

# Innovation in Learning Spaces: How We Are Reinventing the Classroom

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The past millennium has witnessed a myriad of technological changes, and there has been exponential growth in the same over the past century. Yet the design of the classroom has changed relatively little over the same time period. The classroom of Aristotle was organized more or less in the same fashion as that of Thomas Aquinas or Einstein. This design emphasizes the so-called “sage on the stage” model where a lecturer addresses an auditorium of students who are expected to listen, absorb, and retain this knowledge. The model continues to be the staple of pedagogical practice in the 21st century. Although the sage-on-the-stage model still dominates, there is a great deal of research suggesting more efficient and effective ways of imparting knowledge.

A number of alternative pedagogical approaches were developed throughout the second half of the 20th century. By using big data, large samples of students, and online learning platforms, researchers have been able to prove many hypotheses developed in earlier research on teaching practices and open up new frontiers on pedagogy. In particular, MOOCs, or [Massive Open Online Courses](#), are starting to redefine what constitutes good pedagogy and how we view education more generally.<sup>1</sup> These revelations include new insights about active learning, tailoring learning material to students, and using scale to improve the prospects of peer learning.

The use of new technologies and the internet to provide education has many advantages related to scale. For instance, niche courses become more practicable as their potential audience increases beyond the immediate geographic area to an entire province or the world at large. This opportunity to scale up helps increase access to education for students, improve the financial sustainability of higher education more generally, and increase the availability of course offerings.<sup>2</sup> Digital education and blended learning are being used in tandem to explore exciting new frontiers in the world of higher education, which are sure to change how subsequent generations are educated. At [Université Laval](#) for instance, roughly 40 per cent of students in 2015 had taken at least one of their courses online. Furthermore, some of Laval’s degree programs have an online option for over 95 per cent of their courses.<sup>3</sup>

While some are leading the way by reinventing the classroom in the digital space, others are reinventing the classroom’s physical space. McMaster University is a rising hub for scholars, technicians, researchers, and students who are trying to redefine the classroom space with 21st century technologies. In addition to hosting the McMaster Institute for Innovation and Excellence in Teaching and Learning (MIETL), a recognized leader in the field, the university has empowered its experts and staff to collaborate and take an active role in encouraging further

innovations in classroom pedagogy. The result has included pairing geographers and doctors of education with audio-visual experts, psychologists, and the school of business, as well as bringing engineers, the registrar, and graduate students all into the same fold.

This cross-disciplinary approach has brought about multiple successes that feed off of one another. For example, a McMaster professor of engineering developed a new type of computer screen interface that he sought to commercialize through [McMaster Innovation Park](#), the university's research park.<sup>4</sup> This innovation was identified by McMaster's Learning Space Development group as having great potential as a cutting-edge learning display, and the first batch of this new invention was bought by the Learning Space Development team and installed in an experimental classroom setting. The invention had found its first market—a crucial step in research commercialization and one that increased the overall viability of the new invention.

University research and teaching environments have greatly benefited from these innovations. Researchers from the university observed how professors and students interacted with the new tool and the redesigned classroom space, and subsequently used these observations to revise, alter, and innovate with the layout of the pilot classroom. These lessons were then adopted into the new building plans at the university's Hamilton campus, spreading this cutting-edge design even further and reaching greater numbers of students. Furthermore, much of the raw research data was incorporated into the thesis of a graduate student involved in the new classroom project, ultimately joining the body of scholarly academic research on the subject of classroom innovation. Put otherwise, in addition to working toward an enhanced learning and research environment for its students, McMaster has also developed its own innovation cluster based on research and development of learning technologies and classroom innovation.

Getting to this point has come with some challenges. Many professors encountered difficulty adjusting to new classrooms oriented without a “front,” or a “stage for the sage.” Others would adopt traditional practices to this new environment, using a multitude of learning interfaces to project the same lecture slides, or relying on a single interface to engage with students. This has made professor engagement in new learning technologies a major barrier to be overcome. Rather than try to “convert” professors to new pedagogy and technologies, the focus shifted to selecting and engaging professors who were most likely to take advantage of the classroom's technological assets and non-traditional orientation, especially considering the limited number of technologically enhanced classrooms.

A recurring theme of McMaster's remarkable successes in classroom innovation is the centrality of strong coordination and collaboration. For one, technologically enhanced learning has required an immense amount of inter-office coordination and interdisciplinary collaboration—whose success was far from certain in its early stages. The initial solution to the problem of poor coordination came from an unlikely place: the registrar, an office that may see its importance grow in the future. Similar lessons can be drawn from the digital classroom innovations at Université Laval and the [OntarioLearn](#) consortium, both of which employ enhanced centralized coordination as well. If one thing is clear, it's that the new age of classroom learning depends on cooperation, coordination, and collaboration; the organizations that do this well will find themselves at the forefront of higher education.

## Acknowledgements

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Mark Robbins will also be hosting a webinar for The Conference Board of Canada to explore the challenges and opportunities of online learning on June 16. [See here](#) for registration and more details.

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