



Metaverse-Based Instructional Settings: Matters That Matter

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Teaching in the metaverse can present challenges. Most are unrelated to technology.

A few years ago, such a scenario (see “Mornings in the Metaverse”) and most of its elements would have been science fiction. Today, however, similar scenarios are either already possible or soon will be. While scientific and popular literature about VR and metaverses, such as this, is abundant, much of it focuses on enabling technologies. Few works focus on other related and sometimes even more critical nontechnology matters. This article discusses some issues related to metaverse-based instructional settings.

TECHNOLOGY AND METAVERSES

The technologies enabling Caroline's fictionalized metaverse are well documented. There are too many to explore in this article, but an excellent overview can be found in an article by Faraboschi et al.¹ However, even with these technologies, we are still far from generating genuinely representative worlds in which realistic avatar images can function as humans do

in the real world. For example, most would agree that the graphical portrayals of today's metaverse worlds are not significantly better than the

original *Second Life* worlds² that preceded them, and avatar images are still works in progress. A recent example, reported by *Forbes*, is Mark Zuckerberg's dissatisfaction with his own company's rendition of his avatar.³

Let's focus on the hardware essential for metaverse travelers—headsets. A Google search lists a broad range of these for currently available metaverse platforms. Are there drawbacks to their use? In particular, are there health drawbacks?

Regenbrecht et al.⁴ discuss health and safety concerns of headset use for both augmented reality and VR. They warn about problems of perceptual distraction and blind spots, ergonomics, and the long-term effects of exposure. Indeed, it seems that the jury is still out on this matter, especially when many headset models warn against their use by children (students) younger than 12. (See, for example, “Is VR Bad for Your Eyes?”⁵)

Stepping back and focusing on broader technology-related issues, let's think again about the virtual classroom that Caroline, her classmates, and Mrs. Robinson inhabit. Is this plausible today? A Google search on the keywords “education” and “metaverse” generates

MORNINGS IN THE METAVERSE

Hey, wake up! It's 7:30 a.m., and you'll be late for class! Also, be sure to take your vitamins!" yells Caroline's virtual reality mentor (VRM).

Caroline slowly rolls out of bed, washes up, takes her daily vitamin pill, pours some coffee, and dons her Meta Quest VR headset. Instantly, her avatar is sitting at her classroom desk surrounded by 30 other classmate-avatars shuffling around and doing what students usually do before a class is called to order. Some are adjusting their makeup, others are reviewing the highlights of last night's sports events, and a few in the back of the room have their heads on their desks, napping!

Suddenly, Mrs. Robinson, the first-year college history class instructor-avatar, appears at the front of the virtual classroom and shouts over the din, "Quiet everyone! I hope you all read the WebWorld document about the history of Rome that I created for you to read before today's class. I know that most of you

hardly read anything anymore, but I spent a lot of time putting that together. So now settle down, watch the screen, and tour the Roman Forum as it was in 44 B.C. Then, open this eBook I've selected for you when your tour is done." A document icon appears in each student's headset's field of vision (FOV). "Look at the contents of page 38, so we can discuss the politics of Rome during Julius Caesar's time."

Caroline touches the "Enter Rome" button at the center of her FOV, and her VRM gives her a personalized tour through a 3D rendition of the Roman Forum, circa 44 B.C. After a few minutes, she leaves the "city," reaches for the document icon "in front of her," and turns to a virtual rendition of page 38 in Shakespeare's play *Julius Caesar*. While she reads Act III, Scene i, other VRMs provide other students with alternative renditions of Caesar's assassination in different audiovisual (A/V) formats, each appropriate and specific to its student's "learner profile."

almost 1 billion hits! Interest in this topic is widespread and growing. Major technology players, such as Alphabet (Google), Meta (formerly Facebook), Microsoft, etc. have vast funds to spend (waste?) on long shots. However, there are still few comprehensive educational metaverse platforms available for educational institutions to license for classrooms like Caroline's—if the funds were available.

One notable example is the Canadian company Edverse (<https://edverse.ca>), which claims that "Edverse is a magic virtual educational world [that] allows teachers to create their own environment." This platform and others discoverable in the Google search attempt to "offer a path for bringing best educational practices into the metaverse," as described in the Brookings Institution's Center for Universal Education policy brief "A Whole New World: Education Meets the Metaverse."⁶

Even then, can the metaverses of today and the near future meet the educational needs of a society whose students' math and reading skills have regressed so much from the pandemic? (See, for

example, the CBS News report "The Results Are Sobering: Math, Reading Scores See Decline Amid Pandemic."⁷) With educational priorities and economics constantly shifting, a significant drawback to educational metaverse adoption is that the keystone of their use, high-quality-model VR headsets, can be very expensive. With that in mind, think about the costs to education systems wishing to deploy educational metaverses. When will Caroline's educational ecosystem become a practical reality for budget-strapped education systems? Not very soon, probably.

OTHER METAVERSE MATTERS

Regardless of the technologies, expensive or otherwise, complex scenarios can rarely be implemented as easily as Caroline's virtual one seems to be—and sometimes, it's not technology that's to blame. Consider Shakespeare's advice to "kill all the lawyers"⁸—usually cited when legalities obstruct and confound well-intentioned plans. Let's examine two potentially problematic elements that might be barriers to realizing

Caroline's metaverses. These are the matter of intellectual property and the matter of privacy—both issues that mainly reside in the realm of legality.

INTELLECTUAL PROPERTY

In the metaverse scenario described previously, Mrs. Robinson directed her class to read the WebWorld document she created and distributed, take a virtual tour of ancient Rome, and access textual and A/V material regarding a published Shakespearian play. This begs the questions: Where did all this material originate from? Did Mrs. Robinson have the legal right to incorporate/distribute some or any of these materials in her class?

Fair use

Most educators believe that they know all about "fair use." If you're sure you do, you might want to rethink this after you peruse the *U.S. Copyright Office Fair Use Index*.⁹ Here are the four main factors constituting fair use:

1. "Purpose and character of the use, including whether the use is

of a commercial nature or is for nonprofit educational purposes”: Educators, maybe even Mrs. Robinson, typically justify classroom use based on this factor. However, this description states: “Courts will balance the purpose and character of the use against the other factors.” Therefore, educational/classroom use alone does not qualify content as fair use.

2. “*Nature of the copyrighted work*”: This factor states, “Using a more creative or imaginative work (such as a novel, movie, or song) is less likely to support a claim of fair use than using a factual work (such as a technical article or news item).” In this case, a claim of fair use is more problematic when particular kinds of materials are used/reused (without the originator’s agreement).
3. “*Amount and substantiality of the portion used in relation to the copyrighted work as a whole*”: This factor states, “Some courts have found use of an entire work to be fair under certain circumstances. And in other contexts, using even a small amount of a copyrighted work was determined not to be fair because the selection was an important part—or the ‘heart’—of the work.” How much constitutes “even a small amount”? Did Mrs. Robinson use a lot or a little of some of the material assigned to the class? The resolution of that question remains a matter for the courts!
4. “*Effect of the use upon the potential market for or value of the copyrighted work*”: This factor is explained as “whether, and to what extent, the unlicensed use harms the existing or future market for the copyright owner’s original work.” Using Shakespeare’s published play probably no longer harms its

future market since its real market opportunity disappeared 200–300 years ago. But we don’t know anything about what Mrs. Robinson “harvested” from the WebWorld to create her hand-out. Of course, we are assuming that the tour of Rome was used under a license that she or her “real” school executed with its actual copyright holder.

The notion of fair use is more complex than most instructors appreciate. It was also more complicated than Kinko’s Graphics Corp. (acquired by FedEx in 2004) realized until 1991, when they settled a lawsuit of almost US\$2 million (nearly US\$4.5 million today) brought against them by eight textbook publishers. The publishers objected to Kinko’s claim of fair use after Kinko’s photocopied their texts without permission for inclusion in classroom handouts.

Fair use seems relatively well defined for “real-world” environments—until it is adjudicated in a court of law. Do current fair use principles also apply in metaverses? To be clear, it’s possible (but not likely) that you will find guidance in the 478-page *Copyright Law of the United States and Related Laws Contained in Title 17 of the United States Code*.¹⁰

Open educational resources and Creative Commons

Creative Commons (CC) may provide more practical guidance. Created in 2001, the six CC licenses “allow authors of creative works to communicate which rights they reserve and which rights they waive for the benefit of recipients or other creators.”¹¹ While not explicitly created for World Wide Web (or metaverse) materials, they have become the de facto licensing standard for open educational resources (OERs).

The concept of OERs was defined in 2019 at a United Nations Educational, Scientific and Cultural Organization (UNESCO) conference as “learning, teaching and research materials in any

format and medium that reside in the public domain or are under copyright that have been released under an *open license* [italics mine], that permit no-cost access, reuse, repurpose, adaptation and redistribution by others.”¹²

Over the years, OER licensing has come to be associated with CC licensing—in particular, CC BY, which is the (least restrictive) license that “allows reusers to distribute, remix, adapt, and build upon the material in any medium or format, so long as attribution is given to the creator. The license allows for commercial use.”¹³ Note that the use of CC licenses, per se, in the definition of OERs was not a part of the original definition.

Another aspect of OERs that has evolved is that of no-cost access to materials. Originally, this meant one could access, at no cost, materials on the World Wide Web. It did not mean that the materials were free. However, this has morphed into materials being free of charge. This change is reflected in UNESCO’s recent (July 2022) posting:

“OER are defined . . . as learning, teaching, and research materials in any format and medium that reside in the public domain or are under copyright that has been released under an open license, that permit *no-cost access* [italics mine], re-use, re-purpose, adaptation and redistribution by others.”¹⁴

In many ways, OER and CC licensing have replaced fair use as a poorly understood rationale for finding, using, and reusing online materials discovered on the World Wide Web. Like fair use, legal recognition of CC licenses varies, depending on . . . well, you can’t always be sure. (See “Creative Commons in Court” for a discussion and examples of the context in which CC licenses have been viewed in courtroom proceedings.¹⁵) Once again, will those real-world instances be legally relevant in metaverses?

What kind of guidance can all this provide to Mrs. Robinson and other instructors who need to use/reuse/distribute instructional materials in electronic worlds? Can reliance on fair use,

they will be. However, another category of issues that will continue to be more challenging is protecting student privacy/data. Despite the apparent need to access such data to build each student's

hope that if Mrs. Robinson's avatar is a good instructor, both she and her avatar receive good student evaluations.

So here's to you, Mrs. Robinson! **C**

Clearly, this kind of mentor-guided instruction would be ideal in educational metaverses of the future, where every learner might have an assigned personal avatar-mentor.

CC, and/or OERs give Mrs. Robinson unequivocal guidance on how to use learning materials in the metaverse? Maybe, or maybe not!

PRIVACY

When “e-learning” was first conceptualized more than a half-century ago, its utopian future was predicated on the notion of “individualized learning.” This meant that, for any instructional objective, the pace and content of a student's (electronic) instruction would be different than every other student's. Student-to-student differences would be based on student “aptitudes” or learning profiles.¹⁶ Those profiles would be built from different aspects of an individual's abilities, even their physical characteristics and personalities—for example, math and reading ability or even perhaps, in real time, heart and pulse rate, etc.

In Mrs. Robinson's tour-of-Rome assignment, each student received a different kind of tour. While Caroline did read page 38 of the play, other VRMs provided other students with alternative renditions of Caesar's assassination in different A/V formats, each appropriate and specific to its student's “learner profile.” Clearly, this kind of mentor-guided instruction would be ideal in educational metaverses of the future, where every learner might have an assigned personal avatar-mentor.

To provide this kind of instruction, many technical barriers will have to be overcome—and probably, over time,

learner profile, legal considerations will once again probably generate barriers to such access. Some (most?) of those barriers are defined in the Family Educational Rights and Privacy Act and the Protection of Pupil Rights Amendment.¹⁷ While these laws do protect student and family privacy, they will also present significant barriers to our ability to create individual student learning profiles that could ensure the success of metaverses such as Caroline's and Mrs. Robinson's.

Finally, since teaching in a metaverse is very different from real-world teaching—at least for now—how should such instruction be evaluated (by students or institutions) compared to real-world education? An unfortunate aspect of student evaluations of instructors in postsecondary institutions is that their reviews are often independent of the quality of the instruction and instructors. Students may or may not like an instructor's appearance, clothes, or even height and weight, and base their reviews on such (usually) irrelevant matters. What happens when the instructor is an avatar in a metaverse, and the avatar does or does not match up very well to the real-world instructor? Mrs. Robinson may have had a rough night before she called her class to order that morning. She may even still be “imbibing” in the morning—or every morning! Will her avatar reveal these kinds of behaviors to her reviewing students? Let's hope not. Let's

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