Do Dental Hygiene Students Fit the Learning Profile of the Millennial Student?

Christine M. Blue, B.S.D.H., M.S.

Abstract: Differences in learning and the cultural context of our students’ life experiences are important variables that faculty members need to understand in order to be effective in the classroom. Faculty members are finding that millennial students’ approaches to learning are often vastly different from their own and as a result feel frustrated in their ability to help these students with their learning needs. Cultivating awareness of how today’s dental hygiene student learns as well as the millennial learner profile can help faculty members address this educational challenge. The purpose of this study was to identify the learning styles of three groups of dental hygiene students and determine if they fit the learning profile of the millennial student as measured by the Learning Type Measure. Given this new generation of learners, it was hypothesized that dental hygiene students’ learning style preferences would fit the learning profile of the millennial student. The Learning Type Measure was administered to 101 dental hygiene students at the University of Minnesota, University of Arizona, and Virginia Commonwealth University. The results from the study revealed that dental hygiene students do exhibit learning style preferences consistent with the millennial learner profile.

Prof. Blue is Assistant Professor and Director, Division of Dental Hygiene, School of Dentistry, University of Minnesota. Direct correspondence and requests for reprints to her at Division of Dental Hygiene, School of Dentistry, University of Minnesota, 9-372 Moos Tower, 55 Delaware Street SE, Minneapolis, MN 55455; 612-625-5954 phone; 612-625-1605 fax; Bluex005@umn.edu.

Keywords: learning styles, dental hygiene students, millennial learners

Submitted for publication 5/14/09; accepted 7/20/09

A new generation is pursuing degrees in dental hygiene. The millennial generation, often called “millennials,” is the name sociologists have given to Americans who were born after 1980 and graduated from high school beginning in 2000. These students are technologically competent and described as optimistic and group-oriented. Their propensity for multitasking, reliance on electronics, and need for immediate feedback often perplex and frustrate faculty and challenge customary approaches to teaching and learning. Dental hygiene educators may feel frustrated in their ability to help these students meet their learning needs. Cultivating awareness of how today’s dental hygiene student learns as well as the millennial learner profile can help faculty members address this educational challenge.

Facilitating learning involves understanding who our students are; consequently, the learning style literature abounds with analyses of research methodology and instrumentation. Learning styles are the result of preferences in the ways people perceive and process experience. The research suggests that a particular learning style characterizes the way in which an individual learner acquires information and acts on it. Learning style educational researchers hypothesize that everyone has a learning style preference and, if instruction is adapted to accommodate that style, it is anticipated that improved learning will result.1,2

Carl Jung’s psychological types are cited as the beginning of modern learning style theory.3 Jung established four learning styles defined by the way individuals perceive new information and how they judge new knowledge once in consciousness. Jung, however, never developed a theory of psychological type for practical use through instruments or models. The use of model formulation in learning style theory is attributed to organizational psychologist David A. Kolb. Kolb’s model describes four major learning stages that are cyclical in nature.4 Bernice McCarthy reviewed the work of twelve learning style researchers from various disciplines and found almost all of the theories defined a cycle of learning that begins by engaging the learner through direct experience and then moves them toward reflective observation followed by abstract conceptualizing, active experimentation and problem-solving, and finally integration of new content and skills. Using work from Jung, Kolb, Kurt Levin, Isabel Myers, and Joseph Bogen, McCarthy synthesized the strands from each theory and placed them into Kolb’s model. McCarthy was then able to develop composites of four different types of learners to create the Learning Type Measure (LTM).5

The literature on student approaches to learning is complex, and the research results have often been confusing and contradictory. Most studies on learning styles in the dental and dental hygiene literature were
done in the 1970s and 1980s using a variety of learning style inventories. In the 1980s, Hendricson at al. used the Gregoric Learning Style Delineator to study the perceived learning styles of forty-eight dental students as they proceeded through the four years of the curriculum. The findings revealed a predominant learning style with the following characteristics: preference for factual over abstract information and desire for a highly organized learning environment with considerable hands-on opportunity, but free from distractions or ambiguity about learning tasks. Murphy et al. measured the distribution of learning preferences using VARK, a learning preference survey linked to sensory modalities, and compared the results to other student population groups using the VARK database. The results from this study revealed that 44 percent of the dental students (n=100) surveyed showed a single dominant learning preference, and the remaining 56 percent displayed multimodal preferences.

Carrier et al., using Kolb’s Learning Style Inventory, reported in 1982 that dental hygiene students in their study fell into the Diverger and Accommodator learning styles category. The Accommodator learning style is hands-on and relies on intuition rather than logic. These learners use others’ analysis and prefer to take a practical, experiential approach. They are attracted to new challenges and experiences and to carrying out plans. They are adaptable, relish change, and are risk-takers. Divergers are sensitive and prefer to watch rather than do, tending to gather information and use imagination to solve problems. They are best at viewing concrete situations from several different viewpoints. Rakoczy and Money, in 1995, reported that nursing students in their study also fell into the Accommodator and Diverger learning profiles. In 2008, Spears et al. reported on their study of twenty-seven dental hygiene students using the Kolb Learning Style Inventory, which, in contrast to Carrier et al.’s findings, found that, of the four Kolb learning style types, all were represented, with a slight preference for the Assimilating style. Using McCarthy’s Learning Type Measure, Buchanan surveyed 900 dental students and found that the majority of students belonged to the Type II learning style and the second most common was Type III.

Coleman and Kwapis-Jaeger in their study asked if differences existed in the learning styles between dental hygiene students deemed at-risk (as defined by students placed on a modified curriculum in order to complete the program) and those students who graduated in the stipulated time. They administered the Myers-Briggs Type Indicator (MBTI) over a ten-year period (1998–2008) to 316 students during the first semester of class. Ten students were placed on a modified curriculum during that time frame. Their results revealed strong to moderate preference scores in at least two of the four functions that may affect students’ adaptation to their least preferred learning style.

Millennials, who are now entering colleges and universities, have learning expectations, styles, and needs different from students in the past. It is important for faculty members to understand their students through the lens of the culture and history in which they were raised. In order to avoid overgeneralization, it is important to recognize that today’s student population comprises all generations and that within each generation there is diversity. However, there are some general characteristics that apply to many of the millennial cohort (see Table 1).

How do these characteristics impact learning in the college classroom? Because millennial students were highly scheduled when growing up, researchers have found that they like secure, regulated learning environments. Wilson states, “Given how structured their lives have been, they may struggle in the transition to college as they face more ambiguity and a greater call for self-responsibility.” These students’ desire for security is evidenced by their desire for clear objectives, expectations, explicit syllabi, and well-structured assignments. They want to know “the rules.” “Desiring to achieve,” says Wilson, “many will expect detailed instructions and guidelines for completing an assignment and knowing what will be covered on the test.” Questions asked by these students that faculty may get tired of hearing are “What do I need to know on the test?” and “Why do I need to know this?”

Millennials often learn by relating what they are learning to their personal experiences. They integrate new observations into what they already know, forming theories and opinions. Millennials are uncomfortable with making subjective judgments and therefore are not comfortable reading and applying information on their own. Millennials prefer to “know the facts” and will often rely on the instructor to make a connection between life experience and the material. For this reason, millennials may struggle with problem-based or case-based teaching because of their preference to learn the facts rather than face ambiguity. In the classroom, millennial students may expect emphasis on core knowledge and skills and often will request a review session at the end of
Millennial students need to leave the classroom confident in knowing what they have learned because it makes them feel more secure. Millennials are high achievers and generally do not like creative projects or one-time, “sink or swim” exams. They feel pressure to perform and often complain of unfair grades. Millennials often demand immediate feedback on their performance and prefer subjects in which they can measure objective progress. These students will expect praise and encouragement as they progress through the curriculum because all their lives they have heard, “Good job!” for most of what they did. The millennial generation is the most socially connected of all generations. When they are not talking or text-messaging on their cell phones, they are interacting on Facebook or MySpace. Most of their extracurricular activities growing up have involved groups or teams, e.g., sports; consequently, they are very team-oriented. In the classroom, millennials gravitate toward group work and value social interaction. According to Crittenden, this generation is more social and inclined to participate in learning activities that promote social interactions. Because of their group orientation and their desire to make a difference in the world, millennials enjoy participating in community activities and therefore will seek opportunities for academic service-learning and volunteer work. All of these unique characteristics are challenging the traditional classroom teaching structure, and baby boomer faculty are realizing that there is a generational gap when it comes to learning styles. The millennial students bring a new orientation to learning that is very different from that of most dental hygiene faculty members, whose average age is fifty-one. An emerging body of knowledge is appearing in the literature addressing the millennial generation as members of the workplace environment, but no documentation was found on the impact millennial dental hygiene students are having in today’s classroom. Thus, the purpose of this study was to identify the learning style preferences of dental hygiene students and determine if they fit the learning profile of the millennial student. In light of this new generation of learners, it is hypothesized that dental hygiene students’ learning style preferences will fit the learning profile of the millennial student.

### Materials and Methods

Sixty-nine dental hygiene students at the University of Minnesota in 2006, 2007, and 2008 were asked to complete the Learning Type Measure, which surveys preferences for learning. In 2007, in addition to University of Minnesota students, dental hygiene students in baccalaureate programs at the University
of Arizona and Virginia Commonwealth University voluntarily participated in the study. All students were in their first semester of the dental hygiene program. Out of 101 students, thirteen were born before 1981 and therefore would not by definition be considered millennials. The University of Minnesota Institutional Review Board for Human Subjects approved this study (#0608E90146).

The Learning Type Measure (LTM) is a self-report questionnaire that can be administered in approximately fifteen minutes. The instrument contains twenty-six questions designed to elicit students’ learning preferences in attending to and acting on what they learn. The LTM was selected to describe the learning styles of dental hygiene students because of its established reliability and validity. According to McCarthy, there are four major learning styles, each of which asks different questions and displays different strengths and preferences during the learning process. The Concrete-Random Learner (Learner Type I) demands to know why he or she is involved in an activity. The Abstract-Sequential Learner (Learner Type II) wants to know what to learn. The Concrete-Sequential Learner (Learner Type III) wants to know how to apply the learning. The Abstract-Random Learner (Learner Type IV) asks if this is correct, how I can modify it to make it work for me.

Part A of the LTM is used to assess the four learning styles. When answering a question in part A, students are asked to select from a set of four descriptors and rank which descriptor is most like them and least like them using a 1–4 ranking system. Students were instructed to use all four numbers. Part B identifies how individuals process new learning by measuring the “Watching/Doing” dimension, which determines the student’s predisposition for reflection or action. Students are asked to choose one of two descriptors that best describes them. Watchers tend to engage in subjective introspection before acting on information or experience. People who prefer Doing act first and then reflect on their actions. Everyone does both, but a person’s preference impacts his or her behavior. How long one stays in one or the other is significant to one’s learning style.

The number and percentage of students in their highest scoring learning style were calculated. A chi-square test was used to assess the association between learning style and university. In addition, a chi-square test was used to compare learning style and year in school for students at the University of Minnesota. P-values less than 0.05 were deemed statistically significant.

### Results

The findings from this study revealed that dental hygiene students do exhibit learning styles consistent with the millennial learner profile. Survey results showed that the majority of dental hygiene students had learning preferences that fell into Learner Types I (40.5 percent) and II (35 percent), Concrete-Random and Abstract-Sequential respectively (Table 2). All students fell into the Watcher category, indicating a predisposition for reflection before action when presented with new information or experiences. There appeared to be no evidence of year-to-year difference in learning style measures at the University of Minnesota from 2006 to 2008 (chi-square test, p=0.9873) (Table 3). Additionally, there was no statistically significant difference in students’ learning styles based on geographic location or educational environment (chi-square test, p=0.9610) (Table 4).

According to McCarthy’s Learning Type Measure profiles, dental hygiene students who fall into the Learner Type I profile perceive information concretely and process it reflectively. Their favorite question is why? They learn primarily in dialogue, by listening and sharing ideas and valuing group participation. They filter new experiences through who and what they are and in the context of their personal world. They seek meaning and clarity in their learning. They thrive on lots of reflecting time, especially when pondering new ideas, before taking action or trying things out. They build trust through personal interaction.

Dental hygiene students who fall into the Learner Type II profile perceive information abstractly and process it reflectively. Their favorite question is what? They learn by thinking through experiences, judging the accuracy of what they encounter, and examining details and specifics. These learners seek consistency and continuity. They need to know

| Table 2. Overall learning type of dental hygiene students in study (n=101) |
|-----------------|------------------|
| Quadrant 1      | 40.5 (40%)       |
| Quadrant 2      | 35 (35%)         |
| Quadrant 3      | 18.5 (18%)       |
| Quadrant 4      | 7 (7%)           |

*Note: 0.5 indicates that some students had two quadrants that were the highest scores.*
what experts think. They value sequential thinking, need details, and want to be as knowledgeable and accurate as possible. They are systematic and like to operate within set policies and procedures. They seek certainty and are wary of subjective judgments. They critique information and collect data. They are thorough and industrious and seek to achieve goals. They enjoy traditional classrooms.

Discussion

The difference in learning styles is one of many variables that faculty need to understand in order to be effective in the classroom. Based on the results of this study, it is apparent that the descriptors of dental hygiene students’ learning style preferences, as measured by the LTM, fit the profile of the millennial learner. According to the results of this study and the characteristics of the millennial learner, dental hygiene students like a secure and structured learning environment. They want to operate in a learning environment under clear policies and procedures or rules. The more structured and planned out a course is, the more satisfied the student will be. The results of this study suggest that millennial dental hygiene students will want to know what they need to know in order to feel secure in the classroom. They may often ask for review sessions in order to validate what they think they learned. Based on the findings of this research, millennial dental hygiene students want to be as accurate as possible; they often are not comfortable making subjective judgments and applications and will rely on faculty to do this for them. Because these students process new information through the context of their own life experiences, faculty members will need to help them apply course content in real-life scenarios that answer their question of why they need to know the information. Dental hygiene students’ learning styles suggest they want to reflect on new knowledge and experiences before acting. Faculty should capitalize on this learning preference and develop students’ skills of contemplation, critical reflection, and problem-solving. Because millennials have become accustomed to being “taught to the test,” millennial dental hygiene students will need to be taught how to think more critically and with more complexity. As Provitera-McGlynn has stated, “Part of the process of getting millennial students to become critical thinkers involves getting them to practice meta-cognition, that is, they must become aware of not only what they are thinking but also how they are thinking.”

Table 3. University of Minnesota dental hygiene students by school year (n=69)

<table>
<thead>
<tr>
<th>Quadrant</th>
<th>2006 (n=22)</th>
<th>2007 (n=24)</th>
<th>2008 (n=23)</th>
<th>Total (n=69)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
</tr>
<tr>
<td>Quadrant 1</td>
<td>9 (41%)</td>
<td>10.5 (44%)</td>
<td>10 (43%)</td>
<td>29.5 (43%)</td>
</tr>
<tr>
<td>Quadrant 2</td>
<td>6.5 (30%)</td>
<td>7.5 (31%)</td>
<td>8 (35%)</td>
<td>22 (32%)</td>
</tr>
<tr>
<td>Quadrant 3</td>
<td>4 (18%)</td>
<td>4.5 (19%)</td>
<td>4 (17%)</td>
<td>12.5 (18%)</td>
</tr>
<tr>
<td>Quadrant 4</td>
<td>2.5 (11%)</td>
<td>1.5 (6%)</td>
<td>1 (4%)</td>
<td>5 (7%)</td>
</tr>
</tbody>
</table>

Note: Chi-square test, p=0.9873. Due to small cell sizes, a test combining Q3 and Q4 was performed; chi-square test, p=0.9825. 0.5 indicates that some students had two quadrants that were the highest scores. Percentages may not total 100% because of rounding.

Table 4. 2007 dental hygiene students in study by institution (n=56)

<table>
<thead>
<tr>
<th>Quadrant</th>
<th>UM (n=24)</th>
<th>UA (n=16)</th>
<th>VCU (n=16)</th>
<th>Total (n=56)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
</tr>
<tr>
<td>Quadrant 1</td>
<td>10.5 (44%)</td>
<td>5 (31%)</td>
<td>6 (38%)</td>
<td>21.5 (38%)</td>
</tr>
<tr>
<td>Quadrant 2</td>
<td>7.5 (31%)</td>
<td>6 (38%)</td>
<td>7 (44%)</td>
<td>20.5 (37%)</td>
</tr>
<tr>
<td>Quadrant 3</td>
<td>4.5 (19%)</td>
<td>4 (25%)</td>
<td>2 (13%)</td>
<td>10.5 (19%)</td>
</tr>
<tr>
<td>Quadrant 4</td>
<td>1.5 (6%)</td>
<td>1 (6%)</td>
<td>1 (6%)</td>
<td>3.5 (6%)</td>
</tr>
</tbody>
</table>

Note: Chi-square test, p=0.9610. Due to small cell sizes, a test combining Q3 and Q4 was performed; chi-square test, p=0.8597. 0.5 indicates that some students had two quadrants that were the highest scores. Percentages may not total 100% because of rounding.
The results of this study suggest millennial dental hygiene students will want to learn by working collaboratively and will enjoy the activity of teamwork. Consequently, faculty will want to tap into students’ need for social connection in the classroom. Dental hygiene students will want to be involved with “real-life” issues that matter to them. Because of these characteristics, the millennial dental hygiene student will enjoy participating in volunteer or required service-learning experiences.

Conclusion

Even a philosopher like Kierkegaard believed that true instruction begins when instructors understand their students.22 An important component of that understanding is awareness of the different approaches students have toward learning. The cultural context of our students’ life experiences has affected the way they learn. Understanding this important fact is vital for faculty members if they desire to be successful in the classroom. Teachers tend to favor their own learning styles, but mismatches between the millennial dental hygiene student and baby boomer faculty member can have negative consequences. Students who experience this disconnect may feel as though they are being taught in a foreign language; they may be less likely to show interest in the course content, and their grades may be lower than students whose learning styles are better matched to the faculty member’s teaching style. Faculty members who experience inattentive classes and poor student performance may develop negative attitudes toward their students or become discouraged about their professional competence.23

Understanding learning styles and this new millennial generation will therefore help dental hygiene faculty members who are perplexed and frustrated with millennial students’ behavior and performance. Identifying practical pedagogical approaches to accommodate the millennial dental hygiene student learning profile will improve the overall educational experiences of students. It is important to note that thirteen students in this study did not fall into the millennial student category due to their age. These students may represent a category of students called “non-traditional” and make up a significant cohort in higher education today, creating a diverse classroom. The most important application of learning styles is to help faculty members design a balanced teaching approach that will address the learning needs of all their students. In addition, students need to acquire a variety of learning styles that will assist them in the complex global society in which they find themselves.

Each generation of students brings its own history, strengths, and challenges to campus; general group characteristics do not accurately describe the individual student. However, if faculty members are cognizant of dental hygiene students’ learning style preferences and characteristics of the millennial learner, they can employ teaching methods that accommodate a variety of learning styles that are effective for students and enjoyable for them as well. Millennial students are described as optimistic, assertive, positive, friendly, cooperative team players who desire to make a difference in the world. They are predicted to be the next greatest generation. If this cohort of students is indeed poised to be the best and the brightest leaders of our future, then dental hygiene faculty members must do everything possible to ensure their academic success.

REFERENCES

11. Judith Buchanan, Associate Dean for Academic Affairs, School of Dentistry, University of Minnesota. Personal communication, January 2009.


