# Digital Sobriety: Sustainable Use of Gen AI in Higher Computing Education


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## Abstract

"Digital Sobriety" advocates a more conscious and measured use of Gen AI in our teaching. This fashionable but profligate new technology, on its current trajectory, threatens the future of our planet. As computing educators and members of ACM as a professional society, what obligations do these aspects of the "AI Revolution" impose on us? To whom do we disclose the danger to the environment of an enthusiastic and uninformed adoption of GenAI in our teaching, by our students, colleagues and institutions? Instead of lemming-like rushing to adopt the newest shiny thing in the AI Revolution, what hard questions do we need to ask ourselves? Or should we simply ban the use of this fashionable but profligate new technology? We argue that Gen AI and its unconscious and enthusiastic adoption expose us as educators to accusations of profligacy in our actions and blind ignorance oof the environmental costs of our actions. In the ACM codes of ethics, we see obligations to act to ensure that computing technology contributes the social good "In addition to a safe social environment, human well-being requires a safe natural environment. Therefore, computing professionals should promote environmental sustainability both locally and globally" As computing educators we need to consider what obligations do these aspects of the "AI Revolution" impose on us.




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## CCS Concepts

• Social and professional topics → Model curricula; Computing education; Computing education programs;

## Keywords

Digital sobriety, Gen AI, Green IT, Computing education, Engineering education

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## 1 Introduction

"Digital Sobriety" is a relatively new term that is an approach that aims to reduce the environmental impact of the use of digital technology especially the impact if the use of GenAI. However, very few computing professionals appear concerned about the environmental implications of GenAI. So, the panelists pose some hard questions we need to ask ourselves as computing educators, informing the future prospective computer professionals.

Digital sobriety, a relatively new term, is defined as "a lifestyle that in volves not just consuming better but also, and critically, consuming less." [5] It can also be described as:

> "Digital sobriety is a strategic and eco-conscious approach to using digital technologies. It focuses on minimizing unnecessary digital activity, enhancing the efficiency of software and hardware, and promoting sustainable digital habits. It aims to reduce the environmental footprint of

information and communication technologies by supporting minimalist and mindful design, user behavior, and organizational policies" [3,4].

Yet the Green IT literature, merely highlights "the potential of IT for greening the world." [5]. That perspective fails to, significantly, recognize "the harmful consequences of IT uses". In earlier work, [1] we noted that there is a gap in practitioners' awareness of the sustainability implications of rampant use of GenAI technology for the environment. That gap in awareness applies equally to vendors, educators and students. As reported in [2] commentators have predicted that by 2026 GenAI will use power equivalent to the current energy use of Germany, and see big tech companies become some of the worst polluters on the planet. In response to these imperatives, we see big Tech companies investing heavily in energy development with its excessive demand of water used for cooling, and even building new nuclear power plants.[6]

"As computing educators then, acting in accordance with these obligations [under the ACM Code of Ethics]—to whom do we disclose the danger to the environment of an enthusiastic and uninformed adoption of GenAI in our teaching, by our students, colleagues and institutions?" [2].

Key sources that inform and support the concept of digital sobriety include the responsible use of digital technology. This means that users must analyze activities and commercial needs to develop digital systems that reduce and optimize the consumption of natural and energy resources. It becomes questionable how commercial enterprises and governments can do this. Teaching students how to write efficient algorithms and design prompts, in schools, colleges, and universities becomes a necessity.

In addition to this energy consumption, raw material extraction and processing, electronic manufacturing, and distribution also contribute. Another example is the production of smartphones, where the manufacturing stage accounts for the greater majority of carbon emissions over the entire life cycle. Today, the increasing use of digital devices conflicts with the idea of resource limitations. Therefore, it is the responsibility of industrial companies and those using the products developed to adopt more sustainable digital practices by carefully selecting their technology and embracing Green IT.

Digital sobriety is becoming a vital aspect of computing and information technology. The panel members will explore different perspectives, including the limits of digital use and support for equipment manufacturing. They will also present contrasting and even conflicting views on the issues of environmental sustainability and the future of the planet. The audience should find this discussion to be an inspiring experience.

## 2 Panel Structure

The panel will begin with an introduction of the panelists and a background on the topic by the moderator. Then each panelist will speak for approx. six minutes on their position on Digital Sobriety including the power usage, the need for more power plants, the use of water and what we as educators can do to mitigate this burgeoning energy crisis. Following the panelists talks there will be an opportunity for audience questions. A further aspect of this panel will be questions asked of the audience and a demonstration of carbon predicting software when using AI.

In table form the schedule is as follows.

| | | |
|---|---|---|
| 1 | Introduction | Five minutes |
| 2 | Background | Five minutes |
| 3 | Panelists perspectives | Thirty minutes |
| 4 | Audience Q and A | Thirty minutes |
| 5 | Summary | Five minutes |

## 3 Position Statements

**Alison Clear** (Moderator) is an Associate Professor at Eastern Institute of Technology in Auckland, New Zealand.
Alison will present the background on GenAI and sustainability, moderate the panel and the audience Q and A. Her position on this topic is based on the lack of understanding by educators and students of the enormous impact on the environment of the rapid and uncontrolled use of this new technology. It is imperative that as educators we become aware and include this in our use of AI and ensure our own use and our students are aware of the impacts.

**Tony Clear** is an Associate Professor and Co-Director of the Software Engineering Group at Auckland University of Technology.
Drawing on research investigating the impact on IT professional competencies of artificial intelligence, he is concerned about the absence of awareness of the environmental impact of GenAI. He argues that as responsible educators and professional members of ACM we need new strategies to set limits on the use of GenAI as a technology profligate in its use of planetary resources.

**John Impagliazzo** is a professor emeritus at Hofstra University in New York, USA. He also created the *ACM Inroads* magazine and the *IEEE Transactions on Technology and Society* journal. John is an IEEE Fellow, an IEEE Life Member, an ACM Distinguished Educator, and a CSAB Fellow. He is an expert consultant in computing and engineering education, having evaluated over a hundred programs worldwide.
John presents practical viewpoints on digital sobriety, arguing that the ongoing and sustainable use of Gen AI in computing education is essential for the evolution of academic practice and innovation. He argues that the sustainable use of Gen AI in higher education is not a threat but an opportunity. Instead of defying its presence, academic communities should lead its integration. To ban, avoid, or limit Gen AI is to deny learners the tools and challenges of their time. To embrace it is to educate for a future that is not only technologically advanced but ethically and ecologically sound.

**Resego Morakanyane** is a lecturer of Business Information Systems at the University of Botswana. He teaches modules in the areas Business Process Management, IS Project Management, Enterprise Systems, and Strategic Information Systems.
Resego wishes to engage in conversations that explore how human beings can co-exist with these new age technologies. During the panel, he will share experiences on the use and adoption of GenAI by Distance Learning undergraduate students in a late technology-adopter university. He hopes to spark a discussion on sober use, adoption and acceptance of GenAI by both lecturers and students, as well as strategies to cope/co-exist with this disruption.

**Rebecca Odom-Bartel** is an assistant professor of computer science education at Cleveland State University in Ohio, USA. Her research focuses on strengthening lower-division undergraduate CS curriculum to build strong programming and computational thinking skills for diverse learners.

She is particularly interested in designing authentic assignments that foster deep understanding and genuine skill development rather than encourage reliance on generative AI tools. During this panel, she will share strategies for creating assessments rooted in real-world application, problem solving, and creativity to build student confidence while limiting AI misuse. She will also discuss integrating sustainable computing topics into coursework to raise awareness of the environmental impacts of technology production, data storage, and energy consumption.

**Ming Zhang** is a professor of computer science at Peking University in Beijing, China. She is a member of the Advisory Committee of the Ministry of Education in China, a member at large of ACM China and the founder and former Chair of ACM SIGCSE China (2016-2023). She proposed LINE model for Graph Embedding and NSA model (Native Sparse Attention) for efficient long-context modeling, which have received extensive attention in the deep learning and LLM communities. Ming will introduce a recent research paper [7] which she is the corresponding author. She explores the policies and practices adopted by leading universities in China and abroad in response to the challenges brought by Gen AI in programming education. She analyzes the role and effects of Gen AI technologies in transforming traditional teaching across four dimensions: instructional objectives, curriculum content, teaching methods, and assessment systems. She offers recommendations from two perspectives: the reform of instructional models and the shift in educational philosophy.

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