Jefferson City Public Schools–Curriculum

SUBJECT: Elementary

COURSE: EER

STRAND: Genetics

Objectives	Assessment/Evaluation	Instructional Activities

(A) Read about and compare the lives and contributions of famous scientists in the fields of genetics and biotechnology
 	
Performance: 1.2, 1.5
Knowledge: (CA) 1,3
CAGLE: R.3.C (Gr. 6); W.2.B (Gr. 6)
NETS: (3-5) 4
DOK: 1-3
	Biography comparison chart – assessed using a scoring guide	• Handouts over:
		  • Luther Burbank
		  • George Washington Carver
		  • Barbara McClintock
		  • Gregor Mendel
		  • Sally Fox
		• Class discussion

(B) Discover traits are passed from one generation to the next **Performance: 1.7, 2.1** **Knowledge: (CA) 2 (SC) 3** **CAGLE: R.3.C; W.2.B (Gr. 6)** **MAGLE: DP.1.A (Gr. 6)** **SCGLE: SC7.1.A,B (Gr. 6-8)** **SCCLE: SC3.3.B,D,E (Biology I)** **NETS: (3-5) 4** **DOK: 1-3**	Junior's Family Tree project – assessed using a scoring guide	• An Interview with a Horse Breeder – handout • Quart of Paint – activity sheet • Junior's Relatives – fact sheet
(C) Compare observable genetic traits to the traits of classmates and family members, and interpret the differences in the two sets of data **Performance: 1.2, 1.10** **Knowledge: (SC) 3** **CAGLE: R.3.C; W.2.B (Gr. 6)** **MAGLE: DP.1.A (Gr. 6)** **SCGLE: SC7.1.A-D (Gr. 6-8)** **SCCLE: SC3.3.B,D,E (Biology I)** **NETS: (3-5) 8** **DOK: 1-3**	Lab investigation – assessed using a scoring guide	• Just Like Me Phenotype – trait lab investigation • *Bill Nye Genetics* – video

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(D) Use Punnett squares as a tool to predict potential offspring genotypes and phenotypes of parental crosses **Performance: 1.2, 3.5** **Knowledge: (MA) 3 (SC) 3** **CAGLE: R.3.C; W.2.B (Gr. 6)** **MAGLE: NO.3.C (Gr. 5); AR.1.B (Gr. 5);** **DP.1.A (Gr. 6)** **SCGLE: SC7.1.A-D (Gr. 6-8)** **NETS: (3-5) 8** **DOK: 2,3**	Lab investigation – assessed using a scoring guide	• *Invention Discovery: Sally Fox Segment* – video • Let's Get Square – Punnett square lab • The Blue Genes Challenge – activity sheets

(E) Create an imaginary plant using the traits dominant and recessive
 	
Performance: 1.3, 2.1
Knowledge: (SC) 3
CAGLE: R.3.C (Gr. 6)
MAGLE: DP.1.A; DP.4.A (Gr. 6); DP.3.A (Gr. 5)
SCGLE: SC7.1.A-D (Gr. 6-8)
SCCLE: SC3.3.B (Biology I)
NETS: N/A
DOK: 3,4
	• Data chart and conclusion – assessed using a scoring guide
	• Plant diagram – assessed using a scoring guide
		• Rock, Paper, Scissors:
		  • activity
		  • data chart
		• Plant features – activity
		• Create an Imaginary Plant – handout

(F) Discover that selective breeding and genetic engineering are two ways desired traits can be incorporated into plants and animals **Performance: 3.1, 3.2** **Knowledge: (CA) 4 (SC) 4** **CAGLE: W.2.B; LS.1.B (Gr. 6); LS.2.A (Gr. 5,6)** **MAGLE: DP.1.A (Gr. 6)** **SCGLE: SC7.1.A-D (Gr. 6-8)** **NETS: N/A** **DOK: 4**	Product scoring guide	• Class discussion • Peanut Butter Broccoli – activity • Students will work in pairs to create a new produce product

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(G) Examine the relationships between mutations and/or environmental changes and the viability of a species **Performance: 3.1, 3.2** **Knowledge: (MA) 3 (SC) 4,7** **CAGLE: R.3.C; W.2.B (Gr. 6)** **SCGLE: SC4.1.A,D; SC4.3.C (Gr. 6); SC7.1.A-D (Gr. 6-8)** **NETS: N/A** **DOK: 2,3**	Data and lab conclusions – assessed using a scoring guide	• Class discussion • Bird Land Natural Selection – activity/lab
(H) Construct a three-gene DNA model and genetically modify a hypothetical trait change **Performance: 3.8, 4.1** **Knowledge: (SC) 4,7** **CAGLE: R.3.C (Gr. 6)** **SCGLE: SC7.1.A-D (Gr. 6-8)** **SCCLE: SC3.3.B-D (Biology I)** **NETS: N/A** **DOK: 3,4**	Data and lab conclusions – assessed using a scoring guide	• Discussion of Design Your Genes Strawberry Lab • DNA gene cut-out models • Design Yer Genes – lab sheets • Phosphate, Sugar and Base – pair cut out sheets
(I) Understand how technological advances can benefit a particular commodity **Performance: 1.2, 1.8** **Knowledge: (CA) 3** **CAGLE: R.3.C; W.2.B; LS.1.B (Gr. 6)** **NETS: N/A** **DOK: 1-3**	Differentiated final product – assessed using a scoring guide	• Tomato fact sheets 1-6 • Group discussion • What I Learned…and Still Want to Know activity sheet

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(I) In this simulation, students will use what they have learned to create and market a genetically modified plant product **Performance: 1.8, 3.3** **Knowledge: (CA) 1,4** **CAGLE: R.3.C; W.2.B; LS.1.B (Gr. 6); LS.2.A (Gr. 5,6)** **SCGLE: SC7.1.A-D (Gr. 6-8)** **SCCLE: SC3.3.B-D (Biology I)** **NETS: N/A** **DOK: 3,4**	Presentation assessment, using a scoring guide, of a new plant product which will include: • project title • company name • introductory information and pictures • scientific information • DNA changes • advertising information and illustrations	• Snappy Products Inc. – assignment packet • Project Planning – handout • Quality criteria list • Biotechnology articles