Extension/Sample: Using AES Software to Facilitate Interdisciplinary Work.

In my current role as a K-12 curriculum coordinator, part of my responsibility is to ensure that we provide meaningful learning experiences for all students. Conversations with content area leaders now include the topic of change in instructional practice that will lead to more interdisciplinary thinking. Science, social studies, and technology teachers are teaching literacy alongside their colleagues in English language arts departments. We are seeking venues that will facilitate interdisciplinary learning and thinking. Time across content areas of instruction is not a readily available commodity, but technology has become much more accessible and might be used to move this work forward.

Consider this scenario. Joshua is in grade 10. He is studying American history and American literature. These are two separate courses, but the historical perspectives he is gaining about the literature he is reading in English class lead him to wonder about a few important events in the Civil War. His history teacher, Mr. Rochembau, has challenged students to develop their own theories about the role any one political figure may have played in this period of history. As a result of this challenge, Joshua is writing to learn. He is developing thoughts that combine historical nonfiction texts with the fictional work of two authors. As he records his ideas, Joshua realizes there are pieces of information he doesn't fully understand. Through his writing, he is learning more by investigating historical events in order to fill in the gaps in his own understanding.

Mrs. Hamlin, the American literature teacher, has assigned multiple readings, some that look at the Civil War period. One text titled *The First Assassin* is fictional, but written by an esteemed nonfiction history writer, John J. Miller. After reading this text, Joshua has questions about the

events surrounding Abraham Lincoln's inauguration. His research is uncovering details that are new and exciting, but he struggles to get all of this information into a coherent written form. He has difficulty getting the words on the page in a way that expresses his ideas accurately. The work is overwhelming as he seeks to organize thoughts in a coherent manner.

Mr. Rochembau and Mrs. Hamlin create a single writing assignment, and they post that assignment on an automated essay scoring software website. They are collaborating and allowing students to produce one lengthy essay that satisfies the learning goals of both courses. Joshua is getting the best of all worlds. He is thinking about one topic from an interdisciplinary approach. He is reflecting on historical events from multiple perspectives, and reviewing texts written for varying purposes around one topic. He is doing work that will satisfy two courses and deepen his understanding of how events of a period influence literature, and vice versa. The teachers have looked carefully at the demands of literacy in the Common Core State Standards and believe the work they are giving students represents those challenges. In the end, Joshua will be producing his own, crosstextual synthesis of ideas. But remember, he struggles to write.

Several AES programs include prewriting tools. The options within that feature include outlining, mind mapping, flowcharting, and free writing. With just a little bit of coaching by Mrs. Hamlin, Joshua chooses mind mapping. He is able to put thoughts together in groups that make sense for him. From here, he is able to begin typing his thoughts into sentences that express full ideas. Those ideas develop into paragraphs that later become sections of his paper. With a few drafting sessions, Joshua is ready to submit portions of the essay for review.

In this case, Joshua could have been working fully online. Or, he could develop the draft in word processing. Either way, when he has a section of the essay complete, he sends it through the AES

software and immediately receives specific feedback on multiple traits of writing. By submitting the essay in sections, he is less overwhelmed by the feedback. He has an option to work on small sections of the paper at a time.

When submitting text, Joshua not only sees suggestions for mechanical and technical changes, he might also see highlighted portions of his text with pop-up text boxes that present questions about the purpose of the highlighted copy. These questions serve as a reminder to give attention to the structure of the essay. The feedback suggests that an introduction should be included and that a thesis statement generally would appear in a particular place. Questions about support information are posed, asking Joshua to review the content of his essay to be certain that he is providing enough detail for a third-party reader.

While the software is not reading the text for specific sense, or for completely accurate detail, it is asking Joshua to reflect on his work. He is being reminded of the importance of structure and organization on the overall effectiveness of expository writing. The technology is interacting with the writer. Joshua has an opportunity to think critically about his own work. These elements of a writing process lead to the development of self-regulation and metacognition about writing through a looping process of submission, feedback, and revision. Joshua's story becomes one of success. He is working with technology, learning about a topic from multiple perspectives, learning about writing, and has experienced scaffolding that leads him to deep conversations about literature, writing, and history. AES software can help teachers make these learning experiences more readily available for all learners.

As writing technology continues to improve, teams of interdisciplinary educators have more tools to facilitate student learning across curricular areas. They can collaborate in the creation of

meaningful learning activities, and students can receive feedback from experts of the content

areas of study through one portal and one assignment. Some of these features make the use of

AES software attractive. Technology cannot replace the very important dialogue that helps s