

Sherene Carter  
Hypermedia Project Analysis and Design  
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Analysis

I lost the interest of many students when we began the genetics unit last year. Not only are the concepts difficult to comprehend with an 11-year-old brain, but DNA is so tiny that it cannot even be seen with the microscopes that we have. Genes and DNA are so small that it makes the concept very abstract for the students. Another problem when teaching genetics to 6<sup>th</sup> graders is that we are asking them to think about sexual reproduction but not sex. That is difficult for them, and many of them squirm and giggle in their discomfort.

My students at J.D. Smith Middle School are predominately English Language Learners. They struggle with the language and as a result are years behind in their reading skills and are difficult to motivate. A few students are at level with their reading and writing skills and are often bored in class while waiting for their peers to finish their assignments, but for the most part, my students are reluctant readers and have low comprehension rates when they read. Any lesson I can create that takes them away from reading the text and introduces concepts in a fun and creative way, is more successful in motivating them to learn.

Design

I would like to create a musical animation that demonstrates the main concepts of genetics. Students will watch the animation sequence and then answer questions at the end. I wrote a song last summer that introduces the genetic vocabulary and would like to add a visual aspect to the words by using Flash. Having both the musical and visual aspects will increase my chances of reaching all learners.

This hypermedia project will be just the introduction to a 5 week genetics unit. Transfer of the basic vocabulary will be encouraged and assessed by numerous more genetics assignments. After viewing the animation, students should be able to apply dominant and recessive gene concepts to real-life scenarios. According to Bloom's Taxonomy and new research on how people learn, it is important for students to have the basic vocabulary and basic concepts of a subject mastered before higher level thinking projects are required on the subject. Students will get into probability and genetic mapping in high school biology. In sixth grade science they need to be able to predict the phenotype of an organism being given its genotype – this is the high-level goal for our genetics unit.

In order to do this students must be able to recall the genetic vocabulary and its basic concepts; therefore, basic 'knowledge' is the type of goal that will be used for this learning objective.<sup>3</sup> By using the animation and music, the students should be able to have a mental picture form when they hear the words chromosome, DNA, and gene. They should also be able to describe the difference between a dominant and recessive gene. A quiz at the end of the presentation will measure their comprehension and allow them to return to specific parts of the song if they need to.

Students will view the presentation in the computer lab with their headphones on and answer the quiz questions individually. I will monitor and observe scores to determine the successfulness of the project.

*Finished product in Flash Reader: [When I Think About Genetics](#)*

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Upon completion of my Flash presentation, *When I Think About Genetics*, I had it evaluated by another life science teacher at my school. When asked if the presentation will help ELL (English Language Learner) students better understand the concept of genetics she said that it would “because the song opens up with a hypothesis and then explains the genetic concepts by using great animations, colors and cartoons”. She suggested that the presentation be incorporated into the genetics unit after studying Punnett squares. She also felt that it would be helpful to add more examples of cross breeding in the animations. However, in order to add more components to the presentation, I would also have to change the song which would be difficult.

I also had my 4<sup>th</sup> period life science class evaluate the presentation. We have not gotten to the genetics unit yet, so all of the vocabulary words introduced are brand new to them. The students vary greatly in their reading, English language, and cognition abilities, but most said that they thought they could learn more from the video than from reading the text book. When asked where the chromosomes were located (we have learned about the organelles in cells) over half the students were able to come up with the nucleus or cell. A few students put the stomach or head; I am not sure where they got that idea. Most students felt that this gave them an idea of what genetics was; although, they were unable to explain genetics in their own words. Some of the suggestions they gave me for improvements were to have it go slower, make more actions, and explain genes and genetics better. Overall, the students were attentive and excited that I was singing a song for them about science.

All of the suggestions made for improvement are valid and would improve the presentation; however, having easily spent over twenty hours on the product, I am exhausted of working on it. My 30 day free trial of Macromedia Flash has expired, and I have no desire to pay for the product right now. Should the school district buy a license for it, I may make some improvements to the presentation. Some of the clipart that I used from Microsoft Office is dry and I would like more animations, but for right now I am pleased. The pictures match up with the words of the song, and I really can't do a whole lot of alteration to the song as it is designed to follow a popular country song titled *When I Think About Angels*. Using well-known songs appeals more to the students. I look forward to using it with all my life science classes when we get to the genetics unit.

Macromedia Flash is a great program with what seems to be unlimited potential. With all that I learned doing this project, I feel that I have barely scratched the surface of its capabilities. I could not have illustrated my song as well by using Composer, PowerPoint, or Authorware, but spending this much time on a 5-minute review presentation for my life science class is, well . . . absurd. This is why professionals are creating the animations and *selling* them to science teachers – we just do not have the time.