Competency-based Education and the Millennial Learner: A Perfect Pairing?

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Competency-based education (CBE) has become common practice for postsecondary education institutions that facilitate medical training in Canada and the U. S (Campbell, 2020). In terms of theoretical framework, pedagogical delivery and effectiveness, the CBE approach has evolved over time, and so have students. During the rise of CBE approximately 7-10 years ago, it was common for higher education programs to largely consist of students of the millennial generation. It will be analyzed and determined whether CBE can in fact account for establishing a distinct relationship between its methodology and students. This literature-based study out of the University of Toronto defines and examines features of competency-based models while exploring characteristics and preferences in accordance with millennial learners in the medical setting. To do so, CBE teaching and learning theories will elucidate specific methods of student engagement. The findings will be assessed in consideration with classroom application, to determine whether the efficacy of CBE is the ideal strategy for millennial learners is supported or nuanced.

Keywords: competency-based education, millennial learners, post-secondary education

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Over the last decade, higher education institutions governed by the Royal College of Physicians and Surgeons of Canada that administer medical training, at both undergraduate and postgraduate levels, implemented an alternate approach to traditional time-based learning, impacting the way teachers teach and learners learn. This strategy can be referred to as competency-based education (CBE). The methodology is far from new, in theory dating back to the 1980's, and even further if we are considering synonymous concepts. Some authors have stated that this approach has a 100-year developmental history beginning with the workplace efficiency movement (Taylor, 1911) and then moving to the educational sector by the 1940's (Tyler, 1949). Common understandings of key elements in competency-based systems have adopted different terms, such as —competency-based, mastery-based, proficiency-based, and performance-based education (Levine & Patrick, 2019, p. 4). An early definition of CBE, as described by Swanchak and Campbell is "the precise specification of competencies or behaviours to be learned, the modularization of instruction, evaluation and feedback, personalization, and field experience" (1981, p. 5). This definition of CBE has evolved to become an instructional delivery method with evaluation criteria weighted heavily on outcomes rather than process. It is a practical milestone-based system that ensures on-the-job skills are met. Though CBE has been used to varying degrees in professional, trade, and military training for decades, the medical discipline has recently espoused CBE at an international level (Curry & Docherty, 2017). Notably, the integration of competency-based models in higher education is not a result of practitioner negligence or ineptitude, but rather to ensure a baseline of competence across all specialties and uniformity in the development of crucial skills (Royal College of Physicians and Surgeons in Canada, 2020). Competency-based education is now common practice for medical programs within university networks, backed by professional associations in the U.S. and Canada, such as the Accreditation Council for Graduate Medical Education (ACGME) and the Royal College of Physicians and Surgeons of Canada. As a result, today's medical trainees are subjected to evaluation of not only their academic knowledge and clinical skills, but also their competencies, as they progress through a sub-curriculum scattered with milestones and entrustable professional activities (EPA's).

This paper explores a range of literature explaining theories of CBE functionality and the relationship with student development theories specific to the millennial learner. The scope of literature presented will then be analyzed in consideration with research theories discussing expectations and learning trends associated with millennials. To explain the relationship between CBE and millennials in this study, it is imperative to examine the features of recent competency-based models, explore theories in accord with students of the millennial generation, and then bring forward any relevant conceptualizations and draw connections to practical classroom application. Due to its prevalence, a substantial volume of the research presented is associated with, however not limited to, medical education. Based on my findings, conclusions will be drawn to assess the efficacy of competency-based higher education as the ideal teaching strategy to engage and accommodate the learning preferences of millennial students.

Competency-based Education: Function and Theory

Before addressing theories characterizing students of the millennial generation, it is important to explain how competency-based systems operate from a functionalist perspective. Wai-Ching

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Leung (2002) provides an expanded definition, referring to the use of CBE in medical education:

> The basic elements consist of functional analysis of specific occupational roles, translation of these roles (competencies) into outcomes, and assessment of trainee progress on the basis of demonstrated performance. Progress is defined by the competencies achieved and not the underlying process or time served in a formal educational setting. Assessments are based on a set of clearly defined outcomes, so that all parties concerned can make reasonable judgements about whether or not each trainee has achieved them. Potential benefits of this approach include individual flexible training and transparent standards. (p. 693)

For the purposes of this study, emphasis is placed on the following terms mentioned in the above definition; competencies, progress, outcomes, flexible training, and transparent standards. These terms will be dispersed throughout this paper in attempt to establish a connection between the CBE teaching methodology and students' receptivity. In reviewing much of the forthcoming literature gathering commonalities found in the research, I am inclined to identify a linkage between the competency-based teaching model and predict whether student engagement can be discerned as substantial, nuanced, or under supported. Depending on the level of theoretical harmony, conclusions will be drawn to gage the efficacy of CBE as the ideal teaching tool and learning preference for the millennial student today. On this note, as many authors agree, especially in terms of millennial students, engagement is paramount to academic success (Carter, T.L, 2009; Hart et al., 2011; Roberts et al., 2012; Therrell et al., 2015).

It is important to acknowledge CBE as a malleable process and highly dependent on occupational roles specific to each discipline. For example, within the competency-based framework an otolaryngology resident would be required to perform a tonsillectomy, or a family medicine trainee would administer a vaccine at some point in their respective training programs. Both clinical on-the-job functions represent milestones or competencies, which are interchangeable terms. When competencies are flagged by the trainee as executed, their performance is evaluated by a faculty member in a teaching role, and if satisfiable proficiency is determined, the milestone is considered complete and documented as an entrustable professional activity (EPA). For example, the faculty instructor would sign-off that resident x has successfully performed a tonsillectomy or resident y has proven the ability to administer a vaccine. The evaluation process is then documented electronically using a web-based system or smartphone application to link each trainee's progression through the competency curriculum with their performance in the traditional chronologically based curriculum.

There is a formalized process in place to monitor each trainee's progress throughout a competency curriculum. In addition to program committees evaluating academic and clinical training, which typically consist of a director and faculty instructors, the CBE model also dictates the formation of a competency sub-committee. The latter committee's purpose includes measuring competency success rates and assessing the placement and suitability of said competencies. The competency sub-committee would typically contain some of the same and/or different members of the traditional committee, or a rotational membership. Parenthetically, it must be noted that competency-based learning models do not overwrite traditional curricula models. Instead, the competency curriculum acts as a sub-curriculum (a curriculum within a curriculum) and supplements the time-based progression model by designing obstacle-like milestones or competencies, in the form of layers positioned along the course of training.

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Milestones, therefore, can be realigned or repositioned in other segments of the training program, governed by the competency committee. In addition, rather than attributing competencies as static progress indicators that when achieved are declared competent with no terminal date, instead it must be emphasized that the concept of competency training is an ever-changing, contextual construct (Koens et al., 2005). As previously stated, the outcome-based competency paradigm focuses more significantly on end results than process. This strategy supports the recognition of varied learning styles among students and deters subjective judgements associated with process differentiation.

In terms of actual classroom application, CBE commonly associates the use of technology to facilitate a "learner-centredness of training" (Frank et al., 2010, p. 641). Methods such as the flipped classroom may be prevalent in a competency-based learning stream. Learning management systems such as Slack, Blackboard, and Canvas are quite common platforms for teacher-student communication. he proliferation of medical simulation technology also supports the CBE model. For example, surgical training programs in Canada have piloted the OtoSim, a device that attaches to a smartphone to simulate otoscopy (a clinical procedure to examine structures of the ear)…not only does this provide a standardized curriculum for trainees nationally, it also collects performance analytics that can be shared with program directors to assess learners' competence (Hall et al., 2020). In the medical setting the use of technology can also prove to be quite valuable in the absence of real patients in actual clinical experiences. Performing an otoscopy simulation using the OtoSim is an example of a milestone to overcome within a competency curriculum. Especially during the COVID-19 pandemic with training programs disrupted, institutions recognize the tension between the need for flexibility and the responsibility to maintain training standards (Hall et al., 2020).

Moving onward from the functional definition to a more theoretical perspective, the CBE strategy guides the path of mastering competencies throughout the course of training, with an onus on the student's individual performance. As students progress through milestones, they can accomplish objectives in a non-linear fashion and flexible learning style. Theories state that a larger share of students will ultimately reach proficiency in each content area if they are given the freedom to advance at their own pace and if their learning experiences are tailored to their needs and interests (Lewis et al., 2014; Sturgis & Patrick, 2010, as cited in Ryan & Cox, 2017). Some authors echo this theory, arguing that CBE encourages students to take responsibility for their progress by mapping out their own transparent pathway from milestone to milestone on their way towards achieving competence (Frank et al., 2010). In doing so, more time can be spent mastering critical skills and less time learning about concepts textured by shades of didactic pedagogical strategies. Therefore, the CBE method pairs individual accountability and ownership aligned with transparent standards set by a rubric and guided by the competency curriculum. It can be argued that that this strategy promotes engagement through the exclusive process of demonstrating mastery among clearly defined occupational roles, directly preparing students for workplace-specific skills and abilities. Within a CBE model, instructors can teach specifically what they need to teach, and students can learn specifically what they need to learn. The next section will expand on research suggesting how our subjects, millennial students, prefer to learn.

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Millennial Students: Traits and Trends

The Millennial Generation (born ~1982-2002) is now well represented in the university setting and shaped by a variety of influences (Carter, 2009, p. 25). Also known as generation *y*, net generation, and generation 'me', several scholars agree upon shared characteristics, which in turn help provide working definitions for this study. The millennial generation, according to the work referenced in this paper, exhibit diverse traits and behaviours apart from ancestral generational groupings. Monaco, in defining the millennial student, compiled a table consisting of characteristics and how they relate to pedagogy (2007). Several of these suggestions for classroom application include "clear instructions and expectations of assignments, daily lesson learning outcomes, clear paths to success, the inclusion of technology for teaching, linking content to 'real life' situations, and the encouragement of group dynamics" (Monaco, 2007, p. 44). In comparison, researchers have generalized the preceding generation *x* (born ~1965-1980) as displaying the following traits: "gen *x*'ers are thought to be cynical and pessimistic, they are private, culturally independent and skeptical, they are likely to want hard facts, expertly delivered, and value variety and speed" (Borges et al., 2006, p. 572). Based on these juxtaposed characteristics, generation *x*'ers can be described as more compliant with instructional delivery and less likely to question teaching methods, inclined to work independently rather than in groups, and willing to challenge academic sources; while our modern counterparts, millennials can be described as confident and resourceful, skeptical of dull or non-engaging instruction, gravitational towards group work, and outcome oriented.

To provide a disclaimer, researchers should avoid generalizing students, however being mindful of generational characteristics allow educators to develop a culture that is appealing and relevant to current learners (Hopkins et al., 2018). As such, this paper will acknowledge the trends gathered from the following peer-reviewed critiques. On the surface, Howe and Strauss identify seven core traits of millennials germane to the delivery of higher education; they are "special, sheltered, confident, team oriented, conventional, pressured and achieving" (Howe & Strauss, 2003, as cited in Yahr et al., 2013, p. 2). Authors such as Hopkins characterize that what is important to millennials may be different from what is important to individuals who belong to other generational groups (2018, p. 188). Millennials have been parented distinctly and have been consistently deemed to be "special" and "winners," irrespective of their behaviors, effort, or actions (Hopkins et al., 2018, p. 188). Social media is also a very regular part of a millennial's daily routine (Hopkins et al., 2018). "In terms of learning preferences, group activities, workshops, and game-style presentations of knowledge are preferable" (Hopkins et al., 2018, p. 189). Millennial students appear to demonstrate less tolerance for lecture-style teaching, and this is one reason that instructors need to find new ways to engage the students with the learning content (Koponen, 2019). This research goes on to indicate that millennials are accustomed to fast information and answers, so empiric evidence suggests that they may tend to have shorter attention spans (Hopkins et al., 2018). Further in terms of learning preferences, Therrell and Dunneback (2015) provide the following observations:

> Millennial students today are widely subject to boredom and a litany of distractions meant to keep boredom at bay: online video, video games, TV, texting, tweeting, Skyping, and music available 24/7. Focusing young adults on challenging course work presents teachers with a major challenge: to keep students mentally engaged and emotionally

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involved once they are in the classroom or online. When students elaborate, they indicate that teachers who exhibit positive energy are motivational, that body language or facial expressions indicating passion starts to capture their attention and tends to increase their responsiveness (p. 61).

Early connections can be made regarding the relationship between millennial students' apparent need for engagement and the nature of CBE framework. Considering the research presented thus far, I accept that the self-directed proficiency model exhibited by competency-based training would appeal to modern learners. Due to the construct of mapping necessary competencies within a curriculum, the student can prepare for the fixed pillars ingrained within the training program, represented by milestones. The transparent standards and pre-meditated action plan inspire specific focus, increasing the caliber of engagement, as students confront milestone after milestone. Relatively, in terms of motivating millennial students, Crone and MacKay assert "that students increasingly seek structure, direction, and praise in a way previous generations did not…it seems they want things to be fixed or done so they can move on to the next project" (2007, p. 19). Pertaining to medical education, residents can become absorbed in mastering defined competencies, which in turn can activate a healthy form of student engagement. "The fundamental characteristics of milestone-based assessments can be perfectly paired with millennial motivations and expectations of their learning experiences in several dimensions" (Desy, et al. 2017, p. 245). It is the self-directed and flexible learning style embedded within a competency-based model, that in turn can captivate students and keep them engaged throughout the pursuit of turning competencies into EPA's.

CBE for the Millennial Generation: A Fixation on Necessity

Following the analysis of CBE from pragmatic and theoretical standpoints and unpacking characteristics of the millennial student generation, this paper will proceed with determining relevant connections. However, the relationship between the millennial student and competency-based education will be further investigated to draw firm or nuanced conclusions. I would infer that there is a level of synergy between the CBE strategy and student. Research in accordance with my inference depicting this connection is as follows. First, Stasio declares that 20th century classrooms were "time-based" and the 21st century classroom is "outcome-based" (2013, p. 57). This movement defines a critical trait of CBE framework as responsible for altering the classroom dynamic, implying a shift from process-centredness to learner-centredness (Frank et al., 2010). A practical reason for this shift may be of organic methodology, a transition that caters to the learning preferences of millennial students. Secondly, CBE is distinctly different from traditional education in many ways; it moves the focus of assessment away from knowledge acquisition towards knowledge application, incorporates more formative assessment, and emphasizes the direct observation of students' skills with feedback on how these skills compare to a predetermined standard (Weinberger et al., 2010, as cited in Desy et al., 2017). With increased frequency of feedback, natural learning curves may be shortened and lines of communication between teacher and student enhanced. Based on these observations, some authors have agreed that competency-based education is an ideal fit for the millennial generation as it realigns education and assessment with the needs of these 21st-century learners (Desy et al., 2017).

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Much of the literature reviewed in this study portray millennials as extremely resourceful, confident, collective minded, and diverse (Crone, et al., 2007; Desy, et al., 2017; Frank, et al., 2010; Hopkins, et al., 2018; Howe, et al., 2003; Stasio, 2013; Therrell, et al., 2015). Based on the assumption that millennial learners are often tech-savvy, self-directed, highly adoptive of new skills and on-demand feedback and demonstrate preference towards learning flexibility and engaging activities while detaching from didactic instruction - I propose that millennial students tend to be fixated on the necessities and unconcerned with academic content that proves to associate no applicability to their learning objectives. Many millennial students seem to have a "consumerism" attitude towards education (McGlynn, 2008, p. 20). They see themselves as customers in a business transaction, seeking direct benefit and application from education as the product. This can be interpreted as students potentially feeling their priority is to only take what they need from each unit and overlook peripheral details. Today's learners are clever enough to seek out the "real world" value of each assignment in class and determine how they will use the skills obtained in one class in the rest of their courses and which will benefit them most in the professional world (Cardon, 2014). According to the trends and characteristics gathered by the authors in a holistic fashion, millennial students' behaviours and learning preferences complies with my proposition.

Today's students have a fixation on the necessities, which can be further explained by merging millennial expectations with competency-based principles (Desy et al., 2017). Practical application to connect milestone-based ideologies with millennial educational needs are as follows. In addressing specific goals and objectives, each milestone describes the required skill in a transparent, specific manner (Desy et al., 2017). To address the need for continuous and frequent feedback; CBE framework supports formative feedback through multiple methods, including examinations, flipped classroom modalities, simulation technology, and various types of evaluation from different sources (Desy et al., 2017). Most significantly, to accommodate the need for personalized and self-directed teaching methods; CBE provides a rich developmental framework for institutional and self-directed educational interventions and on-demand guidance (Desy et al., 2017). All in all, the CBE model caters to millennial students' appreciation for mandating quantifiable focus on the necessary skills, abilities, and outcomes without the distraction of micro-process supervision.

Conclusion

In conclusion, the research presented in this study identifies and defines the competency-based education method and extrapolates trends and characteristics of the millennial learner. As student development and behaviours evolve over time, it is prudent to also expect an evolution of pedagogical approaches. Hence, as much of the tendered literature reveals, there is a substantial relationship between the CBE model and its resonance with the millennial generation.

This study is important within the realm of higher education academia because it paves the way for an expanded discussion regarding educational reform. Despite most of the examples brought forward in this paper sourced from medical journals and considering medical education practices, the CBE method inherently provides a critical assessment of its validity as an alternate pedagogical strategy, and contrasts and challenges research surrounding student development theories (in millennials). Respective of the findings, this study makes a case for increased research

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activity advocating the CBE movement as part of a macro educational reform, inclusive of all disciplines.

Looking back to the Leung definition of CBE; competencies, progress, outcomes, flexible training, and transparent standards are all themes that underpin and highly correlate with the research brought forward (2002). These components of student development can acclimate to various capacities, with the end goal of engaging the millennial learner in the higher education setting. The opinions collected and conveyed in this paper exemplify CBE as a potentially valuable teaching and learning strategy. Although several of the views regarding millennial student behavior are educated opinions and prone to some level of generalization, it cannot be understated that the shared characteristics lead to an overarching theoretical semblance of the generational group reduced to a singular composition of traits. In particular, the Desy, et al. article (2017) reinforces this thesis by concluding that 'millennials' desire for explicit instruction, personalized learning, and directly observed assessment from their mentors is well met by the educational expectations and objectives of the CBE framework" (Desy, et al., 2017, p. 246). "With its attention to transparency, personalized learning, and frequent formative assessment, the CBE milestone-framework is well aligned with the learning preferences of the millennial generation" (Desy et al., 2017, p. 249). Based on the findings, I would ascertain there is an efficacy for competency-based training as a higher education teaching strategy, potentially proving to be instrumental in engaging and accommodating the learning preferences of today's millennial students.

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