1. Theoretical, Philosophical, and Pedagogical Foundations for MUVE Learning

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This chapter describes the theoretical foundations for MUVE learning. Subjects that will be discussed include:

- Distributed Cognition: A grounding theory for MUVE learning
- The MUVE learner: Whole learning, multiple intelligences, and student power/agency
- The MUVE learning environment: The virtual world
- MUVE learning in relationships: Social and emotional intelligence in learning
- MUVE learning as a societal phenomenon: Situated learning, MUVE as a “Third Place,” experiential learning, MUVE as simulation learning, and the role of imagination in learning: the virtual as real

This chapter is for you if:

1. You are interested in the theoretical, philosophical, and pedagogical foundations for MUVE learning.
2. You are interested in a rationale for adding teaching in MUVE teaching to your personal teaching methods repertoire.

**Introduction: Virtual Environments and the Evolution of Learning**

The argument over use of Internet technology for learning is over. The issue is no longer if Internet technology should be used for learning but rather how best it can be. There is more going on here than the availability of new and more sophisticated equipment. Use of electronic platforms for learning on the worldwide web has caused a tectonic shift in our understanding of learning as a social and cultural process. It also reflects a major change in modern society,
the harbinger of a new age. We are no longer in the Information Age but the “Age of Techne”—the creative human online... Homo cyber (Boellstorff 2008). This book does not defend this evolution but rather accepts it as a given. We are in the midst of a sea change. How, what, when, and where learning happens is changing quickly and profoundly.

Evidence of this is everywhere. Harvard University, a US leader for education innovation, sponsors Project Zero, dedicated to a whole-scale reimagina-
tion of learning supported by new pedagogies and new technology. The Khan Academy, founded by American educator and entrepreneur Salman Khan, is dedicated to cost-free education to any person, anywhere, based on Internet learning platforms and new approaches to learning. Within the profession of nursing, Dr. Patricia Benner, a leader in education innovation, has called for a revolution in nursing education. Her vision includes the challenge to contextualize learning using new approaches and new tools (Benner et al. 2010).

The revolution these education innovators leaders espouse has emerged as a product of new understanding about intelligence, teaching, and how students learn. It has also been affected by an evolution in education philosophy, particularly as it concerns instructor and student power relationships. Last, it has been profoundly affected by integration of the World Wide Web and online learning into student processing, understanding, and sharing of information.

MUVE learning operationalizes these changes into learning activities in virtual space. Because MUVE learning is deeply connected with emerging learning theory, it is not surprising that it has been referred to by some as perhaps the most important educational opportunity of the twenty-first century (Richter, Anderson-Ínman, and Frisbee 2007).

The Theoretical, Conceptual, and Pedagogical Foundations for MUVE Learning

A comprehensive review of the theoretical and conceptual elements that undergird these changes in education is beyond the scope of this text. It is, however, important to outline some of the important elements that provide a foundation for MUVE learning. To do this, these foundational elements will be summarized using a schematic diagram. In this diagram, learners are located at the center of the learning, imbedded in and deeply connected to their environment, relationships, society, and culture.

The Philosophy of MUVE Learning: Distributed Cognition

Figure 1 depicts Distributed Cognition, a theory about how cognition works. Distributed Cognition is a relatively new psychological theory that posits that
knowledge does not reside in an individual (the lonely brain of the student). It is, rather, distributed across individuals in a group, interwoven with their environment and processed through complex interactions between individuals, their social/cultural world, and the objects that facilitate these interactions (Hutchins 1995). Viewed through this theoretical lens, social media platforms such as Facebook, Twitter, and MUVES such as Second Life® are integral parts of a cognition system that encompasses the people, relationships, social context, and the interactions they make possible. Learners are intertwined with each other in this network.

This view of cognition as a learning system that includes all participants, interactions, and media provides an excellent foundation for MUVE learning. In a MUVE learning activity, the student, at the center of the learning, is imbedded within a system of cognition that includes other students, the instructor, and both the physical and electronic environments that surround and connect them.

Such a learning system has important differences from traditional learning systems. In a traditional system, the focus is an academic hierarchy located in a physical location. Information flows from the top down. Students, the recipients of learning and at the bottom of the hierarchy, have had little power or agency. The perspective of Distributed Cognition situates the learner at the center of the learning phenomenon, with power, agency, and control over their learning. This is epitomized by MUVE learning.
The MUVE Learner

This new student is a whole being (mental, emotional, spiritual, and social) whose experience of learning is guided by multiple intelligences and fueled by his or her own yearnings, preferences, intuitions, and imagination. Learner agency is at the core of this model. This learner has power and independence in learning. This means that it is the student who ultimately holds accountability and responsibility for learning. Within this view, the instructor is no longer understood simply as a dispenser of knowledge but rather as a midwife and mentor to learning—a creator, protector, and guide for the learning crucible.

This student, epitomized in MUVE learning, has three fundamental characteristics that set him or her apart from traditional students. First, this student is engaged in whole learning. Second, this student comprises multiple intelligences through which he or she processes information and learns. Third, this student has power and agency, in contrast to his or her disempowered role in the traditional learning hierarchy (see Figure 2).

Whole Learning

Whole learning theory posits that students engage in learning with their whole being. No longer considered just a mental process, learning is now understood to be profoundly affected by students’ physical, mental, and emotional being.
Learning is thus mental, emotional, and physical, truly a mind-body-spirit experience. MUVE learning epitomizes this.

The MUVE learner engages learning not just as a mental activity but also as a physical, emotional, and social activity. Avatar bodies move around the virtual environment, running, flying, touching, as a part of the learning process. The physicality of the virtual environment feeds the learning process. Similarly, in interactions with other students, learning is both a social and an emotional process in which emotion informs thinking as thinking informs emotions. The MUVE learner is a whole learner.

The MUVE Learner: Multiple Intelligences

The MUVE learner also embodies emerging ideas about what intelligence is and how it is engaged in learning. In the past, intelligence was presumed to be a unifocal concept that varied little from person to person. Students were all taught the same way because they were presumed to be cognitively essentially the same. Recent developments in thinking about intelligence are epitomized by Howard Gardner’s Theory of Multiple Intelligences, which describes nine primary types of intelligence that present differently in different people (see Figure 3). Each person has a constellation of primary intelligences. One student’s intelligence profile is different from that of another student. This has profound consequences for the ways in which students learn (Gardner 1999).

Imagine a classroom with the following students: one who speaks three languages, a gymnast, a Buddhist monk, a cellist, an artist, and a nurse. The primary intelligence that informs each of these is students likely quite different. How they learn may be radically different. The nurse may learn best interacting with others. To best process information and learn, this person may actually require interpersonal interaction. The artist may not need such action but may need to draw or work in three dimensions to understand a difficult concept (are you a person who has to diagram something to understand it? You can relate). The gymnast may tune out of a class in which he or she is required to sit immobile in class for long periods of time. If permitted to move around the classroom while listening, his or her learning may improve significantly. If the cellist comes to class and there is music playing, the music may prime the pump of his or her learning.

Talking Story: Drawing upon the Multiple Intelligences of Students

Two students taught me that teaching with a particular student’s primary intelligence in mind can make a big difference. I was in the hospital with a student
nurse at the bedside of his patient. The student was performing a procedure for the first time. I was walking the student through the procedure and, as a matter of course, asked a question about the next step. The student froze. It was the deer in the headlights moment that students dread. I happened to know that the student was a basketball coach and inferred from this that he might have strong kinesthetic intelligence. I asked him to close his eyes and dribble a basketball in his imagination. In a second, his eyes flew open and his face lit up with a grin. “I know what to do next!” he exclaimed and went on to accurately answer my question. Drawing on his primary intelligence helped when he got stuck.

Another student stopped me after a class I had taught on multiple intelligences. She was a quiet and reserved nursing student, usually somber in appearance and scholarly in her academic work. When she approached me, however, her eyes were dancing and she was clearly delighted. She said, “I understand how I think now!” She went on to explain that she had always thought in terms of formulas and equations; it was how she approached everything. This disturbed her because she was in an academic program that often emphasized
interpersonal skills. This discrepancy in skills troubled her, but knowing that mathematical intelligence was her primary intelligence made her appreciate her own way of understanding the world.

Traditional teaching does not usually enlist the whole range of intelligences that Gardner suggests are represented in students. The intelligences represented by art, music, physical movement, interpersonal interaction, nature, and emotions are usually not considered primary and important means for teaching students. Teaching methods too often focus on a narrow range of intelligences, typically mathematical and linguistic intelligence (reading, writing, and arithmetic). The classical education of the past, which included music, athletics, and art, has in most cases succumbed to financial pressure and at best is considered optional. Students are taught with methods that address a narrow range of intelligences. Highly intelligent students may be handicapped if there is a mismatch between the intelligences the instructor uses to teach (math, linguistic) and their own (spatial, kinesthetic, etc.).

MUVE Learning: Multiple Intelligences Applied

MUVE learning activates a wide variety of the intelligences described by Gardner. In a MUVE learning activity, students are, first of all, in a body! To participate in a MUVE learning activity, a student inhabits an avatar body that walks, talks, flies, and interacts with other students. Learning activities take place in complex, stimulating, and often beautiful natural environments that include both visual and auditory stimulation (a sunset, the sound of water, wind, music). Much of the learning that occurs involves other students, and often emotional engagement is a part of the activity. Such rich environments activate many intelligences at once. When this happens, a wider variety of learners engage in rich and effective learning.

The MUVE Learner: Student Power and Agency

Traditionally, students held a low position on the academic totem pole. Instructors held most of the power and students the least. Within this system, learning was dispensed in the form of course grades “given” and degrees “conferred.” Philosophically speaking, education was a paternalistic system in which students had little autonomy beyond their ability to follow rules made by others.

In stark contrast is the concept of student agency. Agency in a sociological context refers to capacity to initiate action in the world. Student agency refers to the capability of students to direct the course of learning. The student is not being acted upon as an object but instead is the primary driver of the learning
process. In a MUVE setting, students have agency for learning. They function within the MUVE as autonomous learners, applying what they have learned and manifesting it creatively into demonstrable performance outcomes.

The MUVE Learning Environment

The MUVE environment is rich and realistic, and it helps students envision application of their learning in settings similar to those where learning will be applied in the future. Figure 4 reflects this as the student’s local environment is extended into the global environment through the use of an Internet platform. Through its use, students can reach beyond their local environment to connect, interact, and learn with students in a global community.

MUVE Learning in Relationships: Social and Emotional Intelligence in Learning

In the traditional paradigm of learning, humans were considered to be thinking beings who also have emotions. The relationship between thinking and feeling was presumed to be antagonistic. To think clearly, a person had to isolate emotions, which were assumed to have a contaminating influence on logical and analytical processes. Current neuroscience findings contradict this assumption. Analysis of brain function using functional magnetic resonance imaging
and other technologies has revealed that learning integrates many forms of perception, including emotional perception.

The Theory of Multiple Intelligences reflects a complementary, not antagonistic, relationship among types of intelligence. Musical intelligence now is understood to complement mathematical intelligence. Interpersonal intelligence works hand in hand with linguistic intelligence. The emotional currency of interpersonal and intrapersonal intelligences is now understood to provide important value to cognition and learning. Some theorists have gone so far as to suggest that all effective learning has a strong emotional element. MUVE learning uses interactions among students, patients, and professionals that have emotional content (see Figure 5). This interpersonal engagement and the intrapersonal reflective process that accompanies it in MUVE learning effectively draw on social and emotional intelligences that support learning.

MUVE Learning: Society and Culture

Many social media platforms, including MUVEs such as Second Life®, share characteristics of a Third Place, and these characteristics contribute to rich and collaborative learning experiences. The fun, socially leveling, and accessible characteristics of learning activities in MUVE contribute to a socially rich, interpersonally rewarding, energizing experience that positively affects learning. Regulars mentor newbies, and the informal, collaborative, and conversational
tone of learning with “the group brain” supports learning that is effective, energizing, and creative (see Figure 6). This may result in improved transferability of MUVE learning into professional practice.

**MUVE Learning Dynamics**

This chapter has identified the philosophical framework for MUVE learning, reviewed important characteristics of the MUVE learner at the center of the MUVE learning experience, and described the important interconnectedness of the MUVE learner with the environment, other people, and vehicles used for interaction between them. This chapter will now conclude with a brief description of learning dynamics that fuel the MUVE learning system: experiential learning, simulation, and imagination.

**Society and Culture: Situated Learning**

When learning is situated, it is a function of the activity, context, and culture in which it occurs. In other words, learning is most effective when it occurs as an actual activity in a specific context, connected to the culture and social context that are appropriate for the learning activity. MUVE learning epitomizes situated learning. A MUVE learning activity that focuses on grieving
may require students to interact in a virtual hospice environment with a grieving patient. The performance outcomes for the activity can require that the student demonstrate in his or her interactions with the patient an awareness and responsiveness to the patient’s culture and social position. The activity itself is in a context that is appropriate to the topic, in this case a hospice facility, in which the student is engaged in interaction with a person who is grieving. In this way, MUVE learning situates learning in the contexts, social dynamics, and cultural environments most appropriate for the learning.

Learning as a Social and Cultural Phenomenon

The MUVE as a Third Place

In the 1990s, urban planning theorist Ray Oldenburg formulated the notion of three primary cultural “places.” The First Place is the home; the Second Place is the workplace. The Third Place is the important place where people connect in low-pressure, fun, recreational, homelike places in which community life is anchored in informal, shared experience. These Third Places are considered creative, formative social locations that play a crucial role in community well-being. According to Oldenberg, Third Places share particular characteristics. They are neutral ground and are accommodating and socially level. Third Places have a playful and conversational mood, as well as a home away from home feeling. Such locations are unostentatious physically, usually homey, and easily accessible, and they have regulars who maintain a friendly culture and welcome newcomers (Oldenberg 1999). See Appendix 1.

Experiential Learning in MUVEs

Learning in a MUVE is fundamentally experiential. Experiential learning theory describes student understanding as a recurring cycling of four steps: concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb 1984; see Figure 7). Most MUVE learning activities routinely include all four of these steps. A student in a MUVE learning activity could, for example, have a discussion with a virtual patient to assess his or her knowledge about an illness. This is an example of a concrete experience. After the conversation, the student reviews a transcript of the interaction. The student reflects on what went well and what did not (reflective observation). The student could then review course content and theories about communication, using this information to make plans to improve his or her skills (abstract conceptualization). In a follow-up activity, the student can try new behavior to improve upon
his or her previous performance (active experimentation). The cycle continues as the student has new concrete experiences and continues to reflect, use theory, and further improve performance.

### Simulation Learning

One teaching method that exemplifies experiential learning is simulation learning. Simulation learning has been used for decades, in professions as widely different as aeronautics and health care. With advances in technology, the sophistication of learning simulation has advanced, and simulation labs of a variety of levels of sophistication are now a part of every health care education program. High-fidelity simulation, defined as simulation that most closely resembles reality, has become increasingly popular in health care in general and nursing education in particular. Some research supports the usefulness of this form of learning, although evidence for the transfer of learning into the clinical environment is not yet well developed (see Figure 8).

Computer-based simulation has been a part of health care education for decades and has gradually increased in sophistication. Learning scenarios, clinical decision-making scenarios using artificial intelligence, and even psychomotor skills such as cardiopulmonary resuscitation and advanced life support skills are used widely. One advantage of Internet-based simulation is its ability to provide learning activities for individuals who either do not have access to
high-fidelity simulation labs or are limited in their use of available ones. Online learning simulation can also greatly enhance online learning and add an element of application and contextualization to this medium.

MUVE learning is a form of computer-based learning simulation. MUVE learning offers many of the same positive benefits of high-fidelity simulation but also offers some things it cannot. Distance learners who do not have access to a simulation laboratory can benefit from MUVE simulation learning activities. Online courses can similarly incorporate benefits of simulation (SIM) without the geographic necessity and cost of SIM activities. Last, even the best of SIM laboratories can offer students only periodic SIM learning activities, whereas MUVE learning activities can be used weekly.

Computer technology and Internet tools specifically do not simply provide improved technical tools for doing the same things we have been doing all along. Changes in communication technology have far-reaching consequences rooted in their impact on people’s imaginal capacity. Consider the evolution of writing—from pictograms scratched on a cave wall to cuneiform characters on clay tablets, to calligraphy on parchment, then later to the earliest printing presses, and then from typewriters to word processors (whiteout to spell check!). What an evolution in the technical means for conveying ideas. Far more is happening, however, than the simple transmission of ideas from one person to another. For example, sociologist Benedict Anderson describes that when newspapers became widely available, something profound happened
socially. People could read about the lives of people not only in other parts of their own country but also across the globe. This newly imagined residency in a shared global community that transcended geography, time, and national boundaries shifted perspective in many ways. Citizenship was no longer just national but global. People’s humanity was expanded, in what Anderson called “deep horizontal comradeship” with others vastly outside their own local experience (Anderson 1983). Through the new media of paper, print, and electronic words, something that was not real became real in the lives of those who used them. This way in which a development in technology facilitated a change in the imagination and imaginal capacity of people was a harbinger of the same type of change observed with the advent of the World Wide Web.

Multi-user virtual environments are worlds where many people from across the globe share residency in a place that similarly transcends geography, time, and national boundaries. This offers the potential for a similarly profound influence on people and learning. In a MUVE, face-to-face interactions happen through the shared habitation of the virtual world. The people behind the avatars both influence and are influenced by each other in ways that shape understanding, experience, and meaning in new ways. There is the potential for imagination and imaginal capacity to lend their power to learning activities through these exchanges (see Figure 9).
In this way, the meaning of the word “virtual” has shifted from its traditional definition (something that is not quite real) to one that reflects simply activity that occurs online. Using this definition, virtual activity is, in fact, as real as anything else that humans do. The technology involved does not determine the reality of what it is used for. Using a virtual medium does not make learning real or unreal. It is the intention of the human using the technology that renders it real or not. In this way, virtual learning is simply learning that occurs online.

Reader’s Roadmap: Where Are We?

This concludes the description of the theoretical and conceptual foundation for MUVE learning. Chapter 2 will describe the history and evolution of MUVE learning.

CHAPTER REFERENCES