

Assignment D – Adult Second Language Acquisition

Theressa Kielhorn François

Dr. Vernon Curran

ED-6802-081 Adult Learning and Development

6 April 2018

Introduction

Learning a second (or third, or fourth) language as an adult is a taxing endeavour. Not only are adult learners attempting a new language after cognitive development is largely complete, but they often have fewer opportunities for practicing the target language, all while juggling the multiple attendant responsibilities that define adulthood (Sanz, 2005). For adult second language (L2) educators, teaching such learners requires specialized knowledge, not only in language acquisition theories and models, but in adult learning approaches as well. This paper provides an overview of major second language acquisition (SLA) theories, their links with theories of adult learning, a discussion of recurrent themes in SLA literature, and their practical implications for educators.

Second Language Acquisition Theory Categories

Research on SLA has its roots in the study of first language (L1) acquisition (Sanz, 2005) and it only emerged as a separate field of inquiry in the 1950s (Thomas, 2013). In her review of SLA research and approaches, Myles (2013) identifies three broad categories of L2 educational theories: Linguistic, Cognitive and Socio-Cultural. Each approach attempts to explain the mechanisms behind second language acquisition in order to enhance learning by suggesting avenues for improving L2 teaching practices.

Linguistic Approaches to SLA

Linguistic approaches involve the explicit teaching and acquisition of L2 language structures. In practice, this approach was often implemented using the Audio-Lingual method of vocabulary drilling, grammatical studies, and contrastive analysis with the learner's native language (Kelly, Kennell & McBride, 2007; Sanz, 2005). The method is based on behaviourist learning principles developed by Edward Thorndike, B. F. Skinner and others who suggested that learning was a matter of imitating stimulus and repeating behaviour until it becomes ingrained and observable (Merriam, 2001; Merriam, Baumgartner, Caffarella & ProQuest, 2007). “[E]ducators couldn't go wrong if they simply followed the bouncing ball of cause to effect, stimulus to response” suggests Kilgore in a critique of behaviourism (2001, p. 53).

Proponents of the Audio-Lingual method “assumed that if students concentrated on mastering content, they would retain the information and be able to apply it” (Wolfe, 2006, p. 35). Unfortunately, while students are often able to recall vocabulary and structures, applying that knowledge in novel, real-world contexts proves more difficult (Rüschoff, 2009; Ozverir, Herrington and Osam, 2016). Despite this major disadvantage, behaviourally-based approaches have their place in SLA. First, drilling basic vocabulary words and structures frees cognitive resources for L2 students who subsequently engage in higher order tasks (Narcy-Combes, 2010). Second, changes in behaviour, such as students’ vocabulary recall or their use of specific syntactic structures, are observable and measurable. The ability to observe and to assess changes in behaviour is a cornerstone of outcome-based education and assessment (Merriam et al, 2007).

Cognitive Approaches to SLA

The publication of Noam Chomsky’s *Aspects of the Theory of Syntax* (1965) ushered in a new era of language acquisition research (Thomas, 2013), “one that emphasized internal factors with almost total disregard for those external to the language learner” (Sanz, 2005, p.8). The focus of cognitivists is on the learner’s efforts at processing, storing and retrieving new information (Merriam et al, 2007; Myles, 2013). This emphasis on internal processes and the conscious interpretation of stimuli makes cognitive approaches complementary of constructivist learning principles (Myles, 2013; Merriam et al, 2007). Cognitive and constructivist methodologies force learners out of a role as recipients of knowledge and into a role as active participants – even managers – of their learning experiences (Rüschoff, 2009).

Prioritizing self-directed learning is also at the heart of Knowles’ theory of andragogy (Merriam, 2001). Knowles’ assumptions emphasize adult learners’ needs for meaningful content, personal agency, and the recognition of personal experience when processing new information (Merriam et al, 2007), tenets that square nicely with cognitive SLA approaches. It is worth noting that critics of both andragogy and of cognitive language theory level the same accusations, namely that environmental factors and individual

differences potentially affecting or inhibiting learning are ignored (Merriam, 2001; Sanz, 2005).

Krashen's Stages of Second Language Acquisition

Stephen Krashen and his collaborators developed a cognitive model of SLA in his book *The Natural Approach* in which they suggest that learners move through five predictable stages of second language acquisition: Preproduction, Early Production, Speech Emergence, Intermediate Fluency, and Advanced Fluency (Krashen & Terrell, 1983; Hill & Miller, 2013). The sequencing of these stages is constant across learner age, educational context, and native language (Sanz, 2005).

The Natural Approach: Five Stages of Second Language Acquisition		
Stage	Characteristics	Approximate Time Frame
Preproduction	The student <ul style="list-style-type: none"> Has minimal comprehension. Does not verbalize. Nods "Yes" and "No." Draws and points. 	0–6 months
Early Production	The student <ul style="list-style-type: none"> Has limited comprehension Produces one- or two-word responses. Uses key words and familiar phrases. Uses present-tense verbs. 	6 months–1 year
Speech Emergence	The student <ul style="list-style-type: none"> Has good comprehension. Can produce simple sentences. Makes grammar and pronunciation errors. Frequently misunderstands jokes. 	1–3 years
Intermediate Fluency	The student <ul style="list-style-type: none"> Has excellent comprehension. Makes few grammatical errors. 	3–5 years
Advanced Fluency	The student has a near-native level of speech.	5–7 years

Figure 1. Krashen & Terrell's Stages of Language Acquisition (adapted from Hill and Miller, p. 12)

One further theory among many that emerged out of Krashen's work on SLA would prove particularly momentous to L2 educators: Input Hypothesis. This approach involves presenting L2 learners with meaningful and comprehensible input for them to absorb with the goal of eventually enabling meaningful language output (Stepp-Greany, 2003). While

again reminiscent of andragogy, this concept also relates to Vygotsky's *Zone of Proximal Development* in that learners must be adequately supported when attempting tasks while still finding the task engaging and challenging (Vygotsky, 1978). Unlike other SLA models that focus narrowly on the acquisition of specific linguistic structures, Input Hypothesis and the Natural Approach are relatively practical and accessible tools for educators seeking to enhance students' L2 acquisition (Vainikka & Young-Scholten, 2013).

Socio-Cultural Approaches to SLA

While Chomsky's work focused on internal processes, his ideas about biologically innate language ability eventually birthed socio-cultural SLA approaches (Kelly et al, 2007) which are also referred to as interactionist, communicative, or sociolinguist. Social-cultural approaches to SLA are “interested in the relationship between language acquisition and the social context in which it takes place” (Sanz, 2005, p. 9). Socio-cultural L2 researchers strive to determine how and to what extent social interactions affect language acquisition (Thomas, 2013).

The socio-cultural communicative approach dispenses entirely with explicit grammar and syntactic instruction altogether, focusing instead on meeting learners' self-identified communication needs and objectives through social interaction in the target language (Ozverir, Herrington & Osam, 2016). This approach frees learners to concentrate on meaningful communications while implicitly developing L2 structural accuracy (McKenna, Zarestky & Anzlovar, 2018; Hsueh, 2011).

Social cognitive adult learning approaches resemble their socio-cultural SLA counterparts in that both prioritize social interactions over instructivist, or teacher-centred methods as a means of effective learning (Sanz, 2005). In both approaches meaning is socially constructed and negotiated rather than a strictly internal process on the part of individual learners (Merriam et al, 2007; Stepp-Greany, 2003). Consideration of the ways in which students' social context and positions mediate learning is also central to critical adult learning theory (Kilgore, 2001; Kitchenham, 2008).

Discussion Themes and Implications for Adult L2 Educators

A number of themes recur when researching SLA theories, many of which overlap with or mirror concepts addressed in adult learning research. These topics can help guide L2 educators in their choices of instructional materials and activities for adult learners.

Motivation

Motivations for learning a second language are directly addressed in SLA literature, although terminology used varies between researchers. One model categorizes motivation into two types: integrative and instrumental. Integrative motivation reflects the learner's desire to interact with members of another culture (travelers, for example), while instrumentally motivated learners (such as job-seekers) need the second language for specific purposes (Hardison, Miller, Li, Schroeder, Burkhauser, Robson & Lai, 2012). Cognitive development models such as Mazlow's posit that learners may be intrinsically motivated to seek out L2 learning opportunities as a reflection of personal identity and achievement, extrinsically motivated by the desire to reap outside benefits, or a combination of both (Hardison et al, 2012; Merriam et al, 2007).

Knowles' andragogy falls squarely into the integrative/intrinsic motivational categories, while adding that internal motivation is more 'potent' than external factors (Merriam et al, 2007). Regardless, many SLA researchers acknowledge that adult learning is often "a means to an end" and that this reality must be acknowledged by educators (Ilacqua & Zulauf, 2000; Kelly et al, 2007; Hardison et al, 2012). Many of the best practices advocated in the literature revolve around engaging adult learners and motivating them to continue with their studies, regardless of their initial reasons for pursuing second language education.

Authenticity & Meaning

While Thorndike may be remembered as a strict behaviourist, he nonetheless recognized the importance of meaningful activities in promoting lesson retention for adult learners (Merriam et al, 2007). Likewise, SLA researchers advocate that learners be presented

with instructional materials and tasks that are relevant and meaningful to them, ideally those “relating to real-world problems and projects” (Kelly et al, 2007, p. 19). Solving authentic problems motivates students to not only develop a solution independently using constructivist techniques, but to identify and to address their language deficiencies in the process (Ozverir, Herrington & Osam, 2016). Techniques for creating meaningful and authentic lessons include: the use of metaphors, analogies and similes; accessing students’ prior knowledge; problem-based tasks and activities; and expository learning techniques (Wolfe, 2006). Authentic and meaningful tasks are also more likely to trigger positive emotional reactions in learners, potentially enhancing motivation and lesson retention (Wolfe, 2006).

Experiential Learning

Integrating learners’ past experiences into the educational context is a foundational principle of adult learning (Merriam et al, 2007; MacKeracher, 2004). “Real education starts after we leave school and there is no reason why it should stop before death” stated John Dewey in 1916. This accumulated knowledge is cited as one of the greatest factors distinguishing older learners from children (Merriam, 2001). SLA researchers are increasingly recognizing the importance of learner experience in developing meaningful and effective L2 lessons (Rüschoff, 2009). Furthermore, studies suggest comparing and contrasting learners’ first and second languages – an approach that might be dismissed as too behaviourist – can be an effective instructional approach, again reinforcing the role of experience in enhancing knowledge acquisition (Thomas, 2013). A first step for educators engaging in experiential learning is to assess students’ prior knowledge (Wolfe, 2006) followed by adult SLA activities that involve a “process of individual interpretation and meaning making based on experience” such as discussions, problem-based tasks, and expository analysis (Kelly et al, 2007, p. 19).

Autonomy & Agency

Self-directed learning is a hallmark of both humanist adult learning approaches and psychological ones such as Mazlow’s, which view “autonomy as the pinnacle of human development” (Clark & Caffarella, 1999, p. 97). Personal agency and autonomy are also

central tenets of Knowles andragogy theory (Merriam et al, 2007). Although instructors of younger children and complete novices may have to choose materials for their L2 students, cognitive and socio-cultural SLA literature suggests that learners themselves should be empowered wherever possible to choose topics and activities that they find both appealing and meaningful (Rüschoff, 2009; Kelly et al, 2007). Through this process, adult learners are also encouraged to not only direct their educational experiences, but to develop the self-awareness to diagnose and to implement plans that meet their learning needs (Merriam et al, 2007).

Cultural Competency & Awareness

Authentic learning scenarios and interactions are rooted in the target language's culture (Pachler, 2009). Learning about the subtleties of a second language's cultural origins increases engagement with material and builds cross-cultural competency (Li, Yao & Hong, 2016; Rüschoff, 2009). Effective intercultural dialogue, particularly between novices and mentors, is an important component of social constructivist adult learning approaches as well (Merriam et al, 2007). Openness to other cultures not only enhances L2 acquisition by building on existing schema, but it requires an appraisal of the learner's own cultural practices for contrastive analysis purposes (Hardison et al, 2012). Such critical appraisals can sometimes lead to transformational awakenings as well (Merriam, 2001; Kilgore, 2001). Educators planning on integrating cross-cultural dialogue into their L2 classrooms should themselves be aware not only to their own cultural history, but sensitive to the “sociopolitical forces that affect the learners and the learning environment” (Ross-Gordon, 2003, p. 88).

Interaction & Collaboration

Adult learning models such as Illeris' Three Dimensions of Learning feature the learner's social context as a pillar of effective instruction (Merriam et al, 2007). Vygotsky also posited that “person-to-person exchange” was an essential step in developing students' language acquisition and self-regulation skills (Thomas, 2013, para. 45). Interaction is central to effective SLA, and involves more than communication between instructors and students (Li et al, 2016). Peer discussion and tools that connect L2 learners with native

speakers are valuable sources of practice in a target language (Hsueh, 2011). Together, learners more quickly negotiate and build meaning through their activities, enhancing acquisition. “The group learning experience isn’t simply the sum of the individual learning experiences,” explain Peters & Armstrong, “...it is both more and other than the individual experiences” (1998, p. 76). L2 educators who seek to maximize language acquisition should therefore provide ample opportunities for group interaction and collaboration in their classrooms.

Community Building

In his theory of andragogy, Knowles proposed that adults learn best in a “non-authoritarian, less formal, cooperative atmosphere” (Ilacqua & Zulauf, 2000, p. 174). An L2 classroom should likewise be a psychologically safe environment, one where students are comfortable expressing themselves in front of their peers and where they are encouraged to take risks by attempting newly-acquired language skills (Wolfe, 2006). Educators in such scenarios act not only as facilitators, as advocated in constructivist approaches, but are expected to develop an egalitarian, nurturing relationship with their students (Merriam et al, 2007). Educators must also encourage participation by fostering peer bonding and healthy, respectful relationships within the learning environment (McKenna et al, 2018).

Cognitive Load

Developed by John Sweller (2012), cognitive load theory suggests that information processing, acquisition, and problem-solving abilities may be inhibited in learners dealing with too many simultaneous cognitive demands at once. The concept is similar to McClusky’s Theory of Margin in that it suggests that the supply of a particular resource – “power” in the case of Margin Theory – is finite and that it can only be freed by reducing demands, or “loads” elsewhere (Merriam et al, 2007).

Cognitive load is a frequently cited as an issue affecting language uptake in SLA literature (Narcy-Combes, 2010; Li et al, 2016). Krashen’s Input Hypothesis is an explicit attempt at reducing cognitive load for L2 learners through the judicious selection of

learning materials that are challenging to learners, yet still comprehensible (Krashen, 1982). Besides pacing carefully selecting resources and pacing lessons, other techniques for reducing L2 cognitive load include reducing the lexical density of learning materials (McKenna et al, 2018) or utilizing digital technologies that allow learners to review learning materials as often as possible at convenient times (Stepp-Greany, 2003).

Learning Styles

MacKeracher (2004) and Kolb (Merriam et al, 2007) are proponents of student learning styles. While students may find learning style inventories and evaluations useful for identifying their own preferred learning modalities, evidence proving that academic result are improved by adapting lessons to cater to learning styles is lacking (Clark & Feldon, 2005). “That is,” explain Clark and Feldon, “subjects who reported preferring a particular instructional technique typically did not derive any instructional benefit from experiencing it” (2005, p. 10). No references to learning styles were found in the SLA literature reviewed for this paper.

Conclusion

All second language acquisition (SLA) theories and approaches have value for second language (L2) educators. Linguistic or behaviourist approaches help students to grasp basic vocabulary and syntactic structures, both enabling higher order learning and providing relatively easy mechanisms for assessment. Cognitive approaches recognize the importance of students’ internal processes when organising and encoding new information, suggesting avenues for enhancing and speeding L2 learning. Socio-cultural approaches meanwhile, emphasize the important roles that social interaction and collaboration play in memorable and meaningful language acquisition. Themes shared between SLA and adult language learning suggest that there is much to be gleaned by comparing and contrasting the fields side by side. No one approach or theme adequately explains the complex phenomenon that adult second language acquisition (Sanz, 2005). Practical and effective educational interventions are likewise to be found by considering and judiciously applying recommendations from a variety of approaches (Clark & Caffarella, 1999).

References

Clark, M. Carolyn & Caffarella, Rosemary S. (1999). Theorizing Adult Development. *New Directions for Adult and Continuing Education, 1999*(84). doi:10.1002/ace.8401

Clark, R. E. & Feldon, D. F. (2005). Five common but questionable principles of multimedia learning. In Mayer, R. (Ed.) *Cambridge Handbook of Multimedia Learning*. Cambridge: Cambridge University Press. doi: 10.1017/CBO9780511816819.007

Dewey, J. (1916). Democracy and education; an introduction to the philosophy of education. New York, Macmillan. Retrieved from: <http://www.gutenberg.org/files/852/852-h/852-h.htm>

Hardison, C., Miller, L., Li, J., Schroeder, A., Burkhauser, S., Robson, S., & Lai, D. (2012). Background on Adult Language Learning. In *Second-Language Skills for All?: Analyzing a Proposed Language Requirement for U.S. Air Force Officers* (pp. 5-16). RAND Corporation. Retrieved from: <http://www.jstor.org/stable/10.7249/j.ctt5hht66.10>

Hill, Jane D., and Kirsten B. Miller. Classroom Instruction That Works with English Language Learners, Association for Supervision & Curriculum Development, 2013. ProQuest Ebook Central, <https://ebookcentral-proquest-com.qe2a-proxy.mun.ca/lib/MUN/detail.action?docID=1572223>.

Hsueh, S. (2011). Challenges of Adopting Web 2.0 and Mobile 2.0 for Language Learning. In B. Facer, & M. Abdous (Eds.), Academic Podcasting and Mobile Assisted Language Learning: Applications and Outcomes (pp. 70-91). Hershey, PA: IGI Global. doi:10.4018/978-1-60960-141-6.ch005

Ilacqua, Joseph A. & Zulauf, Carol A. (2000). The New Learning Environment and Adult Developmental Needs. *Journal of Adult Development*, 7(3), 171–178.
doi:10.1023/A:1009546330539

Kelly, M., Kennell, T., & McBride, R. (2007). Fast Forward: An Analysis of Online and Distance Education Language Training. Ontario Council of Agencies Serving Immigrants. Canada. Citizenship and Immigration Canada. Ottawa, Ont. Retrieved from: <http://www.deslibris.ca.qe2a-proxy.mun.ca/ID/215559>

Kilgore, Deborah W. (2001). Critical and Postmodern Perspectives on Adult Learning. *New Directions for Adult and Continuing Education*, 2001(89), 53–62.
doi:10.1002/ace.8

Kitchenham, A. (2008). The Evolution of John Mezirow's Transformative Learning Theory. *Journal of Transformative Education*, 6(2), 104-123. Retrieved from: <http://journals.sagepub.com.qe2a-proxy.mun.ca/doi/pdf/10.1177/1541344608322678>

Krashen, S.D., (1982). *Principles and Practice in Second Language Acquisition*. Retrieved from: http://www.sdkrashen.com/content/books/principles_and_practice.pdf

Krashen, S. D. & Terrell, T. (1983) *The Natural Approach: Language Acquisition in the Classroom*. Oxford: Pergamon.

Li, B., Yao, S., & Hong, W. (2016). Beginning Chinese as a Foreign Language Online Course Design: Utilizing Multiple Digital Modes and Assessments. In C. Wang, & L. Winstead (Eds.), *Handbook of Research on Foreign Language Education in the Digital Age* (pp. 104-142). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-0177-0.ch006

MacKeracher, D. (2004). *Making sense of adult learning* (2nd ed.).

Merriam, Sharan B. (2001). Andragogy and Self-Directed Learning: Pillars of Adult Learning Theory. *New Directions for Adult and Continuing Education*, 2001(89), 3–13. doi:10.1002/ace.3

Merriam, S., Baumgartner, L., Caffarella, R., & ProQuest. (2007). *Learning in adulthood : A comprehensive guide* (3rd ed., Jossey-Bass higher and adult education series). San Francisco: Jossey-Bass. Retrieved from: <https://ebookcentral-proquest-com.qe2a-proxy.mun.ca/lib/mun/detail.action?docID=792611>

McKenna, K., Zarestky, J., & Anzlovar, M. (2018). Culture and Communication Online: The Inclusion of International and Non-Native Language Learners. In K. Milheim (Ed.), *Cultivating Diverse Online Classrooms Through Effective Instructional Design* (pp. 116-135). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-3120-3.ch006

Myles, F. (2013). Theoretical approaches. In J. Herschensohn, & M. Young-Scholten (Eds.), *Cambridge handbooks in language and linguistics: The Cambridge handbook of second language acquisition* . Cambridge, UK: Cambridge University Press. Retrieved from: http://qe2a-proxy.mun.ca/login?url=https://search.credoreference.com/content/entry/cuphseclaq/theoretical_approaches/0?institutionId=379

Narcy-Combes, J. (2010). Pedagogic Consequences: A Task-Based Approach to Distance Second Language Learning. In J. Bertin, P. Gravé, & J. Narcy-Combes (Eds.), *Second Language Distance Learning and Teaching: Theoretical Perspectives and Didactic Ergonomics* (pp. 223-249). Hershey, PA: IGI Global. doi:10.4018/978-1-61520-707-7.ch011

Ozverir, I., Herrington, J., & Osam, U. V. (2016). Design principles for authentic learning of English as a foreign language. *British Journal Of Educational Technology*, 47(3), 484-493. doi:10.1111/bjet.12449

Pachler, N. (2009). Foreword. de Cássia Veiga Marriott, R., & Lupion Torres, P. (2009). *Handbook of Research on E-Learning Methodologies for Language Acquisition* (pp. 1-646). Hershey, PA: IGI Global. doi:10.4018/978-1-59904-994-6

Peters, J. and Armstrong, J. (1998). Collaborative Learning: People Laboring Together to Construct Knowledge. *New Directions for Adult and Continuing Education*, 1998 (79), 75–85. doi:10.1002/ace.7908

Ross-Gordon, Jovita M. (2002). Effective Teaching of Adults: Themes and Conclusions. *New Directions for Adult and Continuing Education*, 2002(93), 85–92. doi:10.1002/ace.52

Rüschoff, B. (2009). Output-Oriented Language Learning With Digital Media. In M. Thomas (Ed.), *Handbook of Research on Web 2.0 and Second Language Learning* (pp. 42-59). Hershey, PA: IGI Global. doi:10.4018/978-1-60566-190-2.ch003

Sanz, C. (Ed.). (2005). Mind and context in adult second language acquisition : methods, theory, and practice. Retrieved from: <https://ebookcentral-proquest-com.qe2a-proxy.mun.ca/lib/mun/detail.action?docID=547826>

Stepp-Greany, J. (2003). Designing Instructional Technology for Language Learning. *Academic Exchange Quarterly*, Winter 2003: Volume 7, Issue 4. Retrieved from: <http://rapidintellect.com/AEQweb/dec2595.htm>

Sweller J. (2012) Cognitive Load Theory. In: Seel N.M. (eds) *Encyclopedia of the Sciences of Learning*. Springer, Boston, MA. Retrieved from: https://doi-org.qe2a-proxy.mun.ca/10.1007/978-1-4419-1428-6_446

Sweller, J., & Chandler, P. (1991). Evidence for Cognitive Load Theory. *Cognition and Instruction*, 8(4), 351-362. Retrieved from <http://www.jstor.org/stable/3233599>

Thomas, M. (2013). History of the study of second language acquisition. In J. Herschensohn, & M. Young-Scholten (Eds.), *Cambridge handbooks in language and linguistics: The Cambridge handbook of second language acquisition*. Cambridge, UK: Cambridge University Press. Retrieved from http://qe2a-proxy.mun.ca/login?url=https://search.credoreference.com/content/entry/cuphseclaq/history_of_the_study_of_second_language_acquisition/0?institutionId=379

Thouësny, S., & Bradley, L. (2011). Introduction on views of emergent researchers in L2 teaching and learning with technology. In S. Thouësny & L. Bradley (Eds.), *Second language teaching and learning with technology: views of emergent researchers* (pp. 1-8). Dublin: Research-publishing.net. Retrieved from: <https://files.eric.ed.gov/fulltext/ED574599.pdf>

Vainikka, A., & Young-Scholten, M. (2013). Stagelike development and Organic Grammar. In J. Herschensohn, & M. Young-Scholten (Eds.), *Cambridge handbooks in language and linguistics: The Cambridge handbook of second language acquisition*. Cambridge, UK: Cambridge University Press. Retrieved from: http://qe2a-proxy.mun.ca/login?url=https://search.credoreference.com/content/entry/cuphseclaq/stagelike_development_and_organic_grammar/0?institutionId=379

Vygotsky, L. (1978). Interaction Between Learning and Development. In Gauvain & Cole (Eds.) *Readings on the Development of Children*. New York: Scientific American Books.

Wolfe, P. (2006). The role of meaning and emotion in learning. *New Directions For Adult & Continuing Education*, 2006(110), 35-41. doi:10.1002/ace.217