



## Teacher Guide and Curriculum Grades 9–12

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## eXpressions™ Language Quick Guide for Teachers

Visit the eXpressions™ home page at the following URL for information:

<http://www.clevelandclinic.org/eXpressions>

### **STEP 1: Register a class, organization, or group.**

From the eXpressions™ website (URL above), go to “Language” and click on the Teacher Registration link. Complete and submit the required registration information online as instructed.

Note: Students will submit their own online registration form from the Student Submission link on the same page once they have completed their projects.

Registrations and submissions are only accepted during the registration and submission time frames that coincide with the program schedule. Check the website for registration and submission deadlines.

### **STEP 2: Follow the Teacher Guide and Curriculum to help students create their literary works.**

In Student Session #1: Find a research project for inspiration.

Information on interns and their research projects is available via the Program Resources link on the eXpressions™ Language page.

In Student Session #2: Explore acceptable literary genres and examples from past winners and create literary pieces.

To view literary submissions by past winners: From the eXpressions™ website (URL above), click on the Language tab at the top of the page.

In Student Session #3: Guide students through the peer review and evaluation process.

### **STEP 3: Instruct students on how to submit their literary pieces.**

**To submit a literary piece:** From the eXpressions™ website (URL above), select the Language tab and click on the Student Submission link. Complete and submit the required registration information online as instructed.

Note: Students may submit literary works independently as long as a supervising teacher registers for the program (see instructions for teacher registration above).

Registrations and submissions are only accepted during the registration and submission time frames that coincide with the program schedule. Check the website for registration and submission deadlines.

### **eXpressions™ Language Rules and Guidelines:**

- Submissions must be received by the deadline to be eligible for judging.
- In addition to submitting a written project, students must complete the online submission form.
- Submissions with incomplete information will not be accepted.
- See full submission guidelines in the Teacher Guide and Curriculum.

### **STILL HAVE MORE QUESTIONS???**

**Find answers to your questions about eXpressions™ Language:** From the eXpressions™ website (URL above), click on Language, select the Frequently Asked Questions (FAQs) tab and locate the question and response of interest.

Please visit the FAQ page first before contacting the Office of Civic Education Initiatives. Most questions are addressed in the FAQs. Thank you!

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## I. Introduction

The Cleveland Clinic eXpressions™ program engages students in the world of scientific and medical research, exposing their minds to a new range of possibilities. Through project-based, peer-to-peer learning, students produce interpretations and responses, and they practice and develop valuable skills. This innovative learning model gives young men and women an enriched field of knowledge that transcends the traditional division of learning into separate disciplines.

The program began as eXpressions™ Art in 2005 by inviting young artists to listen to and interpret research conducted by Cleveland Clinic science interns from their schools. The result was a stunning array of artwork in diverse mediums. In 2006, art students also interpreted the research produced by the new nursing internship program. In 2007, the addition of myRESEARCH™ and mRi™: myRESEARCH illuminated, a collection of online research presentations, expanded the reach of eXpressions™ to schools without science or nursing interns. Also in 2007, the Office of Civic Education Initiatives (OCEI) expanded their arts programs by developing eXpressions™ Language. This program encourages young writers to create poems, songs, stories, and other creative writings in response to the scientific, medical, and healthcare research produced by internship students.

The basis of eXpressions™ lies in giving high school students the opportunity to participate in summer internships at the Cleveland Clinic. Unlike typical teenage summer jobs, the internships involve participation on a professional level and engage participants in hands-on work at all levels of hospital work. Interns finish their work with a top quality report, including a visual poster display. They then move on to share their experiences with their peers at their home schools and beyond.

This sharing stimulates responses and invites students to perceive and express connections among science, art, and literature. By involving your students in eXpressions™, you will engage in an exciting classroom experience that reveals a profound capacity for creativity, self-expression, and product excellence.

## II. Getting Started

### Who Should Participate?

eXpressions™ Language focuses on written expression of thoughts, concepts, and ideas of high school students (Grades 9-12) and advanced middle school students (Grades 6-8). Any high school or middle school class, organization, or club that emphasizes written communication would be a good choice. Discuss the possibility of creating an interdisciplinary assignment or unit with other teachers.

Here are some examples of potential student participants:

- Language Arts classes
- Foreign Language classes\*
- Communications classes
- Social Studies classes
- Technology classes
- Science classes
- Health classes
- Mathematics classes
- Physical Education classes
- Family and Consumer Science classes
- Arts classes (visual arts, music, theatre, etc.)
- Career Preparation programs
- Special Education programs
- Gifted programs
- English as a Second Language (ESL) classes\*
- School newspaper teams
- Yearbook teams
- Communication clubs
- Writing teams and clubs
- Science teams
- Academic teams
- Foreign Language clubs
- Drama clubs
- Music clubs
- Athletic teams
- Enrichment activities and clubs
- Home-schooling consortia
- Students interested in submitting to literary publications and contests
- Other groups – be creative, the opportunities are endless

\* Non-English submissions with accompanying English translation are accepted. Foreign language and ESL teachers should follow the same curriculum format provided.

## How Will I Integrate Literary eXpressions™ into my Teaching?

You will want to begin by deciding on how you will integrate eXpressions™ into your teaching by deciding the following:

- Will you require all of your students to participate as a graded assignment?
- Will you make eXpressions™ an optional or an extra-credit opportunity?
- Will your students be interested in the possibility of earning college credit (through the College of Arts & Sciences at Kent State University) for participating?

## Locating an Internship Student

**At your school:** Next, you will need to determine the area of research your students will interpret. If you have one or more interns in your own school, you are in an optimal situation. The interns have already completed final projects, and usually they are eager to share results with their peers. The element of peer sharing and collaboration is central to the whole concept of eXpressions™.

**From a nearby school or school district:** If no one in your school or district participated in an internship program this year, perhaps an intern from another nearby school can arrange for a field trip to explain his/her project to your class(es). This can have the added benefit of stimulating a new interest in participating in the internship program.

**Online:** If your situation does not provide access to a Clinic intern, modern technology comes to the rescue. Internship studies are available online, 24 hours a day and seven days a week, by the Office of Civic Education at [www.clevelandclinic.org/eXpressions](http://www.clevelandclinic.org/eXpressions). Connect to student research projects via the [myRESEARCH](#) or [mRi™](#): [myRESEARCH illuminated](#) links on the eXpressions™ Language page. You can review the possibilities and decide which ones are most likely to ignite the interest and creativity of your students.

## Creating a Schedule

Essentially, you set the stage by arranging for students to encounter the research and by guiding students through the creative process. You will also need to create a timeline planning for the key dates. Set up your own schedule for prewriting, drafting, peer responses, and creating the final products well in advance of the deadline.

The following classroom sessions suggest one way of organizing this project for your students. You are invited to adapt the procedures and to use your own creative genius as you invent new ones!

### III. Student Session #1: Scientific Research and the Creative Process

#### Goals:

Students will:

- Become familiar with the eXpressions™ program.
- Think creatively about science, medicine, and healthcare.

#### Objectives:

Students will:

- View scientific research projects from Cleveland Clinic internship students.
- View artistic interpretations of scientific research and understand the artists' motives in creating them.

#### Materials:

- Computers with internet access (1-3 students per computer) (Note: Students can also utilize home or public computers to complete this session individually).
- eXpressions™ Program Overview Video (provided on website).
- Samples of artwork submitted by eXpressions™ students from your school or other schools (provided on website).
- Samples of literary works submitted by eXpressions™ students from your school or other schools (provided on website).
- Whiteboard and markers, large paper and markers, chalkboard space.

#### Teacher Preparation:

- Make arrangements for class, group, or individuals to utilize computers with internet access (i.e., computer lab, library, laptops, etc.).
- Schedule an internship student to talk about their research, including sharing their Power Point presentation and research poster.
- Schedule a former eXpressions™ Art student to share their artwork with the class or group including their artist's statement.
- Schedule a former eXpressions™ Language student to share their experience and their literary works with the class or group.
- Practice moving through the links provided to access research presentations and artwork.
- Explore the eXpressions™ Language information, frequently asked questions (FAQs), and examples of award-winning literary works.
- Explore the research projects at myRESEARCH and mRi™: myRESEARCH illuminated from links on the Program Resources page of the website.
- Explore eXpressions™ art and language projects on the website.

### **Classroom Activities:**

1. Provide a brief explanation of eXpressions™. (See the Introduction to this Teacher Guide).
2. Show the eXpressions™ Program Overview (provided on the website)
3. Have students experience an intern's research project, either live or through the internet.
4. Emphasize that there is a real challenge involved here: an original, creative response to scientific research.
  - Group activity: Compare and contrast science and art or science and writing. What are the similarities and the differences? Are they more alike or more different? Is it challenging to interpret science artistically and with words? Why or why not?
5. Explain that the Clinic offers a similar competition to art students called eXpressions™ Art.
  - Share examples of artwork (completed or in progress), live or via the internet, so that students can experience ways art students have responded to scientific research. Direct attentions to both the works and the artists' statements (commentaries on their artwork), and invite students' responses, insights, and questions.

### **Assignment:**

Ask students to select one scientific research project and to think creatively about literary responses to the research.

1. Identify the following components of the research project:

**Question:** What was the purpose of the research project? What was the researcher trying to figure out? What question were they asking?

**Approach:** What methods did they use? How did they figure out the answer to their question?

**Results:** What did they find out in their investigation?

***Extended Conclusion:*** Why are the results important? Why should we care?

2. What concepts and ideas are important to the research project?
  
3. What thoughts, feelings, and emotions does the research project elicit in you?

#### **IV. Student Session #2: From Brainstorming to Drafting**

##### **Goals:**

Students will:

- Become familiar with the diverse types of literary genres.
- Express thoughts and ideas inspired by scientific research through the written word.

##### **Objectives:**

Students will:

- Brainstorm a variety of types of literary responses.
- Begin drafting an original poem or prose piece.

##### **Materials:**

- Access to computers for word processing (optional) (Note: To begin the drafting process, it is useful, if possible, to give each student access to a computer. For most writers today, hand drafting is a thing of the past!)
- Examples of diverse literary genres

##### **Teacher Preparation:**

- Make arrangements for class, group, or individuals to utilize computers with internet access (i.e., computer lab, library, laptops, etc.).
- Locate and gather examples of a variety of literary works that represent diverse literary genres as examples for students.

##### **Classroom Activities:**

1. Conduct a general sharing of responses and insights based on the scientific research presented to the class in the previous session. (Responses will vary widely, depending on the project you are using, but the discussion is important to help students who feel clueless about what they are being asked to accomplish).

For example, one year students listened to a presentation from a young man who participated in an internship involving tracheostomies. Students' responses ranged from horror at the thought of being voiceless to anti-smoking campaigns and, ultimately, generated an amazing array of creative pieces.

Note: Students' ideas for responses to the research may at first seem somewhat limited, depending on their previous experiences with creative writing and their level of intellectual maturity. This lesson aims to help them see a vast array of

alternatives. The idea is to broaden students' perspectives, to help them to think outside the boxes that limit insight.

2. Remind students that there are many styles of literary responses, and ask the class to brainstorm possibilities. Record examples so the group can see the whole collection.

Examples:

concrete poem	ballad
3-piece sonnet sequence	one-act play
extended free verse	journal/diary entries
children's book	short story
eulogy/obituary	letter
science fiction piece	song lyrics
myths/fables	collection of haiku
interior monologue	etc....

For an extended list and description of examples, see Appendix A: Literary Formats: A Writing Genre Resource.

How and why are these formats successful in conveying thoughts, feelings, concepts, and ideas?

3. Allow students informally to brainstorm and play with various possibilities. You may want to review methods of generating ideas and a plan including the following methods:

- Outlines
- Venn diagrams
- Webbing
- Clustering

Many internet sites are available with graphic organizers that vary from very simple to extremely complex.

4. Emphasize two key factors in any piece of writing: purpose and audience.

Encourage students to think clearly about what they are trying to achieve through their writing: to explain, to convince, to entertain, to compare and contrast, to reflect, etc.

Emphasize the importance of having a clear idea of the intended readers and of devising a way to publish to those readers.

5. If possible, give students access to word processing, and have them begin drafting.

Set a deadline for all to bring a working first draft for peer review and evaluation.

**Assignment:**

1. Identify a research project that you will utilize as inspiration for your literary work. Why did you select this particular project?
2. What type of literary format are you interested in using? Why?
3. Create an outline for your literary work to organize your thoughts, feelings, and ideas.
4. Begin a draft of your literary work.

## V. Student Session #3: Peer Collaboration and Revision

### Goals:

Students will:

- Evaluate and critique the literary works of others.
- Use constructive criticism and evaluations by peers to improve their own literary pieces.

### Objectives:

Students will:

- Use reader responses as a way to fine-tune their creative piece.
- Use a writing rubric to evaluate literary works of others.
- Offer constructive criticism and encouragement to other creative writers.

### Materials:

- Copies of Reader Response handout (one per student) – See Appendix B
- Copies of your personalized version of the Writing Rubric handout (two per student) – See Appendix C for format

### Teacher Notes:

During this session, students read one another's first drafts and collaborate to help each other produce top quality pieces. You may want to set the tone by emphasizing that they should look first for what really works in a specific writing. Examples might include effective use of a refrain, development of a unique voice, and vivid imagery/figurative language. Students should make suggestions about ways to make the works even better.

The teacher can use the Reader Response form and Writing Rubric format for assessing the students' creative works. We ask that you individualize the Writing Rubric to meet your personal assessment needs and the needs of your students. You can do this by defining the criteria for each box (category + score) provided. Using these forms also provides a way to check that the first draft has been attempted, as well as an opportunity for one-on-one individualized instruction.

### Classroom Activities:

1. Conduct a brief sharing session in which students talk about their experiences in working on their first drafts, including frustrations and inspirations.

2. Hand out copies of the Reader Response handout and have students read others' works, write about them, and talk about them.
3. Hand out copies of your version of the Writing Rubric. Review this evaluation tool with students so that they are clear about the criteria you will use to evaluate the writings.
4. Explain to students that they will now collaborate to help one another move from the first draft stage closer to the final product. Have students complete the Writing Rubric for their peer's literary work.
5. Re-read your own literary work. Self-assess your own literary work using the Writing Rubric. Use the feedback from your self-evaluation and peer-evaluation to revise your creative work.

**Assignment:**

Using the suggestions provided by your peers, revise your literary work into its final form.

Submit the following items by the established deadline:

- Two (2) copies of the final draft of the literary work (one for classroom teacher's evaluation and one for one eXpressions™ submission).
- Drafts of the literary work.
- Electronic file of the literary work (as e-mail attachment or on CD/DVD).

## VI. Submitting the Final Products to eXpressions™

Each participant **must** submit his/her creative writing in **two (2)** ways:

### 1) Electronic Submission

- Have students go to the eXpressions™ website. Complete and submit the online entry form. E-mail the final product as a word document to Bryan Pflaum, MFA, Director of Creative Learning, at [pflaumb@ccf.org](mailto:pflaumb@ccf.org). Follow Complete submission guidelines on the submission form.

**Submissions received after the deadline will not be accepted.**

**Submissions with incomplete information will not be considered.**

## **VII. eXpressions™ Language is Aligned with State and National Standards and Benchmarks**

In state graduation tests, nationwide college testing such as ACT and SAT, and in virtually all admissions tests, writing skills play a key part. eXpressions™ is not a test-oriented program, but leading your students through the competition will enhance the skill set that is central to the writing process. It will also accomplish that often neglected final result, the published product.

eXpressions™ interfaces with a variety of standards key to the language arts area, as participants engage in the following learning activities:

- Generate writing ideas through discussion with and input from others
- Determine a clear purpose and audience
- Plan strategies to appeal to audience and achieve purpose
- Use appropriate pre-writing tasks and organizational strategies
- Revise by deleting and adding material and by improving diction and syntax
- Proofread to correct mistakes in spelling, usage, and punctuation
- Use available technology to compose text and publish a final product

The eXpressions™ Language program is aligned with the following state and national standards and benchmarks:

### **STATE OF OHIO STANDARDS, BENCHMARKS, AND GRADE-LEVEL INDICATORS**

#### **Ohio English Language Arts Standards, Benchmarks, and Grade-Level Indicators (Grades 9-12)**

##### **Acquisition of Vocabulary Standard**

###### Contextual Understanding Benchmark

- Define unknown words through context clues and the author's use of comparison, contrast, and cause and effect (Grades 9-10).
- Recognize and identify how authors clarify meanings of words through context and use definition, restatement, example, comparison, contrast, and cause and effect to advance word study (Grades 11-12)

###### Structural Understanding Benchmark

- Use knowledge of Greek, Latin, and Anglo-Saxon roots, prefixes, and suffixes to understand complex words and new subject-area vocabulary (e.g., unknown words in science, mathematics, and social studies) (Grades 9-12).

###### Tools and Resources Benchmark

- Determine the meanings and pronunciations of unknown words by using dictionaries, thesauruses, glossaries, technology, and textual features, such as definitional footnotes or sidebars (Grades 9-12).

### **Reading Process: Concepts of Print, Comprehension Strategies, and Self-Monitoring Strategies Standard**

#### Comprehension Strategies Benchmark

- Answer literal, inferential, evaluative, and synthesizing questions to demonstrate comprehension of grade-appropriate print texts and electronic and visual media (Grades 9-12).

#### Reading Applications: Information, Technical, and Persuasive Text Benchmark

- Analyze information found in maps, charts, tables, graphs, diagrams, cutaways, and overlays (Grade 9).
- Evaluate the effectiveness of information found in maps, charts, tables, graphs, diagrams, cutaways, and overlays (Grade 10).

### **Reading Applications: Literary Text Standard**

- Analyze how an author's choice of genre affects the expression of a theme or topic (Grades 9-10).
- Analyze ways in which the author conveys mood and tone through word choice, figurative language, and syntax (Grades 9-10).
- Analyze the author's use of point of view, mood, and tone (Grade 10).
- Describe the effect of using sound devices in literary texts (e.g., to create rhythm, to appeal to the senses or to establish mood) (Grade 10).
- Evaluate ways authors develop point of view and style to achieve specific rhetorical and aesthetic purposes (e.g., through use of figurative language, irony, tone, diction, imagery, symbolism, and sounds of language), cite specific examples from text to support analysis (Grades 11-12).

### **Writing Processes Standard**

#### Prewriting Benchmark

- Generate writing ideas through discussions with others and from printed material, and keep a list of writing ideas (Grades 9-12).
- Determine the usefulness of and apply appropriate pre-writing tasks (e.g., background reading, interviews or surveys) (Grades 9-12).
- Determine a purpose and audience and plan strategies (e.g., adapting focus, content structure, and point of view) to address purpose and audience (Grades 9-12).
- Use organizational strategies (e.g., notes and outlines) to plan writing (Grades 9-12).

#### Drafting, Revising, and Editing Benchmark

- Use a variety of sentence structures and lengths (e.g., simple, compound and complex sentences; parallel or repetitive sentence structure) (Grades 9-12).
- Use precise language, action verbs, sensory details, colorful modifiers, and style as appropriate to audience and purpose and use techniques to convey a personal style and voice (Grades 9-12).
- Use available technology to compose text (Grades 9-12).

- Reread and analyze clarity of writing, consistency of point of view, and effectiveness of organizational structure (Grades 9-12).
- Add and delete information and details to better elaborate on stated central idea and more effectively accomplish purpose (Grades 9-12).
- Rearrange words, sentences and paragraphs, and add transitional words and phrases to clarify meaning and maintain consistent style, tone, and voice (Grades 9-12).
- Proofread writing, edit to improve conventions (e.g., grammar, spelling, punctuation, and capitalization), identify and correct fragments and run-ons, and eliminate inappropriate slang or informal language (Grades 9-12).
- Apply tools (e.g., rubric, checklist, and feedback) to judge the quality of writing (Grades 9-12).

#### Publishing Benchmark

- Prepare for publication (e.g., for display or sharing with others) writing that follows a manuscript form appropriate for the purpose, which could include such techniques as electronic resources, principles of design (e.g., margins, tabs, spacing, and columns) and graphics (e.g., drawings, charts, and graphs) to enhance the final product (Grades 9-12).

### Writing Application Standard

- Write narratives that: a) sustain reader interest by pacing action and developing an engaging plot (e.g., tension and suspense); b) use a range of strategies and literary devices including figurative language and specific narration; and c) include an organized, well developed structure (Grades 9-10).
- Produce informal writings (e.g., journals, notes, and poems) for various purposes (Grades 9-12).
- Write reflective compositions that: a) use personal experiences as a basis for reflection on some aspect of life; b) draw abstract comparisons between specific incidents and abstract concepts; c) maintain a balance between describing incidents and relating them to more general, abstract ideas that illustrate personal beliefs; and d) move from specific examples to generalizations about life (Grades 11-12).

### Writing Conventions Standard

#### Spelling Benchmark

- Use correct spelling conventions (Grades 9-12).

#### Punctuation and Capitalization Benchmark

- Use correct punctuation and capitalization (Grades 9-12).

#### Grammar and Usage

- Use correct grammar (e.g., verb tenses, parallel structure, indefinite and relative pronouns) (Grades 9-12).

### Communication: Oral and Visual Standard

#### Listening and Viewing Benchmark

- Apply active listening strategies (e.g., monitoring message for clarity, selecting and organizing essential information, noting cues such as change in pace) in a variety of settings (Grades 9-12).

## **Ohio Foreign Language Standards, Benchmarks, and Grade-Level Indicators (Grades 9-12)**

### **Communication: Communicate in Languages other than English**

Benchmark B: Express a wide range of feelings and emotions, and discuss and report opinions.

#### Interpersonal

- Express and compare opinions and preferences about information gathered regarding events, experiences, and other school subjects (Grade 9).

Benchmark D: Give and follow a series of complex directions.

#### Interpersonal

- Give and follow directions, instructions, and requests (Grades 9-11).

Benchmark G: Use a variety of reading and listening strategies to derive meaning from texts.

#### Interpretive

- Use listening and reading strategies (e.g., skimming and scanning techniques) to determine main idea and purpose (Grade 9).
- Use listening and reading strategies (e.g., identifying key words and phrases) to determine tone and intended audience (Grade 10).
- Use listening and reading strategies (e.g., answering focused questions) to anticipate outcome or content (Grade 11).
- Use listening and reading strategies (e.g., applying prior knowledge) to make inferences and draw conclusions (Grade 12).

Benchmark I: Create presentations on a range of original or authentic expressive products.

#### Presentational

- Create and present a narrative (e.g., current events, personal experiences, school happenings) (Grade 9).
- Present an age-appropriate song, story, or poem from the target language culture (Grade 10).
- Create texts (e.g., short stories, poems, skits) based on themes/perspectives (e.g., family, dating, careers, music) from the target culture (Grade 11).

Benchmark K: Apply age-appropriate writing process strategies to produce a variety of documents for publication.

#### Presentational

- Apply, age-appropriate writing process strategies (prewriting, drafting, revising, editing, publishing) (Grades 9-12).

## **Connections: Connect with other Disciplines and Acquire Information Standard**

Benchmark A: Investigate, analyze and present concepts from across disciplines.

### Integrated Studies

- Investigate and discuss interdisciplinary topics (e.g., world health issues, fine arts concepts, and geographical terms) (Grade 9).
- Explain interdisciplinary topics (e.g., literary genres, ecosystems, financial markets, immigrant population) (Grade 10).
- Identify and discuss topics common to people in both the home and target cultures (e.g., economic, political, geographical, historical) (Grade 11).
- Analyze information from various authentic sources about interdisciplinary topics (e.g., opera, genetics, and nutrition) (Grade 11).
- Combine information from other disciplines with information from authentic target language sources to complete activities in the foreign language classroom (e.g., tessellations from geometry for Arabic project, ecosystems) (Grade 12).

## **Communities: Participate in Multilingual Communities and Cultures at Home and Around the World Benchmark**

Benchmark A: Provide information or services to individuals, the school, or the community using knowledge of the target language and culture.

### Outreach

- Participate in collaborative projects with language students of other grade levels or school districts (e.g., present plays, write books, share folk tales, exchange letters) (Grades 9-10).
- Present original written and illustrated stories to others (Grade 12).

Benchmark F: Evaluate and discuss how understanding of another language and culture enhances job skills and career options.

### Career Exploration and Skills

- Explore and obtain information about careers that require linguistic and cultural proficiency (Grade 9).
- Investigate how the knowledge, skills, and interests learned in foreign language class apply to potential career choices (Grade 9).

Benchmark G: Develop evaluative tools and implement group strategies to complete tasks and solve problems.

### Career Exploration and Skills

- Work cooperatively (e.g., evaluate and select options) to develop a persuasive piece (e.g., advertising campaign) for a product or service (e.g., food, housing, tickets to a play, vacation) (Grade 10).

## **Ohio Science Standards, Benchmarks, and Grade-Level Indicators (Grades 9-10)**

### **Life Sciences**

Benchmark A: Explain that cells are the basic unit of structure and function of living organisms, That once life originated all cells from pre-existing cells, and there are a variety of cell types.

#### Characteristics and Structure of Life

- Explain that living cells are the basic unit of structure and function of all living things (Grade 10).

Benchmark B: Explain the characteristics of life as indicated by cellular processes and describe the process of cell division and development

#### Characteristics and Structure of Life

- Explain the characteristics of life as indicated by cellular processes including a) homeostasis, b) energy transfers and transformation, c) transportation of Molecules, d) disposal of wastes, and e) synthesis of new molecules (Grade 10).

Benchmark C: Explain the genetic mechanisms and molecular basis of inheritance.

#### Heredity

- Illustrate the relationship of the structure and function of DNA to protein synthesis and the characteristics of an organism (Grade 10).

Benchmark D: Explain the flow of energy and the cycling of matter through biological and ecological systems (cellular, organismal, and ecological).

#### Diversity and Interdependence of Life

- Describe how cells and organisms acquire and release energy (photosynthesis, chemosynthesis, cellular respiration, and fermentation) (Grade 10).

Benchmark J: Summarize the historical development of scientific theories and ideas, and describe emerging issues in the study of life sciences.

#### Historical Perspectives and Scientific Revolutions

- Describe advances in life sciences that have important long-lasting effects on science and society (e.g., biological evolution, germ theory, biotechnology, and discovering germs) (Grade 10).

## Physical Sciences

Benchmark F: Explain how energy may change form or be redistributed but the total quantity of energy is conserved.

#### Nature of Matter

- Describe radioactive substances as unstable nuclei that undergo random spontaneous nuclear decay emitting particles and/or high energy wavelike radiation (Grade 9).

#### Nature of Energy

- Trace the transformations of energy within a system (e.g., chemical to electrical to mechanical) and recognize that energy is conserved. Show that these transformations involve the release of some thermal energy (Grade 9).

### **Scientific Inquiry**

Benchmark A: Participate in and apply the processes of scientific investigation to create models and to design, conduct, evaluate, and communicate the results of these investigations.

#### Doing Scientific Inquiry

- Develop oral and written presentations using clear language, accurate data, appropriate graphs, tables, maps, and available technology (Grade 9).
- Draw logical conclusions based on scientific knowledge and evidence from investigations (Grade 9).
- Present scientific findings using clear language, accurate data, appropriate graphs, tables, maps, and available technology (Grade 10).
- Draw conclusions from inquiries based on scientific knowledge and principles, the use of logic and evidence (data) from investigations (Grade 10).

### **Scientific Ways of Knowing**

Benchmark A: Explain that scientific knowledge must be based on evidence, be predictive, logical, subject to modification, and limited to the natural world.

#### Nature of Science

- Comprehend that many scientific investigations require the contributions of women and men from different disciplines in and out of science. These people study different topics, use different techniques, and have different standards of evidence but share a common purpose – to better understand a portion of our universe (Grade 9).
- Demonstrate that reliable scientific evidence improves the ability of scientists to offer accurate predictions (Grade 9).
- Recognize that science is a systematic method of continuing investigation, based on observation, hypothesis testing, measurement, experimentation, and theory building, which leads to more adequate explanations of natural phenomena (Grade 10).

Benchmark D: Recognize that scientific literacy is part of being a knowledgeable citizen.

#### Science and Society

- Illustrate that much can be learned about the internal workings of science and the nature of science from the study of scientists, their daily work, and their efforts to advance scientific knowledge in their area of study (Grade 10).

## **Ohio Science Standards, Benchmarks, and Grade-Level Indicators (Grades 11-12)**

### **Life Sciences**

Benchmark A: Explain how processes at the cellular level affect the functions and characteristics of an organism.

#### Characteristics and Structure of Life

- Describe how the maintenance of a relatively stable internal environment is required for the continuation of life, and explain how stability is challenged by changing physical, chemical, and environmental conditions as well as the presence of pathogens (Grade 11).
- Recognize that chemical bonds of food molecules contain energy. Energy is released when the bonds of food molecules are broken and new compounds with lower energy bonds are formed. Some of this energy is released as thermal energy (Grade 11).
- Recognize that information stored in DNA provides the instructions for assembling protein molecules used by the cells that determine the characteristics of the organism (Grade 12).
- Explain why specialized cells/structures are useful to plants and animals (e.g., stoma, phloem, xylem, blood, nerve, muscle, egg, and sperm) (Grade 12).

Benchmark C: Explain how the molecular basis of life and the principles of genetics determine inheritance.

#### Heredity

- Examine the inheritance of traits through one or more genes and how a single gene can influence more than one trait (Grade 12).
- Explain how developmental differentiation is regulated through the expression of different genes (Grade 12).

Benchmark G: Summarize the historical development of scientific theories and ideas within the study of life sciences.

#### Historical Perspectives and Scientific Revolutions

- Describe advances in life sciences that have important, long-lasting effects on science and society (e.g., biotechnology) (Grade 12).

### Science and Technology

Benchmark A: Predict how human choices today will determine the quality and quantity of life on Earth.

#### Understanding Technology

- Describe how new technologies often extend the current levels of scientific understanding and introduce new areas of research (Grade 12).

### Scientific Inquiry

Benchmark A: Make appropriate choices when designing and participating in scientific investigations by using cognitive and manipulative skills when collecting data and formulating conclusions from the data.

#### Doing Scientific Inquiry

- Explain why the methods of an investigation are based on the questions being asked (Grade 11).
- Summarize data and construct a reasonable argument based on those data and other known information (Grade 11).

## Scientific Ways of Knowing

Benchmark A: Explain how scientific evidence is used to develop and revise scientific predictions, ideas, or theories.

### Nature of Science

- Give examples that show how science is a social endeavor in which scientists share their knowledge with the expectation that it will be challenged continuously by the scientific community and others (Grade 12).
- Evaluate scientific investigations by reviewing current scientific knowledge and the experimental procedures used, examining the evidence, identifying faulty reasoning, pointing out statements that go beyond the evidence, and suggesting alternative explanations for the same observations (Grade 12).
- Describe how individuals and teams contribute to science and engineering at different levels of complexity (e.g., an individual may conduct basic field studies, hundreds of people may work together on major scientific questions or technical problems) (Grade 12).

Benchmark C: Explain how societal issues and considerations affect the progress of science and technology.

### Science and Society

- Research the roles of science and technology in careers that students plan to pursue (Grade 11).

## **Ohio Technology Standards, Benchmarks, and Grade-Level Indicators (Grades 9-12)**

### **Standard 3: Technology for the Productivity Applications**

Benchmark B: Identify, select, and apply appropriate technology tools and resources to produce creative works and to construct technology-enhanced models.

### Productivity Tools

- Demonstrate proficiency in all productivity tools (e.g., word processing, spreadsheet, database, desktop publishing) (Grade 9).
- Utilize advanced word processing and desktop publishing features and programs (Grade 10).

### **Standard 4: Technology and Communication Applications**

Benchmark A: Apply appropriate communication design principles in published and presented projects.

### Multimedia Applications

- Format text, select color, insert graphics, and include multimedia components in student-created media/communication products (Grade 9).

### Principles of Design

- Manipulate communication design elements (image, language, sound, and motion) based on the intent of the message (e.g., inform or persuade) (Grade 10).
- Employ design techniques taking into consideration the psychological impact and cultural connotations of color when designing for print media and multimedia, video, and web pages (Grade 11).
- Apply principles of design (contrast, repetition, alignment, and proximity) for academic and personal needs (e.g., resume, scholarship application) (Grade 11).
- Facilitate message intent by incorporating design elements that contribute to the effectiveness of a specific communication medium into student-generated products (e.g., black and white footage to imply documented truth; set design that suggests cultural mood) (Grade 12).

#### Evaluation

- Examine how and why image, language, sound, and motion convey specific messages designed to influence the audience (Grade 9).
- Assess the accuracy of the communication product (Grade 9).
- Select and evaluate message-appropriate designs for print, multimedia, video, and web pages for curricular and personal needs (e.g., silly graphics may not be appropriate for academic projects) (Grade 11).

Benchmark B: Create, publish, and present information, utilizing formats appropriate to the content and audience.

#### Use of Communications

- Use technology to publish information in electronic form (e.g., web, multimedia, digital video, electronic portfolio) (Grade 9).
- Collaborate in online learning or videoconferencing activities based on research and/or an investigation of real-world problems (e.g., study of community or regional ecosystem) (Grade 11).
- Select and use appropriate online structured learning experiences to meet individual learning needs (Grade 11).

#### Publication

- Publish information in printed and electronic version, and select appropriate publication format (e.g., paper, web, video) (Grade 10).

### **Standard 5: Technology and Information Literacy**

Benchmark A: Determine and apply an evaluative process to all information sources chosen for a project.

#### Evaluating Sources

- Seek and evaluate information to answer both personal and curricular needs (Grade 11).
- Analyze the intent and authorship of information sources used for a curricular need (Grade 11).
- Determine valid information for an assignment from a variety of sources (Grade 11).
- Acknowledge intellectual property in using information sources (Grade 12).

- Determine and apply an evaluative process to all information sources chosen for a project (Grade 12).

Benchmark B: Apply a research process model to conduct research and meet information needs.

Use

- Organize and analyze information, finding connections that lead to a final product (Grade 10).
- Analyze information and synthesize into a communicated product (Grade 11).
- Create a product to communicate information, representing a personal point of view based on findings (Grade 12).

Manage

- Archive the final product in a format that will be accessible in the future (Grade 12).

### **Standard 7: The Designed World**

Benchmark F: Classify, demonstrate, examine, and appraise medical technologies.

Understanding Technological Systems

- Describe how technology has impacted medicine in the areas of prevention, diagnostics, therapeutic treatment, and forensics (e.g., medical tools, instruments, materials, monitoring equipment) (Grade 10).
- Describe how medicines and treatments have both positive and negative effects (Grade 10).

Technical Careers

- List advances in the sciences of biochemistry and molecular biology that have made it possible to manipulate the genetic information found in living creatures (Grade 11).
- Describe how medicines and treatments may have both expected and unexpected results (Grade 11).

Emerging Technology

- Investigate and evaluate new medical technologies (Grade 12).

## **Ohio Mathematics Standards, Benchmarks, and Grade-Level Indicators (Grades 9-12)**

### **Patterns, Functions, and Algebra Standard**

Use Patterns, Relations, and Functions Benchmark

- Describe the relationship between slope and the graph of a direct variation and inverse variation (Grade 9).

### **Data Analysis and Probability Standard**

Statistical Methods Benchmark

- Analyze and interpret univariate and bivariate data to identify patterns, note trends, draw conclusions, and make predictions (Grade 11).
- Evaluate the validity of a study based on characteristics of the study design, including sampling method, summary statistics and data analysis techniques (Grade 11).
- Describe the shape and find all summary statistics for a set of univariate data, and describe how a linear transformation affects shape, center, and spread.

## **Ohio Mathematics Standards, Benchmarks, and Grade-Level Indicators (Grades 9-12)**

### **Social Studies Skills and Methods Standard**

#### Thinking and Organizing

- Critique the conclusions drawn from survey and research data by questioning: a) sample size; b) demographics; c) the sponsoring organization; and d) logic of the conclusions reached (Grade 11).
- Research an issue or topic by gathering, recording, evaluating, and interpreting relevant data (Grade 12).

#### Communicating Information

- Identify appropriate tools for communicating a position on an issue (e.g., electronic resources, newsletters, letters to the editor, public displays, and handouts) (Grade 11).
- Develop a research project and make formal presentations to the class and/or community members using: a) key terms; b) support for main ideas; c) examples; d) statistics and other evidence; e) visual aids; and; f) formal citation of sources.

## **Ohio Fine Arts Standards, Benchmarks, and Grade-Level Indicators (Grades 9-12)**

### **Music**

#### **Connections, Relationships, and Applications Standard**

Benchmark A: Articulate similarities and differences between music and other content areas.

- Apply problem-solving and creative thinking skills used in music to other content areas (Grades 9-12).

#### **Creative Expression and Communication Standard**

Benchmark A: Demonstrate mastery of materials, concepts, and personal concentration when creating original artworks.

- Integrate the element of art and principles of design using a variety of media to solve specific visual art problems and to convey meaning (Grade 12).

#### **Connections, Relationships, and Applications Standard**

Benchmark B: Formulate and solve a visual art problem using strategies and perspectives from other disciplines.

- Research and provide examples that show the relationship of visual art to other subjects in the curriculum (e.g., English language arts, mathematics, social studies, and science) (Grade 9).

## **NATIONAL STANDARDS**

### **National Language Arts Standards – National Council of Teachers of English (NCTE) (Grades K-12)**

#### **Understanding the Human Experience**

Students read a wide range of literature from many periods in many genres to build an understanding of the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience.

#### **Evaluation Strategies**

Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

#### **Communication Skills**

Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.

#### **Communication Strategies**

Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

#### **Applying Knowledge**

Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.

#### **Multicultural Understanding**

Students whose first language is not English make use of their first language to develop competency in the English language arts to develop understanding of content across the curriculum.

#### **Participating in Society**

Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities.

#### **Applying Language Skills**

Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

## **National Foreign Language Standards – National Council on the Teaching of Foreign Languages (Grades K-12)**

### **Connections**

Connect with Other Disciplines and Acquire Information

- Students reinforce and further their knowledge of other disciplines through the foreign language.

### **Communities**

Participate in Multilingual Communities at Home and Around the World

- Students use the language both within and beyond the school setting.
- Students show evidence of becoming life-long learners by using the language for personal enjoyment and enrichment.

## **National Arts Standards – Consortium of National Arts Education Associations (Grades K-12)**

### **Understanding Relationships between Music, the Other Arts, and Disciplines outside the Arts**

- Students identify ways in which the principles and subject matter of other disciplines taught in the school are interrelated with those of music.

### **Script Writing by Planning and Improvising, Writing and Refining Scripts Based on Personal Experience and Heritage, Imagination, Literature, and History**

- Students write theatre, film, television, or electronic media scripts in a variety of traditional and new forms that include original characters with unique dialogue that motivates action.

### **Make Connections between Visual Arts and Other Disciplines**

- Students understand and use similarities and differences between characteristics of the visual arts and other arts disciplines.
- Students identify connections between the visual arts and other disciplines in the curriculum.

## **National Science Education Standards – National Research Council (Grades 9-12)**

### **Scientific Inquiry**

Understandings about Scientific Inquiry

- Results of scientific inquiry – new knowledge and methods – emerge from different types of investigations and public communication among scientists. In communicating and defending the results of scientific inquiry, arguments must be logical and demonstrate connections between natural phenomena, investigations, and the historical body of scientific knowledge. In addition, the methods and procedures that scientists used to obtain evidence must be clearly reported to enhance opportunities for further investigations.

### **Physical Science**

## Structure of Atoms

- Radioactive isotopes are unstable and undergo spontaneous nuclear reactions, emitting particles and/or wavelike radiation. The decay of any one nucleus cannot be predicted, but a large group of identical nuclei decay at a predictable rate. This predictability can be used to estimate the age of materials that contain radioactive isotopes.

## Structure and Properties of Matter

- Carbon atoms can bond to one another in chains, rings, and branching networks to form a variety of structures, including synthetic polymers, oils, and the large molecules essential to life.

## Chemical Reactions

- Chemical reactions occur all around us, for example in health care, cooking, cosmetics, and automobiles. Complex chemical reactions involving carbon-based molecules take place constantly in every cell in our bodies.

## Life Science

### The Cell

- Cells have particular structures that underlie their functions. Every cell is surrounded by a membrane that separates it from the outside world. Inside the cell is a concentrated mixture of thousands of different molecules which form a variety of specialized structures that carry out such cell functions as energy production, transport of molecules, waste disposal, synthesis of new molecules, and the storage of genetic material.
- Most cell functions involve chemical reactions. Food molecules taken into cells react to provide the chemical constituents needed to synthesize other molecules. Both breakdown and synthesis are made possible by a large set of protein catalysts, called enzymes. The breakdown of some of the food molecules enables the cell to store energy in specific chemicals that are used to carry out the many functions of the cell.
- Cells store and use information to guide their functions. The genetic information stored in DNA is used to direct the synthesis of the thousands of proteins that each cell requires.
- Cell functions are regulated. Regulation occurs both through changes in the activity of the functions performed by proteins and through the selective expression of individual genes. This regulation allows cells to respond to their environment and to control and coordinate cell growth and division.
- Cells can differentiate, and complex multicellular organisms are formed as a highly organized arrangement of differentiated cells. In the development of these multicellular organisms, the progeny from a single cell form an embryo in which the cells multiply and differentiate to form the many specialized cells, tissue and organs that comprise the final organisms. This differentiation is regulated through the expression of different genes.

### The Molecular Basis of Heredity

- In all organisms, the instructions for specifying the characteristics of the organism are carried in DNA, a large polymer formed from subunits of four kinds (A, G, C, and T). The chemical and structural properties of DNA explain how the genetic information that underlies heredity is both encoded in genes (as a string of molecular "letters") and replicated (by a templating mechanism). Each DNA molecule in a cell forms a single chromosome.

## Matter, Energy, and Organization in Living Systems

- The chemical bonds of food molecules contain energy. Energy is released when the bonds of food molecules are broken and new compounds with lower energy bonds are formed. Cells usually store this energy temporarily in phosphate bonds of a small high-energy compound called ATP.

## The Behavior of Organisms

- Multicellular animals have nervous systems that generate behavior. Nervous systems are formed from specialized cells that conduct signals rapidly through the long cell extensions that make up nerves. The nerve cells communicate with each other by secreting specific excitatory and inhibitory molecules. In sense organs, specialized cells detect light, sound, and specific chemicals and enable animals to monitor what is going on in the world around them.
- Behavioral biology has implications for humans, as it provides links to psychology, sociology, and anthropology.

## Science and Technology

### Understandings about Science and Technology

- Scientists in different disciplines ask different questions, use different methods of investigation, and accept different types of evidence to support their explanations. Many scientific investigations require the contributions of individuals from different disciplines, including engineering. New disciplines of science, such as geophysics and biochemistry often emerge at the interface of two older disciplines.
- Science often advances with the introduction of new technologies. Solving technological problems often results in new scientific knowledge. New technologies often extend the current levels of scientific understanding and introduce new areas of research.
- Creativity, imagination, and a good knowledge base are all required in the work of science and engineering.

## Science in Personal and Social Perspectives

### Personal and Community Health

- The severity of disease symptoms is dependent on many factors, such as human resistance and the virulence of the disease-producing organism. Many diseases can be prevented, controlled, or cured. Some diseases, such as cancer, result from specific body dysfunctions and cannot be transmitted.

## History and Nature of Science

### Science as a Human Endeavor

- Individuals and teams have contributed and will continue to contribute to the scientific enterprise. Doing science or engineering can be as simple as an individual conducting field studies or as complex as hundreds of people working on a major scientific question or technological problem. Pursuing science as a career or as a hobby can be both fascinating and intellectually rewarding.

## **National Mathematics Standards – National Council of Teachers of Mathematics (Grades 9-12)**

## **Algebra**

Analyze change in various contexts.

- Approximate and interpret rates of change from graphical and numerical data.

## **Data Analysis & Probability**

Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer.

- Understand the meaning of measurement data and categorical data, of univariate and bivariate data, and of the term variable.
- Understand histograms, parallel box plots, and scatterplots and use them to display data.

Develop and evaluate inferences and predications that are based on data.

- Evaluate published reports that are based on data by examining the design of the study, the appropriateness of the data analysis, and the validity of conclusions.

## **Communication**

- Organize and consolidate mathematical thinking through communication.
- Communicate mathematical thinking coherently and clearly to peers, teachers, and others.
- Analyze and evaluate the mathematical thinking and strategies to others.
- Use the language of mathematics to express mathematical ideas precisely.

## **Standards for the 21<sup>st</sup>-Century Learner – American Association of School Librarians (Grades K-12)**

**Inquire, think critically, and gain knowledge.**

Skills

- Make sense of information gathered from diverse sources by identifying misconceptions, main and supporting ideas, conflicting information, and point of view or bias.
- Demonstrate master of technology tools for accessing information and pursuing inquiry.
- Collaborate with others to broaden and deepen understanding.

Dispositions in Action

- Demonstrate creativity by using multiple resources and formats.

Responsibilities

- Use information technology responsibly.

Self-Assessment Strategies

- Seek appropriate help when it is needed.

**Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge.**

#### Skills

- Use the writing process, media and visual literacy, and technology skills to create products that express new understandings.

#### Dispositions in Action

- Demonstrate personal productivity by completing products to express learning.

#### Responsibilities

- Connect understanding to the real world.

#### Self-Assessment Strategies

- Recognize new knowledge and understanding.

### **Share knowledge and participate ethically and productively as members of our democratic society.**

#### Skills

- Participate and collaborate as members of a social and intellectual network of learners.
- Use writing and speaking skills to communicate new understandings effectively.
- Connect learning to community issues.
- Use information and technology ethically and responsibly.

#### Responsibilities

- Create products that apply to authentic, real-world contexts.
- Contribute to the exchange of ideas within and beyond the learning community.

#### Self-Assessment Strategies

- Assess the quality and effectiveness of the learning product.

### **Pursue personal and aesthetic growth.**

#### Skills

- Respond to literature and creative expressions of ideas in various formats and genres.
- Connect ideas to own interests and previous knowledge and experience.
- Use creative and artistic formats to express personal learning.

#### Responsibilities

- Seek opportunities for pursuing personal and aesthetic growth.
- Practice safe and ethical behaviors in personal electronic communication and interaction.

#### Self-Assessment Strategies

- Develop personal criteria for gauging how effectively own ideas are expressed.

## **National Health Education Standards – American Cancer Society (Grades 9-12)**

### **Health Promotion and Disease Prevention**

Students will comprehend concepts related to health promotion and disease prevention.

- Analyze how behavior can impact health maintenance and disease prevention.
- Explain the impact of personal health behaviors on the functioning of body systems.

### **Reducing Health Risks**

Students will demonstrate the ability to practice health-enhancing behaviors and reduce health risks.

- Analyze the role of individual responsibility for enhancing health.

### **Using Communication Skills to Promote Health**

Students will demonstrate the ability to use interpersonal communication skills to enhance health.

- Demonstrate skills for communicating effectively with family, peers, and others.

### **Health Advocacy**

Students will demonstrate the ability to advocate for personal, family, and community health.

- Express information and opinions about health issues.
- Demonstrate the ability to adapt health message and communication techniques to the characteristics of a particular audience.

## APPENDIX A

### Literary Formats: A writing genre resource

#### Prose formats

Traditional forms of prose include essays, short stories, flash fiction, narratives, biographies, reflective pieces, commentaries, plays (dialogues/ monologues), and fiction/non-fiction.

More innovative formats could be:

**Advertisement** - Create a one page advertisement like you'd see in a magazine. You want to get your reader's attention, demonstrate the need for what you are selling, and show how your product/service will satisfy that need. Study professional ads to see how these goals are accomplished and use those examples as your models.

**Advice columns** - Like the ones you find in magazines or newspapers, an advice column features a letter from a reader who needs advice or help and a response from the columnist whose expertise allows him or her to sincerely give this help. You should consult a real column in a newspaper to see how you could format yours.

**Announcement** - We hear announcements each day in school. There are also announcements in church or before a meeting. Announcements alert people to important events that are coming up. Create an announcement that gives critical information about an upcoming event: who, what, when, where, why, and how. Top the announcement with an attention-getting label, such as "Attention all athletes," or "important information for all drivers."

**Campaign Speech** - Politicians who are running for office give speeches that they hope will get them elected. These speeches usually include the person's views on important issues as well as statements that they hope will help voters understand what kind of person the politician is.

**Descriptive Paragraph** - When we read a descriptive paragraph, it's like we are there. The imagery allows us to see, smell, hear, taste, and feel our surroundings.

**Diary** - A personal diary is a daily journal, a recording of the significant moments of the day. It begins with the date. Some diary writers begin, "Dear Diary," but that's not a rule. Since a diary is meant to be personal, it often reveals feelings and thoughts that people tend to keep private. You should include diary entries for several days. This genre is a good way to show a process over time.

**Eyewitness Account** - When an important event happens, someone is generally there to see it happen. An eyewitness is asked to give details about exactly what happened, when it happened, and how it happened. The eyewitness would provide specific, concrete details like colors, sizes, distances, times, etc. that make the account as factual as possible. While not everyone sees an event in the exact same way, eyewitness accounts help us put the event into perspective. The account could be prompted by a reporter's or a police officer's questions.

**Informative Essays** - Informative essays explain a process, an event, or a concept. It is writing characterized by inclusion of sufficient details, reasons, or examples to allow the reader to fully understand the process, event, or concept.

**Interview** - When trying to figure out appropriate questions to ask an interviewee follow this guideline. First, get the facts. Next, ask your interviewee to clarify what has been said. (What do you mean by...?) Then the interviewer is supposed to verify information given, provide any follow-up questions, and provide closure to the discussion.

**Memory** - A memory is similar to a monologue in that it is the reflection of one speaker. To write a memory is to single out an important event from the past and recall its details (who, what, when, and where) and to write also about why the memory is important. How did the event change the person (speaker, narrator) or why does it still come to mind? Why was this event important? Memories are written in first person point of view and should be full of details that make the event seem true to life. Your reader should be able to visualize the event, almost as if he or she were there.

**One Act Play** - A one act play introduces characters in a conflict that is resolved in one act. Before writing your own, read a one act play to give you an idea of how to proceed. The play must be written using the typical conventions of a play or drama.

**Personal Commentary** - Most personal commentaries fall into one of three styles: an amusing commentary, a description of an event whose consequences are emotionally charged or easy to relate to, and finally, a personal point of view about something serious. The common elements that personal commentaries share are that they reveal something about the author and they have a single, central theme.

**Post Card** - A post card must have three parts. On the front is the picture and a greeting, such as "Hello from Ontario," or "Wish you were skiing with us." On the back are the addresses and stamp to the right and the message to the left. People generally write in small print on postcards to let them say everything they want to say or they may write brief ideas. Be sure that each word in your message counts or means something.

**Ransom Note** - A ransom note is written from a kidnapper who demands money or something else of value before he will release his captive. Things like addictions or obsessions or fears can hold people hostage, too. It would be interesting to write from the point of view of such a kidnapper. Be careful that you play with ideas here and don't get carried away. Kidnapping is violent and illegal.

**Song/Ballad** - Write lyrics to a song or ballad (a song that tells a story). You should have several verses. Think of the main ideas you want the song to express. Remember that songs are to be sung, so think of that as you compose. If you're really adventurous, record your song and make your genre an audio file. Look at the structures of some of your favorite songs to use for examples.

**Source:**

[http://www.sheboyganfalls.k12.wi.us/cyberenglish9/multi\\_genre/genre\\_types.htm#advice%20columns](http://www.sheboyganfalls.k12.wi.us/cyberenglish9/multi_genre/genre_types.htm#advice%20columns)

## Poetry Formats

**ABC** - A poem that has five lines that create a mood, picture, or feeling. Lines 1 through 4 are made up of words, phrases or clauses while the first word of each line is in alphabetical order. Line 5 is one sentence long and begins with any letter.

**Acrostic** - Poetry that certain letters, usually the first in each line form a word or message when read in a sequence.

**Ballad** - A poem that tells a story similar to a folk tale or legend which often has a repeated refrain.

**Ballade** - Poetry which has three stanzas of seven, eight, or ten lines and a shorter final stanza of four or five. All stanzas end with the same one line refrain.

**Blank verse** - A poem written in unrhymed iambic pentameter and is often unobtrusive. The iambic pentameter form often resembles the rhythms of speech.

**Bio** - A poem written about one's own self, personality traits, and ambitions.

**Burlesque** - Poetry that treats a serious subject as humor.

**Canzone** - Medieval Italian lyric style poetry with five or six stanzas and a shorter ending stanza.

**Carpe Diem** - Latin expression that means 'seize the day.' Carpe diem poems have a theme of living for today.

**Cinquain** - Poetry with five lines. Line 1 has one word (the title). Line 2 has two words that describe the title. Line 3 has three words that tell the action. Line 4 has four words that express the feeling, and line 5 has one word which recalls the title.

**Classicism** - Poetry which holds the principles and ideals of beauty that are characteristic of Greek and Roman art, architecture, and literature.

**Couplet** - A couplet has rhyming stanzas made up of two lines.

**Dramatic Monologue** - A type of poem which is spoken to a listener. The speaker addresses a specific topic while the listener unwittingly reveals details about him/herself.

**Eulogy** - A sad and thoughtful poem about the death of an individual.

**Epic** - An extensive, serious poem that tells the story about a heroic figure.

**Epigram** - A very short, ironic and witty poem usually written as a brief couplet or quatrain. The term is derived from the Greek epigramma meaning inscription.

**Epitaph** - A commemorative inscription on a tomb or mortuary monument written to praise the deceased.

**Epithalamium (Epithalamion)** - A poem written in honor of the bride and groom.

**Free verse (vers libre)** - Poetry written in either rhyme or unrhymed lines that have no set fixed metrical pattern.

**Ghazal** - A short lyrical poem that arose in Urdu. It is between 5 and 15 couplets long. Each couplet contains its own poetic thought but is linked in rhyme that is established in the first couplet and continued in the second line of each pair. The lines of each couplet are equal in length. Themes are usually connected to love and romance. The closing signature often includes the poet's name or allusion to it.

**Haiku** - A Japanese poem composed of three unrhymed lines of five, seven, and five syllables, usually about some form of nature.

**Horatian Ode** - Short lyric poem written in two or four-line stanzas, each with its the same metrical pattern, often addressed to a friend and deal with friendship, love and the practice of poetry. It is named after its creator, Horace.

**Iambic Pentameter** - One short syllable followed by one long one five sets in a row. Example: la-LAH la-LAH la-LAH la-LAH la-LAH

**Idyll (Idyl)** - Poetry that either depicts a peaceful, idealized country scene or a long poem telling a story about heroes of a bygone age.

**Irregular (Pseudo-Pindaric or Cowleyan) Ode** - Neither the three part form of the pindaric ode nor the two or four-line stanza of the Horatian ode. It is characterized by irregularity of verse and structure and lack of correspondence between the parts.

**Italian sonnet** - A sonnet consisting of an octave with the rhyme pattern abbaabba followed by six lines with a rhyme pattern of cdecde or cdcdcd.

**Lay** - A long narrative poem, especially one that was sung by medieval minstrels.

**Limerick** - A short sometimes vulgar, humorous poem consisting of five anapestic lines. Lines 1, 2, and 5 have seven to ten syllables, rhyme and have the same verbal rhythm. The 3rd and 4th lines have five to seven syllables, rhyme and have the same rhythm.

**List** - A poem that is made up of a list of items or events. It can be any length and rhymed or unrhymed.

**Lyric** - A poem that expresses the thoughts and feelings of the poet.

**Memoriam Stanza** - A quatrain in iambic tetrameter with a rhyme scheme of abba -- named after the pattern used by Lord Tennyson.

**Name** - Poetry that tells about the word. It uses the letters of the word for the first letter of each line.

**Narrative** - A poem that tells a story.

**Ode** - A lengthy lyric poem typically of a serious or meditative nature and having an elevated style and formal stanza structure.

**Pastoral** - A poem that depicts rural life in a peaceful, romanticized way.

**Petrarchan** - A 14-line sonnet consisting of an octave rhyming abbaabba followed by a sestet of cddcee or cdecde

**Pindaric Ode** - A ceremonious poem consisting of a strophe (two or more lines repeated as a unit) followed by a an antistrophe with the same metrical pattern and concluding with a summary line (an epode) in a different meter. Named after Pindar, a Greek professional lyrist of the 5th century B.C.

**Quatrain** - A stanza or poem consisting of four lines. Lines 2 and 4 must rhyme while having a similar number of syllables.

**Rhyme** - A rhyming poem has the repetition of the same or similar sounds of two or more words, often at the end of the line.

**Rhyme Royal** - A type of poetry consisting of stanzas having seven lines in iambic pentameter.

**Romanticism** – A poem about nature and love while having emphasis on the personal experience.

**Rondeau** - A lyrical poem of French origin having 10 or 13 lines with two rhymes and with the opening phrase repeated twice as the refrain.

**Senryu** - A short Japanese style poem, similar to haiku in structure that treats human beings rather than nature: Often in a humorous or satiric way.

**Sestina** - A poem consisting of six six-line stanzas and a three-line envoy. The end words of the first stanza are repeated in varied order as end words in the other stanzas and also recur in the envoy.

**Shakespearean** - A 14-line sonnet consisting of three quatrains of abab cdcd efef followed by a couplet, gg. Shakespearean sonnets generally use iambic pentameter.

**Shape** -Poetry written in the shape or form of an object.

**Sonnet** - A lyric poem that consists of 14 lines which usually have one or more conventional rhyme schemes.

**Tanka** - A Japanese poem of five lines, the first and third composed of five syllables and the other seven.

**Terza Rima** - A type of poetry consisting of 10 or 11 syllable lines arranged in three-line tercets.

**Verse** - A single metrical line of poetry.

**Villanelle** - A 19-line poem consisting of five tercets and a final quatrain on two rhymes. The first and third lines of the first tercet repeat alternately as a refrain closing the succeeding stanzas and joined as the final couplet of the quatrain.

Source: [http://www.poemofquotes.com/articles/poetry\\_forms.php](http://www.poemofquotes.com/articles/poetry_forms.php)

## APPENDIX B: Reader-Response Sheet

**Directions:** After you carefully read a classmate's creative writing, answer the following questions.

Who is the student author, and what is the title of the piece?

What form does the writer use—poem? story? other?

How does the writing connect with the scientific research?

What is the writer's main purpose?

Who comprises the intended audience?

Are the diction and syntax appropriate for the purpose and audience? Be specific.

What do you like best about this creative writing?

What would you suggest to make the content even better?

Can you spot any errors in language or punctuation that the writer should correct?

**APPENDIX C: eXpressions<sup>™</sup> Writing Rubric**

	<b>Superior 5</b>	<b>Good 4</b>	<b>Average 3</b>	<b>Fair 2</b>	<b>Poor 1</b>	<b>Absent 0</b>	<b>Score (sum of row)</b>
Connection between scientific research and writing topic							
Sense of purpose							
Sense of audience							
Format and length							
Creativity							
Diction							
Syntax							
Voice							
Organization							
Appearance							

**TOTAL SCORE:** \_\_\_\_\_ (sum of scores in last column)