# Does pedagogy still rule? *

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***SUMMARY:*** *Theories on teaching and learning for adult learners are constantly being reviewed and discussed in the higher educational environment. Theories are not static and appear to be in a constant developmental process. This paper discusses three of these theories: pedagogy, andragogy and heutagogy. It is argued that although educators engage in many of the principles of either student-centered (andragogy) and self-determined (heutagogy) learning, it is not possible to fully implement either theory. The two main limitations are the requirements of both internal and external stakeholders, such as accrediting bodies and requirements to assess all student learning. A reversion to teacher-centered learning (pedagogy) ensues. In summary, we engage in many action-oriented learning activities but revert to teacher-centered approaches in terms of content and assessment.*

## 1 INTRODUCTION

Theories on teaching and learning for adult learners are constantly being reviewed and discussed in professional education, especially in terms of the university educational environment. Teaching and learning theories in this concept are not static and appear to be in a constant developmental process. Following on from theories and discussions on the differences between pedagogy and andragogy, yet another theory is being discussed: heutagogy. These theories shall be discussed further below. Professional education, including university education, is rapidly expanding in line with fundamental developments in society, that is, the spread of knowledge-based education in a highly technological society. Universities are making serious moves toward improving the quality of teaching and learning, especially in undergraduate education. However, even with ongoing research and new innovations in these areas, problems still remain in teaching and learning in undergraduate engineering programs. With the restructuring of degrees, there is still a large amount of material to impart in a necessarily restricted time; the fundamental skills that are absolutely essential for future engineering graduates. In some cases, the temptation to simplify complex problems, passing over intellectual challenges, is often overwhelming; alternatively, it is also difficult to justify trialling novel and "risky" educational techniques on core curriculum material, for fear of failure and repercussions in student feedback, as well as in accreditation of both the students and the courses. As educational theories advance, educators are aiming, in principle, to move towards more effective learning techniques such as andragogy (student-centered approach) and heutagogy (self-determined learning).

## 2 PEDAGOGY

Pedagogy was originally developed in the monastic schools of Europe in the Middle Ages. Assumptions regarding learning and learners were based on observation of monks in the teaching of simple skills to children (Knowles, 1984). The tradition of pedagogy was later adopted and spread to some secular schools of Europe and America in the 18th and 19th centuries. Pedagogy is derived from the Greek word "paid" meaning "child", plus "agogos", meaning "leading", therefore defined as the art of leading and teaching children. The pedagogical model is a content model concerned with the transmission of information and skills, where the teacher decides in advance what knowledge or skill needs to be transmitted and arranges a body of content into logical units, selects the most efficient means for transmitting this content (lectures, readings, laboratory exercises, films, tapes, for example), then develops a plan for the presentation of these units into some sequence. Pedagogy is a teaching theory, rather than a learning theory, and is usually based on transmission.

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## 3 ANDRAGOGY

Andragogy is a learning theory that is usually based on transaction. Theories of transmission work on the basis of filling deficits in student knowledge and comprehension of their environment, while theories of transaction work on the basis of addressing the immediate, practical needs of context-dependent learners. Andragogy is different from pedagogy in that it is a learning theory and not a teaching theory. The term is defined from the Greek words "anere", meaning "man", and "agogus", meaning "leading", and is used by adult theorists and educators to describe the theory of adult learning. Offering an alternative to pedagogy, the andragogical model considers the following issues be addressed in the learning process: allowing the learner to know why something is important to learn; showing the learner how to direct themselves through information; relating the topic to the learner's experiences – individuals will not learn until ready and motivated to learn; and finally, a need to have a life-centered, task-centered or problem-centered orientation. The andragogical model was conceived by Knowles (1984) and is predicated on four basic assumptions about learners, all of which have some relationship to our notions about a learner's ability, need and desire to take responsibility for their learning:

1. Their self-concept moves from dependency to independency or self-directedness.
2. They accumulate a reservoir of experiences that can be used as a basis on which to build learning.
3. Their readiness to learn becomes increasingly associated with the developmental tasks of social roles.
4. Their time and curricular perspectives change from postponed to immediacy of application and from subject-centeredness to performance-centeredness (Knowles, 1980, pp. 44-45).

Andragogy differentiates the learning needs of adult learners from those of juveniles and uses the term andragogy to describe the specific methods that should be employed in the education of adults. It is in sharp contrast with pedagogical teaching, where the concern is with transmitting the content; while in andragogy, the concern is with facilitating the acquisition of the content. Andragogy requires adult learners to be involved in the identification of their learning needs and the planning of how those needs are satisfied, and learning should be an active rather than a passive process. Adult learning is most effective when concerned with solving problems that have relevance to the learner's everyday experience.

There is a great deal of debate and criticism of andragogy, especially when compared to other teaching and learning theories. However, andragogy and its principles are considered to be an effective application to various learning situations of the maturing adult learner as a member of society or as a member of an organisation or as an individual. Learners, as Knowles characterised them in the andragogical model, are self-directed; enter educational programs with a great diversity of experience; become ready to learn when they experience a need to know or do something; are life-centered, task-centered or problem-centered; and are motivated by internal self-esteem, recognition, better quality of life and self-actualisation. These principles identify and allow for differences in the aims and objectives of the adult learner, as well as individual differences or differences in the learning context. This exemplifies that adult learners with such characteristics see what is required in terms of educational practice, and apply an active and experiential methodology that will develop their ability to apply learning to problem solving in future situations. Andragogy is based on a transactional process design where the teacher manages "… a process for facilitating the acquisition of content by the learners" and serves "as a content resource [who can] provide leads for other content resources" (Knowles, 1980, pp. 183).

## 4 HEUTAGOGY

Where andragogy provides approaches for improving educational methodology, Hase & Kenyon (2000, pp. 2) argued that it maintains "… connotations of a teacher-learner relationship. They suggested that, since society has rapidly changed and we now live in a highly technical society, learning should be more self-determined: the learner determines what and how learning should take place. With the term derived from the Greek word for "self", with "agogos" meaning "leading" and based on theories of self-determined learning, the term heutagogy was coined by Hase & Kenyon in the late 1990s. They saw heutagogy as "… a desire to go beyond the simple acquisition of skills and knowledge as a learning experience" (Hase & Kenyon, 2000, pp. 3); "knowledge sharing" rather than "knowledge hoarding" (Ford, 1997, in Hase & Kenyon, 2000), where knowing how to learn will be a fundamental skill in the future of our workplaces. Therefore, the core concept underscoring this approach is a desire to go beyond the simple acquisition of skills and knowledge as a learning experience with an emphasis on a more "holistic" development in the learner of an independent capability (Stephenson, 1994), the capacity for questioning ones values and assumptions (Argyris & Schon, 1996), and the critical role of the system-environment interface (Emery & Trist, 1965).

Individuals are able to make sense of the world and generalise from their particular perceptions, can conceptualise, and can perceive invariance (Emery, 1974). Therefore, individuals have the potential to learn continuously in real-time by interacting with their environment; can learn through their lifespan;

can be led to ideas rather, than be force-fed the wisdom of others; can enhance their creativity; and thereby relearn how to learn. Rogers (1969) also suggested that individuals want to learn and have a natural inclination to do so throughout their life, and argued that teacher-centered learning has been grossly over emphasised. He based his student-centered approach on five key hypotheses:

1. We cannot teach another person directly – we can only facilitate learning.
2. People learn significantly only those things that they perceive as being involved in the maintenance or enhancement of the structure of self.
3. Experience, that if assimilated would involve a change in the organisation of self, tends to be resisted through denial or distortion of symbolisation, and the structure and organisation of self appear to become more rigid under threat.
4. Experience, which is perceived as inconsistent with the self, can only be assimilated if the current organisation of self is relaxed and expanded to include it.
5. The educational system, which most effectively promotes significant learning, is one in which threat to the self, as learner, is reduced to a minimum.

Citing these principles, Hase & Kenyon (2000) identified them as the key principles of heutagogy. Figure 1 illustrates these principles in a more simplistic form.

Heutagogy is seen primarily as applicable to vocational education and training, not necessarily for university education, especially in terms of assessment. The principles of heutagogy seek to democratise the assessment process by allowing it to be driven by the realities of the marketplace – the determination of real material value is predicated entirely on the use-value of the material learned, both in the learner's design of the course of study and in the learner's ability to use that course of study for personal or professional gain. However, in that the principles of heutagogy are seen as potentially improving or extending the theories of andragogy and pedagogy, the removal of the educator makes the concept of heutagogy impractical in a credentialing institution. This is examined later.

Even although the heutagogical principles indeed empower the learner within a learning situation, it is still seen (especially in undergraduate education) that the educator/facilitator should remain a vital part of helping learners interpret their world, while at the same time maintaining a distance appropriate to encouraging learners to actively engage in that world through the process of discovery as it relates to their own interests and needs. Therefore, this then reverts back to Knowles' theory of negotiated reality between the teacher, the student and the learning material; the teaching of adult learners justifies the existence of the educator and the institution to which that educator is attached. This use of andragogical principles is used in ways that heutagogical principles cannot be, and this is why pedagogy and andragogy remain valuable teaching and learning principles within education environments.

## 5 AIMING TO ACHIEVE HEUTAGOGICAL PRINCIPLES IN ENGINEERING EDUCATION

Undergraduate education at the Queensland University of Technology (QUT) has undergone significant change within the past decade (Boles

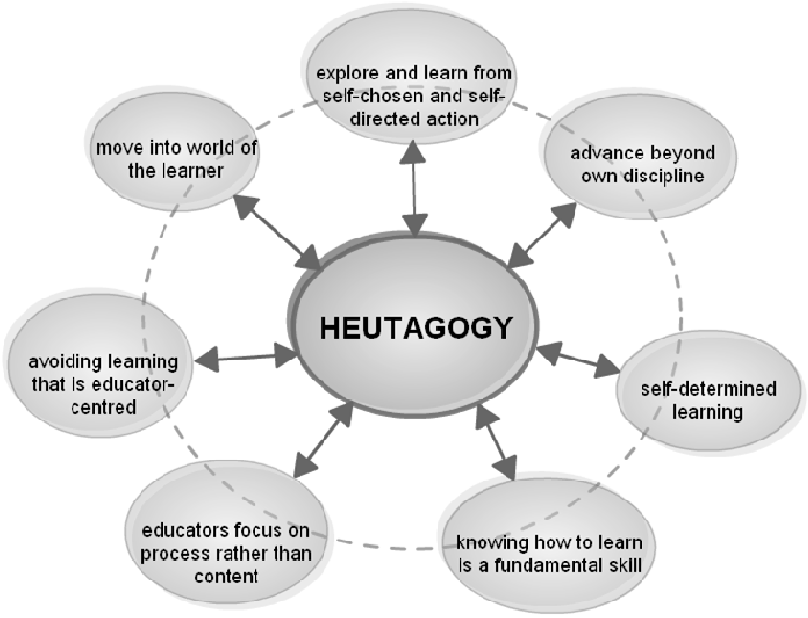


**Figure 1:** Principles of heutagogy.

et al, 2006). Many engineering educators have also outlined the changes that have already happened and those changes that need to be made for engineering education in a rapidly changing society (Campbell et al, 2007; Hargreaves, 1998; Hargreaves & Ternel, 1997; Murray, 2001). Engineering education at this institution is situated within the Faculty of Built Environment and Engineering; one of the largest Faculties within QUT, offering approximately 20 undergraduate degrees across engineering, design and urban development. While this situation has major benefits for our students, there are many issues that come with being a part of a large faculty, not least those within the engineering disciplines. However, QUT, in its Teaching and Learning Portfolio, aims to have a student-centered approach to education and aims to address broad heutagogical principles within undergraduate education. In thinking about the process of learning rather than the content, engineering utilises an assessment instrument (and not without its criticisms) called Criterion Referenced Assessment (CRA). The process of CRA seeks to assess both the process of learning as well as the content. In the teaching of our engineering students, educators make every effort to avoid teacher centered learning through interaction in tutorials and hands-on laboratory work. Students are given the ability to explore and learn from self-chosen and self-directed action and are encouraged to look beyond their own discipline. A good range of choices are available in terms of the majors, second majors and minors, as well as a common first year program, and units offered in the degree. However, some flexibility is not possible due to the degree having to adhere to certain "guidelines" outlined by external and internal stakeholders; this is also true in that the content of the units is not negotiable, nor is the assessment of any units in the degree.

This then raises the issue of whether we are really able to meet andragogical or heutagogical principles. The limit on heutagogical principles in terms of what we do in engineering education is the assessment aspect. According to Hase & Kenyon (2000, pp. 6) "… assessment becomes more of a learning experience rather than a means to measure attainment. As educators we should concern ourselves with developing the learner's capability not just embedding discipline based skills and knowledge. We should relinquish any power we deem ourselves to have." However, we argue that the guidelines set by certain internal and external stakeholders do not allow students to have "control" over what is or is not assessed. Students have to meet certain criteria laid out by these stakeholders, or they do not meet the criteria set out by bodies governing their profession and professional practice.

Boles et al (2006, pp. 2) argued that "engineering education continues to re-invent itself not only in its response to various pressures, but also in its attempt to positively influence the next stages of technological advances and of enhancements of the quality of life in the community". In their examination of the development of engineering education programs, they illustrate that ongoing and seemingly rapid technological change is only one of many factors affecting not only engineering education, but also the learning experience of engineering students. This is especially true for "Y Gen" students who are demanding more online material ready at their fingertips in the form of podcasts, YouTube postings and feedback forums. Yet the dichotomy is that educators within engineering make significant efforts to attempt teaching using technological tools, but the students indicate that using older technology tends to assist them to learn complex problems. For example, students would rather attend lectures, and have indicated that they prefer the "chalk and talk" option for lectures and, particularly, tutorials. Using andragogical or heutagogical approaches to teach undergraduate engineering students as adults (for example, encouraging them in options and opportunities in what and how they learn) works well in theory, but in reality, feedback from the Learning Experience Survey, and that from email and informal discussion, indicate that the students are less interested in learning, but more interested in assessment and achieving good grades; that is, they are assessment-driven rather than learning-focussed. They indicate in feedback that they are reluctant to be taught using these principles; they would much rather be told what they have to know and would rather not work the solutions out together with a tutor/educator. These issues are exacerbated also by the educator/learner ratio and the volume of material to be covered in a decreased amount of allocated time per week. This encourages a style of presentation based on the active teacher and passive learner.

## 6 CONCLUSION

Undergraduate engineering education taking place in universities focuses on transmission of knowledge and skills, premised on the notion of pedagogy and its underlying assumptions. Andragogy "fits" the university education context because of its flexibility and educators within engineering do aim to implement its theories. However, due to various issues (not least the reluctance in dealing with complex teaching methodologies), educators are reverting to traditional pedagogical methods (most return to what is familiar; to teach how one was taught). Although discussion is given to andragogical and heutagogical principles, and their application in the university educational situation, heutagogy and its principles are not able to be applied (in its "truest" form) due to the very nature of university learning, and internal and external stakeholder requisites for certain professions. For example, engineering and architectural education is guided by Engineers Australia and the Royal Australian

Institute of Architects, respectively, which accredit courses so students can graduate with a certain set of core capabilities deemed necessary for the graduate to work within and become a member of that profession. This is not unreasonable. Undergraduate courses are also structured so as to educate students who recently completed high school education and, as such, this environment is weak in terms of its function as a model of adult learners.

So in practice, we are not able to achieve the andragogical and heutagogical (learner-centered) principles so we revert to the well-known pedagogical (teacher-centered) approach. The problem is that we know that current styles of teaching and learning are not working as effectively as we would like with the current generation of students, but what do we replace it with? The challenge for all of us, therefore, is to find a way to move forward from our comfortable transmission modes of educational practice into the more challenging realms of student-centered ownership of learning, and to create a new culture of engineering education where pedagogy is not the only ruler in the realm of assessment.

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