	- applies all or almost all of the skills involved in an inquiry process
Communication Communication of information and ideas Presentation for an audience and a purpose	- communicates information and ideas with limited clarity - presents with a limited sense of audience and purpose	- communicates information and ideas with some clarity - presents with some sense of audience and purpose	- communicates information and ideas with considerable clarity - presents with a generally clear sense of audience and purpose	- communicates information and ideas with a high degree of clarity and confidence - presents with a consistently clear sense of audience and purpose
Application Application of legal and ethical principles to the case study	- applies legal and ethical principles with limited effectiveness	- applies legal and ethical principles with some effectiveness	- applies legal and ethical principles with considerable effectiveness	- applies legal and ethical principles with a high degree of effectiveness

Note: A student whose achievement is below Level 1 (50%) has not met the expectations for this assignment or activity.

Appendix 4.5.5

Evaluating Personal Response

Category/Criteria	Level 1 (50-59%)	Level 2 (60-69%)	Level 3 (70-79%)	Level 4 (80-100%)
Knowledge/ Understanding - understanding the competing forces in the process of safeguarding cultural artifacts	- demonstrates limited understanding of the competing forces in the process of safeguarding cultural artifacts	- demonstrates some understanding of the competing forces in the process of safeguarding cultural artifacts	- demonstrates considerable understanding of the competing forces in the process of safeguarding cultural artifacts	- demonstrates thorough understanding of the competing forces in the process of safeguarding cultural artifacts
Thinking/Inquiry - application of creative thinking skills to legal and ethical issue	- applies creative thinking skills with limited effectiveness and innovation	- applies creative thinking skills with some effectiveness and innovation	- applies creative thinking skills with considerable effectiveness and innovation	- applies creative thinking skills with a high degree of effectiveness and innovation
Communication - communication of information and ideas	- communicates information and ideas with limited clarity	- communicates information and ideas with some clarity	- communicates information and ideas with considerable clarity	- communicates information and ideas with a high degree of clarity
Application - application of legal and ethical principles to actual cases of ownership and control of archaeological findings	- applies legal and ethical principles to actual cases of ownership and control of archaeological findings with limited effectiveness	- applies legal and ethical principles to actual cases of ownership and control of archaeological findings with moderate effectiveness	- applies legal and ethical principles to actual cases of ownership and control of archaeological findings with considerable effectiveness	- applies legal and ethical principles to actual cases of ownership and control of archaeological findings with a high degree of effectiveness

Note: A student whose achievement is below Level 1 (50%) has not met the expectations for this assignment or activity.