Zumba(tm) to Yoga to Reality TV: Using Pop Culture to Teach Biomechanics

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How do we make content relevant?

- How do we adapt our teaching to hook these students?
- Let's use pop culture!!
- Great idea!
- What's hot?

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Ask the Experts!

- Why are ***we*** trying to find this link to Pop Culture?
- Let the students make the link

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Constructive Education

- The work of Dewey, Montessori, Piaget, Bruner, and Vygotsky among others provide historical Precedents
- Fosnot (1996) Constructivism: A psychological theory of learning
- Embodied knowledge
  - Hudson, J. (2002) A Recovering Schizophrenic's Perspectives on Biomechanics.
- Active Learning
  - Knudson (2010) What we have learned from teaching conferences and research on Learning in Biomechanics.

Constructivist Learning

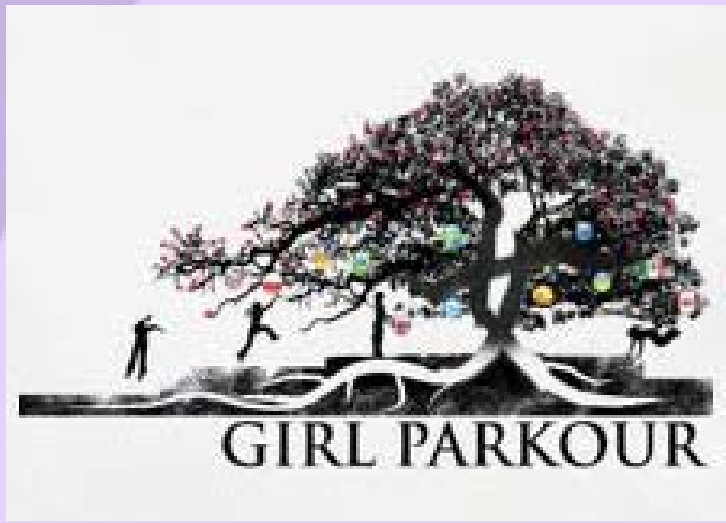
1. Knowledge is physically constructed by learners who are involved in active learning.
2. Knowledge is symbolically constructed by learners who are making their own representations of action;
3. Knowledge is socially constructed by learners who convey their meaning making to others;
4. Knowledge is theoretically constructed by learners who try to explain things they don't completely understand.

Fosnot (1996) in Gagnon, G. W., Jr. & Collay, M. (2006) Constructivist Learning Design

Construct Learning

- How do we do this?
  1. Create the situation
  2. Group students
  3. Bridge knowledge
  4. Prepare for questions
  5. Decide on the Product
  6. Reflections

Gagnon, G. W., Jr. & Collay, M. (2006)
Constructivist Learning Design



Situation

Process

- What situation are you going to arrange for students to explain?
- Give this situation a title and describe the process
- include what you expect the students to do and how students will make their own meaning.

Gagnon, G. W., Jr. & Collay, M. (2006) Constructivist Learning Design

Example:

- *"Use a Zumba routine or Yoga moves (or any dance) to illustrate the concept of…*
- *Center of Gravity (and/or stability, if you dare)*
- *The COG Dance*
- *2 minute dance that reflects the concepts of COG*

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Groupings

Process

How are you going to make groupings of students?

a) whole class, individuals, teams of two, three, four, five, six or more

b) what process will you use to group them; counting off, choosing a color, or similar clothing?

How are you going to arrange groupings of materials?

a) How many sets of materials you have will often determine the numbers of student groups you will form.

Gagnon, G. W., Jr. & Collay, M. (2006) Constructivist Learning Design

Example

- *Groups of 4 -5*
- *Count off*

- *Materials may include:*
  - *Paper and color to design "representation of COG"*
  - *Music*

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Bridge

Process

Initial activity

- Determine students' prior knowledge
- Build a "bridge"
  - what they already know and what they might learn from activity
- a simple problem to solve,
- having a whole class discussion,
- playing a game, or
- making lists.
- Sometimes done before students are in groups and sometimes after they are grouped.
- You need to think about what is appropriate.

Gagnon, G. W., Jr. & Collay, M. (2006) Constructivist Learning Design

Example

- *Knowledge of Dance chosen*
- *Concepts of COG (recall or present or source to go to)*
- *Could question the class and list concepts on board*

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Questions

Process

- Questions could take place during each element of the Learning Design.
- guiding questions to introduce the situation,
- to arrange the groupings,
- to set up the bridge,
- to keep active learning going,
- to prompt exhibits,
- to encourage reflections

Example

- *"How long?"*
- *"Do we have to dance?"*
- *How do we represent the concept*
- *Would you get it?*
- *How do we "see" COG?*

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Exhibit

Process

- Students make an exhibit for others
  - a description on cards
  - a verbal presentation,
  - a graph, chart, or other visual representation,
  - acting out or role playing their impressions,
  - constructing a physical representation with models,
  - making a digital video, photographs, or audio tape for display.

Example

- *Exhibit is the Dance or routine*
- *Digital video of routine*
- *Each group member participates*

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Reflections – vital step!!!

Process

- what they thought about while explaining the situation and then saw the exhibits from others.
- what students remember from their thought process
- What attitudes, skills, and concepts will students take out the door?
- What did students learn today that they won't forget tomorrow?
- What did they know before; what did they want to know; and what did they learn?

Example

- *Class or groups interpret / rate dance of other groups*
- *What concepts were best/least represented or presented*
- *Groups debrief on their own performance*
- *What concepts they did well would they do differently?*
- *What are the "take-aways" from the experience?*
- *Question on this topic at start of next class*

Gagnon, G. W., Jr. & Collay, M. (2006) Constructivist Learning Design

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Will be messy

- Like any construction project
  - There will be a mess along the way
  - Learning this way takes time and further reflection
  - Must let go of control
  - Amazing things happen
  - Train wrecks happen
  - Learning occurs even when product not perfect

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Other situations / prompts

- Think of products or goals of the learning
- Product to:
  - Demonstrate, explain, analyze, evaluate
  - The biomechanical concept or theory
- Examples:
- Survivor
  - Design challenges for survivor that use knowledge of…to win
- Amazing Race
- Angry birds

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References

- Fosnot, Catherine. (1996) *Constructivism: Theory, perspectives, and practice*. New York: Teachers College Press. pp. 8-33.
- Gagnon, George W. Jr. & Collay, Michelle (2006). *Constructivist Learning Design*. Thousand Oaks, CA: Corwin Press.
- Hudson, J. (2002) A Recovering Schizophrenic's Perspectives on Biomechanics. Presented at AAHPERD, Current issues in undergraduate biomechanics instruction, San Diego, 2002
- Knudson, D. (2010). What we have learned from teaching conferences and research on Learning in Biomechanics. *Proceedings of the 28th International Conference on Biomechanics in Sport. 28:68*

For further Reading

•Iverson, Heidi (2011). *Understanding the Variable Effect of Instructional Innovations on Student Learning.* Physics Education Research Conference. PER Conference series, Omaha, Nebraska: August 3-4, 2011. Volume 1413, Pages 223-226

•Sawyer, R. K. (2012). *Explaining creativity: The science of human innovation (second edition).* New York: Oxford University Press.