

Did You Send It?

The use of electronic mail (e-mail) by a pioneering community of scholars goes back to the mid 1970s, long before the World Wide Web (1993). Combining flexibility with almost instantaneous transmission of information to one or multiple recipients across a computer network, e-mail is a communication technology integral to today's academic life. Indeed, it enables extremely quick communication across borders, making collaboration between scholars and researchers easy, rapid, and almost cost-free. For example, by using the "attachment" function, a scholar could send a draft of a scientific article to a co-worker based in another continent. Feedback that once took weeks to receive via the national postal service can now be obtained in hours or days. Given the pervasive role of e-mail in today's academic life, it is important to use it judiciously.

In 2009, a seminal study correlated a large random sample of 3771 research-active life scientists from 430 U.S. institutions with a data set combining information on the diffusion of two early innovations, BITNET and DNS, in information technology (IT) from 1969 to 1993.¹ BITNET is a U.S. network of universities comparable to the Internet, and DNS is the hierarchical and decentralized naming system by which Internet domain names are located and translated into Internet protocol addresses. With electronic mail exchanged by networked computers, digital information is exchanged by the simple mail transfer protocol (SMTP) created in 1982.² The results of this study were revealing.

While established scientists did not benefit from the adoption of IT by their institutions, early to midcareer scientists experienced great advancement in the quantity and quality of research and collaboration. Notably, IT acted as an equalizing force, increasing the productivity of scientists at mid- and lower-tier institutions by giving these faculty access to colleagues and resources at top-tier universities and research centers.

Since 1993, progress in the uptake of rapidly advancing IT has been dramatic, changing the practice of research in academia, and also that of teaching and learning. Access to the Internet and e-mail became ubiquitous. Alongside countless benefits, a number of problematic consequences quickly emerged.

In 2001, a study at a service company in Britain reported that e-mail messages "have some disruptive effect by interrupting the user - more than is generally assumed".³ The scholars found that nearly 70% of e-mails received were viewed within 6 s, "quicker than letting the phone ring three times". Furthermore, most of these e-mails were not directly relevant to employees and were mostly a result of e-mails sent using the "send-to-all" function.

Several years later, when the use of e-mail had become ubiquitous, an experimental investigation approached these concerns further by investigating how the frequency of checking e-mail affects one's well-being.⁴ As part of the study, 124 adults were asked to check their e-mail three times a day for 1 week. These participants reported experiencing lower daily stress and higher well-being, including improved mindfulness. During another week, participants were permitted to check their e-mail an unlimited number of times per day and reported experiencing significantly greater psychological stress. Specifically, the team found that by limiting the number of instances participants checked their e-mail they observed lessened tension during important activities and lower overall day-to-day stress.

Many scholarly activities need quiet time, without the interruption of phone calls, e-mails, and meetings. "Deep work", as defined by Newport,⁵ is the ability to focus without distraction on a cognitively demanding task. Scholars need this to creatively advance research ideas, solve problems, study, write and review research articles, and research projects.

Alas, a 2014 study on faculty time usage carried out at Boise State University in the U.S. found that the average professor spent 61 h a week working.⁶ While 17% of the workweek days were dedicated to meetings and 13% to e-mails, notably, only 3% were spent on research and 2% on manuscript writing. Therefore, universities willing to prioritize research and teaching would have to carefully re-examine administrative and service activities to sift out those that are crucial or mandatory for its faculty. To streamline these tasks, support from a dedicated pool of assistants is essential.

Restoring a healthy and productive use of e-mail in the academy requires learning how to (i) clear the mind at work; (ii) effectively process e-mails; and (iii) only write useful e-mails.

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Clearing out unnecessary mental clutter caused by trying to keep track of all work commitments is certainly a challenge. One simple approach is to write down all planned (and unfinished) tasks and projects, and then break them into “actionable” work items to achieve the “ready state of the martial artist - a mind like water.”⁷ This simple gesture of writing down planned tasks allows the mind to focus on taking action instead of recalling tasks. In brief, focus on “organizing tasks into actionable external memories, and on opportunistic, situation-dependent execution.”⁷

It is imperative to effectively process our e-mails in an orderly fashion or in a state “characterized by a sense of control, focus and well-being. This is in sharp contrast to the confusion, anxiety and procrastination that accompany the all-too-common situation of information overload.”⁷

To this end, one method is to process yesterday’s e-mails in a single batch.⁸

- Make it manageable by processing a finite number of e-mails rather than an ever-expanding inbox.
- Avoid interruption from today’s e-mails.
- Answer e-mails in the right state of mind to stop taking on unnecessary commitments in order to get rid of e-mails.

Another important tactic is to take special care in composing e-mails so as to avoid unnecessary verbiage. A useful e-mail comprises a short message directly focusing on the message content, preferably on one topic and no introductory text. The important points of the message will appear at the top, written in a clear and readable fashion. Proofread your text, and if the message requires two or three paragraphs, separate them with a blank line, and avoid using all caps and large font sizes. Use a short and focused subject line (e.g., “Betanin DRIFT: absorption frequencies” and not “Molecular group absorption frequencies for betanin DRIFT analysis”). Lastly, refrain from using “e-mail-to-all” messages, especially “reply-to-all” messages.

The education of scientists and managers needs to be renewed by integrating science with management education so as to shape tomorrow’s organizational leaders and scientists.⁹

Misuse of e-mail, the main information technology used in academia, can be ended through knowledge and renewed education. By abandoning the use of urgent “e-mail-to-all” messages with the request of ever new spreadsheets and reports, universities and research centers (reformed by managers) can focus on advanced teaching and research.¹⁰

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Notes

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REFERENCES

- (1) Ding, W. W.; Levin, S. G.; Stephan, P. E.; Winkler, A. E. *The Impact of Information Technology on Scientists’ Productivity, Quality and Collaboration Patterns*; NBER Working Paper No. 15285; National Bureau of Economic Research, Cambridge, MA, 2009.
- (2) Postel, J. B. Simple Mail Transfer Protocol, RFC 821, 1982; <https://tools.ietf.org/html/rfc821>.
- (3) Jackson, T.; Dawson, R.; Wilson, D. The cost of e-mail interruption. *J. Syst. Inform. Technol.* **2001**, *5*, 81–92.
- (4) Kushlev, K.; Dunn, E. W. Checking e-mail less frequently reduces stress. *Comput. Hum. Behav.* **2015**, *43*, 220–228.
- (5) Newport, C. *Deep Work: Rules for Focused Success in a Distracted World*; Grand Central: New York, 2016.
- (6) Ziker, J. The Long, Lonely Job of Homo academicus, *The Blue Review*, 31 March 2014; <http://thebluereview.org/faculty-time-allocation/>.
- (7) Allen, D. *Getting Things Done*; Penguin Books: New York, 2001.
- (8) McGuinness, M. *Time Management for Creative People*; London, 2007; <http://researchswinger.org/others/creativetime.pdf>.
- (9) Pagliaro, M. Science and Management: A New Alliance Within the Unifying Context of Culture. *Adv. Manag. Appl. Econ.* **2012**, *2*, 1–18.
- (10) Pagliaro, M. Chemistry Education Fostering Creativity in the Digital Era. *Isr. J. Chem.* **2019** DOI: [10.1002/ijch.201800179](https://doi.org/10.1002/ijch.201800179).