

COLLEGE HAPPENINGS

February 5, 2019

FROM THE DEAN

The Problem with Lectures

Some time ago I attended a talk which referenced a paper where the authors monitored the brain activity of a student during a typical week at MIT using a portable sensor. The results are shown here in Fig. 1. This data reveals that the student's brain activity was lowest during two activities throughout the week: watching TV and attending class lectures.

The lack of brain activity during lectures confirms what educational scholars have long known from other research evidence: that passive lectures are among the least effective forms of teaching. In their well know article "Seven Principles for Good Practice", Chickering and Gamson point out how students must do more than just listen.

"Learning is not a spectator sport. Students do not learn much just by sitting in class listening to teachers, memorizing prepackaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences, apply it to their daily lives. They must make what they learn part of themselves."

—Arthur W. Chickering and Zelda F. Gamson, "Seven Principles for Good Practice," AAHE Bulletin 39: 3-7, March 1987

And yet, the "sage on the stage" model of teaching continues to be the norm throughout higher education. This semester, I would like to encourage

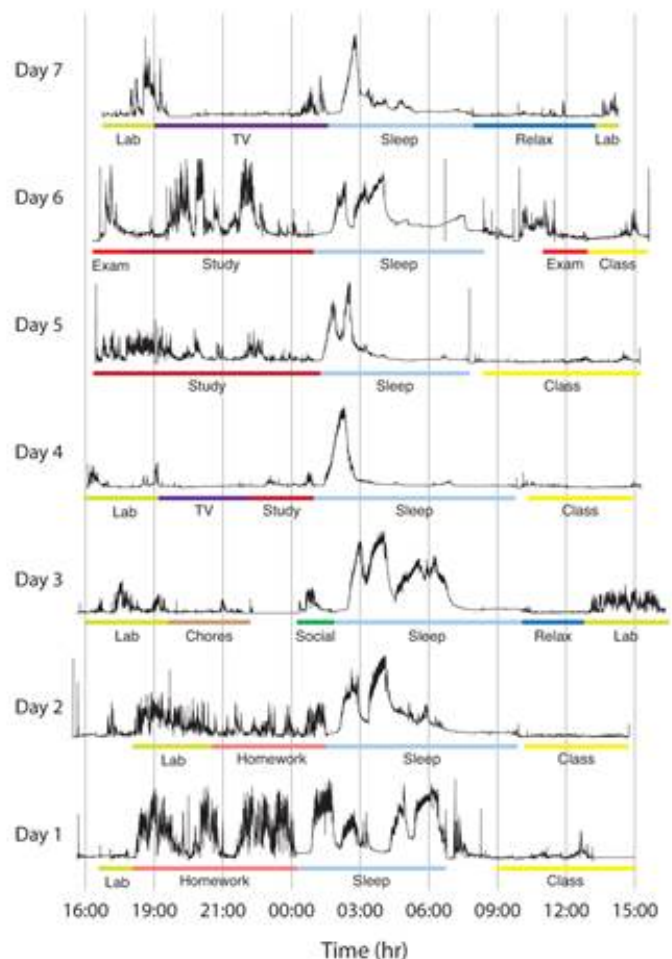


Fig. 1. Brain activity of a student during a typical week at MIT, measured with a portable sensor.

From: Poh M-Z, Swenson NC, Picard RW. A Wearable Sensor for Unobtrusive, Long-Term Assessment of Electrodermal Activity. *IEEE Transactions on Biomedical Engineering* 2010;57:1243–52.

you to take some responsible risks in your teaching by increasing the level of active learning that occurs in your classes.

Examples of strategies to increase the level of active learning in your classes can vary from incorporating elements of a flipped classroom, to role-playing, to breaking up lecture segments with short quizzes, discussions, role playing, or quiz shows. There are numerous resources available, and I would be happy to help point those that are interested in the right direction.

On a final note, I encourage you to make a point to get to know your students this semester. For example, make time before and after class to learn students' names and a bit about them. Such contact between faculty and students goes a long way in improving learning and retention.



IN THE NEWS

[NDSU researchers aiming for diabetes monitoring without a poke](#)

[Pre-engineering students get hands-on experience in NDSU lab](#)

[Student group honored with Outstanding Chapter Award](#)

[Science-loving students compete with LEGO robots](#)

[FLL teams appear on North Dakota Today \(Video\)](#)

CONGRATULATIONS

NDSU's **Gamma Tau Chapter** of the **Institute of Electrical and Electronic Engineers-Eta Kappa Nu (IEEE-HKN)** has been named an Outstanding Chapter Award winner by the organization's board of governors.

The **Bison Robotics VEX U team** won the Excellence Award and the tournament championship at a recent regional qualifier in St. Cloud, MN earning them a spot in the **World Championships in Louisville, KY**.

Please let [College Happenings](#) know about honors, awards, new grants and other announcements so we can share them with other faculty and staff.

PRESIDENT BRESCIANI VISIT

NDSU **President Dean Bresciani** will be attending the next **CoE Faculty Council** meeting to give an update on the university and present **David Grewell and David Steward** with their medallions for being awarded the Walter B. Booth Distinguished Professorships.

The meeting is scheduled for **Tuesday, February 12 from 2:00 – 3:00 p.m. in CIE 101**.

UPCOMING EVENTS

Wednesday, February 6, **Spring Career Expo**. 10:00 a.m. to 2:00 p.m. at the Fargodome. [More Information](#).

Thursday, February 7, **Faculty Luncheon**. “Open Educational Resources: Reduced Cost, Improved Outcomes” with Tanya Spilovoy, WICHE Cooperative for Educational Technologies. **11:30am-1:00pm, MU Arikara Room**. [Register Here](#).

Thursday, February 7, **Mechanical Engineering Seminar**. Ghazal Vahidi will present “Application of Cellulose Nanocrystals and Zinc Oxide as a Green Fire Retardant System in High Density Polyethylene.” **1:00 – 1:50 p.m. in Dolve 118**.

Thursday, February 7, **Digital Fabrication Lab Grand Opening**. Stop in for a tour, see live demonstrations of 3D printing, and meet the staff. Refreshments will be provided. **4:30 – 7:30 p.m. Main Library, Main Floor, Room 119**.

Tuesday, February 12, **Responsibility Review Training**. A Responsibility Review is meant to be a developmental tool used to build a partnership between the employee and the supervisor. **3:00 – 4:30 p.m. in the Memorial Union Mandan room**. [Register Here](#).

Wednesday, February 13. The **Office of the Vice Provost for Faculty and Equity** will be hosting a presentation from the local Rape and Abuse Crisis Center on recognizing and responding to signs of Intimate Partner Violence. **11:30 a.m. – 1:00 p.m. in the Memorial Union Hidatsa room**.

Friday, February 15, **Digital Measures Help Session**. Learn the basics of entering faculty activities, learn about the data upload process, and create reports (vita, annual report, promotion and tenure report). **To RSVP e-mail Annette, DM assistant, at annette.ruiz@ndsu.edu**

DEGREE MAP TRAINING

NDSU will soon launch Degree Map for undergraduate students – an online degree planning tool supporting students in planning their semester-by-semester path to graduation.

Degree Map is offered by the same company as [Schedule Planner](#) and because it utilizes real-time information from the Campus Connection advisement report, students and advisers will be able to work together to build a comprehensive degree plan.

Training sessions will be conducted February 11th – 13th for faculty and professional advisors. Sign up is essential for planning purposes. Please sign up via this [link](#).

RESEARCHER OF THE YEAR AWARDS

The College of Engineering Graduate and Research Committee is now accepting nominations for the CoE Researcher of the Year Awards.

Each year the college recognizes the outstanding achievements of CoE faculty and graduate students by awarding Two CoE Researcher of the Year Awards: one for a pre-tenured faculty member and the other for a tenured faculty member, and One COE Graduate Research Assistant of the Year Award.

Nominations and supporting materials are due by February 22 at 5:00 p.m.

Contact [Xiangfa Wu](#) for more details on eligibility requirements, nomination procedure, required supporting materials and selection criteria.

FUNDING OPPORTUNITIES

NIH: Bioengineering Research Grants (R01, R21, U01)

The purpose of this National Institutes of Health funding opportunity announcement (FOA) is to encourage collaborations between the life and physical sciences that:

1. Apply a multidisciplinary bioengineering approach to the solution of a biomedical problem.
2. Integrate, optimize, validate, translate or otherwise accelerate the adoption of promising tools, methods and techniques for a specific research or clinical problem in basic, translational, or clinical science and practice.

Standard deadlines apply.

R01: February 5, June 5, October 5; R21: February 16, June 16, October 16

DOD/DOE/NSF/USDA: National Robotics Initiative

The National Robotics Initiative – Ubiquitous Collaborative Robots program ([NRI-2.0](#)) builds upon the original National Robotics Initiative (NRI) program to support fundamental research in the United States that will accelerate the development and use of collaborative robots (co-robots) that work beside or cooperatively with people. The focus of the NRI-2.0 program is on ubiquity, which in this context means seamless integration of co-robots to assist humans in every aspect of life.

The program supports four main research thrusts that are envisioned to advance the goal of ubiquitous co-robots: scalability, customizability, lowering barriers to entry, and societal impact – more details on these are provided in the [program solicitation](#).

Application deadline: February 19, 2019

RECENTLY FUNDED GRANTS

- Xuefeng Chu (PI). North Dakota Water Resources Research Institute Graduate Fellowship Program Support from ND State Water Commission. \$25,000 from the ND Water Commission. 03/01/2019 – 02/29/2020.

RECENTLY SUBMITTED PROPOSALS

- Ravi Kiran Yellavajjala (PI). AI For Lowering Residential Home Fire Accidents in Poor, Crowded Neighborhoods and Senior Citizen Communities. \$509,430 from Google Inc. 05/01/2019 – 04/30/2022.
- Mijia Ying (PI). Rapid Airfield Concrete Pavement Slab Replacement and Patch Guidance. \$400,000 from The National Academies. 06/15/2019 – 12/31/2020.
- Rajesh G Kavasseri (PI). Collaborative Research: Distribution Systems Automation with Efficient Data Driven Multiagent Approach. \$156,313 from the National Science Foundation. 08/01/2019 – 07/31/2022.
- Dharmakeerthi Nawarathna (PI). IIRB Instrumentation: Universal Device for Molecular Detection and Quantitative Analysis in Biological Research. \$329,875 from the National Science Foundation. 06/01/2019 – 05/31/2022.
- Om Prakash Yadav (PI). RII Trac-2-FEC: Sustainable Energy Infrastructure Network: Robust, Reliable, and Resilient (SUSTEIN-R3). \$5,813,445 from the National Science Foundation. 09/01/2019 – 08/31/2023.
- Jordi Estevadeordal (PI). MRI: Acquisition of a High Repetition Rate Laser System for Spatially and Temporally Resolved Flow Measures. \$282,352 from the National Science Foundation. 08/01/2019 – 08/01/2029.
- Xin Sun (PI). Big Data Acquisition and Processing for High-throughput Phenotyping. \$966,215 from the National Science Foundation. 08/01/2019 – 07/31/2023.

RECENT PUBLICATIONS

For 2019, 11 publications by authors with the College of Engineering affiliation have appeared in various journals, according to the ISI Web of Science and submissions from faculty. Here are some of the most recent publications:

- Chu, Xuefeng, Zhulu Lin, Mohsen Tahmasebi Nasab, Lan Zeng, Kendall Grimm, Mohammad Hadi Bazrkar, Ning Wang, Xingwei Liu, Xiaodong Zhang, and Haochi Zheng. 2019. "Macro-Scale Grid-Based and Subbasin-Based Hydrologic Modeling: Joint Simulation and Cross-Calibration." *Journal of Hydroinformatics* 21 (1): 77–91. <https://doi.org/10.2166/hydro.2018.026>.
- Michael, Johnson, Zhang Qifeng, and Wang Danling. 2019. "Titanium Carbide MXene: Synthesis, Electrical and Optical Properties and Their Applications in Sensors and Energy Storage Devices." *Nanomaterials and Nanotechnology* 9 (January): 1847980418824470. <https://doi.org/10.1177/1847980418824470>.
- Sharma, Swati, and Halis Simsek. 2019. "Treatment of Canola-Oil Refinery Effluent Using Electrochemical Methods: A Comparison between Combined Electrocoagulation + Electrooxidation and Electrochemical Peroxidation Methods." *Chemosphere* 221 (April): 630–39. <https://doi.org/10.1016/j.chemosphere.2019.01.066>.
- Wang, Xingyu, Xiaoning Qi, Zhibin Lin, and Dante Battocchi. 2018. "Graphene Reinforced Composites as Protective Coatings for Oil and Gas Pipelines." *Nanomaterials* 8 (12): 1005. <https://doi.org/10.3390/nano8121005>.
- Zhang, Ruihang, and Yan Zhang. 2018. "An Experimental Study of Pulsatile Flow in a Compliant Aortic Root Model under Varied Cardiac Outputs." *Fluids* 3 (4): 71. <https://doi.org/10.3390/fluids3040071>.

College Happenings is distributed to the NDSU College of Engineering staff and faculty every other Tuesday.

Read past issues of *College Happenings* [here](#).

Deadline for submissions to *College Happenings* is 12:00 p.m. Fridays.

Contact kyle.bosch@ndsu.edu to submit items for *College Happenings*.

Follow the College of Engineering on social media.

