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Dawn of 5G: Empowering VR, AR and Much More

The enormous potential of virtual and augmented reality will be enabled through the wide-scale rollout of fifth-generation mobile bandwidths.

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Technologies are converging to bring about a wholesale upgrade of online learning through the adoption of virtual and augmented reality. The pivotal development will be the wide-scale deployment of 5G bandwidths to support VR and AR protocols and devices.

The enormous power of VR and AR requires not only a high-download bandwidth, but also a low latency -- the time between a request and the response. Current 4G connections often sport a latency of 50 milliseconds (ms) or more. Sol Rogers in *Forbes* [writes that more than 20 ms can cause nausea in those viewing VR:](#)

With 5G's sub-5 or sub-2 ms latency, the user experience will be amazing. In other words, it will be smooth and natural. As VR is all about immersion -- feeling like you are in the immersive virtual environment -- this is incredibly important. The benefits will be felt by many industries using VR -- from healthcare to entertainment.

At the same time, the speeds of 5G will soar above the 4G top rates of about 1 Gb/S to up to 20 Gb/S. That, of course exceeds many currently installed

local area and Wi-Fi networks on campuses across the country. Imagine, for the first time, distant learners will have connectivity equal to or exceeding those on campus.

It is clear that 5G will be able to hurdle the standards required for seamless and spectacular virtual and augmented reality. The nature of online learning in its present format can once again radically change. We will be engaging activities, places, simulations and real-life situations well beyond the two-dimensional online presentations of the past. This will take us a long way from the text-intensive and low-resolution videos and PowerPoint into an immersive world without bounds.

In many ways, widespread deployment of 5G will enable online learning to leapfrog the traditional classroom in providing meaningful, realistic and impactful engagements for learners at a distance. Providing simulations and real-life engagements to students will take the learning field virtually outside the classroom and directly into the workplace and the world, from subatomic spaces to outer space. In addition to an assortment of reality formats reaching unlimited locations, 5G will enable even more robust-sized, larger group discussions than we have been able to support in the past.

The prospect of the instructor and entire class connected via ultra-high-speed, low-latency mobile connections opens a host of possibilities. These possibilities will emerge just as quickly as the 5G network rolls out -- the availability will vary depending upon the smartphone you are using, the network to which you are connected and your location. While 5G is already in use in some selected areas today, more general use of the enhanced network will continue to grow throughout 2020 and 2021, with substantial saturation likely following that. One can anticipate that the access issues of today will melt away over the next two years in this country, though some rural sections

of the U.S. and foreign countries are expected to take longer for full deployment.

Of course, as with all technologies, there will be advantages and challenges. In education, [the advantages seem to far outweigh the disadvantages](#). The potential of [enhanced video, full-featured VR platform adaptive learning, personalized learning and much, much more could be realized](#) through this high-performance mobile network.

Early concerns over [any health threat from the lower power but higher frequency 5G signals largely have been dispelled](#). While the health risks of 5G signals cannot be proven to be zero, [the Live Tiles report includes this assessment](#): “The Australian Radiation Protection and Nuclear Safety Agency’s Dr. Ken Karipidis said last year, ‘The only established health effect [of radiofrequency radiation] is that of rising temperature,’ and cannot cause cancer.”

The 5G industry has incentives to advance early adoption of the network and technologies among universities. [Peter Lindor of Ericsson points out](#), “Network operators and businesses have realized there is little room for 5G fast-followers. The 5G revolution can only be sparked by striking out early and fostering innovation -- and colleges and universities are the perfect place to do that.”

Fifth generation is already deployed in scores of cities across the country. Fueled by competition among the network providers, the build-out is progressing in rapid fashion. A majority of our learners will likely have access to 5G networks within two years. At that point we all should have completed our experimental tests utilizing the technology and be prepared to compete online via 5G.

Is your university preparing to take advantage of the low-latency, high-bandwidth potential of 5G? Who is planning for the implementation of a mobile strategy that includes 5G? Will competing universities get to the starting line ahead of you -- reaching those eager learners with shiny new 5G phones ready to capitalize on their greater-than-gigabit/second mobile connections? How might you make use of that connectivity to enhance your online/mobile-friendly curriculum?

Read more by [Ray Schroeder](#)

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