Saving Energy in College Computer Labs

Pilot studies conducted at SUNY Plattsburgh and Ithaca College

Research Objective

The purpose of the pilot was to influence students on college campuses to save energy by turning off computers and monitors in public computer labs before leaving the lab.

Background

Social psychological research has shown that people often change their behavior to align with the behavior that is perceived as the norm, or common behavior.[1,2] The normative influence is especially strong when the behavior is practiced by individuals who are considered similar to the target population.[3]

Behavioral Strategy: Social Norms

Social norms include both descriptive and injunctive norms. Descriptive norms are the common behaviors in a given situation. For example, if most people leave unused computers turned on in the computer lab after they are done using them, then the descriptive norm is "leaving lab computers on." Injunctive norms, such as rules or policies, refer to behaviors that are approved or sanctioned by a social group as the moral or right thing to do. When injunctive norms are not upheld by the majority, descriptive norms typically will have a stronger influence on behavior.

Pilot Description

In February and May 2011, two pilot studies were conducted in New York State to test the effectiveness of using descriptive and injunctive norms to influence students to turn off computers before leaving college computer labs. The first pilot was conducted at the State University of New York at Plattsburgh (SUNY Plattsburgh) and the second pilot was conducted at Ithaca College.

Preliminary research indicated three barriers to promoting conservation behaviors in college computer labs. First, students held the common misconception that putting a computer into sleep mode saves as much energy as turning it off. Second, leaving unused computers turned on was the descriptive norm in computer labs. Third, the practice of turning on all the computers when the labs opened in the morning and leaving unused computers in the "on" mode created an implied injunctive norm that leaving an unused computer on would be expected by the next user.

These prompt signs were put on the computer monitors in the pilot study at SUNY Plattsburgh.

Percentage of students in the Plattsburgh pilot that turned off computers before leaving the lab (target behavior) under each of four different conditions.

3%

Unused computers on and no signs posted (current practice).

2%

Unused computers on and signs posted.

12%

Unused computers off and no signs posted.

34%

Unused computers off and signs posted.

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Findings

SUNY Plattsburgh. The Plattsburgh pilot tested two behavioral interventions to influence the target behavior: (1) posting a prompt sign (the size of a business card) at the lower left hand corner of each computer monitor to remind students to turn off their computer and monitor before leaving the lab and (2) conveying a descriptive norm by keeping all unused computers in the off mode. These two interventions were combined in four different treatment conditions: (1) unused computers left on, no sign posted (the base or control condition); (2) unused computers left on, signs posted; (3) unused computers turned off, no signs posted; (4) unused computers turned off, signs posted. The most effective condition involved having the unused computers turned off with the signs posted. This condition aligned the descriptive norm of maintaining all unused computers and monitors in the off mode and the injunctive norm that students should shut down their computers before leaving the lab: 34% of the students in this condition turned off their computers before leaving (see graphic on the first page for the results of the four different conditions).

The most effective behavior change strategy to influence students to turn off their computers and monitors before leaving the lab was to bring the perceived social norm to turn off unused computers and the perceived school's policy into alignment.

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Ithaca College. The most effective condition from the Plattsburgh pilot was then implemented at Ithaca College. Unused computers and monitors were maintained in the off mode, and a sign was posted on each computer monitor to remind students to shut down their computers before leaving the labs. Maintaining this condition required modifying Ithaca College's standard practice, which had been to turn on all the computers and monitors at the beginning of each day. It also required the computer lab proctors to turn off all unused computers at the beginning of each two-hour shift. This condition maintained (at 2-hour intervals) the descriptive norm to turn off unused computers. The prompt sign maintained the injunctive norm that turning off unused computers was Ithaca College's policy. In the control condition (computers left on, no signs posted), 3% of the students using the computer labs turned off their computers. In the most effective condition (computers turned off, signs posted), 30% of students turned off their computers before leaving the computer labs. Note that in the Plattsburgh pilot, the most effective condition resulted in shutdown rates of 34%. The fact that unused computers were maintained in the off mode in real time (constantly) in Plattsburgh and only at two-hour intervals in Ithaca possibly explains this condition's greater effectiveness in Plattsburgh.

Conclusion

The Plattsburgh pilot demonstrated that sign prompts alone asking students to turn off their computers before leaving the computer labs will not significantly influence behavior; only 2% of students turned off their computers when the signs were posted but unused machines were on. This pilot demonstrated that to influence students to turn off their computers before leaving the labs, the injunctive norm and the descriptive norm of turning off unused computers need to be aligned. Implementing this behavioral strategy at universities and libraries statewide has the potential for significant energy savings and greenhouse gas reductions. For example, a campus with 20,000 students could save an estimated 1.4 million kilowatt-hours per year. According to the U.S. Environmental Protection Agency's 2012 online equivalency calculator, these energy savings are equivalent to the annual emissions from more than 200 passenger vehicles or the annual electricity use of 50 average American homes.

References

For a detailed description of this pilot research see Bator, R.J., Tabanico, J., Walton, M.L., and Schultz, P.W. 2013. "Promoting Energy Conservation with Implied Norms and Explicit Messages." *Social Influence* doi:10.1080/15534510.2013.778213

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