Abstract: While the high school dropout rate has shown steady improvement during the last decade, it is still unacceptably high among students of color. They make up a large percentage of the 3.3 million youths who have not completed H.S.; however, they are the least likely to take, complete, and pass GED tests. Concept mapping could offer for young urban adult learners the opportunity to make meaningful, fully integrated, and supervised connections between their lived experiences and the knowledge explored in literacy classes. This paper explores the potential use of concept maps as an instructional intervention in adult literacy programs.

Introduction

Two major strategies to improve the literacy levels adults in the general population involve increasing the high school completion rates of school age youth; and enrolling school non-completers into adult literacy programs (which were initiated with the passage of the Economic Opportunity Act of 1964), and assisting them to take and pass the General Education Diploma (GED) tests (which began in the 1940s). However, over the past few decades these strategic initiatives have not produced the desired results. While the high school dropout rate has shown steady improvement during the last decade, it is still unacceptably high among students of color. For example, in 2007, 21.4% of Latinos, 8.4% of African Americans, 6.1% of Asians and Pacific Islanders, and 5.3% of White students dropped out of high school (Catelli E.F. et al., 2009). In 2005, 39 million (18%) of U.S. adults aged 16 and older lacked a H.S. diploma. However, proportionately people of color were more likely to be among those without a H.S. diploma. Thirty-five percent of Latinos, 20% of Native Americans, and 18% of African Americans did not complete H.S. compared to 12% of Asians and Others respectively, and 10% of Whites (GED Statistical Report, 2008). For the majority of these adults, adult literacy classes and a General Education Diploma (GED) represent an avenue to develop and document their literacy attainment. However, only about 2.3 million adults (less than 6% of those eligible) enroll in adult literacy programs each year (Keenan, 2009). Of those who participate, the majority are students of color. For example, Keenan (2009 indicated that 72% of adult literacy participants were students of color compared to 26% who were White. This low rate of participation is made more alarming when we consider that in a given year up to 74% dropout; many in the first 3 weeks (Quigley, 1997).

Using Cross’s (1982) framework of barriers, Quigley (1997) identified several factors associated with each of the barriers to influence non-completion. For example, situational barriers included transportation, family issues, and others. Institutional barriers included red tape, poor geographic access, lack of handicapped access, inconvenient scheduling, irrelevant courses, and others. Dispositional barriers concerned attitudes in general and specific attitudes towards education, cultural and value differences between adult literacy students and their teachers (Quigley, 1997). Quigley identified dispositional barriers as demonstrating the most potential for significant intervention to stem the dropout rate. Given that teachers and students
are very likely to see the world differently, he concluded that practitioners and researchers need to pay more attention to the world as seen by students.

Additionally, like the secondary schools that preceded them, adult literacy programs tend to be least effective with young students of color (many found in urban areas). They make up a large percentage of the 3.3 million youths who have not completed H.S.; however, they are the least likely to take, complete, and pass GED tests. For example, in 2008, the majority of GED candidates were White (52%), followed by African American (23.7%), Hispanic (19.2%), American Indian (2.5%) and Asian (1.8%) (GED Statistical Report, 2008). Similarly, the majority of those who passed the tests were Whites (60.2%), followed by African Americans (18.3%), Hispanics (17%), American Indians (2.1%), and Asians (1.8%). Lastly, only about 1.5% of school non-completers take and pass the GED tests each year (GED Statistical Report, 2008), and only 2 percent of those who receive a GED actually complete a four-year college degree (Tyler, 2004). Apparently, students of color are not well prepared to take and pass the GED tests, and those who do succeed too often fail to successfully pursue and complete postsecondary education.

As evidenced by some controlled experiments with low-achieving inner-city school children (Guastello, Beasley, & Sinatra, 2000) many young students of color are fully capable of mastering the content of adult literacy classes and perhaps successfully preparing for postsecondary education opportunities. However, the literacy problems experienced by these learners are typically exaggerated for several reasons: a) their K-12 and adult literacy programs still rely heavily on rote learning as a primary means to assist them to obtain knowledge, and their teachers do not have the means to identify and correct how these learners develop their knowledge base; b) the programs tend to focus on the attainment of abstract decontextualized knowledge, students thereby tend to perceive that their informal learning experienced in the urban community outside of the educational system is devalued within the classroom; and c) most academically challenged adult learners never really learned “how to learn.” In an Information Age, where people are inundated daily with information from a broad range of old and new media sources, e.g., television, radio, computers, Internet, handheld devices, and others, students who have learned to learn via rote memory are poorly prepared to mentally process the mass of information at their disposal. Consequently, our current approaches to addressing the adult literacy instructional needs of young students of color has not kept pace with literacy skill demands that have sprang from the increased pace of technological innovation. Any improvements in adult literacy instruction must address the fundamental way we think about the teaching and learning process and the way students make sense of their learning experiences.

The purpose of this paper is to explore the potential use of concept maps as an instructional intervention in adult literacy programs. Based upon the Assimilation Theory of Learning (Ausubel, Novak, & Hanesian, 1978), concept maps are schematic devices for representing a set of concepts in a meaningful framework of propositions (Novak & Gowin, 1984). Supporters of concept maps argue that as humans, we think and learn with concepts. Therefore, learning meaningfully means relating new knowledge to what we already know. Through the use of concept maps, adult literacy instructors can assist learners to connect their existing knowledge to new content, i.e., when they are aware of how learners store these concepts hierarchically and how they differentiate these concepts as their learning grows.

Concept mapping could offer for young urban adult learners the opportunity to make meaningful, fully integrated, and supervised connections between their lived experiences and the knowledge explored in literacy classes. Therefore, the paper will address the following question:
How can adult literacy programs and GED instruction in these programs utilize concept maps to more effectively address the instructional and learning needs of young adult students of color? Several topics will be discussed: a conceptual framework for concept maps in adult literacy programs; and an exploration of approaches that adult literacy practitioners should consider to successfully integrate the use of concept maps into their programs.

**Conceptual Framework for Concept Maps in Adult Literacy Programs**

As evidenced by the dropout rates experienced by adult literacy programs, students are unlikely to be inspired and motivated by the standard curriculums of most programs. Taught by predominantly part-time teachers utilizing individualized instruction and some classes; such curriculums often rely on abstract decontextualized knowledge in a generalized form that effectively disconnects the academic content of classes from the lived experiences and meaning perspectives of students. These curricula and teaching approaches can thereby contribute to an ineffective pattern of rote learning that failed many adult literacy students in their earlier educational attempts. The effective use of concept maps in adult literacy classes has the potential to assist students to more meaningfully connect their academic learning experiences with their existing knowledge, and to learn “how to learn.” This skill could serve them invaluably in an Information Age where information is abundant, but it must be accessed and effectively processed mentally in order to be added to the new knowledge of the recipient.

**Concept Maps: Description and Theoretical Base**

Arguing that both concepts and propositions composed of concepts are the central elements in the structure of knowledge and the construction of meaning, Novak and Gowin (1997) based their work on Ausubel, Novak, and Hanesian’s (1986) Assimilation Theory of Learning. This theory identifies concepts and propositional learning as the foundation upon which individuals construct their own idiosyncratic meanings. This theory contrasts rote learning (i.e., the acquisition of new knowledge via verbatim memorization and arbitrarily incorporated into the knowledge structure without interacting with previous knowledge) with meaningful learning in which learners must choose to relate new knowledge to relevant concepts and propositions they already know.

Because they attempt to represent meaningful relationships between concepts in the form of propositions, concept maps are different from other graphically-based instructional approaches (e.g., flow charts, cycle diagrams, and predictability trees) that adult literacy educators may have used in an attempt to assist students to graphically represent their learning efforts. Novak and Gowin (1997) argue that an effective concept map has the following elements:

- **Ten to twenty-five key concepts**—concepts are the mental images we have for words, particularly objects (e.g., job, employment, family, community, computer, Internet) and events (e.g., employment search, family reunion, block party, word processing, Internet search) that are perceived regularities relevant to a particular topic. However, everyone will not have the same mental image of the same concepts. Pictures or graphical representations are used to depict the learner’s understanding of the meaning of a set of concepts (Daley, Canas, and Stark-Schweitzer, 2007).

- **Linking words**—these words (e.g., are, where, the, is, then, with, and others) are used together with concepts to construct propositions that are stored in an individual’s
cognitive structure via rote or meaningful learning. Integrative reconciliation is employed to synthesize and demonstrate understanding via linkages and connections across bodies of knowledge (Daley, Canas, & Stark-Schweitzer, 2007).

- **Subsuming** — this represents a hierarchy of concepts in which lower-order concepts are subsumed under higher-order concepts (or the reverse), i.e., either general (most important) to specific (least important), or specific to general (Novak & Gowin, 1997). The hierarchy of concepts is context dependent, i.e., it is based on the learner’s perceived regularities.

- **Progressive differentiation** — this is a process in which learners organize concepts into more and more complex understandings, i.e., breaking them into component parts.

An important attribute of concept maps is the potential to share meanings, i.e., visual representations of conceptual meanings offer learners and instructors an opportunity to share, discuss, and revise their understanding of concepts, propositions, and the relationships between new and existing knowledge. Also, conceptual learning is fostered via critical thinking, synthesis, and shared meaning (Daley, Canas, & Stark-Schweitzer, 2007).

**Research Findings: Benefits of Using Concept Maps**

For over 25 years, concept maps have successfully impacted students’ learning in various levels of education, e.g., elementary and secondary education, higher education, medical education, and others (Novak, 1990). Recently, they have been increasingly employed in adult education and related fields, e.g., Human Resource Development (HRD). For example, in an integrative literature review of over 300 research papers presented at three different concept mapping conferences, Daley, Conceicao, Mina, Altman, Baldor, and Brown (n.d.) identified six themes that captured how concept mapping can facilitate theory development and research within HRD. One of these themes included “teaching and learning.” To promote student learning, Daley, et al. (n.d.) found that concept maps have been employed for a variety of purposes, i.e., as advanced organizers, for educational group activities, to improve reading and comprehension, to teach math, as part of sharing teaching experiences, and as a self-reflection and self-regulation tool. As an instructional strategy, Daley, et al. (n.d.) found concept maps have been used as a tool to organize instruction and to gather student feedback on learning, and to assess students’ understanding of science concepts and science language production. In terms of content areas, the range of papers focused on engineering, math, physics, medical education, photography, pharmacy, entrepreneurial behavior, and business planning. The learners ranged from kindergarten, elementary, middle and high school, undergraduate and graduate students, medical students and business learners.

Empirical research studies on the effects of concept maps on students’ learning have generally found positive results when compared with other instructional techniques. Although no studies were identified of learning outcomes for adult literacy students, several controlled studies have been conducted with K-12 students. For example, in one study in an urban setting, treatment groups using concept mapping improved reading comprehension scores among low achieving urban seventh grade students by six standard deviations when compared to a traditional read and discuss instructional technique (Guastello, et al. 2000). While, it is clear that in its 25 year history, the concept maps developed by Novak and Gowin (1984) have been increasingly embraced by scholars and practitioners from a wide variety of fields and disciplines; they are still under utilized in adult literacy programs and classes. It should be possible for
literacy instructors to master the use of concept maps and to effectively integrate them into the teaching/learning process without a significant amount of disruption in their current routines.

**Incorporating Concept Maps in Adult Literacy Classes**

In the past, literacy teachers may have resisted the use of concept maps for several reasons. First, the original concept maps required students to handwrite the maps and the process was a bit clumsily and disorganized from the learners’ perspective and they could thereby lead to learner frustration. However, concept maps are now digitized and accessible via Internet based programs, e.g., Cmap Tools (Daley, et al., 2007). This tool has been designed to support the development and elaboration of individual and group-based concept maps, and to link them to other web-based maps. Cmap Tools also provides a search mechanism, which allows users to right-click on a concept and search for information on the Web that is related to that concept and that specific map (Daley, et al., 2007). The retrieved information can lead to the development of a knowledge model. That is, the learner can use the information to build a more elaborated map or a new map. Maps constructed from the readings could complement (or be linked to) the original map. The collection of concept maps and linked resources on a particular topic represents a students’ knowledge model (Daley, et al., 2007).

Second, teachers may not possess the knowledge and confidence to use the maps themselves. This issue can be addressed via professional development workshops. This process should follow several steps (Novak & Gowin, 1984; and Daley, Canas, & Stark-Schweitzer, 2007). 1) Define a focus question, i.e., a question that clearly specifies the problem/issue that the concept map should resolve. 2) Identify and list the key fifteen to twenty-five concepts that apply to the knowledge domain of the map. 3) Rank order these concepts, i.e., identify the most general concepts first and place them at the top of the map. 4) Identify the more specific concepts that relate in some way to the general concepts. 5) Tie the general and specific concepts together with linking words in some fashion that makes sense or has meaning to you. 6) After the preliminary map is constructed, look for cross-linkages between the general and more specific concepts. 7) Discuss, share, think about and revise your map.

Third, teachers may have been concerned about the time commitments students would require to master the concept mapping process. Many students who enroll in adult literacy classes are seriously concerned about their time utilization in classes and the tangible results from their learning efforts. Concept maps provide tangible evidence of their learning progress. By comparing initial maps with subsequent maps on the same topics, students can clearly see the extent to which their knowledge of a particular topic has grown. They should thereby view their time invested in learning to use concept maps as time well spent.

Fourth, some teachers may think that concept maps are too complex a challenge for their students. Novak (1990) has reported that elementary-level students and students with special needs have been successful in their use of concept maps. Therefore, concept map making skills should be within the ability range of adult literacy students. Fifth, teachers may not know how to integrate the maps into their teaching practice. Concept maps could be first introduced to new students during the initial Intake Orientation. Teachers could use a pre-instruction workshop to teach students how to construct concept maps via Cmap tools. For young urban learners, this process can be made more engaging and culturally relevant by asking students to create a map of one of their favorite hip-hop songs. During students’ class activities, they can produce concept maps of the topics they are studying which can assist students in clarifying a topic and teachers can use the maps to provide feedback, and identify student misunderstandings. Teachers can also
use the maps as assessment tools for understanding student thinking and reasoning processes, and comparing student maps to their own expert maps of the same topics.

**Conclusions**

Regardless of the philosophical orientations of teachers and administrators, adult literacy practitioners can successfully integrate concept mapping into their programs. Although they have been underutilized in adult literacy programs, they offer the potential to be a “difference maker” in the lives of many young urban adults who seek to improve their life chances via adult literacy classes and the GED.

**References**


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