

Sustainable & Responsible Design



Sustainable & Responsible Design is about creating healthy, thriving environments with plenty of fresh air, light and natural views to keep learners alert, positive and engaged while reducing costs and environmental footprint.

The **Microsoft K – 12 Education Transformation Framework** is an effective, flexible platform for education transformation. To develop it, we combed the latest research and consulted hundreds of academics, experts and policy makers. We distilled the key insights into a single powerful framework.

Intelligent Learning Environments empower creative collaboration in flexible learning spaces. It enables more sustainable and energy-efficient ways of working and more responsive and coordinated security to keep learning communities safe. It also helps administrators manage facilities more efficiently to maximize learning while cutting cost.



What is Sustainable & Responsible Design?

Cloud-based solutions can be used to monitor and automate heating and cooling, keeping classrooms comfortable and reducing energy bills. Use the Internet of Things (IoT) and modern analytics to reduce your energy consumption, detect and predict equipment faults, and optimize your facilities operation. Environmental lighting can even impact student achievement and learning outcomes.

Today's environmentally conscious stakeholders have increasingly high expectations that learning institutions are making wise use of our limited natural resources by using energy-efficient technology.

*"The bank was very impressed by the energy savings it achieved using Carnegie Mellon's dashboards and Power BI. It was able to reduce plug load energy consumption by 30 percent."*¹

Bertrand Lasternas

Researcher - Center for Building Performance and Diagnostics, Carnegie Mellon University

Guiding Questions:

- How can learning outcomes be improved through sustainable & responsible design?
- How can faculty and staff productivity be improved through sustainable & responsible design?
- How can cost savings identified through sustainable & responsible design be reinvested into enhancing learning environments?

Expected Outcomes

Energy efficient facilities and buildings tend to create an environment that is more comfortable, which means students, faculty, and staff are likely to be happier and more productive on campus. Comfortable conditions also contribute to an effective learning space.

Today's administrators and campus planners are looking to improve their grounds by augmenting more and more "smart buildings." These campus structures are specifically designed to make use of today's latest energy-efficient technology to help:

- Reduce energy consumption
- Predict and detect faults
- Reduce minor disasters
- Help you save money and go green

"With the FDD system, it is really easy to look at one floor plan and know what the problems are. I'm not in the building, but I know what's happening."²

Ruthy Bennett

Regional Energy Manager, Towns of Arlington and Bedford

Technology as an Enabler

The facilities management and energy efficiency solution helps you see in real time how your energy is being consumed.

Monitor your equipment status by collecting data through Azure IoT Suite, then transform this data into a standardized format for management and storage. Leverage Azure Machine Learning and Power BI for analysis and visualization, and anywhere access to reporting dashboards.

Use rules-based prioritization engines to identify patterns that precede equipment failures over time. This allows you to predict and prevent failures.

Further Reading

Primary school's energy management transformed by cloud-based insights.

Read full story: <https://aka.ms/lx26xv>

Carnegie Mellon University (CMU) wanted to improve building management and energy efficiency, so it implemented the PI System.

Read full story: <https://aka.ms/Gilo5v>