With a sufficiently high level of motivation, students can eventually learn from any, even primitive or poorly designed learning environments. The whole point of investing . . . resources into the design and development of sophisticated high-tech interactive e-learning environments is to achieve returns in terms of efficiency: learning faster and without mental stress. (Kalyuga, 2007, p. 388)
Overview

Interactivity in multimedia learning
  In-class activity
  Interactivity, learner control, feedback
  Definitions
  Classifying interactivity
  Implications for learning

In-class Activity

Class Activity
  Examine the links provided
  What examples of interactivity, feedback and control do you observe?
  How are they similar; how do they differ?
  What examples have you observed/experienced in other aspects of your life - i.e., classroom teachers: what is your experience with these concepts in the classroom?
  What are the benefits/drawbacks? Prepare a concrete example of each.
  How can you categorize your observations?

Interactivity

Defining Interactivity
  Reciprocally active; acting upon or influencing each other (Oxford English Dictionary)
Interactivity

**Defining Interactivity**

Kalyuga (2007): Interactive environments respond dynamically to learners’ actions.

Emphasis on definition based on systems: how does the system respond.

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Interactivity

**Defining Interactivity**

Kennedy: "Interactivity is a continuous dynamic interplay between instructional events, students’ actions, and their cognition."

The cognitive processes of the user are central to the conception of the construct.

"An educational multimedia program cannot BE interactive; it only has the POTENTIAL to be so. A user is required to release this potential."

(Kennedy, 2004, p. 45; emphasis added)

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Interactivity

**Defining Interactivity**

System behavior (instructional events)

User behavior

User’s cognitive processes

What other elements might be usefully considered in a definition of interactivity?
Classifying Interactivity

- Betancourt (2005): 2 dimensions
  - Control: Learner can act on pace and direction of frames
  - Interactive behavior: Learner acts on content of frames by actions or parameters (e.g., in a simulation)

Kalyuga (2007): Can be classified along several dimensions

- What is presented, and how it is presented: information delivery control (e.g., pacing); representation control (e.g., modality); content control (e.g., amount of information)
- Responsiveness: flexibility; dependence on learner response feedback (from simple, automatic feedback to extended, on-demand feedback), manipulation (real-time change in response to learner), adaptation (responses fixed, but tailored to learners’ behavior), communication (flexible, non-predicted)

In-class Activity

- “Interactivity is potentially highly beneficial in a multimedia environment.”
- Based on the theories we have discussed this semester, can you offer any theoretical support for this statement?
Implications of Interactivity

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Potential benefits of interactivity in a multimedia environment:
- intrinsic motivation; “deep processing” rather than “surface processing” (Kennedy)
- potential to explore from varying viewpoints; control can overcome “perceptual limitations” (Betrancourt)
- potential to customize instruction (Kalyuga)

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Potential drawbacks of interactivity in a multimedia environment
Cognitive load implications, e.g.:
- Split attention: hyperlinks can end up separating pieces of information that need to be processed simultaneously
- Increase in extraneous load: overly complex environment could distract or “lose” users

Additional examples?
Interactivity: Empirical Explorations

- Moreno & Mayer (2005): feedback, reflection
- Schwann & Riempp (2004): learner control
- Rieber (1991): intrinsic motivation
- Lee, Plass & Homer (2006): reducing extraneous load