

BrainU 202 Content-

Neuroscience described as input- processing-output

Objective: To provide an organizational framework reference for neuroscience activities

Methods: Discussions of framework graphic to orient participants to where each activity “fit” into the framework

Lesson plans/activities: None

Examples of less well known sensory systems (vestibular, pain)

Objective: To explore less well known sensory systems

Methods: Lectures and activities

Lesson plan/activity:

Vestibular Response Teacher, Student Guides

Neuroethics- neuroimaging study of Pepsi/Coke challenge

Objective: To analyze and interpret data, discuss data’s impact using published and class generated experiments

Methods: Discussion, class activity

Lesson plan/activity:

Neuromarketing Teacher, Student Guides

Comparing invertebrate and vertebrate neurobiology,

Objective: To compare metamorphosis and adolescence as age related developmental changes to nervous systems

Methods: Lecture, discussion, dissection, modeling

Lesson plans/activities:

Manduca Wax Model Teacher, Student Guides

Manduca Dissection Teacher, Student Guides

Early neural development

Objective: To understand mechanisms of neural pathfinding

Methods: Lectures/kinesthetic activity

Lesson plan/activity:

Pathfinding Teacher, Student Guides

Depression

Objective: To understand the neural basis of depression

Method: Lecture

Lesson plan/activity: none

Modification of synapses through exogenous chemicals

Objective: To demonstrate how synapses can be altered

Method: Flash animation

Lesson plan/activity:

Toxins and Synapses flash animation

BrainU 202 Pedagogy/Science Processes–

Interface between pedagogy and content knowledge

Objective: To link neuroscience content talks with classroom practice

Methods: Informal and formal discussions, use of neuroscience graphic to link activities with neuroscience content information

Lesson plans/activities: None

Graphic science journaling

Objective: To record experiences, data from investigations in graphic formats

Methods: Informal and formal note taking

Lesson Plans/activities: None

Scientific drawing

Objective: To use journals to record information in graphic form

Methods: Lecture, use of examples, drawing activity

Lesson plans/activities: None

Questioning strategies

Objective: To model guiding questions to move students towards understanding a learning goal

Methods: Lecture, Hands-on activity + discussion

Lesson plan/activity: Developing and Practicing Questions Skills task card

Introduction to national science standards

Objective: To introduce how AAAS Atlas and Benchmarks show national science standards

Methods: Lecture, brief activity

Lesson plan/activity: None

Connecting with graduate students

Objective: To give teachers a sense of a day in the life of a graduate student

Method: Half day pairing of teacher participants with current graduate students

Lesson plan/activity: None

Networking/sharing ideas with colleagues

Objective: To provide opportunities to process and share information

Methods: Informal and formal conversations

Lesson plans/activities: None

Modeling scientific poster talks

Objective: To model a scientific poster presentation

Methods: Discussion, preparation time, culminating presentations

Lesson plan/activity: None

Co-teaching

Objective: To gain experience teaching with another teacher

Methods: Short co-teaching presentation during workshop, 2-4 days of co-teaching activities during the following school year (substitute teacher time provided by grant for teachers to co-teach in one another's classrooms)

Lesson plan/activity: see Co-teaching plan outline below

Co-teaching action plan

Objective: To develop a co-teaching plan to implement neuroscience activities with partner teacher in one another's classrooms

Methods: Informal and formal discussions, planning time, final draft due 2 weeks after workshop completion

Lesson plans/activities: Co-teaching plan write-up listed below

BrainU 202 Co-Teaching Plan

Planning an Inquiry-based, Co-teaching Lesson in Neuroscience

Teacher Information: (Name, School, School Address, phone, e-mail)

Co-teaching Partner:

Class and Grade Level:

Lesson Overview:

Provide a brief overview of the lesson and its components. How will the lesson be introduced? What will students do? What are your closure strategies?

Circumstances:

(Example: This neuroscience lesson is designed for my five 7th grade class of 30 students to complete within two, 45-minute class periods.)

Standards:

What MN science standards are supported by this lesson?

Content:

What content will this lesson support or directly teach? **Include 1-2 key concepts and 2-3 vocabulary words to be discovered and/or used by students.**

Student Objectives:

(Students will be able to . . .) What measurable skills and content will students be able to demonstrate by the end of this neuroscience lesson? **Write one or two measurable objectives.**

Assessment Strategies:

List specific assessments strategies to be used during and after the lesson. These assessments should support your objectives. If duties are divided, which teacher is responsible for what assessment components?

Inquiry/Questioning Integration:

List at least three, student-focused, open-ended questions you plan to use with students during the inquiry.

Co-teaching Responsibilities:

Using the lesson components above, who is responsible for what? Be specific. How and when are responsibilities shared?

Logistics:

When (approximately) do you plan to meet, and to visit each others' classrooms?

What would you like to learn from this experience?