LESSON PLAN

TOUCHCAST USAGE IN EDUCATION

BY MR. BRIAN JONES

SCIENCE - GENETICS -7TH GRADE

TouchCast // Science // Lesson Plan Units 1-3

Genetics - Units 1-3

Grades : 7th grade

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Overview

This unit's lesson plan is part of 7th grade science curriculum about Genetics. The teacher demonstrates major concepts in the Genetic theme, like Punnett Square, and how they are applied to their lives. TouchCast application is used by both the teacher and the students, for lecturing, role-playing, documentation, reflection and assessment.

Unit 1

- **Objectives**

Students will be able to use the TouchCast app to create an online video presentation of their Punnett Square findings. Students are expected to include three or more types of video apps (vApps) during their presentation to help clarify findings, e.g. websites, pictures, and other examples.

- **Common Core Standard Writing WHST.6-8.6:** Use technology, including the internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

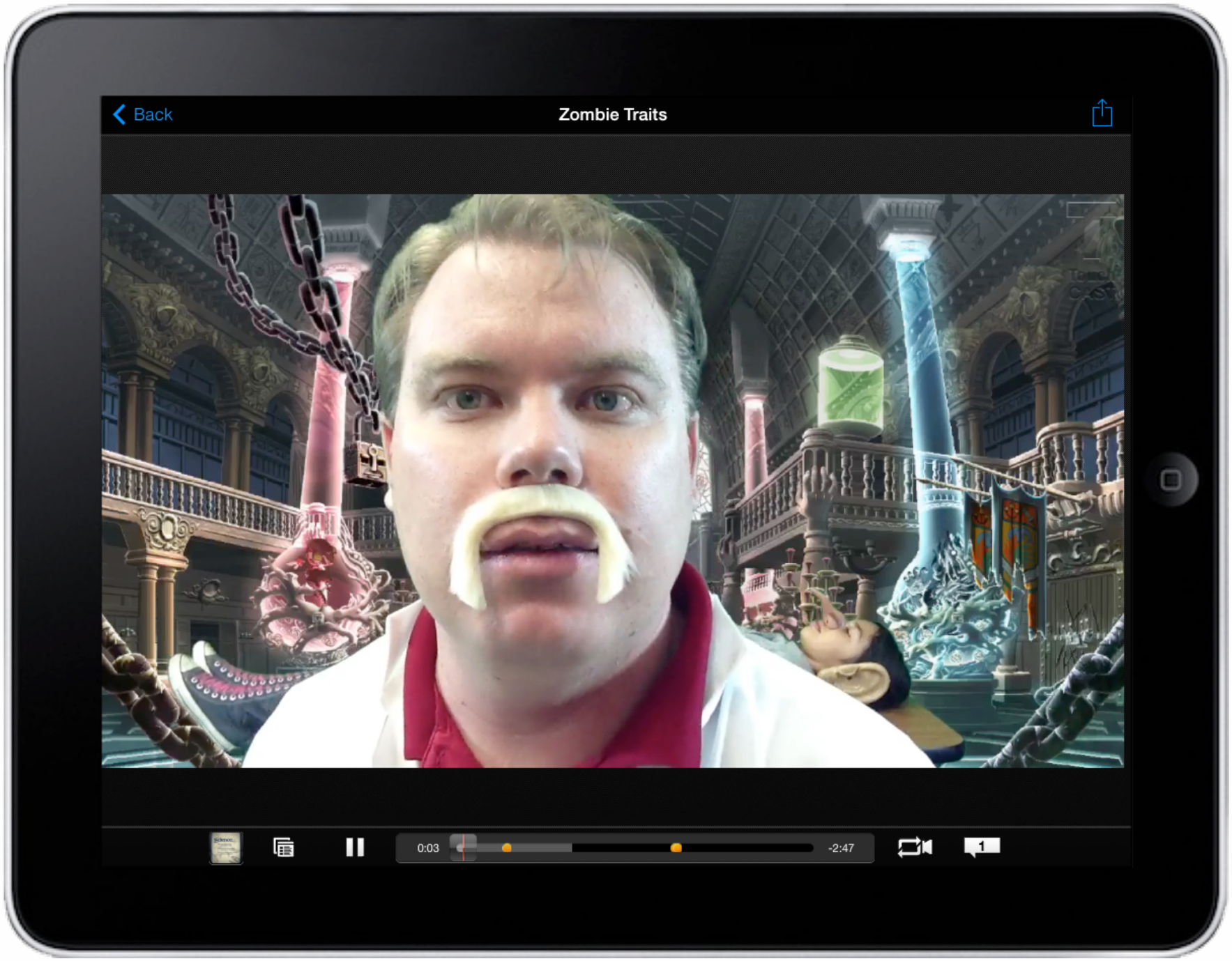
TouchCast // Genetics // Unit 1

Part / Time	Procedures	TouchCast
Key Words	**Trait:** a distinguishing quality or characteristic belonging to an organism **Dominate Allele:** Trait will always be present, even when paired with a recessive **Recessive Allele:** Trait will only be present when paired with another recessive allele **Genotype:** The genetic makeup of a cell that offspring inherit from their parents **Phenotype:** The physical appearance of an organism; the physical parts that you can see **Homozygous:** Having the same type of alleles for a given trait, for example **AA** (dominate) or **aa** (recessive) **Heterozygous:** Having two different alleles for a given trait, for example **Aa** (heterozygous dominate). **Mutation:** A gene mutation is a permanent change in the DNA sequence that makes up a gene **Offspring:** The production of a new organism produced by one or more parent	**Teacher's Role-playing TouchCast - Introduction to Punnett Square topic** As a part of the introduction, the teacher will explain the key words: **-** Quote vApp to write keywords terminology -White board text tool to write keywords on board - Questions vApp for pre-assessment and post-assessment - Use the Browser vApp to include related websites about Reginald Punnett - Use the Images vApp to include images to present zombies traits - Use the White Board to draw a Punnett Square and demonstrate traits - Use the Poll vApp to ask students a question for pre-assessment - Use the Question vApp to present questions to students - Use the List vApps to list students' assignments
Introduction (10-15 min)	Teacher creates a TouchCast that compares and contrasts the family tree of a zombie family. A fun idea : to create it in the style of a Bill Nye episode Content of the TouchCast - 1. Demonstrate what a Punnett Square is : a. Maps genotypes b. First used by Reginald Punnett c. How it is used to **predict** traits of the **offspring** 2. Demonstrate the Punnett Square to predict what the offspring of two given zombies would look like. (Use whiteboard VAPP) 3. Challenge the students to complete the same process with a new set of zombies. Students are expected to take Cornell Notes on important information from the video in their Science Notebooks. *Students will include images from their notebooks in their TouchCasts.	
Body of lesson	1. Students are provided with Punnett Squares 2. Students will each draw four tiles from a bag a. The tiles will either have a capital "B" for black hair or lowercase "b" blonde hair b. Students will draw four tiles representing the two alleles that represent the trait of each parent zombie. 3. Students will place the illustrated tiles on their Punnett Square a. One parent on the top horizontal b. One parent on the left vertical side 4. Students will then write out the different genotype each zombie offspring could have	**Student's role-playing TouchCasts -** **-** Class will be divided to groups of 3 or 4 - Groups create TouchCasts using the green screen, acting as the creature they have created, using costumes (ears, noses, mustaches for hair color) to illustrate the traits.

TouchCast // Genetics // Unit 1

Part / Time	Procedures	TouchCast
Body of lesson (continued from previous page).	5. The teacher can pull the group together and discuss the results 6. Students will create a TouchCast and reenact the offspring of the zombie they created. <u>If time allows:</u> 1. Have different bags a. Each one represents a different phenotype 2. Students draw four tiles for each phenotype a. Two for each parent, same as above 3. Students complete a Punnett Square 4. Student illustrate the phenotypes belonging to one of the zombie offspring	**Tips for student's TouchCast-** - Use the quote vApp or the white board to explain key words -Don't forget to add a title -Include an image of your Punnett Square with the zombies traits or draw it on the screen in real time with the drawing tool -Divide the roles between your group members; actors, director, TouchCast operator, script writer, etc. -Time your vApps into the script
Materials	1. TouchCast app on iPad or PC 2. Green screen 3. Tripod 4. Lights 5. Punnett Squares cards and bags 6. Costumes and Props (according to attributes) 7. <u>Storyboard</u> 	**An extra-credit lecture TouchCast assignment Who Was Gregor Mendel?** - Students will use TouchCast to create a digital photo collage with narration about Mendel and his work as a scientist - Use the photo vApp -Add titles -Use the teleprompter to read your script -Use the green screen and a suitable background image for the period of time and the location -Use the browser vApp for websites about Mendel

TouchCast // Genetics // TouchCast examples



Watch the teacher TouchCast Introduction to Genetics lecture part 1

TouchCast // Genetics // TouchCast examples

Watch the teacher TouchCast Introduction to Genetics lecture part 2

TouchCast // Genetics // Unit 2

Unit 2

•Objectives

Students will observe traits from family members to create a Punnett Square on a specific trait. Students are expected to complete Punnett Square on three traits.

•Next Generation Science Standard (NGSS) MS-LS3-2:

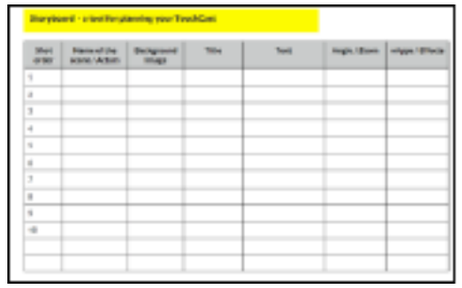
Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

• **Common Core Standard Writing WHST.6-8.6:** Use technology, including the internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

TouchCast // Genetics // Unit 2

Part / Time	Procedures	TouchCast
Introduction (10-15 min)	1. Teacher will present the TouchCast assignment to the students: -Students will interview their parents and grandparents to explore family traits. -Students will create a Punnett Square for three specific traits (e.g. nose, eye color, height, hair color, etc . . .). - Students will compare their ancestors' traits to their traits, what did they inherit from them. -Students will create a TouchCast presentation to explain the information they gathered. -Students need to use the key words to describe their findings. -Students will present their TouchCast in classroom, in the next lesson.	
Body of Lesson (1 to 2 days in class, and a week's time in homework) **(Day 1 focus on Script. plan a script and how to time it)**	1. Students explore websites about ancestry (e.g. ancestry.com or myheritage.com) 2. Teacher demonstrates "teleprompter" feature on TouchCast. Discuss why this is an important feature for television newscasts. Why is it necessary? 4. Students plan out a mock example to reflect on their understanding of the tasks and TouchCast know-how 5. Students plan a script for their TouchCast 6. Instructor scaffolds students who need assistance when adding desired links to their TouchCast via vApps	**Students' lecture/interview TouchCast - Ancestors' Traits, Compare and Contrast** - TouchCast topic: Genetic traits (phenotypes) that were passed down through family members - Interview your ancestors and incorporate the interview into your TouchCast or present only your findings - Create a Punnett Square for three specific traits (e.g. nose, eye color, height, hair color, etc . . .). - Compare your ancestors' traits to yours, what did you inherit from them. Use the Images vApp to add family photos and mark the traits with the drawing tool - compare and contrast - TouchCast tools students can use, include: Teleprompter for script, drawing tool, text, web pages vApp, poll vApps (ask the viewers to vote), merging tool to merge TouchCasts of few group members
Day 2 - vApps	1. Students integrate the information gathered from their parents into the script and add vApps to support it 2. Students focus on three main features with dominant/recessive traits 3. Students record the TouchCast	

TouchCast // Genetics // Unit 2

Part / Time	Procedures	TouchCast
Conclusion	1. Teacher will select a few students to present their work process and display their TouchCasts (optional - mirror their iPad using the reflection iPad App when presenting on SmartBoard) 2. Have a whole class discussion about how this applies to their certain TouchCast project	Presentation and self-assessment with TouchCast
Materials	1. TouchCast app 2. iPads or PC 3. Tripod 4. Green screen (optional) 5. Images of family traits and celebrities with dominant/recessive traits 6. Punnett Squares drawings 7. Storyboard 	
Post assessment	1. Create a TouchCast with photos of a celebrity. Students will deconstruct it based on Punnett Square and reflect on it. 2. Students will predict the two celebrities offspring. 3. Students will create a TouchCast to present their findings.	**Students' post-assessment TouchCast - celebrities Traits, prediction of Offspring** Student will use two images vApps of celebrities and draw the relevant Punnett Square with the white board tool. They will predict the offspring of the celebrities.

TouchCast // Genetics // Unit 3

Unit 3

- **Objective**

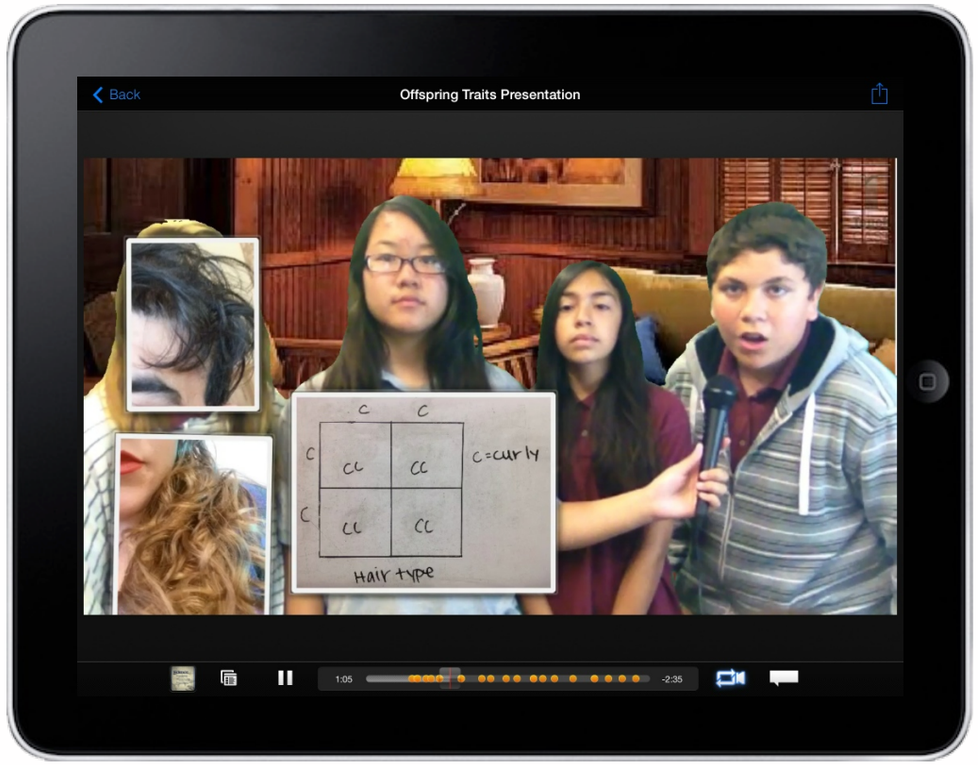
Students will present their TouchCasts to the class. The class will take Cornell Notes to compare and contrast the presenting group's TouchCast to their own. The presenting group will then lead a discussion group as to the video's content and any necessary corrections that are required.

- **Common Core Standard Writing WHST.6-8.6:** Use technology, including the internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

TouchCast // Genetics // Unit 3

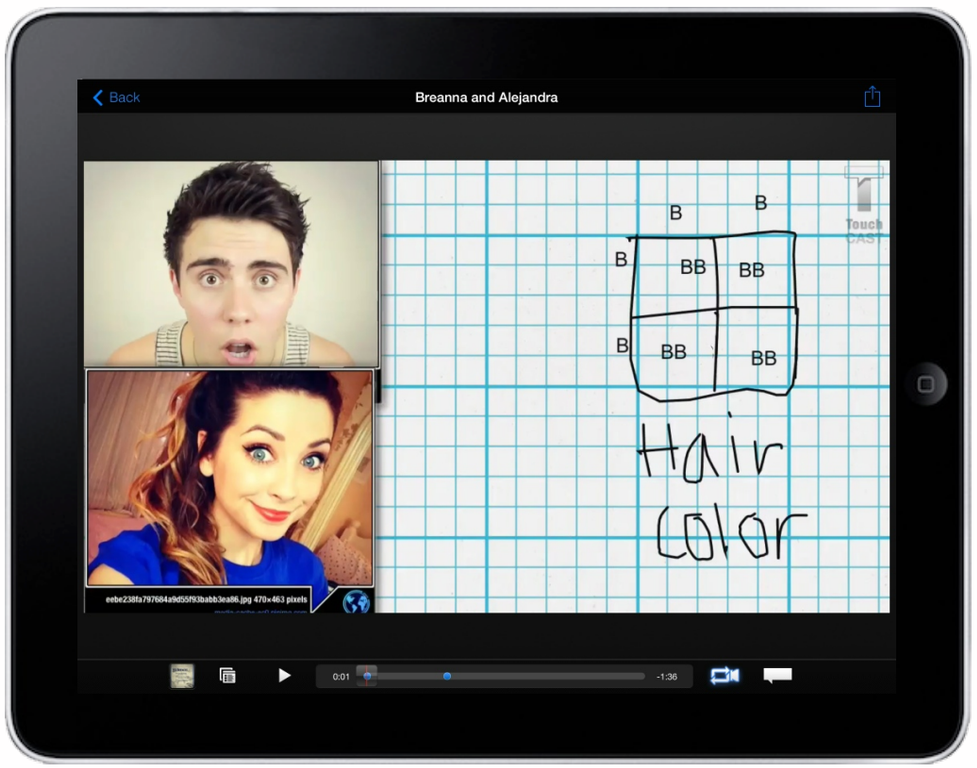
Part / Time	Procedures	TouchCast
Introduction (10-15 min)	1. The objective of today's lesson is to share our videos and provide constructive feedback - Discuss norms on "What is constructive feedback?" - Introduce the "comment" section of TouchCast, and have students provide constructive feedback as to what they liked and what they learned - Review with students how to accomplish this on their computers or iPads	Providing feedback with TouchCast
Body of Lesson (20 min)	1. Students will present their traits with TouchCast 2. Students will use the comment feature on TouchCast to facilitate discussion 3. Constructive criticism will be handled in classroom through a constructive dialogue	

TouchCast // Genetics // TouchCast examples



Watch the students "Offspring Traits" TouchCast

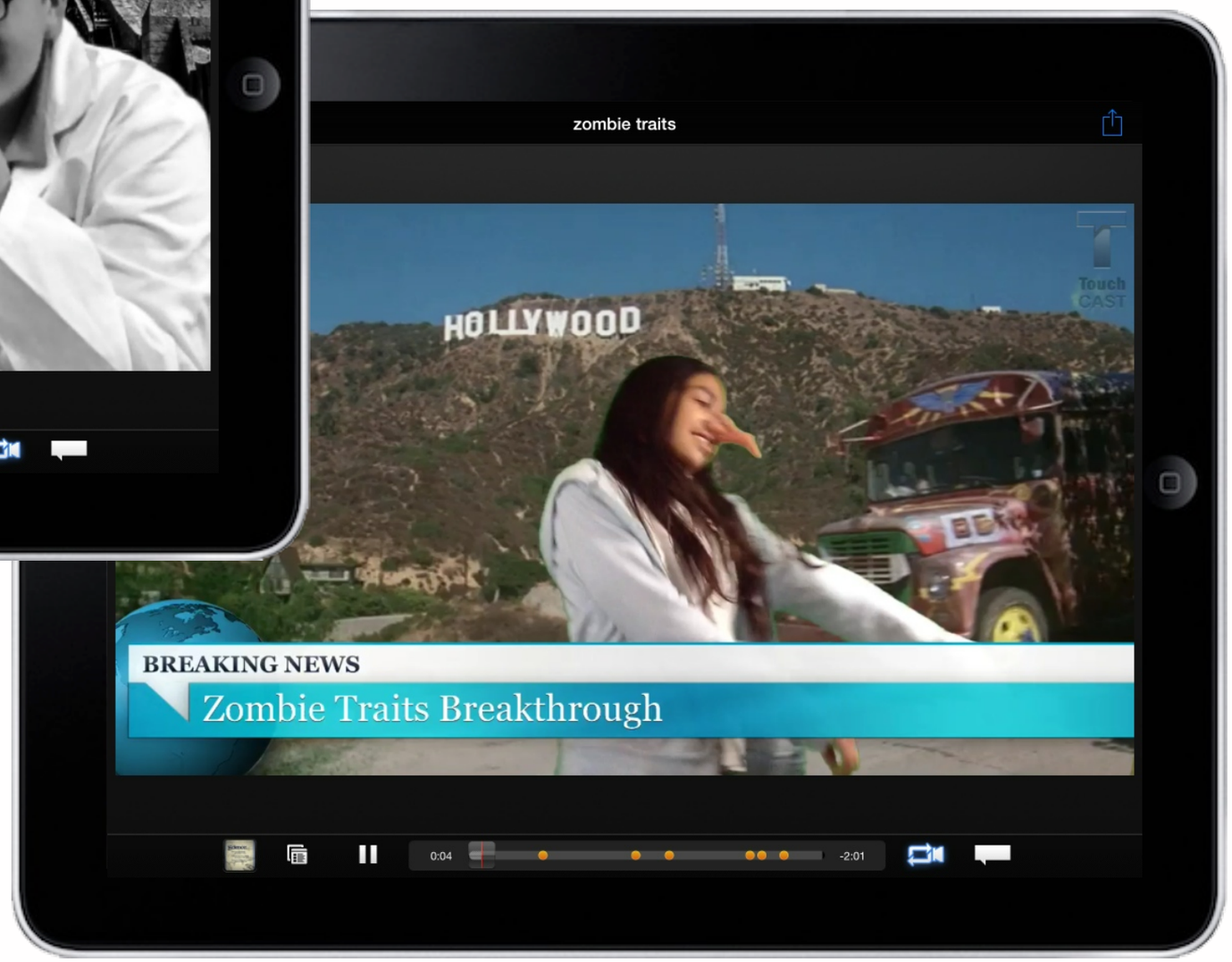
Watch the students "Punnett Square" TouchCast



Watch the students "Punnett Square celebrities assignment" TouchCast

TouchCast // Genetics // TouchCast examples

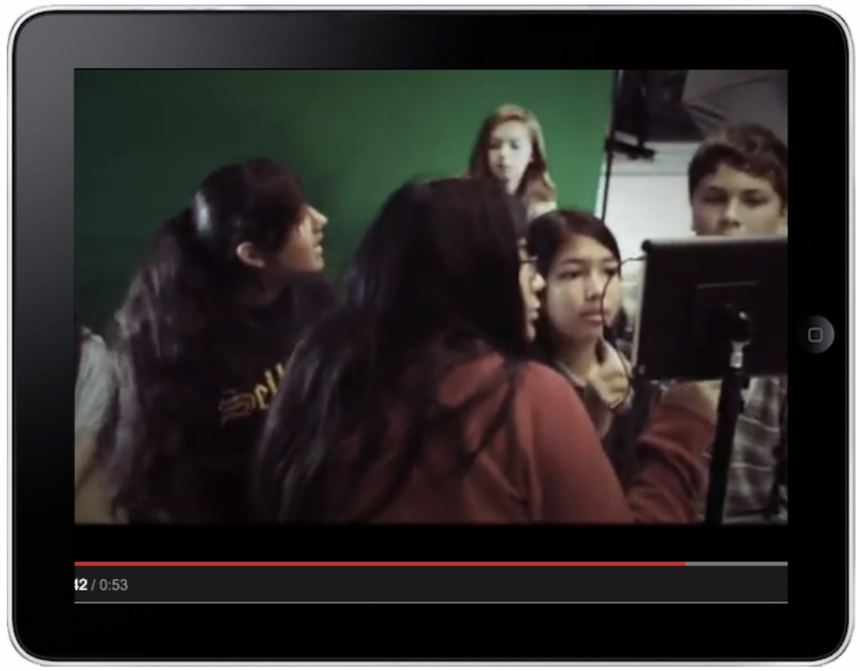
Watch the students lecture TouchCast about Gregor Mendel



Watch the students role-playing TouchCast about Zombie Traits

TouchCast // Genetics // TouchCast examples

Watch the students at work creating TouchCasts



Watch "EDtech Moment" on TouchCast

The teacher's reflection on the learning experiences with TouchCast

TouchCast // Genetics // Assessment Rubric

Category	4	3	2	1	Score
Analysis	The relationship between the variables is discussed and trends/ patterns logically analyzed. Predictions are made about what might happen if part of the lab were changed or how the experimental design could be changed.	The relationship between the variables is discussed and trends/patterns logically analyzed.	The relationship between the variables is discussed but patterns, trends or predictions are not made based on the data.	The relationship between the variables is not discussed.	
Data Representation	TC was professional looking and accurate representation of the data in tables and/or graphs. Graphs and tables were labeled and titled in vApps.	TC was an accurate representation of the data in tables and/or graphs. Graphs and tables were labeled and titled.	TC was an accurate representation of the data in a written form, but graphs or tables were not included in vApps.	Data was not shown OR are inaccurate.	
Drawings/ Diagrams	Used 3 TC vApps that were clear and accurate. Diagrams were included and made the experiment easier to understand. Diagrams were labeled neatly and accurately.	Used 2 TC vApps, and diagrams were included and labeled neatly and accurately.	Used 1 TC vApp, and diagrams were included and labeled.	TC vApps were not used; required diagrams were missing OR were missing important labels .	
Scientific Concepts	The TC illustrates an accurate and thorough understanding of scientific concepts underlying the lab regarding traits and Whiteboard OR vApps used to display Punnett Squares.	The TC illustrates an accurate understanding of scientific concepts underlying the lab regarding traits and Whiteboard OR vApps used to display Punnett Squares.	The TC illustrates an understanding of scientific concepts underlying the lab regarding traits and Whiteboard OR vApps used to display Punnett Squares.	The TC lacks the necessary understanding of scientific concepts underlying the lab regarding traits and Whiteboard OR vApps used to display Punnett Squares.	
Conclusion	Conclusion includes whether the findings supported the hypothesis, possible sources of error, and what was learned from the experiment and was clearly addressed in TC.	Conclusion includes whether the findings supported the hypothesis and what was learned from the experiment and was addressed with few errors in TC.	Conclusion includes what was learned from the experiment and was addressed in the TC, but with errors.	No conclusion was included in the TC OR shows little effort and reflection.	

*Designed by Brian Jones for TouchCast 04/04/2014

TouchCast // Appendix // Storyboard

Storyboard - A tool to plan your TouchCast

Shot order	Name of the scene / Actors	Background Image	Title	Text	Angle / Zoom	vApps / Effects
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						