LOCALLY DEVELOPED COURSE OUTLINE

ESL Introduction to Science15-5

Submitted By:

Chinook's Edge School Division No. 73

Submitted On:

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Course Basic Information

Outline Number	Hours	Start Date	End Date	Development Type	Proposal Type	Grades
15-5	125.00	09/01/2014	08/31/2019	Acquired	Extension	G10 G11 G12

Course Description

The primary goal of ESL Introduction to Science 15 is to provide English Language Learners (ELLs) with the opportunity to build communicative competence with the English language while attaining the scientific awareness needed to function as effective members of society.

Course Prerequisites

There are no pre-requisites required.

Sequence Introduction (formerly: Philosophy)

This course, ESL Introduction to Science 15 provides additional opportunities for students to develop and refine the learner competencies outlined in the Alberta Education's Inspiring Education document.

The primary goal of ESL Introduction to Science 15 is to provide English Language Learners (ELLs) with the opportunity to build communicative competence with the English language while attaining the scientific awareness needed to function as effective members of society. English Language Learners (ELLs) at the beginning levels of English language proficiency face language-related barriers to achievement in science classes due to the use of extensive subject-specific vocabulary and the complexity of the discourse, grammatical structures, and language functions required. English Language Learners require English Language Development (ELD) while simultaneously creating and sharing knowledge upon which scientific concepts are built. The outcomes in the course will reflect the linguistic criteria in the Alberta Benchmarks Assessment Framework addressing the listening, speaking, reading, and writing strands of language; the functions, forms, and vocabulary of English Language Development (ELD); and comply with the 2006 Alberta Education Vision for Senior High Science program philosophies.

This course will provide the background from the junior high science program to provide continuity with the senior high programs. In the senior high science programs, students focus on learning the big interconnecting ideas and principles. These ideas, or major themes, originate from science knowledge that transcends and unifies the natural science disciplines. These themes include change, diversity, energy, equilibrium, matter and evidence; and the connections among science, technology and society. Instructional design in the Introduction to Science course should be designed to engage students in scientific concepts and processes that encourage the development of scientific literacy and numeracy competencies which will then be transferred to further study in high school. By engaging students in collaboration, hands-on, scientific experiments and theory testing; through designing and testing models, key concepts and skills inherent in the discipline can be examined. Students be encouraged to develop process skills through communicating scientific understanding and exploration in multiple means including observations through journals and formal laboratory reports. Further, learning experiences should encompass rich, relevant, and recursive, real-world examples for exploration to apply scientific literacy to enhance citizenship, stewardship, and critical thinking.

Student Need (formerly: Rationale)

Students at English language proficiency levels 1 or 2 require from one to four semesters of specially-designed instruction which prepares them to enter content courses within the regular Alberta Program of Studies. ESL Introduction to Science 15 is a course that provides English Language Learners with an opportunity to study language, its functions, forms, vocabulary, (ELD) and the common cultural referents required to improve their literacy skills so that they are able to successfully integrate into the High School Science Program of Studies. This course will support the ELLs with developing and extending their language skills for the purposes of engaging in the scientific discourse of hypothesizing, explaining, describing, and informing.

The students will strengthen their understanding and application of the content-specific English vocabulary, text forms (grammatical structures), and functions (purposes) to succeed in secondary science classes.

Upon completion, students will enter Science 14 or Science 10 as appropriate.

Scope and Sequence (formerly: Learner Outcomes)

ESL Introduction to Science is a 5-credit course designed to offer intensive and explicit academic language instruction to Level 1 and 2 ELLs whose participation in carefully structured tasks will build competence and proficiency in academic functions, forms, vocabulary, listening, speaking, reading, and writing. The instructional design will support ELLs in acquiring and refining the pre-requisite skills for successful integration into high school science courses.

The instructional design will:

• personalize and differentiate the tasks to an appropriate comprehensible level for Beginner and High Beginner ELLs.

• attend to science concepts through all four strands of language learning: speaking, listening, reading, and writing.

• include explicit instruction in English functions (discourse), forms (grammar), and vocabulary.

• make scientific information accessible to language learners by modifying and adapting text.

• emphasize an inquiry-based approach to engage the learners.

• focus on experiential learning and thinking scientifically.

• use themes to help students understand relationships among scientific principles and processes.

• use content that activates students' prior knowledge of essential concepts and employ hands-on experiences in scientific experimentation and observation.

• employ collaborative and interactive communicative situations.

• provide numerous visual and linguistic exemplars.

• include transferable cognitive academic language and science specific terminology

• model cognitive and metacognitive strategies required in a Canadian learning environment.

Guiding Questions (formerly: General Outcomes

1 demonstrate receptive and expressive language skills appropriate for science text and media - listening and speaking; reading; writing (see Alberta ESL Proficiency Benchmarks Grades 10 - 12, LP 1,2 for illustrative examples)

2 understand and effectively apply English language functions, forms (grammar), and vocabulary appropriate in science contexts

3 further their ability to ask questions, investigate and experiment; gather, analyze and assess scientific information, and test scientific principles and their applications (see 2006 Science Vision Statement)

Learning Outcomes (formerly: Specific Outcomes)

1 demonstrate receptive and expressive language skills appropriate for science text and media - listening and speaking; reading; writing (see Alberta ESL Proficiency Benchmarks Grades 10 - 12, LP 1,2 for illustrative examples)	**15-5**
1.1 Listening and Speaking Outcomes: demonstrate aural comprehension of the vocabulary and phrases common to scientific (expository) text having contextual visual support	X
1.2 Listening and Speaking Outcomes demonstrate comprehension of main ideas from short oral or mixed-media presentations on scientific concepts having contextual and visual support	X
1.3 Listening and Speaking Outcomes engage in simple, structured spoken interactions on scientific topics	X
1.4 Listening and Speaking Outcomes present scientific ideas and information orally in simple, highly structured situations	X
1.5 Listening and Speaking Outcomes use basic vocabulary to discuss information and issues presented in science	X
1.6 Listening and Speaking Outcomes use textual features of different types of simplified texts designed for ELL/ESL learners on scientific topics to assist understanding	X
1.7 Reading Outcomes: activate context clues (text features, embedded definitions, grammatical patterns, first language, prior experiences) to comprehend new science text	X
1.8 Reading Outcomes demonstrate comprehension of high-frequency vocabulary and phrases common to science text	X
1.9 Reading Outcomes respond to simple texts in a variety of ways which may or may not involve language	X
1.10 Reading Outcomes demonstrate literal comprehension of science topics in a variety of ways	X
1.11 Reading Outcomes increasingly read and comprehend structured sentences and short scientific paragraphs with support	X

1.12 Reading Outcomes demonstrate comprehension of scientific concepts presented in simple sequenced text with literal explanation	X
1.13 Reading Outcomes gather and organize information from several science-related sources	X
1.14 Writing Outcomes: correctly use the vocabulary and phrases common to scientific text in scaffolded written text	X
1.15 Writing Outcomes convert relevant information in graphic organizers and visuals into sentences	X
1.16 Writing Outcomes write sentences, basic paragraphs and structured reports (using sentence and paragraph frames) to convey information draw conclusions, outline processes and express opinions on scientific topics	X
1.17 Writing Outcomes organize information in a scaffolded paragraph using connecting devices to show simple chronological, sequential, spatial, comparative and causal relationships	X
1.18 Writing Outcomes use correctly the grammatical structures of written English appropriate for this level (See Language Reference Chart in Appendix B)	X
1.19 Writing Outcomes engage in reporting (take notes in abbreviated verbal, graphic or numerical form	X

2 understand and effectively apply English language functions, forms (grammar), and vocabulary appropriate in science contexts	**15-5**
2.1 apply the structures and language features appropriate to the text type and purpose (define, explain, describe, analyze, compare, classify, infer, argue, summarize, paraphrase, synthesize, and evaluate)	X
2.2 understand and show sufficient control over forms (grammatical structures) typical of science academic genres (e.g. subordinate adverb clauses to demonstrate time relationships; passive voice in science reportage) (See Language Reference Chart Appendix B)	X

2.3 elicit, clarify and respond appropriately to questions, factual information and opinions on scientific topics apply knowledge of forms (grammar) to	X
2.4 use correctly the grammatical structures of spoken English appropriate for this level	X
2.5 demonstrate increased vocabulary to improve comprehension of the "gist" of complex informational texts	X
2.6 develop strategies for comprehending unfamiliar vocabulary including, when possible, accessing first language knowledge	X
2.7 enhance understanding of text (e.g. recognize transitional devices, embedded clauses or time relationships implicit in verb tenses)	X
2.8 demonstrate increasing accuracy and pronunciation of scientific vocabulary	X
2.9 identify a few connecting devices and transition words that are used to show relationships among ideas	X
2.10 use a number of vocabulary building and word recognition strategies and resources to understand science texts	X

3 further their ability to ask questions, investigate and experiment; gather, analyze and assess scientific information, and test scientific principles and their applications (see 2006 Science Vision Statement)	**15-5**
3.1 investigate properties of states of matter (i.e. water) as solids, liquids and gases and associated changes of state	X
3.2 investigate and describe relationships between humans and their environment, and identify multiple-perspectives on issues	X
3.3 apply understanding of particle model of matter to local ecosystem (cycling of human-produced chemical substances that enter and interact with environments)	X
3.4 investigate and describe, in general terms, the role of different substances in the environment supporting or harming ecosystem balance (both on humans and other living organisms)	X

3.5 examine and evaluate patterns in the first 18 elements of The Periodic Table (including nomenclature, atomic symbol, atomic mass, atomic radii, ionic charge; chemical properties (groups))	X
3.6 investigate chemical nomenclature (elements and compounds) and apply to classification of pure substances or mixtures	X
3.7 investigate chemical reactions to identify reactants and products and chemical or physical changes	X
3.8 engage in collaborative scientific inquiry to explain and apply scientific concepts. Articulate through the language of the discipline - the scientific method (state a problem; formulate a hypothesis; determine controlled, manipulated, and responding variables; organize and present observation data; graphically represent data if applicable; draw conclusions and analyze results)	X
3.9 construct models to test scientific theories; test models, evaluate design; modify design; reflect on process	X
3.10 evaluate scientific measurements (i.e. volume, mass, density, pH, temperature) through estimation and application of skills to measure accurately using the appropriate tool (i.e. beaker, graduated cylinder, Triple beam balance, litmus paper, thermometer)	X
3.11 apply laboratory skills to observe and record scientific observations to communicate and reflect on data using appropriate tool (microscope, hand lens)	X
3.12 construct and apply scientific literacy to interpret new sources of information	X
3.13 apply appropriate safety conduct and WHMIS comprehension to all scientific inquiries	X

Facilities or Equipment

Facility

There are no special facilities or spaces required to teach this course. Schools that offer science programs will have standard science classrooms and/or science labs that are fully equipped to accommodate the ESL Introduction to Science course.

Facilities:

Equipment

There is no special equipment recommended or required, outside of the equipment that is found in a standard science classroom and/or science lab.

Learning and Teaching Resources

Fathman, A. K., and D. T. Crowther, eds. 2006. Science for English language learne classroom strategies. Arlington, VA: NSTA Press.

Carr, J.; Seton, U.; Lagunoff, R. 2007. Making Science Accessible to English Learne

A Guidebook for Teachers. West Ed

For additional resources please refer to (CORE) Collaborative Online Resource Env

Sensitive or Controversial Content

It is expected that all issues and texts that may be considered to be controversial or sensitive in nature, will be discussed with school administration prior to coverage in class.

Issue Management Strategy

Health and Safety

All Chinook's Edge School Division No. 73 procedures (planning, parental permission, risk assessment, etc.) will be followed if students are taken off of the school campus, in accordance with Chinook's Edge School Division No. 73 Administrative Procedure 2-09 *Field Trips and Excursions.*

Risk Management Strategy

Statement of Overlap with Existing Programs

This course is designed to address the conceptual and linguistic gaps that newcomer ESL students have when they enter High School. The Learning Outcomes focus on high-priority knowledge, skills, and attitudes of earlier grades, and deliberately mirror curriculum from the Elementary and Junior High Programs of Studies.

This course is a reauthorization and previously has been found by Alberta Education not to have any significant overlap with existing provincially developed courses.

Student Assessment

The primary assessment tool for this course should be the Alberta Education Language Proficiency Benchmarks for English Language Learners-Grades 10-12 LP 1, 2.

Assessment practices for this course should invite student participation in articulating learning targets and setting criteria for success, in providing evidence of understanding and in developing appropriate grading practices. Assessment and grading practices should also reflect the context of particular student, school and classroom learning needs.

Teachers will set specific criteria and grading practices, with students, as they assess student learning based on the learning outcomes from the course. These criteria form the basis for assessing, grading and reporting student progress. Communicating student progress is an ongoing conversation between the teacher, the student and the parent, throughout the course, with the goal of improving student learning.

The validity of assessment will be enhanced if evidence of student achievement, related to the general and specific outcomes, is gathered over time, and through communication with students as they build understanding, revise misunderstandings and refine approaches to learning. Careful observation of students as they engage in learning tasks and critical examination of the work they produce allows teachers to build out a multi-dimensional picture of student learning.

Valid grading reflects a student's achievement towards the learning outcomes. The reporting of behavior, effort, attendance, neatness, group contribution, initiative etc. is reported separately (Webber, Aitken, Lupart, & Scott, 2009, Guskey, 2006, Reeves, 2004).

To be credible and defensible, assessment information that is used in grading a body of evidence, samples student performance, and is related to specified outcomes, based on

professional judgment rather than being based on a calculated mean (average).

Assessment and grading practices should take into consideration the helical nature of learning - the recursive and increasingly complex skills and knowledge required of students as they demonstrate what they know and can do in relation to each of the specific and general outcomes. As the complexity of learning outcomes increases within each level of the course evidence of a more comprehensive understanding is required.

Where a specific learner outcome spans all levels students are expected to show an increasing level of sophistication and refinement of skills in demonstrating the outcome. Overall, general and specific outcomes can be achieved and assessed concurrently rather than sequentially.

Teachers should adhere to the following assessment standards when determining appropriate assessment and grading practices for this Locally Developed Course.

Assessment practices should reflect the following principles:

• Assessment of student performance is explicitly tied to the learning outcomes of the course

• Students are involved in understanding and articulating learning targets and criteria of success

• Students have opportunities to receive feedback in non-graded and formative learning activities and assignments before submitting assignments or engaging in activities for summative evaluation

• Assessments are purposefully designed in ways that motivate and challenge students,

and are respectful of student diversity

• Students are provided choice in how they demonstrate learning

• Assessment data is gathered from a broad range of assessment activities and includes information from student work products and performances, from teacher observations of student learning processes, and from student reflections/student-provided evidence of success

• Assigned grades emphasize the most recent and most consistent evidence of student learning

• Assessment of Citizenship, Personal Development and Character is considered within all learning programs as included within the Calgary Board of Education Board of Trustees' Governance Policies.

References

Guskey, T. R. (May, 2006). Making high school grades meaningful. Phi Delta Kappa International,

87(9), pp. 670-675. Retrieved from http://www.jstor.org/stable/20442125

Reeves, D.B. (Dec 2004). The case against zeros. Phi Delta Kappan 86 (4). Retrieved from

http://schools.esu13.org/bannercounty/Documents/caseagainstzero.pdf

Webber, C.F., Aitken, N. Lupart, J. & Scott, S. (2009). The Alberta student assessment study final report. Edmonton, Canada:

Course Approval Implementation and Evaluation

The Associate Superintendent of Learning Services, in collaboration with the school Principal, will evaluate and monitor course(s) to ensure that all requirements by Alberta Education, the developing school board, and Chinook's Edge School Division No. 73 are met. School Principals will supervise course implementation at the school level.

Course pre-requisites, copyright privileges, and conditions listed by the developing board will be adhered to.