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The Material Grounds of Digital Learning: Towards a sensory rich and extroverted online learning experience.

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In this past 1.5 year and in all levels of education, we got used to talking about digital and analogue means, online and on campus learning environments, the physical and the virtual. And by doing so, we often embraced these dualities and occasionally forgot that there is always a physical environment that supports the digital one, there is always a hardware that supports the software, a non-digital infrastructure that grounds digital learning. In *Material Grounds of Digital Learning* presentation, I talk about the importance of taking these material grounds into consideration, of re-imagining them and reintroducing them in the design of digital learning.

Year 1 of Architectural education is often designed as a foundation year to design studies. Students are introduced to design learning, which presupposes learning by doing and by watching others do, by exploring and by experimenting, in addition to more 'traditional' modes of learning, like library-research or by following teacher's advice. All these activities are hosted in various physical environments, but there is one of seminal importance for students of architects, the design studio.

In a typical year in architectural studies, students and tutors *dwell* in design studios.

They come in the morning, meet and greet their peers, lay their tools, organise material resources and design outputs, run late to a lecture or seminar, return to meet friends, share a snack, exchange notes, email their teachers. In the same space students read relevant or not books and magazines, use their laptops, assemble their design work, listen to music, borrow a tool, produce models and drawings, brainstorm, demonstrate or put to test somebody else's idea, etc.

In design studios, creativity develops as an assemblage of very diverse learning and social instances, of continuous efforts and meaningful interruptions, of social and learning encounters, not all of which are scheduled or have learning value.

As such, the design studio is an expandable, adaptable, smooth space, a key learning environment for creative practices, and a threshold to other learning environments/practices, in and out of campus.

These messy spontaneous creative rituals struggled to fit in our Covid-safe prebooked studio-desks and timeslots, where students would track and trace their visit to campus, sanitise their working area and equipment, keep 2 metres distance at all times, work in a focused and productive manner for 2-3hours, and then go back home or to take a 15 minutes break in order to return to a recently ventilated and deep cleaned working space.

While our studios were safely and effectively re-arranged, Health and Safety routines seemed to be in battle with our creative ones.

In particular, and in the frame of design education, this past year:

- All messy studio activities needed to be personalised.
- Informal or unsupervised learning and social interaction was significantly constrained or needed to happen out of campus.
- The Development, Display, and Debate of creative work could happen on campus, but an online equivalent to the studio needed to be invented for remote, self-isolating, or trapped in circuit lockdown learners.

So, the hardest task we were given as design educators was to re-invent our creative patterns and rituals and by extension to re-orchestrate the spaces that support them, for both our remote and our oncampus learners.

And to do so, we started with a very basic question: if the design studio was no longer the ground zero for our messy and unpredictable creativity, and it was no longer the threshold to other learning environments, then which spaces would play that role?

For our remote, self-isolating or in lockdown learners, the first space of reference was their office or bedroom. And the threshold or portal to the rest of the learning environments, was Digital Education.

This presentation discusses how we equipped, enhanced but also challenged, expanded the constraining personal space of the self-isolating, remote or in lockdown learner, in Year 1 in WSA. Starting with the student's bedroom I talk about how we cherry picked local sites and invented walking itineraries, to preserve a sensory rich and creatively emancipating design curriculum. Through a set of hardware and software, peripatetic exercises and bodily explorations, sensing and analysing activities we introduced our students to their peers and to Cardiff city, and helped them explore it, sense it, study it, debate it. In this blended or augmented learning experience, Digital Education helped us orchestrate and connect all these learning instances and environments.

Last year, we came to appreciate and utilise Digital Education in our teaching, often in irreversible ways. But we also re-affirmed and appreciated that Digital Education is not immaterial at all. And there is an immediate pedagogical need/responsibility to reimagine, and reconsider its material grounds, especially in design learning.