Issues Surrounding a Heutagogical Approach in Global Engineering Education

Dr. Yakut Gazi, Texas A&M University

In her 20 years of experience as an instructional designer, media specialist, IT consultant, faculty member, and technology leader, Dr. Yakut Gazi has worked at higher education institutions in the US, Qatar, Turkey, and Spain. Prior to joining TAMU Engineering as the Assistant Vice Chancellor for Engineering Remote Education in September 2013, she led the distributed learning and classroom technology operations at Texas A&M University-Central Texas and worked at A&M's branch campus in Qatar, where the university offers four of its top engineering programs. She is on the editorial board of the Journal of Social Media in Society and the MERLOT Journal of Online Learning and Teaching. She presented at over 45 regional, national, and international conferences and is the co-author of a book titled "Discourse Indicators of Culture in Online Courses: Designing Learning Environments for Global Success". She received her doctoral degree from Texas A&M University and her Master's and Bachelor's degrees from, Bogazici University in Istanbul, Turkey. She speaks English, Turkish, and Spanish.

Issues Surrounding a Heutagogical Approach for Global Engineering Education

Abstract

Heutagogy is the study of self-determined learning, which places the learner, rather than the teacher or the institution, or even the curriculum, at the center of the learning process. The goal of heutagogy is to create responsible, self-capable, proactive, competent learners, who are ready to face the challenges of the increasingly connected world, today as well as tomorrow. The promise of heutagogy is ambitious and applaudable. This paper provides additional considerations for heutagogical approach to be successful in the global science and engineering programs.

Introduction

Hase and Kenyon[15] (2001) define heutagogy, a word that originates from the Greek word "self", as the study of truly self-determined learning, which builds on humanistic theory and approaches to learning described in the 1950s. Hase and Kenyon also argue that in the rapidly changing society and information explosion, we should be looking at an approach that not only shifts away from a traditional pedagogical approach to andragogy, where adult learners negotiate level of autonomy and control with the teacher, but also to an educational approach where the learner determines what ad how learning should take place. In a heutagogical approach, learners are expected to be highly autonomous and the goal is to develop of learner competencies as well as produce learners with capacities and capabilities to learn. The instructor facilitates the learning process, provides guidance and resources; however, it is the learner who owns the path to learning path and processes and determines what will be learned and how.

The recent interest in heutagogy is also a result of the technological advances and advent of online learning environments, where the learners have access to a plethora of resources and are expected to take charge of their own learning. As science, technology, and engineering disciplines continue to grow an interest in online distance learning, heutagogy becomes a relevant approach to learning in these disciplines. While heutagogy is an attractive approach with potential to create successful learning environments for many students, it also needs to be examined from a global/intercultural perspective for its validity for non- Anglo- and non-Western cultures, especially because more and more learning environments (for example, MOOCs) are becoming global, housing a wide variety of students and cultures. For this paper, Anglo and Western cultures refer to the Eurocentric, North American, and Australian cultures. This paper will examine the heutagogical approach in engineering education using Hofstede's dimensions of national culture: power distance, uncertainty avoidance, individualism/collectivism, masculinity/femininity, long-term/short-term orientation, and indulgence/restraint. The discussion will end with an analysis of the value of heutagogy in academic versus workforce development environments in science, technology, and engineering.

Andragogy, Self-Directed Learning, and Heutagogy

Andragogy is a theory that holds a set of assumptions about how adults learn. According to American Council on Education, adult learners are learners over the age 25 and often referred to as non-traditional learners. These individuals usually have additional responsibilities such as family, career, military or community and are seeking a degree or educational offering to enhance their professional or personal lives (American Council on Education, n.d.)[1]. According to National Center on Education Statistics (2002)[25], 73% of all undergraduate students are non-traditional. Boyd (1966, p. 180)[4] argues that "the adult knows his standards and expectations. He no longer needs to be hold nor does he require the approval and reward from persons in authority". Knowles (1975, cited in Anderson, 2013)[2] posits that adult learners can basically undertake all the curricular functions of educational institutions: needs assessment on learning, choosing and implementing learning strategies, and evaluating outcomes of learning. His definition of self-directed learning (1970, p.7)[19] emphasizes these functions that underlie this type of learning: "The process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying humans, and material resources for learning, choosing and implementing learning strategies, and evaluating learning outcomes." According to Boyd (1966)[4] and Rogers (1969, cited in Anderson, 2013)[2] personal autonomy and freedom of choice are key aspects of adult learning. Self-directed, autonomous, and independent learning are usually used synonymously by experts in the field of education (Anderson, 2013)[2].

Heutagogy goes a step beyond andragogy where there is still a place for teacher-learner relationships by bringing a new set of principles and practices that may have applications across the whole spectrum of the education and learning span (Hase & Kanyon, 2001)[15]. Heutagogy has its roots in many philosophies and approaches: phenomenology, systems thinking, double loop and organizational learning, androgogy, learner-managed learning, action learning, capability, and work-based learning (Hase and Kanyon). Emphasis in heutagogy is on development of independent capability in the learner, which goes beyond skills and knowledge acquisition.

Emery (1974, cited in Hess and Kanyon, 2001)[15] argues that people have the potential to learn continuously and real-time by interacting with their environment; they learn throughout their life span, they enjoy being led to ideas rather than spoon-fed. However, the success of self-directed learning environments is not a guarantee and depend on various variables: commitment to learning at the current time, sense of competency as a learner, familiarity of the subject matter, technical skills related to the learning process (Candy, 1999)[7].

Hase and Kanyon (2001)[15] point to a myth that the carefully developed print-based materials enable self-directed learning and flexible learning. Flexible delivery does not equal flexible learning. In flexible learning, the teacher provides resources, but the learner designs the actual course. Flexible learning moves away from teacher-centered learning, which is what Rogers strongly argued as grossly overemphazised (1989, cited in Hase and Kanyon). Learners read around critical issues or questions and determine what

is of interest and relevance to them and then negotiate further reading and assessment tasks. In this manner, heutagogy goes beyond a linear path as each learner's path is potentially unique. Today's hypertext learning environments provide the affordances for this kind of learning to become reality.

Critiques of self-directed learning focus on the balance between student-institutional control and student-teacher control as potential issues (Garrison, 1987 and Morgan, 1985, cited in Anderson, 2013)[2]. However, there are further issues with implementing self-directed learning in global learning environments. We will explore these issues in the next section.

Global Engineering Education and Intercultural Considerations

With the emergence of new global cultural forms, media, and technologies of communication, the relations of affiliation, identity, and interaction within and across local cultural settings have been reshaped, which is termed globalization (Burbules & Torres, 2000)[6]. Although globalization in education is highly recognized and upheld by scholars and educators, the target needs of students in global education courses are still seen as content and language focused. The experiences, beliefs, and cultural expectations of students from a variety of backgrounds are not yet reflected in the pedagogy and evaluation practices (Pincas, 2001)[27]. One of the outcomes of increasing access to education at a distance through global online courses, as Moore (2006)[23] points out, is that more and more students are becoming embedded in their own culture, while studying under the direction or guidance of a teacher who is foreign to the students' cultures. These courses usually originate from institutions that are also engrained in predominantly Western/Anglo worldview and perspectives on learning and teaching. The meaningfulness of Western constructs outside the West has been questioned widely (Minkov, 2013)[22]. Rogers, Graham, and Mayes (2007, cited in Gunawardena, 2013)[14] emphasize the need for more thorough examination of culture due to the amount of content for learning that is created in the West and exported through the Internet to other countries. However, culture is a concept, which is very complex and difficult to define. Researchers have often avoided defining culture explicitly (Segall, 1984)[28]. Nichols (2003)[26] cites sources to claim that research on cultural difference is widely variable in ways it defines the term "culture" "as a value system, country, language; in the methods used to collect and analyze information about culture; and in the resulting descriptions of particular cultures" (p.144). Studies in social psychology, for example, do not consider culture as a psychological construct on its own, but as a source of group-based variation in other psychological phenomena (Adams & Markus, 2004)[1]. When the approach is this, culture becomes a shorthand for a grouping variable of secondary interest (Adams & Markus), whereas the primary interest is more standard psychological phenomena, like motivation, emotion, cognition, conformity, dissonance, and the like. Culture is a general term for the beliefs and behaviors accepted within communities that may range from small family units to national or international systems (Pincas, p. 30)[27]. Hofstede[16] defines culture as the "collective programming of the mind that distinguishes the members of one group or category of people from one another" (2001, p. 9), which

emphasizes the learnable aspect of culture. Culture is also an individual and psychological construct as reflected in Matsumoto's definition (cited in Gunawardena et al, 2003, p.754)[13]: "the set of attitudes, values, beliefs, and behaviors shared by a group of people, but different for each individual, communicated from one generation to the next." For the purposes of this paper, the following definition of culture will be used:

> *Culture is the set of established values, attitudes, and beliefs a group of people collectively hold. Culture is manifested in individuals' behaviors when they are interacting with people from their own and other cultures.*

Hofstede's model of cultural dimensions (1997, 2001)[17][16] attempts to explain interpersonal phenomena and is one of very few empirically supported frameworks (Gunawardena et al., 2001)[11]. It can explain and help researchers understand the similarities and differences that are observed in different countries when matched phenomena are under consideration (Hofstede). Hofstede's studies were originally conducted with IBM employees of more than 50 countries all around the world. In 2010, Hofstede, Hofstede, and Minkov expanded upon the original framework[18]. Altogether, studies identified six dimensions of national culture differences. These differences are rooted in a basic problem with which all societies have to cope, but on which their answers vary. Hofstede's (1997, 2001, 2010)[16][17][18] dimensions are:

1. the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally, *power distance.* In cultures of lower power distance, consultative or democratic practices are embraced. Latin American, Asia, Africa, and Middle Eastern countries score very high (have high power distance), whereas Western/Northern Europe and Germanic countries score low. United States score in the middle.
2. the level of stress in a society when there is an unknown future, *uncertainty avoidance.* Societies with high uncertainty avoidance try to reduce stress by careful planning and step-by-step processes and by implementing rules, regulations, and procedures. People in low uncertainty avoidance cultures tolerate change more easily and have fewer roles. They are relatively comfortable with the unknown.
3. the degree to which the society emphasizes individuals and individual goals or collaboration, group identity and goals, and avoidance of conflict, *individualism versus collectivism.* In individualistic societies, individual achievements and rights are emphasized whereas in collectivist societies, group affiliation and membership are expected for a lifetime with unquestioning loyalty. Latin America, Asia, and Africa have strong collectivistic values whereas Europe and North America have high individualistic values. In fact, the United States scores highest in the individualism dimension. In general, as countries become richer, they become more individualistic.
4. the extent to which the gender roles are rigidly defined, *masculinity versus femininity* . In masculine cultures, the differences between gender roles are more dramatic and less fluid than in feminine cultures where men and women have the same values emphasizing modesty and caring, rather than competitiveness, assertiveness, ambition, and power. Due to the problematic connotations of the terminology (sexuality), sometimes researchers use quality of life versus quantity of life to refer to

this dimension. Masculinity is extremely low in Nordic countries and very very high in Japan and in European countries like Hungary, Austria and Switzerland influenced by German culture. Masculinity scores are relatively high in the United States and United Kingdom. For example, the existence of paternity leave and equality in pay between genders are indicators of feminine cultures.

5. the choice of focus for people's efforts, long-term versus short-term orientation , also referred as Confucian dynamism. Cultures with short-term orientation attach more importance to the future, fostering pragmatic values oriented towards rewards, including persistence, saving and capacity for adaptation. Cultures with long-term orientation, on the other hand, value steadiness, respect for tradition, preservation of one's face, reciprocation and fulfilling social obligations. High long term orientation scores are typically found in East Asia; moderate in Eastern and Western Europe, and low in the Anglo countries, the Muslim world, Africa and in Latin America. This dimension, being relatively new, needs more data to be collected to substantiate its explanatory power.
6. the extent to which members in society try to control their desires and impulses, *indulgence versus restraint*. Indulgent societies allow relatively free gratification of basic and natural human desires related to enjoying life and having fun, where restrained societies believe such gratification needs to be curbed and regulated by strict norms. This dimension is the most recently added one and hence lacks substantial data to make major generalizations. However, the existing data are not surprising: indulgence scores are highest in Latin America, parts of Africa, the Anglo world and Nordic Europe; restraint is mostly found in East Asia, Eastern Europe and the Muslim world.

Hofstede's framework also received wide criticisms for ignoring internal ethnic and linguistic diversities within the same nation (Ess & Sudweeks, 2005)[11]. Especially in the case of adult learners with diverse backgrounds, classifications according to nationality or a specific dimension of culture can be superficial. These adult learners bring a wide variety of experiences and resources to the learning environment that makes them individually unique. Individuals may as well and do act in ways not expected from their culture; they may be members of subcultures that conflict with certain aspects of the macroculture. Although there are frameworks that explain how people behave as a culture, at the individual level these frameworks need modification. Therefore, the extrapolations from one's culture to the behavior at the individual level are at best an educated guess.

Despite this caution, Hofstede's framework will still help us exemplify how a global approach, rather than a Western approach, to heutagogy is needed:

- Personal autonomy and freedom of choice, foundational characteristics of adult learning as defined by Boyd (1966)[5] and Anderson (2013)[3] are primarily Western and democratic values, predominant in cultures with low power distance. These concepts are not widespread in high power distance cultures. People from cultures of power distance tend to have an easier time fulfilling orders, following instructions, when they perceive a power distance, as in instructor-student communication, or when communicating with

older peers. These people expect and feel more comfortable with following an authority (instructor) in the learning environment. For example, Murphy (1989)[25] found that distance learners in Turkey, which is a high power distance culture, struggled while transitioning from the traditional teacher-centered form of their high school education to one in which they must function independently as they learn from textbooks and, optionally, from instructional television programs and a limited offering of face-to-face lectures. People in high power distance cultures are also more inclined to perform certain speech acts when they perceive themselves to have authority over others; for example, when they lead a group or communicate with younger peers. These manifestations of power distance may be further complicated or compensated by masculinity/femininity of the particular culture.

- Uncertainty avoidance manifests itself best in people's need for security. People from high uncertainty avoidance cultures can have a harder time dealing with ambiguity and in the context of the learning experience. This may pose issues for the heutagogical environment, where learner is expected to be in charge and making decisions about the learning process. The manifestation of the issue can be observed as frequent questions about expectations or discontent about this change of learning approach.
- Depending on the learner's culture, their approach to group work and collaboration with the peers may be impacted by the degree of individualism versus collectivism and masculinity versus femininity they value. Autonomous, self-determined learning assumes certain level of individuality and assertiveness, which are characteristics of masculine cultures. At the same time, if the heutagogical environment is constructed in such a way that the learner will have to depend on the community of learners to make successful decisions about the process of learning, their degree of collectivism or femininity orientation will have an implication on their achieving their learning goals. Additionally, "self" in self-directed learning is culturally formed and bound (Brookfield, 2009)[6] and individuals understanding and approach to this type of learning will be affected by their culture's individuality versus collectivism.

In addition to Hofstede's framework, a large body of research has accumulated to show the importance of cultural considerations in designing and developing computer-mediated learning environments (Gunawardena, 2013)[15]. The discussion of these approaches has been excluded from the scope of this paper.

Conclusions

Some researchers think conducting intercultural communication research that documents differences in cultural styles perpetuates and strengthens negative stereotypes, however, ignoring the differences and assuming everyone is the same is another form of discrimination (FitzGerald, 2003)[12] that leads to misinterpretation and problems in intercultural relationships. There is a necessary caution that needs to be taken by researchers, however, in making generalizations of cultural styles. Most researchers tend to over-generalize when making comparisons. For example, referring to East Asians as a whole group of Japanese, Chinese, Korean, and South Asians including India can be misleading since this grouping represents many different cultures and languages with sometimes differing characteristics. Clyne (1994)[9], for example, found that South

Asians such as Indians and Sri Lankans had more in common with Iranians rather than other Asians such as Japanese and Chinese. However, there are intercultural differences, and global learning environments should attempt to consider these differences in their design and development.

Although it may be theoretically possible to train instructors in intercultural approaches to learning and expect educational structures to be more flexible over time, I argue that it is a more immediate as well as long-lasting solution to try and prepare more autonomous learners, who are less dependent on instructors and institutions. This approach should be the basis of our educational systems and schooling, starting from preschool through K-12. This is a tremendous undertaking, which requires major paradigmatic change in the way we conceptualize schools, teachers, learners, and their roles. Societal change is painfully slow and we may not have the luxury to wait for learners ready for self-directed approaches to become adults. For immediate implementation of heutagogical approaches, workforce development, continuing education, and massive open online courses (MOOCs) can be the logical starting point, where the primary reason for attendance is generally interest in the topic and perceived utility of the information (Krupinski, Lopez, Lyman, Barker, & Weinstein (2004)[22], not necessarily credentialing. These learners are better suited and prepared for making decisions on what to learn, how to learn (in person, online, hybrid, self-paced, group learning, etc.), whether or not their learning should be assessed formally. In this sense, today's MOOCs can be perfect examples of a heutagogical approach. As these courses are open and free, learners make their own decisions to take them, pursue them to the completion or leave where they want, and in some cases take the assessments provided to get completion credentials. As this approach to learning is non-traditional and not mainstream, the traditional ways of assessing the success of these courses deliver poor results. For example, roughly five percent of students who signed up for a Coursera (a major MOOC platform provider) MOOC earned a credential signifying official completion of the course (Koller, Ng, Do, and Chen, 2013)[21], which is an extremely low retention rate that alarmed educators.

The concept of learner autonomy in making choices about materials, activities, and assessments of learning should also be scrutinized for science, engineering, and technology-related fields, where gaps in competency can lead to major material losses as well as loss of lives. The decisions about what to learn, how to learn it, how quickly or slowly it needs to be learned, and how it will be assessed are a delicate matter that require expertise and maturity. There should be multiple levels of accountability built into the learning experience to ensure that independent of the choices learners make, the result of the learning experience is mastery of the essential learning outcomes. This is another reason why workforce development, continuous education, and informal learning are an immediately available and more logical choices for heutagogical approach for science and engineering education, rather than, say, undergraduate education.

According to Ess (2002)[10], the goal of 21st century education is to create "cosmopolitans", the citizens of the world, who deeply understand and can maneuver comfortably among multiple cultural worldviews and communicative preferences. These cosmopolitans ought to engage with one another via global forms of computer-mediated

communication in ways that preserve and enhance foundations of culture, rather than simply colonize them into a single homogeneity. Hence, an education that is shaped with philosophy based on global approaches and ethics, rather than a single worldview, is necessary for a genuinely intercultural electronic global village, to produce self-capable, self-determined, competent learners. The products of Western educational approaches, although valuable, should be examined carefully through a cultural lense, as well as with an open mind about their utility in a variety of disciplines, educational platforms and contexts.

Bibliography

[1] Adams, G. & Markus, H. R. (2004). Epilogue: Toward a Conception of Culture Suitable for a Social Psychology of Culture. In M. Schaller and C. S. Crandall (Eds.) *The psychological foundations of culture*. (pp. 335-360). Mahwah, NJ: Lawrence Erlbaum Associates.

[2] American Council on Education (n.d.) Adult learners. [Online] http://www.acenet.edu/higher-education/topics/Pages/Adult-Learners.aspx, Retrieved January 4, 2014.

[3] Anderson, W. (2013). Independent learning. In M. G. Moore and W. G. Anderson (Eds.) *Handbook of distance education* (pp. 86-103). Mahwah, NJ: Lawrence Erlbaum.

[4] Blaschke, L. M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. The International Review of Research in Open and Distance Learning. [Online] http://www.irrodl.org/index.php/irrodl/article/view/1076/2087, Retrieved January 2, 2014.

[5] Boyd, R. (1966). A psychological definition of adult education. *Adult Leadership, 13*, 16-162.

[6] Brookfield, S. (2009). Self-directed learning. In R. Maclean & Dr. Wilson (Eds.), *International Handbook of Education for the Changing World of Work* (pp. 2615-2637). Bonn, Germany: Springer.

[7] Burbules, N. C. & Torres, C. A. (2000). *Globalization and education: Critical perspectives*. London: Routledge.

[8] Candy, P. C. (1991). *Self-direction for lifelong learning: A comprehensive guide to theory and practice.* San Francisco, CA: Jossey-Bass.

[9] Clyne, M. (1994*). Intercultural communication at work: Cultural values in discourse*. Cambridge: Cambridge University Press.

[10] Ess, C. (2002). Cultures in collision: Philosophical lessons from computer-mediated communication. *Metaphilosophy, 33*(1/2), 229-253.

[11] Ess, C., and Sudweeks, F. (2005). Culture and computer-mediated communication: Toward new understandings. *Journal of Computer-Mediated Communication, 11*(1), article 9. http://jcmc.indiana.edu/vol11/issue1/ess.html

[12] FitzGerald, H. (2003). *How different are we?: Spoken discourse in intercultural communication*. London, Great Britain: Multilingual Matters, Ltd.

[13] Gunawardena, C. N, Nolla, A. C., Wilson, P. L., Lopez-Islas, J. R., Ramirez-Angel, N., & Megchun-Alpizar, R. M. (2001). A cross-cultural study of group process and development in online conferences. *Distance Education, 22*(1), 85-121.

[14] Gunawardena, C. N., Wilson, P.L., Nolla, A. C. (2003). Culture and online education. In M. G. Moore and W. G. Anderson (Eds.) *Handbook of distance education* (pp. 752-775). Mahwah, NJ: Lawrence Erlbaum.

[15] Gunawardena, C. N. (2013). Culture and online distance education. In G. H. Moore (ed.) *Handbook of Distance Education*, pp. 185-200). New York, NY: Routledge.

[16] Hase, S. & Kenyon, C. (2001). From andragogy to heutagogy. http://www.psy.gla.ac.uk/~steve/pr/Heutagogy.html, Retrieved January 2, 2014.

[17] Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Thousand Oaks, CA: Sage.

[18] Hofstede, G. (1997). *Culture and organizations: Software of the mind*. New York: McGraw-Hill.

[19] Hofstede, G., Hofstede, G. J. & Minkov. M. (2010).*Cultures and organizations: Software of the mind, 3rd ed.* New York: McGraw-Hill. 2010.
[20] Knowles, M. (1975).Self-directed learning: A guide for learners and teachers. New York: Association Press.
[21] Koller, D. Ng, A., Do, C. & Zhenghao, C. (2013). Retention and intention in Massive Open Online Courses: In Depth. *EDUCAUSE Review Online.* [Online] http://www.educause.edu/ero/article/retention-and-intention-massive-open-online-courses-depth-0, Retrieved January 4, 2014.
[22] Krupinski, E.A., Lopez, A.M., Lyman, T., Barker, G., & Weinstein, R.S. (2004). Continuing education via telemedicine: Analysis of reasons for attending or not attending, *Telemed J E Health, 10*(3), 403-409.
[23] Minkov, M (2013). *Cross-Cultural Analysis. The Science and Art of Comparing the World's Modern Societies and Their Cultures*. Thousand Oaks, CA: Sage.
[24] Moore, M. G. (2006). Questions of culture [Editorial]. *The American Journal of Distance* Education, 20, 1-5.
[25] Murphy, K.L. (1989, March*). A study of motivation in Turkish distance education.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA. (ERIC Document Reproduction Service No. ED 319 956)
[26] National Center for Education Statistics (2002). Non-traditional undergraduates. [Online]. http://nces.ed.gov/pubs2002/2002012.pdf, Retrieved January 4, 2014.
[27] Nichols, S. (2003). "They just won't critique anything": The 'problem' of international students in the Western academy. In J. Satterthwaite, E. Atkinson, and K. Gale. (Eds.) *Discourse, power, and resistance: Challenging the rhetoric of contemporary education*. (pp. 135-148). Stoke-on-Trent, UK: Trentham Books.
[28] Pincas, A. (2001). Culture, cognition and communication in global education. *Distance Education, 22*(1), pp.41-48.
[29] Segall, M. H. (1984). More than we needed to know about culture but are afraid not to ask. *Journal of Cross-Cultural Psychology, 15*, 153-162.