EDT 598, Week 7, Activity 1
After reading the text chapter compare the points the authors raised to the Virtual Worlds research summary. What were the points of agreement and or disagreement? What could have the textbook authors have added to the chapter to include this research? One full page or longer.

In comparing the different points the authors raised, Hew and Cheung's study reviews, "Past empirical research studies on the use of three-dimensional immersive virtual worlds in education settings such as K-12 and higher education" (p. 33). This compares to Clark's consideration of his section titles: *The Case For Simulations And Games, Do Simulations And Games Teach? Balancing Motivation And Learning*, after which he goes on to spend more than half of the chapter presenting *The Five Games And Simulations Principles* (p. 344), "Evidence-based guidelines for design and development of simulations and games for instructional success" (p. 357) .

Hew states, "Three questions guided our review:"

(1) How are virtual worlds (e.g., *Active Worlds*, *Second Life*) used by students and teachers?

(2)What types of research methods have been applied?

(3) What research topics have been conducted on virtual worlds in teaching and learning, as well as their related findings?

Another central aspect of Hew and Cheung's research is that they, "Found that virtual worlds may be utilized for the following uses: (1) communication spaces, (2) simulation of space (spatial), and (3) experiential spaces ('acting' on the world)" (p. 33).

Clark concentrates on games/simulations and educational best practices of designing and using them, "In this chapter we focus on the evidence we do have to help you define tradeoffs and leverage proven technique when considering simulations and games to achieve your learning goals." (p. 345).

After discussing the abovementioned topics, *Simulations And Games, Do Simulations And Games Teach?* Etc., Clark spends the majority of the chapter presenting the five Games and Simulations Principles:

Principle 1, Match Game Types to Learning Goals

Principle 2, Make Learning Essential To Progress

Principle 3, Build in Guidance

Principle 4, Promote Reflection on Correct Answers

Principle 5, Manage Complexity (p. 357 -374)

This is in contrast to Hew's broad viewpoint, for example, of what subjects are being studied (p. 41). Hew states that learning outcomes are one of the three topics research has most focused on

while learning outcomes themselves are the main topic of Clark's research. Clark focuses almost solely on learning goals and how to maximize them when designing or using simulations and games.

What are the points of agreement or disagreement?

Both studies agree that we need further and better research studies. Clark states, "There are no clear conclusions except that we need better-quality research studies" (p. 354). He cites Gosen and Washbush (2004), who found that:

> While at face value many studies support the effectiveness of computer-based simulations, very few of the studies meet high standards for research design. Of 155 studies reviewed, not one met all of the criteria for sound research. They conclude that: There is evidence the approaches are effective, but the studies showing these results do not meet the highest of research design and measurement standard. Thus we believe any conclusion about them must be tentative. (pp. 283-284) (Clark, p. 354)

Hew is in agreement with Clark when he states most of the studies, "14 of the 15 papers", are classified as descriptive research as opposed to other, more demanding, research methods, "Such as experimental research, that involve questions about cause and effect." While Hew believes the descriptive research is a necessary step to more demanding research, he states, "The use of virtual worlds in K-12 and higher education has yet to be fully developed and understood—hence the lack of other research methods, such as experimental research." But he believes the descriptive research is a good lead in to more experimental studies. (p. 39-40)

Clark believes, "The research of the next few years should give more guidance about how to design simulation and game features that effectively balance motivational and learning elements" (p. 374). His list of some important questions for which we need empirical data includes:

1. Guidance for guidance, "we need more information on the most appropriate format, source, timing, and type of guidance to use for different instructional goals at different learning stages" (p. 374).
2. Simulation and game taxonomies for different learning outcomes
3. Cost-benefit of games and simulations
4. Who prefers games?
5. Effective game interfaces
6. How much interactivity?
7. Simulations versus games?

Hew's suggestions for future research is similar but more research than learner oriented:

> Future research should be carried out to explore improvements to previous studies as mentioned above [sic]. For example, future research should provide a rich, thick description of the methodology, including the duration of the study, interobserver and intraobserver agreement reliability and effect sizes so that findings can be adequately interpreted. (p. 46)

Clark and Hew seem to agree on the need to respect the nuances of using appropriate technology to match the learning goals. Clark's *Games and Simulations Principle 1, Match Game Types to Learning Goals* (p. 357) states, "It is critical, therefore, that we understand not just how games work, but how different types of games work and how game taxonomies align with learning taxonomies" (p. 358). While Hew states, "One of the important questions or issues in analyzing virtual world implementations is considering whether a particular study or task could have been carried out in another environment" (p. 38).

What could have the textbook authors have added to the chapter to include this research?
Clark and Mayer could have added three-dimensional immersive virtual world research to the chapter to include Hew and Cheung's study.

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