Supporting Adult Learning: Enablers, Barriers, and Services

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ABSTRACT
Adult learners are a large group for higher education including the computing and information technology programs. This paper provides a structured analysis of enablers and barriers to adult learning based on their characteristics and learning preferences. The paper proposes a general operational framework to support adult learners at different levels in educational institutions. The framework can be used as a guide for organizing adult learning support programs. Implications to IT education for adult learners are also discussed.

Categories and Subject Descriptors
K.3.0 [**Computer and Education**]: General

Keywords
Adult Learner, Adult Learning Theory, Andragogy, Higher Education.

1. INTRODUCTION
Adult learners are a large group for higher education. Adult learning is different from children's learning in that adult learners are more self-directed, having prior experience, and are internally-motivated to learn subjects that are more relevant to life and can be applied immediately. Understanding adult learners' characteristics can help institutions and instructors support adult students' learning and success.

As more working adults (especially many IT professionals) consider going back to college and taking distance or e-learning courses, it is essential for educators and administrators to recognize adult learner characteristics and learning profiles to meet their needs, and support adult students to reach their goals [3, 8]. The purpose of this paper is to summarize adult learner characteristics as enablers and barriers, and propose a structured support framework for educational institutions.

2. ADULT LEARNING THEORIES
Adult learning theories emphasize the importance of experience and self-directedness and imply that adult learners benefit most

from experientially based constructivist-learning environments. The two important pillars of adult learning are andragogy and self-directed learning [8]. Knowles defined andragogy as "the art and science of helping adults learn" as opposed to the concept of pedagogy, the art and science of helping children learn [6, p. 43] whereas one of the best known self-directed learning models is Gerald Grow's Staged Self-Directed Learning (SSDL) model [5]. Self-directed learning provides a framework to match the teaching style and teaching methods to the learner's stage of self-direction. In essence, instructors play a role of facilitator or service manager in the educational process [2]. The role of facilitator is to challenge learners to examine their ways of thinking and doing regardless of their stage of self-direction.

3. ENABLERS AND BARRIERS TO ADULT LEARNING
Understanding the characteristics and needs of adult learners is a first step to provide better learning experience and support for them. Some of these characteristics can be barriers to their learning, and some others may provide benefits if they are appropriately addressed in teaching and course designs. We assess major enablers and barriers to adult learners at three levels (Table 1):

4. Proposed Framework for Adult Learner Support
We should create a cooperative climate of mutual trust and acknowledge the wealth of knowledge and experiences the adult learners bring to the class. Some teaching strategies and practices include *Active learning* [1], *Collaborative learning* [12], *Peer learning* [10], *Authentic learning* – relating learning to real world issues and problems [7], and *Personalized learning*, which provides flexibility and choices to accomplish course objectives [4, 9].

Two types of technologies are commonly used in the online learning environment which can help adult learners learn efficiently: learning management systems (LMS), a more formal and structured learning environment, and Web 2.0 applications including blog, wiki, social networking, online group, social bookmarking, online forum, content sharing, collaborative editing, online collaboration, etc. More importantly, it was found that organizational support and relevance of the course are two major factors influencing adult learners' decision to drop out or persist in online learning [11]. To enhance adult learners' learning and experience, a wide range of support and resources are needed as shown in Table 2.

Table 1. Enablers and Barriers to Adult Learners at Three Levels

	Enabler	Barrier
Personal	Rich life and work experience. Past experience motivates to learn. Goal-oriented. Strong motivation to improve knowledge and skills. Relevant to life	Poor academic preparedness. Lack of previous success. Are anxious about returning to school because of a long gap in education. Past experience may be biased or incomplete. Late adopter of technologies. Resistance to change. Ability to absorb new information due to aging.
situational	Less involved in campus activities; more concentrated. More open to discuss and communicate with peers.	Have multiple roles in life: work, family, financial responsibilities. Rigid schedules and limited time. Tight budgets (debt) and lack of support.
institutional	A variety of learning program options (e.g., online program, part-time program, accelerated training programs). Academic advising and other ancillary supports (e.g., counseling, career service, child care). Flexible course schedules.	Lack of information and support. Rigid course schedule and degree requirements. Teaching methods and course delivery that do not match adult learners' needs (e.g., more memorizing content, irrelevant to life, information cannot be applied immediately).

Table 2. Services to Support Adult Learners' Learning and Success

Level of support	Services to support Adult Learners' learning and success
Instructor	A variety of teaching methods and educational technology, accommodating class policy, relevance of the course
Academic program / Department	Flexible class schedules Distance learning options Career-related certificate program options Accelerated class options Part-time degree programs Academic advising Course credit for life experience (Prior Learning Assessment)
Institution	Financial aid packages Child care services Transportation options Course credit for life experience (Prior Learning Assessment) Academic, educational and career services Technology support

5. CONCLUSION

The principles and practices discussed in this paper apply to adult learners in the IT discipline as more IT professionals now come back to school for improving their skills, acquiring new skills or getting a certificate for promotion or changing fields. The teaching strategies and practices such as pair programming, capstone project, and online community, along with newer technologies, especially the advancement of web applications and resources have shown us an unprecedented potential to create learner-centered learning environments for IT students.

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