

# **The VECAP Position Paper on Universal Design for Learning for Career Assessment and Vocational Evaluation**

**Frances G. Smith**

Center for Applied Special Technology (CAST) and Boston College

**Pamela Leconte and Edward Vitelli**

The George Washington University

## **Abstract**

As a framework, Universal Design for Learning (UDL) provides a lens for designing assessments that are fair, equitable, and supportive of variation in learner ability. The UDL framework is aligned with decades of research on effective instructional strategies and recent neuroscientific findings. The Vocational Evaluation and Career Assessment Professionals Association (VECAP) published a national position paper on UDL in 2006 (Leconte, Smith, & Johnson, 2006) to establish recommended approaches for vocational evaluation and career assessment practitioners. This paper updates the previous position paper, highlighting emerging neurological research in the learning sciences that underscores the importance of UDL for the profession.

## **The VECAP Position Paper on Universal Design for Learning and Career Assessment and Vocational Evaluation**

The Vocational Evaluation and Career Assessment Professionals Association (VECAP) advocates for the application of universal design for learning (UDL) principles in vocational evaluation and career assessment to expand and enhance best practices that help ensure social justice for consumers and participants. VECAP has been committed to adopting positions that emphasize best practices in assessment approaches, such as the necessity of assistive technology, the value of interdisciplinary collaboration, and the focus of assessment in community settings (Vocational Evaluation and Career Assessment Professionals Association, 2011). Earlier position papers about these approaches have evolved into standards of practice. UDL as a framework to guide the assessment process and integration should become a universal standard of practice in all aspects of career assessment and vocational evaluation. Using UDL as a lens underscores the importance of crafting an assessment process that is personalized and includes multiple approaches and ways to determine an individual's strengths and

abilities (Russell, 2011). UDL strengthens the importance of assessment approaches that are formative, authentic, and encourage multiple opportunities to triangulate data (Leconte, 1994; Smith, Lombard, Neubert, Leconte, Rothenbacher, & Sitlington, 1994). Approaches to assessment informed by UDL principles are responsive to research on the value of continuous monitoring of progress to support learning (Bransford, Brown, & Cocking, 2000; Rose, Hall, & Murray, 2009). Additionally, UDL principles offer multiple opportunities for consumers to explore career options.

Research from the learning sciences continues to support that learner variability is developmental and systematic (Rose & Fischer, 2009; Rose & Gravel, 2010). Learning for one individual will vary across his/her developmental capabilities, background experiences, and context (Fischer & Bidell, 2006). Learner variability is central to the UDL framework and validates the importance of considering multiple means to reach all learners—across all settings. Thus, planning with a UDL lens assures that the career assessment and evaluation process is designed to provide maximum affordances for learning opportunity and success.

## Defining Universal Design for Learning

UDL is defined in the *Higher Education Opportunity Act of 2008* as

A scientifically valid framework for guiding educational practice that—provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient (20 U.S.C. § 1003(24)).

Three UDL tenets guide effective practices that advance fairness and equity (Rose & Meyer, 2002). These tenets require simultaneous and consistent provision of

- Multiple means of representation to provide options that support differences in perception, understanding language and mathematical expressions, and comprehension.
- Multiple means for action and expression to provide options that support differences in physical action, expression and communication, and capabilities in executive functioning.
- Multiple means for learner engagement to provide options for recruiting interest, sustaining effort and persistence, and encouraging self-regulation.

By considering these tenets, UDL facilitates access to and participation by all who wish to engage in career assessment and vocational evaluation services. Engagement indicates that UDL tenets will help individuals guide, plan, and participate fully (Institute on Rehabilitation Issues, 2003); UDL helps to strengthen this engagement, reinforcing an important goal of career assessment and vocational evaluation: empowerment. Career assessment and vocational evaluation processes that are designed through the lens of a UDL framework acknowledge expected learner variability and support equity and inclusive practices that encourage individual success. Integrating an array of techniques, a variety of methods and tools, multiple representations of material, and multi-modal representations of instructions represents a UDL approach. The requirements of vocational evaluation—to use multiple

sources and multiple methods to gain multiple outcomes that will assist participants—naturally align with UDL philosophy, tenets, and principles (Smith, 2003).

The UDL framework is structured across these three central tenets and nine guidelines that offer targeted strategies to consider in planning, providing, and facilitating the career assessment process. A central goal of UDL is to provide opportunities that encourage learning expertise—learners who are resourceful, goal-directed, and motivated (Rose & Gravel, 2010). Framing career assessment with UDL in mind provides for this assurance.

Assessment that focuses on multiple measures that facilitate individuals' self-awareness and understanding of their strengths and abilities is key to career success (Institute on Rehabilitation Issues, 2003; Sitlington, Neubert, Begun, Lombard, & Leconte, 2007). Thus, applying UDL to assessment enables practitioners to offer processes that are flexible, accessible, and appropriate for any type of individual. Such variability in approach accommodates the unique characteristics of individuals with differences in brain structure and function (including those with non-English language backgrounds, low socioeconomic circumstances, disabilities, etc.). Increasingly, the important focus on learner variability across all individuals complements the central philosophies of vocational evaluation and assessment practices and opens doors for new opportunities (National Center on Universal Design for Learning, 2011b; Rose & Fischer, 2009).

### Brain-based Learning Anchors UDL

Research of brain-based learning (Bransford, Brown, & Cocking, 2000; Center for Applied Special Technology, 2010; National Center on Universal Design for Learning, 2011b; Rose & Meyer, 2000, 2003) multiple intelligences (Gardner, 1999; Sternberg, 1997), varied learning style preferences, and diverse learner approaches supports the need to reach out to assessment participants using UDL approaches. The variation of neurological characteristics correlates with the need for multiple and varied means of assessment. In the context of UDL, each individual has three primary networks that are critical to learning: recognition, strategic, and affective

(National Center on Universal Design for Learning, 2011b).

### Recognition Networks

The concept of recognition refers to how individuals gather and make meaning of the various perceived stimuli. Key neurological components to processing these stimuli are located toward the posterior of the cerebral cortex (see [Figure 1](#) for a visual representation).



*Figure 1.* The location of the recognition networks. Retrieved from National Center on Universal Design for Learning (2011b)

More specifically, sections of the occipital, parietal, and temporal lobes enable individuals to recognize patterns, upon which further cognitive processes (such as evaluating or analyzing data) are based. For example, word recognition is rooted primarily in the left fusiform gyrus, where the occipital and temporal lobes meet. Shaywitz (2005) explains that this area is where “incoming information from different sensory systems comes together and where, for example, all the relevant information about a word—how it looks, how it sounds, and what it means—is tightly bound together and stored” (p. 79). However, this occipito-temporal area does not function in the same manner for every individual. Neurological imaging (e.g., functional magnetic resonance imaging or fMRI, positron emission tomography or PET scanning) reveals that, in comparison to other readers, individuals with dyslexia experience an under-activation of this region during reading exercises. An individual’s life experiences and training may also impact his or her recognition networks, further suggesting variation in posterior cortex functioning. In addition to differences in reading abilities, individuals with dyslexia also “appear to be disproportionately represented in the upper echelons of creativity” (Shaywitz, 2005, p. 57). Such creativity can facilitate learning and should be captured within career assessment processes. Research suggests that

individuals with dyslexia may possess specific visual-spatial talents, and may be more inclined to pursue artistic related studies at the postsecondary level (von Károlyi, Winner, Gray, & Sherman, 2003; Wolff & Lundberg, 2002). If assessment environments implement UDL, these talents can be used to enhance assessment experiences and outcomes.

### Strategic Networks

Information and knowledge gained from the recognition networks are subsequently utilized by the strategic networks, which are housed in the frontal lobe (see [Figure 2](#) for a visual representation).



*Figure 2.* The location of the strategic networks. Retrieved from National Center on Universal Design for Learning (2011b)

The strategic networks coordinate how an individual interacts with his or her environment, controlling a set of faculties frequently referred to as executive functions (e.g., goal planning, focusing, organization, self-monitoring). Variation in frontal lobe functioning may express itself in myriad ways. Among transition-age individuals (ages 14-24), a common manifestation is Attention Deficit Hyperactivity Disorder (ADHD). Recent research suggests that individuals with ADHD have reduced frontal lobe volume and activity (Krain & Castellanos, 2006; Rubia, Smith, Brammer, Toone, & Taylor, 2005; Valera, Faraone, Murray, & Seidman, 2007). Correspondingly, these individuals, in contrast to their non-diagnosed peers, typically experience delays in the development of their executive functioning abilities, causing difficulties related to inattention, impulsivity, and hyperactivity. However, these individuals may be sought after as creative employees capable of generating many ideas to solve difficult problems (White & Shah, 2006; 2011).

### Affective Networks

The recognition and strategic networks work in tandem with affective networks,

which are located below the cerebral cortex, in the limbic system (see [Figure 3](#) for a visual representation).



*Figure 3.* The location of the affective networks. Retrieved from National Center on Universal Design for Learning (2011b)

As Meyer and Rose (1998) explain, affective networks help us act (strategic networks) upon the information that we perceive (recognition networks); “they determine whether the patterns we perceive matter to us, and help us decide which actions and strategies to pursue” (p. 6). The limbic system consists of several important components, including the amygdala, thalamus, hypothalamus, and hippocampus. Variation in any of these components may impact an individual’s ability to regulate his or her emotions or willingness to engage in particular tasks. For example, recent research indicates that individuals with larger amygdala volumes tend to have more personal relationships, while individuals with impaired amygdala functioning have difficulty with social interactions and recognizing fear (Adolphs, Gosselin, Buchanan, Tranel, Scyng, & Damasio, 2005; Bickart, Wright, Dautoff, Dickerson, & Barrett, 2011; Kennedy, Gläscher, Tyszka, & Adolphs, 2009).

#### **Assimilating UDL with Career Assessment and Vocational Evaluation**

Among the goals of career assessment, especially vocational evaluation, gaining or improving access to one’s personal aspirations are primary. Universal design for learning and assessment facilitates access more than any idea since the initiation and growth of using assistive technology prior to, within, and following assessment and evaluation. UDL provides a framework that encourages multiple opportunities in how information is represented, expressed, and engaged with for assessment and instruction, which are based on neuroscience research about how people learn. This research indicates that all assessment and

instructional activities must be designed for equal access and participation *prior to* delivery so that all individuals can succeed (Ketterlin-Geller, 2005; Spooner, Baker, Harris, Delzell, & Browder, 2007). The UDL conceptual framework is supported by the National Center on Universal Design for Learning (2011a), with the recommendation that any assessment should “reduce or remove barriers to accurate measurement of learner knowledge, skills, and engagement” (para. 6).

Given the shifting demographics within education, vocational rehabilitation, workforce development, and career assessment services, the UDL framework focus on individualization is of particular importance (Institute on Rehabilitation Issues, 2003; Russell, 2011). Planning assessment services through a UDL lens assures that tests are universally designed, incorporates technologies to expand accessibility, and are appropriate for a range of learners (Dolan & Hall, 2009). UDL provides individualized access to all users or consumers of career assessment and vocational evaluation services, but it is essential for certain consumers.

#### **Changes in Consumer Characteristics and Skills**

Increasingly, education, vocational rehabilitation, workforce development, and career assessment professionals are working with transition-age consumers (ages 14 to 24). In forty-seven states and the District of Columbia, transition-age consumers constituted a higher percentage of the overall vocational rehabilitation population in 2010 than they did in 2004. This is reflected in national statistics. In 2004, one in every four (25.9%) vocational rehabilitation consumers fell into the transition-age demographic. In 2010, this figure rose to one in every three (34.6%) consumers (Rehabilitation Services Administration, 2012). This trend is expected to continue since the Rehabilitation Services Administration has maintained service to transitioning students as a national priority (Rehabilitation Services Administration, 2008).

Members of this transition-age population also belong to another unique demographic. They are “digital natives,” individuals who were born into a society already immersed in digital technology (Prensky, 2001; 2010). In contrast to

previous, “pre-immersion” generations, they are accustomed to a “plugged-in” environment, having been raised in an era where phones also serve as video cameras, where email—itsself a recent technological breakthrough—is falling victim to social networking tools such as Facebook and Twitter (Hampton, Goulet, Rainie, & Purcell, 2011; Madden, 2010), and where books are downloaded instead of checked out of libraries. They are accustomed to communicating in multiple ways with multiple devices and are no longer as engaged in learning or other activities that do not rely on electronic formats (Gray, Silver-Pacuilla, Brann, Overton, & Reynolds, 2011; Oblinger & Oblinger, 2005). According to recent research on media consumption, youth between the ages of eight and eighteen spent in 2009 an average of seven hours a day utilizing various electronic media. This represents a consumption increase of approximately 20% since 1999 (Rideout, Foehr, & Roberts, 2010). This preference for electronic-based means of communicating is not unique to younger consumers. Research suggests that heavy usage of electronics is increasing in older citizens. As a result, this growing demographic has become a target audience for suppliers of social media and digital technology (Kang, 2011; Smith, 2011). As more digital immigrants require services, career assessment and vocational evaluation should use contemporary technology while implementing UDL-based environments.

Such a drastic shift in consumer characteristics may present challenges to service provision. In practice, however, technology creates unprecedented opportunities for career assessment and vocational evaluation professionals to work more effectively with a wider range of consumers. Through the use of an ever-increasing palette of digital resources, consumers can benefit from individualized learning and assessment environments, including materials that are responsive to their unique needs and interests (Smith, Leconte, & Johnson, 2006). As a protean medium that lends itself readily to customization, digital technology is a natural ally of the UDL approach (United States Department of Education, 2010). By using multiple techniques and tools that are appropriate for individuals with varied backgrounds, learning style preferences,

cognitive attributes, and abilities, the framework eliminates barriers to full engagement, learning, and discovery in career assessment and vocational evaluation. Implementing multiple techniques and options supports the central tenets of assessment processes. In other words, to facilitate positive, growth producing outcomes for consumers, assessment processes must be holistic and humanistic (Smith, Lombard, Neubert, Rothenbacher, & Sitlington, 1994) as well as therapeutic and equitable (Leconte, 1994).

### **A Process Strengthened by Multiple Approaches**

Because of this diverse spectrum of neurological functioning, career assessment, planning, and programming should be individualized and customized to gain maximum benefit for participants. Assessment plans that are created through a UDL lens better assure that methods will be flexible and offer multiple opportunities for success. Russell (2011) notes,

From a test theory perspective, however, personalization has great potential to reduce error that results from needs that are irrelevant to the construct a test is designed to measure. By improving access through adapted presentation and alternate representations, some students will better understand the information with which they are asked to work. In turn, better understanding results in activation of the construct of interest. By increasing engagement with test content and the problem presented to the student, a test item has a better opportunity to capture outcomes that are the product of the construct of interest (p. 125)

More importantly, when vocational evaluators consider connections to UDL guidelines, they are aligning their approaches with research-based practices that support expected differences in learner variability (National Center on Universal Design for Learning, 2011b; Rose & Fischer, 2009). The three central tenets of UDL reinforce the importance of offering multiple options during an assessment process and provide additional opportunities to consider providing:

# Universal Design for Learning Guidelines

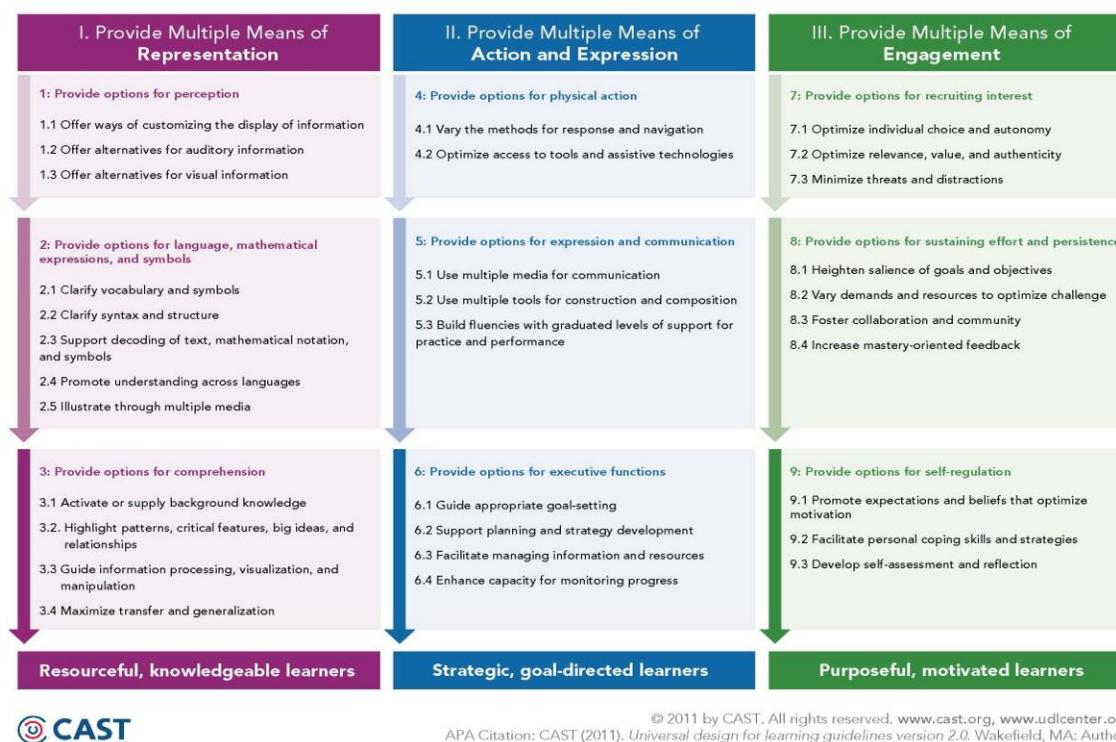


Figure 4. The nine UDL Guidelines, organized by the three principles. Retrieved from Center for Applied Special Technology (2011). *Universal design for learning guidelines version 2.0*. Wakefield, MA: Author. Copyright 2011 by CAST.

- Multiple means of representation, to give learners (and people being assessed as learners) various ways of acquiring information and knowledge (e.g., multimedia instructions for work samples and other methods, such as standardized inventories, situational assessments).
- Multiple means of expression, to provide learners alternatives for demonstrating what they know (e.g., individuals may use hands-on performances, oral, written, graphic, video, or computer-generated communication as well as American Sign Language and other languages).
- Multiple means of engagement, to tap into learners' interests, offer appropriate challenges, and increase motivation (e.g., individuals may watch, listen, use their hands and bodies as well as digital platforms in assessment and shall help guide the process by selecting areas of interest or curiosity).

## UDL Guidelines

The UDL guidelines suggest a variety of strategies and technology approaches that can be considered for expected learner

variability across each of the three brain networks (National Center on Universal Design for Learning, 2011b). These nine guidelines suggest techniques that align with the identified brain networks and representative options within each. For example, to support the recognition network, UDL guidelines one through three align with considering (a) options for perception, (b) options for language, mathematical expression and symbols, and (c) options for comprehension. To support the strategic network, specific guidelines four through six address (a) options for physical action, (b) options for expression and communication, and (c) options for executive functions. Finally, to align approaches that address the affective network, UDL guidelines seven through nine address (a) options for recruiting interest, (b) options for sustaining effort and persistence, and (c) options for self-regulation. An illustration of these guidelines is noted in [Figure 4](#).

These nine guidelines offer a new lens through which the vocational evaluation and career assessment practitioner can consider all of the key components of the assessment process, including interviews, interest and aptitude testing, career exploration, work sampling, and reporting.

Vocational evaluation and assessment is a professional discipline which utilizes a systematic appraisal process to identify an individual's vocational potential. Consumers range from school-aged youth to older adults who are making career decisions or vocational transitions. The vocational evaluation and assessment professional provides services to measure, observe, and document an individual's interests, values, temperaments, work-related behaviors, aptitudes, skills, physical capacities, learning style and training needs. The foundation of vocational evaluation and assessment is that all human assessment should be holistic and humanistic. A holistic approach encompasses issues of diversity, all relevant attributes of the individual, his/her existing or potential environments (ecologies), and the interactions between the individual and the environments. A humanistic approach to vocational evaluation and assessment requires consumer involvement, and processes that are designed and implemented to benefit the individual served, with an emphasis on individual capabilities rather than disability. Further, the environment should fit the individual rather than the individual adjusting to fit the vocational environment (1994, p.1).

*Figure 5. Definition of Vocational Evaluation and Assessment (Smith, Lombard, Neubert, Leconte, Rothenbacher, & Sitlington, 1994).*

### **Means of Representation**

Vocational evaluation and assessment practitioners can be creative in the design of assessment plans that incorporate varied approaches for client/student action and expression. In today's growing digital world, the recognition of how technology changes the ways in which individuals use and access information is another important

factor for evaluators to consider as they develop evaluation and career assessment plans. For example, paper-based tests might be scanned into an optical character response (OCR) digital format that allows various learners to "read" information through a speech synthesizer, electronically translate it into a different language, or easily magnify the view. Pictorial career

interest surveys that are paper based might be represented through digitally based career exploration tools such as photographs, videos, or virtual reality scenarios to enhance perception or comprehension.

### **Multiple Means for Action and Expression**

Learners vary in both their preference and ability to express what they know. Individuals required to “write” an assessment response might instead use their voice to dictate the information through a software program or an application (“app”) on a portable device, use a word processor to compose a response, or demonstrate a response through a hands-on activity. Embedded digital supports such as spell-checkers, highlighters, and graphic organizers prove invaluable to many who have grown accustomed to tools that scaffold their writing and expression when communicating through written expression.

### **Multiple Means for Engagement**

Finally, encouraging the natural give-and-take exchange of information during the assessment process can facilitate the value of choice and ownership of the consumer in the assessment process. Crafting an assessment plan with consumers allows them to consider and select which tools address their individual interests, goals, preferences, and capabilities.

### **VECAP’s Definition of Career Assessment**

Previously, VECAP endorsed the definition of vocational evaluation and assessment as articulated by The Interdisciplinary Council on Vocational Evaluation and Assessment (Smith,

Lombard, Neubert, Leconte, Rothenbacher, & Sitlington, 1994; see [figure 5](#)). Integration of UDL in evaluation and assessment processes is compatible with, and guided by, this definition.

Efforts to provide holistic and humanistic assessment services require the integration of UDL from the onset of any assessment process. By doing so, professionals facilitate a third principle of career assessment and vocational evaluation (Smith, et al., 1994) that fosters human growth (i.e., enhanced maturity, improved self-esteem, advanced self-determination, and enhanced personal responsibility) and career development.

### **Benefits of Including UDL in Career Assessment and Vocational Evaluation Practices**

Career assessment and vocational evaluation services designed within a UDL framework allow any participant access to all types of methods and approaches. To gain access to one’s personal goals and aspirations, one has to have complete access to assessment methods (e.g., work sampling, inventories, situational assessments, web-based career exploration). This requires use of digital text, voice synthesizers, access to various digital applications and tools, and re-thinking provision of services. The use of assistive technology along with advances in general technology and cyberspace (e.g., the cloud) can reinforce UDL in assessment. Thus, participants can try out, see, and experience their potential in safe settings prior to using them in education or employment environments. This permits multiple opportunities to express, explore, and demonstrate career preferences, needs, strengths, capabilities, and goals. It also

Table 1

*Universal Design for Learning in Vocational Evaluation and Career Assessment Processes*

	<b>Traditional Approach</b>	<b>UDL-enhanced</b>
Referral	Information is obtained through a variety of outside sources.	Information includes expressed and expected outcomes from the individual.
Initial Interview	Specifics are explained with the individual through a structured paper-based questionnaire or face-to-face oral interview.	Data is gathered through multiple sources including a digitally based interview tool that allows variation in how information is provided either through writing, writing with supports, voice or speech-to-text. Oral interviews may be conducted face-to-face but via audio-video teleconference call.
Individualized Planning	Plans are developed through a structured (often paper-based) planning form.	Plans are developed in a digital format (perhaps a portfolio design) that allows the individual to create plans alongside the evaluation practitioner—recruiting interest and increasing relevance. Use of hyperlinks to videos of career examples and relevant terms/information help to fill gaps in prior knowledge.
Evaluation/Assessment Techniques	Assessment methods may include options that provide many instruments or techniques, including paper-based inventories, questionnaires, hands-on work samples, and community-based exploration experiences.	Emphasis on multiple methods and approaches which integrate digital technology to expand one’s opportunities for multiple ways of learning, performing and behaving.
Synthesis of Data and Report Development	Assessment results are analyzed, synthesized, and interpreted into language that is	Results can be presented in multiple digital formats, including interactive electronic

	understandable to all users of the results, especially the consumer.	profiles, reports, and portfolios. Pictures, illustrations, graphs, and PowerPoint can improve understanding by recipients of reports, especially if the consumer's own words and interests are included.
Exit Interview or Wrap-up Conference	Assessment results and recommendations are discussed with multiple recipients of reports and profiles, especially the referral agent, consumer, and other stakeholders.	Results are discussed using multiple formats and media and are available to anyone who wants to participate with the use of telephonic, video and audio media, electronic conferencing platforms, etc.
Feedback from consumers and users of reported information	Feedback is requested from referral agents and others who may use assessment information via paper follow-up surveys.	Immediate and long-term feedback are promoted and can be solicited via email, electronic surveys, and other electronic formats.
Follow-up	The hardest stage of assessment to accomplish, follow-up information is usually requested by calling the consumer, asking the referral source, and/or mailing brief questionnaires.	Evaluators can be alerted about times for follow-up by functions in their electronic calendars. They can send out electronic surveys that will compile information on both individual and multiple consumers to identify which recommendations were followed, why others were not followed, and which aspects of their services are validated as useful and which are not.

allows participants opportunities to demonstrate optimal learning, discovery, and performance preferences and needs during assessment processes. Integrating UDL offers opportunities to try out various methods and techniques that facilitate representation, expression, and engagement

to determine which are most effective. UDL helps equip individuals with knowledge about themselves—how they learn, what works to support learning, and how to engage in life-long learning. Finally, use of UDL in assessment reduces barriers to achieving desired education, training, and

employment. An illustration of how UDL can be infused across a typical vocational evaluation or career assessment process is provided in [Table 1](#).

### **Guiding Principles for Including UDL in Career Assessment and Vocational Evaluation**

Adopting a UDL framework to guide a career assessment and vocational evaluation process makes good sense. Vocational evaluation and career assessment processes, by definition, focus on methods that highlight the use of multiple and authentic approaches to assure that a participant's career directions are appropriately ascertained. "The underlying principles of UDL support the same philosophies many vocational evaluation practitioners have been recognizing for years—that all individuals benefit from a different presentation in approach" (Smith, 2003, p. 70). To provide equity and fairness, career assessment and vocational evaluation processes that integrate the principles of UDL help to ensure process that considers variations in how individuals learn, work, behave, and interact with information and their environment.

### **Conclusion**

The range of people who can benefit from career assessment, including vocational evaluation, is wide and diverse. No one method or approach can effectively provide the discovery and learning that one is expected to experience when using these services. In the past, some people have been denied access to meaningful assessment and evaluation due to methodological, physical, and instructional barriers. Advances in

technology and in our understanding of how the brain works (e.g., how we learn) provide the opportunity for anyone who wants to participate in our service to do so. As professionals, we must provide barrier-free, fully accessible services. This will require vocational evaluators to be self-motivated, on-going learners about ever-changing technological advances (e.g., mobile devices, digital applications, and social media—along with the "next new thing") and neuro-scientific discoveries regarding how people learn. If we subscribe to the notion that "assessment is learning," we must individualize and tailor career assessment and vocational evaluation services to adjust and meet anyone's needs so that anyone can benefit (i.e., learn) from participating. To provide anything less than UDL-designed assessment and evaluation processes undermines equity, fairness, and success for individuals who seek to realize dreams and achieve educational, vocational, and employment success.

### **References**

- Adolphs, R., Gosselin, F., Buchanan, T. W., Tranel, D., Schyns, P., & Damasio, A. R. (2005). A mechanism for impaired fear recognition after amygdala damage. *Nature*, *433*(7021), 68-72. doi:10.1038/nature03086
- Bickart, K. C., Wright, C. I., Dautoff, R. J., Dickerson, B. C., & Barrett, L. (2011). Amygdala volume and social network size in humans. *Nature Neuroscience*, *14*(2), 163-164. doi:10.1038/nn.2724
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How people learn: Brain, mind, experience, and school*. Washington, D.C.: National Academy Press.

- Center for Applied Special Technology. (2010). *Universal design for learning*. Retrieved from <http://www.cast.org>
- Center for Applied Special Technology. (2011). *Universal design for learning guidelines version 2.0*. Wakefield, MA: Author.
- Dolan, R. P., & Hall, T. E. (2009). Developing accessible tests with universal design and digital technologies: Ensuring we standardize the right things. In D. T. Gordon, D. H. Rose, & L. Schifter (Eds.), *A policy reader in universal design for learning* (pp. 165-188). Cambridge, MA: Harvard Education Press.
- Fischer, K. W., & Bidell, T. R. (2006). Dynamic development of action, thought and emotion, W. Damon & R. M. Lerner (Eds.), *Theoretical models of human development. Handbook of child psychology*. (6<sup>th</sup> ed.), Vol. 1, pp. 313-399. New York: Wiley.
- Gardner, H. (1999). *Intelligence reframed*. New York, NY: Basic Books.
- Gray, T., Silver-Pacuilla, H., Brann, A., Overton, C., & Reynolds, R. (2011). Converging trends in educational and assistive technology. In T. Gray & H. Silver-Pacuilla (Eds.), *Breakthrough teaching and learning* (pp. 5-24). New York, NY: Springer Publishing.
- Hampton, K. N., Goulet, L. S., Rainie, L., & Purcell, K. (2011). *Social networking sites and our lives*. Washington, D.C.: Pew Internet and American Life Project, Pew Research Center.
- Higher Education Opportunity Act of 2008, 20 U.S.C. § 1003 (2008).
- Kang, C. (2011, July 18). Marketers target moms armed with smartphones. *The Washington Post*. Retrieved from <http://www.washingtonpost.com/business/economy/marketers-target-moms-armed-with-smartphones>
- Kennedy, D. P., Gläscher, J., Tyszka, J., & Adolphs, R. (2009). Personal space regulation by the human amygdala. *Nature Neuroscience*, 12(10), 1226-1227. doi:10.1038/nn.2381
- Ketterlin-Geller, L. R. (2005). Knowing what all students know: Procedures for developing universal design for assessment. *Journal of Technology, Learning, and Assessment*, 4(2). Retrieved from <http://www.jtla.org>
- Krain, A. L., & Castellanos, F. X. (2006). Brain development and ADHD. *Clinical Psychology Review*, 26(4), 433-444. doi:10.1016/j.cpr.2006.01.005
- Leconte, P. J. (1994). *A perspective on vocational appraisal: Beliefs, practices, and paradigms*. Unpublished doctoral dissertation, The George Washington University, Washington, DC.
- Madden, M. (2010). *Older adults and social media*. Pew Research Center Publications. Retrieved from <http://pewresearch.org/pubs/1711/older-adults-social-networking-facebook-twitter>
- Meyer, A., & Rose, D. H. (1998). *Learning to read in the computer age*. Cambridge, MA: Brookline Books.
- National Center on Universal Design for Learning. (2011b). *What is meant by the term curriculum?* Retrieved from <http://www.udlcenter.org/aboutudl/udlcurriculum>
- National Center on Universal Design for Learning. (2011a). *What is UDL?* Retrieved from <http://www.udlcenter.org/aboutudl/whatisudl>
- Oblinger, D. G., & Oblinger, J. L. (2005). Is it age or IT: First steps toward

- understanding the net generation. In D. G. Oblinger & J. L. Oblinger (Eds.), *Educating the net generation* (pp. 2.1-2.20). Retrieved from <http://net.educause.edu/ir/library/pdf/pub7101.pdf>
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon* 9(5).
- Prensky, M. (2010). *Teaching digital natives: Partnering for real learning*. Thousand Oaks, CA: Corwin.
- Rehabilitation Services Administration. (2008). Vocational rehabilitation services program: Draft strategic performance plan goals, objectives, and measures. Retrieved from [http://www2.ed.gov/policy/speced/guid/rsa/strategic\\_performance\\_plan\\_2008.pdf](http://www2.ed.gov/policy/speced/guid/rsa/strategic_performance_plan_2008.pdf)
- Rehabilitation Services Administration. (2012). Ad hoc query for annual review report. Retrieved from [http://rsa.ed.gov/ahq.cfm?form\\_id=107](http://rsa.ed.gov/ahq.cfm?form_id=107)
- Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2010). Generation m2: Media in the lives of 8- to 18-year-olds. Retrieved from <http://www.kff.org/entmedia/upload/8010.pdf>
- Rose, D. H., & Gravel, J. W. (2010). Universal design for learning. In P. Peterson, E. Baker & B. McGraw (Eds.), *International encyclopedia of education* (pp. 119-124). Oxford: Elsevier.
- Rose, D. H., Hall, T. E., & Murray, E. (2009). Accurate for all: Universal design for learning and the assessment of students with learning disabilities. In D. T. Gordon, D. H. Rose, & L. A. Schifter (Eds.), *A policy reader in universal design for learning* (pp. 189-208). Cambridge, MA: Harvard Education Press.
- Rose, D. H., & Meyer, A. (2000). *The future is in the margins: The role of technology and disability in educational reform*. A report prepared for the U.S. Department of Education. Retrieved from <http://4.17.143.133/udl/index.cfm?i=54>
- Rose, D. H., & Meyer, A. (2002). *Teaching every student in the digital age*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Rose, D. H., & Meyer, A. (2003). Digital learning. *Cable in the Classroom*. Retrieved from <http://www.ciconline.org>
- Rose, L. T., & Fischer, K. W. (2009). Dynamic systems theory. In R. A. Shweder (Ed.), *The child: An encyclopedia companion*. Chicago: University of Chicago Press.
- Rubia, K., Smith, A. B., Brammer, M. J., Toone, B., & Taylor, E. (2005). Abnormal brain activation during inhibition and error detection in medication-naive adolescents with ADHD. *The American Journal of Psychiatry*, 162(6), 1067-1075. doi:10.1176/appi.ajp.162.6.1067
- Russell, M. (2011). Personalizing assessment. In T. Gray & H. Silver-Pacuilla (Eds.), *Breakthrough teaching and learning* (pp. 111-126). New York, NY: Springer Publishing.
- Sitlington, P. L., Neubert, D. A., Begun, W. H., Lombard, R. C., & Leconte, P. J. (2007). *Assess for success: A practitioner's handbook on transition assessment, 2<sup>nd</sup> Edition*. Thousand Oaks, California: Corwin Press.
- Smith, A. (2011). *Smartphone adoption and usage*. Washington, D.C.: Pew Internet and American Life Project. Pew Research Center.

- Smith, F. G. (2003). Universal design for learning and vocational evaluation: Recognizing the parallels. *The National Issues Forum Papers: 2003 Proceedings*, Retrieved from [http://vecap.org/index.php?/site/publications\\_categories/C112/](http://vecap.org/index.php?/site/publications_categories/C112/)
- Smith, F. G., Leconte, P., & Johnson, C. (2006). *VECAP position paper on universal design for career assessment and vocational evaluation*. Retrieved from [http://www.vecap.org/images/uploads/docs/vecap\\_udl\\_position\\_paper.pdf](http://www.vecap.org/images/uploads/docs/vecap_udl_position_paper.pdf)
- Smith, F. G., Lombard R., Neubert D., Leconte, P., Rothenbacher, C., & Sitlington, P. (1994). The position statement of the Interdisciplinary Council on Vocational Evaluation and Assessment, Fall 1993. *The Journal for Vocational Special Needs Education*, 17(1), 41-42.
- Spooner, F., Baker, J. N., Harris, A. A., Delzell, L., & Browder, D. M. (2007). Effects of training in universal design for learning on lesson plan development. *Remedial & Special Education*, 28(2), 108-116.
- Sternberg, R. (1997). *Successful intelligence*. New York, NY: Plume.
- Thirtieth Institute on Rehabilitation Issues. (2003). *A new paradigm for vocational evaluation: Empowering the VR consumer through vocational information*. Hot Springs, AR: University of Arkansas, CURRENTS.
- United States Department of Education (2010). *2010 National Education Technology Plan*. Retrieved from <http://www.ed.gov/technology/netp-2010>
- Valera, E. M., Faraone, S. V., Murray, K. E., & Seidman, L.J. (2007). Meta-analysis of structural imaging findings in attention-deficit/hyperactivity disorder. *Biological Psychiatry*, 61(12):1361–1369. doi:10.1016/j.biopsych.2006.06.011
- Vocational Evaluation and Career Assessment Professionals Association (2011). *National Position Papers*. Retrieved September 26, 2011 from [http://vecap.org/index.php?/site/publications\\_categories/C27/](http://vecap.org/index.php?/site/publications_categories/C27/)
- von Károlyi, C., Winner, E., Gray, W., & Sherman, G. F. (2003). Dyslexia linked to talent: Global visual-spatial ability. *Brain and Language*, 85(3), 427-431. doi:10.1016/S0093-934X(03)00052-X
- White, H. A., & Shah, P. (2006). Uninhibited imaginations: Creativity in adults with Attention-Deficit/Hyperactivity Disorder. *Personality and Individual Differences*, 40(6), 1121-1131. doi:10.1016/j.paid.2005.11.007
- White, H. A., & Shah, P. (2011). Creative style and achievement in adults with attention-deficit/hyperactivity disorder. *Personality and Individual Differences*, 50(5), 673-677. doi:10.1016/j.paid.2010.12.015
- Wolff, U., & Lundberg, I. (2002). The prevalence of Dyslexia among art students. *Dyslexia*, 8(1), 34-42.

[Return to Table of Contents](#)

### Author Note

Frances Smith, 2011-2012 UDL Fellow Boston College Lynch School of Education and CAST, [Frances.Smith@bc.edu](mailto:Frances.Smith@bc.edu)