

PRINCIPLES FOR TEACHING THE MILLENNIAL GENERATION: INNOVATIVE PRACTICES OF U-M FACULTY

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In order to teach well, faculty need to know who is in their classrooms. The current cohort of university students is composed primarily of “Millennials,” i.e., the generation born between 1982 and 2002 (Howe & Strauss, 2000).¹ How Millennials differ from previous generations, and how these differences are changing higher education, have been topics of considerable discussion over the past several years (see DeBard, 2004; Gloeckler, 2008; Howe & Strauss, 2000; McGlynn, 2007; McGuire & Williams, 2002; Sword & Leggott, 2007). This Occasional Paper describes some of the differences that Millennial students bring to the classroom and outlines four principles for teaching Millennials successfully. To illustrate how these principles inform specific teaching strategies, we highlight examples of innovative teaching by U-M faculty.

It is worth noting that some writers have challenged the accuracy of characterizing a cohort of students by generation (Hoover, 2009). We agree that instructors should treat these traits, like all generalizations, as a guide rather than a rule, since each student has multiple social identities, as well as individual characteristics and interests. However, the ideas raised by those who study Millennials do provide a useful heuristic for instructors, and we have grounded our recommendations about teaching today’s students in the literature on student learning and the experiences of outstanding faculty on campus.

Who Are Millennial Students?

Millennials are the largest and most culturally diverse generational cohort in U.S. history, estimated to be about 82-100 million native-born people and immigrants (Howe & Strauss, 2000). Like McGlynn (2007) and DeBard (2004), we are primarily interested in the characteristics that differentiate Millennial students from students born in previous generations (e.g., Generation X, Baby Boomers, etc.). The most striking differences that Millennials bring to the university classroom are their preferences for *collaborating*, *connecting*, and

¹ Scholars disagree about the timeframe that defines the Millennial generation. Some argue that the Millennial generation begins as early as 1979 (Sweeney, 2008).

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creating social change. Researchers indicate that Millennial students appreciate being able to work together (DeBard, 2004; Howe & Strauss, 2000), use technology to interact with each other and seek information (Oblinger, 2008; Prensky, 2001; Taylor, 2005), and apply novel approaches to today's problems (Howe & Strauss, 2000; Sweeney, 2008). The following sections examine each of these preferences.

Collaborating

Millennials have been taught that teamwork skills are necessary for success in school and work. Whether Millennials truly believe that collaboration is superior to individual effort, or they simply seek to be perceived as team players by those in positions of authority (DeBard, 2004), collaboration is a term that resonates with them. For instructors, this positive orientation toward collaboration is good news, since research has consistently demonstrated that collaboration and group discussion enhance student learning (Bonwell & Eison, 1991; Michaelsen, Fink, & Knight, 1997; Smith, Wood, Adams, Wieman, Knight, Guild, & Su, 2009).

Collaboration, however, presents both opportunities and challenges for instructors. On the one hand, students may see collaborative learning as engaging, fun, and practical. For example, games, simulations, and group discussions provide students with opportunities to take advantage of the diverse talents and backgrounds of their classmates and to hone their skills for participating in groups. On the other hand, common challenges associated with group work include dominating students, nonparticipating students, difficulty staying on task, and ineffective group processes resulting from a lack of clarity, support, and/or accountability (Michaelsen et al., 1997). Furthermore, the de-emphasized role of academics among today's undergraduates, coupled with competing demands on Millennial students' time (e.g., work, social organizations, family, and friends), may hamper their ability to manage the responsibilities and demands of group collaboration, especially when it entails out-of-class time (see Nathan, 2005).

Connecting

Millennials are undoubtedly the most technologically connected generation ever. The mere mention of the word "Millennial" conjures images of "technoliterate" students

(Taylor, 2005), otherwise known as "digital natives" (Prensky, 2001). The prevalence of digital technologies has provided Millennials with unfettered electronic access to information, friends, family, instructors, and classmates throughout most their lives (Kvavik, 2005; McGuire & Williams, 2002; Oblinger, 2003, 2008; Smetanka, 2004). Cell phones, laptops, and social networking communities, such as Facebook and Twitter, provide Millennials (and their instructors) with tools for sharing, exploring, and connecting in ways unimaginable to previous generations (Shirky, 2008). In 2008, 99.6% of incoming U-M students reported having a Facebook account. In addition, 59% of incoming students estimated spending 1-5 hours per week on social networking websites, and nearly 15% reported spending over 6 hours per week using social networks (Matney & Borland, 2009). These technologies have shaped students' views of information, learning, and collaboration.

Creating social change

Millennials demonstrate an awareness of pressing local and global challenges as well as an interest in engaging in civic activities such as voting, charity, and community service (DeBard, 2004; Gloeckler, 2008; Howe & Strauss, 2000). For example, 94% of first-year U-M students reported performing volunteer work during the year preceding their enrollment in the University, representing a statistically significant increase compared to first-year U-M students surveyed a decade ago (Matney, 2009).

Faculty can help Millennials create meaningful change in their communities by providing them with the skills to become critical consumers (and producers) of information. Communications tools (e.g., wikis, blogs, YouTube, and online communities) provide access to information and have opened possibilities for organizing around particular social problems. Web-based technologies give Millennials creative outlets for addressing social problems and working collaboratively with others.

In sum, Millennials bring a number of unique experiences, perspectives, and abilities to the university classroom. Their capacities for collaborating with peers, connecting with one another, and creating and disseminating socially-relevant knowledge present exciting opportunities for teaching and learning. The following section highlights principles for effectively

teaching and engaging today's students and specific strategies that U-M faculty use to accomplish these goals.

How U-M Faculty Engage Millennial Students

We have identified four principles for effective teaching that can help Millennial students become engaged, articulate, and responsible problem-solvers and leaders. These principles are drawn from an extensive review of research on best practices in postsecondary education and are particularly relevant to teaching Millennials (see Bonwell & Eison, 1991; Chickering & Gamson, 1987; deWinstanley & Bjork, 2002; Kuh, 2008; Michaelsen et al., 1997; Prince, 2004; Sword & Leggott, 2007; Whetten, 2007). According to these principles, teaching is most effective when faculty

- facilitate cooperation among students;
- prepare students for diversity and cross-cultural interaction;
- cultivate knowledge creation; and
- promote active engagement inside and outside the classroom.

In the remainder of this Occasional Paper, we highlight specific teaching strategies used by U-M faculty that demonstrate how each of these principles can be put into practice.

Facilitate cooperation among students

Millennials are team-oriented and like to congregate and keep in contact with one another, their friends and family, and their instructors. Faculty can facilitate cooperation through the use of group projects, peer-review of assignments, and study groups. Some research suggests that Millennial students enjoy collaboration as long as there are clear expectations and structures for promoting group success (DeBard, 2004). To facilitate cooperation, instructors should design assignments and group projects with specific goals in mind, communicate these goals to students, explicitly address how student interactions and group roles impact learning and productivity, and hold group members accountable to one another (Michaelsen et al., 1997). The following examples from U-M faculty put the principle of collaboration into practice.

• **Amy Mainville Cohn**, *Industrial and Operations Engineering*. Cohn puts a unique spin on traditional office hours. Rather than hosting individual students in her office, Cohn meets with groups of students in the

Pierpont Commons cafeteria on North Campus. In this setting, students work together to solve problems while waiting to speak with a Graduate Student Instructor (GSI) or their professor. Once the instructors determine that one member of a group clearly understands the problem, they then “deputize” that student to teach other members of the group. This process of connecting and sharing information allows students to learn from one another, reinforces their understanding through teaching, and maximizes the collective understanding of the students in attendance.

• **Shaun Jackson**, *Taubman College of Architecture and Urban Planning* and *School of Art and Design* and **William Lovejoy**, *Ross School of Business*. Jackson and Lovejoy teach an interdisciplinary capstone course on integrated product development. This course is collaborative and experiential in nature. According to Jackson and Lovejoy, learning does not result from hearing lectures or receiving handouts, but rather from putting skills into practice. To simulate the competitive nature of the business environment, students work in teams to research, design, create, and market fully functional, customer-ready products aimed at solving a real-world problem. Student teams create websites and market their products virtually to nearly 1,000 viewers; the students also market their products more traditionally at an in-person trade show with approximately 200 participants. The successful development and marketing of these products depends upon how well students collaborate to maximize the diverse knowledge and skills that individuals bring to the team, and, ultimately, the public's response to their product (<http://ummedia04.rs.itd.umich.edu/~umbs/tauber/IPD.mov>).

• **Brian Coppola**, *Arthur F. Thurnau Professor, Chemistry*. Coppola uses large-scale cooperative learning to challenge students to achieve at levels that surprise them. Each year 100-120 of Coppola's first-year organic chemistry students publish a 250-page web-based textbook and companion website. Throughout the semester, students transform a set of contemporary research articles into teaching materials for one another. These documents are peer-reviewed, and two weeks before the final exam, the companion website is launched for public viewing. Through this experience, students learn about the benefits of group collaboration. Coppola helps students develop critical thinking skills about how scientific evidence is used to justify knowledge claims. Coppola draws his exam questions from the errors that

remain in the students' textbook. To Coppola's delight, he learned that there are at least 20 other organic chemistry professors around the United States who eagerly await the latest "edition" of his students' web-text for use in their classes.

Kuh (2008) suggests that collaborative assignments and experiences, like the ones presented in this section, allow students to achieve two essential learning goals. First, students learn to work and engage problems in the company of others, which means they must articulate their understandings, justify claims, and work together to solve problems. Second, students learn to deepen their understanding by listening to the insights of others, particularly those with backgrounds and experiences different from their own.

Prepare students for diversity and cross-cultural interaction

Millennials are an extremely diverse generation. For instance, one in five Millennial students has a parent who is an immigrant (Howe & Strauss, 2000). However, mere proximity to others who have different cultural values or life experiences does not in itself prepare students for effectively living and functioning in a diverse society (Bok, 2006). Many students come to the University from homogenous neighborhoods and have not had the opportunity to interact with students who differ significantly from themselves (Nagda, Gurin, Sorensen, Gurin-Sands, & Osuna, 2009). Instructors can help students develop skills for intercultural interaction by thoughtfully infusing a variety of perspectives, where appropriate, and creating opportunities for dialogue. This approach has the potential to develop students' capacity for learning from difference (see also Nagda, Gurin, Sorensen, & Zúñiga, 2009). To prepare Millennials with the skills necessary to thrive in a diverse society, instructors can use a variety of examples that highlight divergent points of view, incorporate opportunities for sharing personal reflections on readings or other course materials, and thoughtfully structure interactions to elicit different perspectives within the class. The following examples illustrate these strategies.

• **Mark Clague**, *School of Music, Theatre & Dance*. Clague created the LIVING MUSIC project so that his students could publish oral histories of people involved in various aspects of the music world, such as performance, production, and management. The website (<http://site maker.umich.edu/livingmusic>) provides a diverse col-

lection of first-person commentaries on contemporary musical life. Students choose a person to interview and create an online posting with biographical and demographic information about the individual, the interview transcript, and students' reflection on the experience. Students encounter difference on multiple levels because the interviewees represent a rich intersection of racial, ethnic, socio-economic, educational, and professional diversity. Through this process, students learn to think critically about media representation and its impact on history. Since the documents are distributed for public viewing, Clague's approach helps students understand the power media have in representing diverse members of society. Students can reflect on how this information connects with their personal experiences and their understanding of course concepts.

• **Christi Merrill**, *Comparative Literature and Asian Languages and Cultures*. Merrill uses an interactive website to engage students in *Introduction to Asian Studies* (<http://sitemaker.umich.edu/as235/home>); click cancel when asked to authenticate). The website includes a blog that allows students to explore cultural artifacts from Asian countries (literature, film, objects, etc.) and to participate in online discussions. The blog also provides a forum where students comment on assigned texts and respond to their classmates' ideas. Merrill's website engages students and encourages them to make meaningful connections with the ongoing politics, history, and cultures of Asia.

• **Kathleen Sienko**, *Mechanical Engineering*. Through the Global Intercultural Experience for Undergraduates (GIEU) program (<http://www.gieu.umich.edu>), Sienko has recently led two student trips to experiential learning field sites in Ghana focused on understanding maternal health challenges in resource-limited settings. The interdisciplinary student teams observed doctors, nurses, midwives, and patients on the wards of the Okomfo Anokye Teaching Hospital in Kumasi and the rural Sene District Hospital in Kwame Danso. Students also completed service learning projects, including teaching HIV/AIDS educational outreach modules to high-school-aged Ghanaian students, developing website templates for the Kwame Nkrumah University of Science and Technology and Sene District Hospital, and conducting medical inventories of the OBGYN Department at two hospitals. Additionally, students brainstormed clinical problems based on their observations and generated novel interventions for improving maternal health.

By rethinking traditional course design and assignments, these faculty members expose students to diverse individuals and cultures, and provide them with the skills needed to interact effectively with others. Experiential learning can help students appreciate different points of view and develop a better understanding of their own perceptions, values, and culture.

Cultivate knowledge creation

Millennials have immediate access to more information than any generation before them. However, mere access to information does not guarantee that students will thrive in a knowledge-intensive environment. Instructors must teach students how to become critical consumers, users, and creators of information (see Sword & Leggott, 2007). The following simulations, games, webpages, wikis, and social networking tools allow Millennials to use their diverse talents, skills, and experiences to create and disseminate new information.

- **David Chesney**, *Electrical Engineering and Computer Science* and **Erik Hildinger**, *Technical Communications*. In many “Introduction to Engineering” courses, freshmen have the opportunity to design solutions to real-world engineering problems, build a prototype based on their designs, and test their product to assess its effectiveness. Chesney and Hildinger’s course, *Gaming for the Greater Good*, applies this teaching method to software development. Their approach merges Millennial students’ interests in gaming, working in teams, and entertainment with solving socially relevant problems. Students with varying levels of programming skills work together to develop a computer game based on an idea proposed by one of the students. These teams create an initial version of the game midway through the course for the “Proto Palooza,” a gaming expo where their classmates test out and provide feedback on the games. By the end of the course, student teams create a functional product and prepare a formal presentation for the class. In the past, students have created computer games that teach others about educational topics (e.g., algebra or circuits for K-12 students) or socially relevant topics (e.g., ways women can avoid being assaulted).

- **David Porter**, *English Language and Literature and Comparative Literature*. Porter encourages students to work in groups to create webpages that explore an aspect of eighteenth-century England. As they do with

traditional term papers, students investigate a topic, connect their research with course readings, and create original interpretations and analyses based on the content. Unlike traditional term papers or final exams, the webpage projects allow students to self-publish their work for the public using a multi-media format. This website encourages students to creatively convey their research findings in a manner appropriate for a general audience. The *Eighteenth-Century England* website features a number of completed student research projects, and it also houses a set of resources and guidelines for helping students produce new material for the site (www.umich.edu/~ece).

- **Scott Moore**, *Arthur F. Thurnau Professor, Ross School of Business*. Moore cultivates knowledge production among graduate students by using a wiki as a course website where he and his students collaboratively create and edit instructional content. For each class session, one student is assigned the task of taking notes for the class, while another student is asked to create and post test questions based on course material covered that day. All students are encouraged to make edits to the notes and questions, creating a climate of shared ownership. As students learn new information relevant to the course, they are asked to update the class website with interesting weblinks, resources, and commentary. For a video and handout about this project, visit <http://www.crlt.umich.edu/faculty/Thurnau/ThurnauVideos.php>.

By allowing Millennial students to work collaboratively, select topics that interest them, and communicate their understanding through media that they find useful and familiar (e.g., games, webpages, and wikis), instructors recast students as active producers (as opposed to passive consumers) of knowledge (Sword & Leggott, 2007). These methods encourage students to think critically about course material, methods of inquiry, and the process of creating and evaluating knowledge claims.

Promote engagement inside and outside the classroom

Millennials have the resources and abilities to create a more livable and sustainable world. The role of the instructor is to motivate, coach, direct, teach, support, and structure opportunities for students to actively engage with course content inside and outside the classroom. Kuh (2008) suggests using capstone courses and community-based projects to help students learn from one another and address social problems outside the

classroom. Inside the classroom, instructors can actively engage students by using reflective pauses, discussion groups, frequent assessments, and in-class simulations of real-world problems (see also Bonwell & Eison, 1991; Chickering & Gamson, 1987; Prince, 2004; Smith, Sheppard, Johnson, & Johnson, 2005; Whetten, 2007). The following examples of U-M faculty demonstrate engagement in lecture halls and beyond.

- **Deborah Ball**, *Arthur F. Thurnau Professor, School of Education*. In a large public policy course, Ball creates interactive classes by posing questions that require students to analyze data and exchange ideas with their peers on topics that have immediate policy implications, such as the graduation requirements for Michigan schools resulting from the No Child Left Behind Act. She chooses challenging questions that students might struggle to answer on their own, with the intent that class discussion will not only help students understand policy issues in more depth, but will also teach them to work on problems collectively, formulate clear arguments, and consider alternative viewpoints. According to Ball (2009), “this strategy should not merely offer a reprieve from lecture, but provoke a discussion through which students will learn more than they would if they were working alone.” For a video and handout about this project, visit <http://www.crlt.umich.edu/faculty/Thurnau/ThurnauVideos.php>.

- **Brenda Gunderson**, *Statistics*. In *STATS 350, Introduction to Statistics and Data Analysis*, Gunderson poses questions in a large lecture course using personal response systems or clickers. A clicker is a wireless hand-held device that students can use to answer multiple-choice questions (Zhu, 2007). Instructors can display graphs of responses for further discussion. Gunderson designs the clicker questions to break up the lecture as well as to allow students to refocus and reflect on the topic. By incorporating ungraded clicker questions, she creates a low-stakes learning environment in which students are responsible for assessing their own understanding of statistical concepts. Both Gunderson’s and Ball’s approaches to using in-class questions, the former dependent on new technology and the latter more traditional, make it possible for faculty to check student understanding and allow students to discuss their answers and teach one another.

- **Dan Klionsky**, *Alexander G. Ruthven Professor of Life Sciences*. In his introductory biology course, Klionsky abandons traditional lectures and opts to engage students

in inquiry-based, problem-solving sessions. This approach allows students to work together in groups to apply and synthesize course concepts. Klionsky and GSIs circulate to answer students’ questions and further discuss the implications with students, fostering more critical thinking. To achieve this in-class engagement, students take quizzes at the beginning of each class period to ensure that they understand the material from the previous class and have completed the background reading for the current class. With this approach, students must keep up with course content and can therefore spend class time with the professor developing higher-order thinking skills. There are no midterms or final exams, and each individual quiz is worth a small portion of the grade, which may reduce test anxiety while providing valuable and timely feedback to students and the instructor. If students perform poorly on the quizzes, Klionsky spends time during the next class session clarifying misconceptions.

- **Lorraine Gutiérrez**, *Arthur F. Thurnau Professor, Psychology and Social Work*. Gutiérrez promotes learning by directly involving students in her program of community engagement research. For example, some students in the *Detroit Initiative* in psychology collaborate with community-based organizations to measure the impact of creative arts programs on youth development. By involving students in research, Gutiérrez helps them develop skills for participation and citizenship in a diverse democracy. Students also learn how research can be used to benefit the community. Finally, teaching through community engagement illustrates the interconnectedness of local communities, and provides students with a chance to make a meaningful difference in these communities.

- **Buzz Alexander**, *Arthur F. Thurnau Professor, English Language and Literature*. Alexander integrates undergraduate community engagement projects into English 310, 319, and *The Prison Creative Arts Project (PCAP)*. Over the past 15 years, Alexander has sent more than 2,000 students into Michigan prisons, juvenile facilities, and marginalized high schools in Detroit to facilitate the production of creative work, such as theater productions, paintings, dance, music, and photography. PCAP provides students with opportunities to extend their learning about the social impact of the arts and the effects of incarceration on individuals and society.

Engagement inside or outside the classroom requires mutual effort on the part of instructors and students.

Instructors must be open to redesigning the structure of their courses to encourage active and collective inquiry, and students must be willing to take responsibility for their learning.

Conclusion

The challenges that the Millennial generation will encounter after they graduate will require complex problem-solving and collaboration skills, including the ability to define problems, pose questions, evaluate evidence, and express themselves clearly (Bok, 2006). As the examples discussed here illustrate, many faculty at U-M are successfully preparing Millennials for the challenges and opportunities of a diverse and interconnected world. Their methods facilitate cooperation, prepare students for diversity and cross-cultural interaction, cultivate knowledge creation, and promote engagement inside and outside the classroom. CRLT instructional consultants (crlt@umich.edu) are available to provide a wide range of services and instructional resources – including consultations, midterm student feedback, and faculty grants – for instructors who wish to pursue any of these teaching strategies in their own courses.

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