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Broadening Our Perspectives on Adult Literacy, Numeracy, and Problem-Solving Skills with PIAAC Data: A Commentary on The Centre for Literacy’s 2014 Summer Institute

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I recently attended the annual Summer Institute sponsored by The Centre for Literacy, which convened in Montreal, Canada in June 2014 (for more information, see The Centre for Literacy, 2014). This event provided a unique opportunity to interact with multiple adult education stakeholders (i.e., researchers, practitioners, and policymakers) initiating a dialogue to understand and evaluate adult literacy and numeracy trends and issues on a global scale. The event focused on exploring and developing avenues for research, practice, and policy using data from a recently administered, large-scale international assessment, the Program for the International Assessment of Adult Competencies (PIAAC). To accomplish this, over 85 adult education experts participated in a three-day interactive PIAAC forum of panel and discussion sessions, quantitative- and qualitative-based research presentations, guest speakers and performances, roundtable-guided conversations with colleagues, and a plethora of networking opportunities. As a researcher, this event broadened my perspective in several important ways: a. facilitating my awareness of my role in ascertaining and translating research in alignment with practitioner and policymaker needs; b. understanding culturally-specific issues and considerations plaguing adult education; and c. deepening my knowledge of PIAAC data and how this data can be utilized in the United States as well as internationally to inform policy. I think it is important to recognize convergences and divergences in the issues and practices facing adult education worldwide. I begin this commentary with a brief description of PIAAC and a summary of how the results from the United States factor into a broader international context. Next, I identify and provide insight into the three key themes that emerged at the event. Finally, I conclude by discussing my reflections on the value of PIAAC data and considerations for future directions in the field of adult education.

What is PIAAC and How Did the United States Fare?

PIAAC, a comprehensive, international skills survey administered in 24 countries from 2011 to 2012 (Round 1), assesses the domains of literacy, numeracy, and problem solving in technology-rich environments (i.e., operating a computer). In addition, a detailed background questionnaire was administered, which included a range of items related to personal characteristics, employment history, socioeconomic status, various skills used at home and at work, and health literacy (National Center for Education Statistics [NCES], 2014a). Although PIAAC is an internationally administered assessment, there were some differences in data collection by country (i.e., given in multiple languages, computer-based/paper-based formats, domains assessed, and certain country specific items). In the United

States, the three PIAAC domains were collected in the English language during 2011 to 2012 on a nationally representative sample of 5,000 adults (ages ranging from 16 to 65). The United States background questionnaire was administered in English and Spanish languages. More information about PIAAC as well as restricted use and publicly available United States and international PIAAC datasets are available through NCES and the Organization for Economic Cooperation and Development (OECD) websites (NCES, 2014a; OECD, 2014).

The PIAAC results provide a framework for adult educators to understand how the literacy, numeracy, and problem-solving abilities of adults in the United States compare to those of adults internationally. Round 1 PIAAC results indicate that adults in the United States scored significantly below the international average across all three domains (literacy, numeracy, and problem solving in technology-rich environments) (American Institutes for Research [AIR] PIAAC, 2014; NCES, 2014a). In particular, the United States performed well below the international average in the numeracy and problem-solving domains, with 28.7% and 48.9% falling at or below the lowest PIAAC level (Level 1), respectively (OECD, 2013). Moreover, the United States exhibited disparities by racial/ethnic groups; African American and Hispanic adults were overrepresented in the lowest levels of the PIAAC literacy and numeracy domains. These findings present a dismal picture of adults' performance in the United States relative to other countries; however, the Summer Institute experience was eye-opening in evaluating and extending these findings as well as expanding my awareness of how issues plaguing the United States are also similar to issues impacting international adult educators.

Key Themes and Issues to Understanding and Utilizing PIAAC Data

Three key themes and issues pertaining to understanding, interpreting, and utilizing PIAAC data consistently emerged in discussions and presentations over the three-day Summer Institute: a. making numeracy a priority; b. utilizing the additional component reading skill data; and c. considering the skills and the appropriate interpretations of the data from minority, under-represented groups. These themes appeared across multiple international contexts and these were concerns that traversed the multitude of adult education stakeholders represented at the event. Thus, I think these themes are paramount to future pursuits in research and practice in order to bridge the gap and open dialogues between different stakeholders and various global cultures.

The primary concern echoed in the voices of many adult educators at the Summer Institute was literacy deficits across countries. However, in addition to literacy, many attendees expressed concern that numeracy skills are often neglected and that weak numeracy skills are highly associated with poor employment outcomes. One speculation is that existing instructional math practices in many schools are not sufficient in training adults to be productive and proficient at the real-world math skills needed in the workforce (Tout, 2014). Thus, one of the central themes that emerged for future research was how adult educators could use PIAAC numeracy data to better inform instructional math practices and policy internationally. Given that the United States performed particularly poorly on the PIAAC numeracy domain, I think numeracy skills are clearly an important, under-studied area to be

considered for future research. As a researcher focused on adults performing at the lowest levels of PIAAC (adults enrolled in Adult Basic and Secondary Education programs in the United States), I know there is a paucity of literacy research; however, there is even less research conducted on these adults' numeracy skills. In particular, research is needed to investigate current math instructional practices, to determine how these translate to skills needed in the workforce, and to adequately design interventions to identify, target, and improve key component numeracy skills.

Another theme that surfaced repeatedly at the Summer Institute was the need to consider the impact of the supplementary PIAAC sections on component reading skills. In contrast to previously administered large-scale international assessments (i.e., the 2003–2008 Adult Literacy and Life Skills [ALL] Survey and the three-phase [1994, 1996, 1998] International Adult Literacy Skills [IALS] Survey; NCES, 2014b; OECD, 2000), PIAAC assessed the component reading skills of print vocabulary knowledge, sentence- and passage-level comprehension skills, and fluency skills. These additional reading component skills provide word-, sentence-, and passage-level information, which is critical to gaining a fuller, more detailed representation of adults' literacy skill profiles. Adult educators surmised that these findings may be essential to better understanding the skill set and developmental trajectory of how adults performing at the lowest PIAAC levels acquire proficient reading skills. In addition, these reading component skills may help to inform instructional practices by identifying at what level(s) – the word, sentence, and/or passage – adults struggle with most and modifying instructional practices to meet an adult's specific component skill weaknesses (Reder, 2014).

Many countries represented in the PIAAC data include specific minority groups. Adult educators currently have very little information regarding the skills, needs, and cultural practices of these groups. I listened to many personal anecdotes and presentations on research and interventions targeted at some of these minority groups. For example, Canada is making efforts to better understand the implications of PIAAC data and create resources on Aboriginal populations. The Summer Institute afforded me with the opportunity to witness a performance by a spoken poetic word artist who teaches and promotes adolescent literacy in Canadian indigenous populations through creative writing and song. In addition, an Aboriginal woman presented an inspiring account of how she overcame homelessness and obtained a college degree through *Courage to Soar*, a program designed to empower and further the education and career opportunities of Aboriginal women (for more information, see Minwaashin Lodge, 2010). These firsthand experiences provided a glimpse into the culturally-specific needs of members from minority communities. I think cultural practices and norms are an important facet for adult educators in the United States to consider when tailoring instructional needs to and designing interventions and programs for a heterogeneous group of adult learners.

There were additional presentations on research and interventions being conducted with other minority groups. For example, *Literacy Cubed (LIT³)* is a family literacy project targeting Roma families in Romania, Slovakia, and Montenegro in order to improve reading and health literacy outcomes. The Roma are known to experience high poverty rates, to have limited educational opportunities and resources, and to have limited access to quality

healthcare that has been perpetuated through several Roma generations (Mallows, 2014). LIT³ develops and distributes health and literacy materials, conducts workshops, campaigns to raise awareness, and disseminates information about Roma communities in order to improve reading and health outcomes as well as inform national educational policies (for more information, see Literacy Cubed, 2014). As a large-scale assessment, PIAAC is capable of identifying many of these minority sub-groups within countries; however, this dataset is not sufficient because of the limited sample sizes of the various minority sub-groups. Moreover, it is not clear whether the overall literacy, numeracy, and problem-solving PIAAC rates for a country are representative of the abilities of minority sub-groups such as the Roma. Thus, more qualitative- and quantitative-oriented, large-scale research and interventions (i.e., LIT³) are needed to conduct rigorous analyses and to elucidate the cultural and educational practices and needs of these different sub-groups internationally.

Concluding Remarks and Considerations

PIAAC represents a rich dataset that provides a plethora of information beyond merely ranking countries around the world by levels of literacy, numeracy, and problem-solving abilities. Researchers and educators can capitalize on the comprehensiveness of the background questionnaire to investigate potential variations in PIAAC domains by demographic characteristics (i.e., age, race/ethnicity, second language status, educational background, socioeconomic status, employment status, reading engagement level). Moreover, the supplementary component reading skill data offer a finer-grained analysis to understand the literacy profiles of adults globally. I highly encourage adult educators interested in accessing and utilizing PIAAC data to capitalize on the restricted use and public access files available through the NCES and OECD websites. The NCES, OECD, and AIR PIAAC websites also offer a variety of resources geared toward practitioners including a wiki discussion board, monthly newsletters, webinars, presentations, technical reports, and a vibrant, interactive chart building interface to display PIAAC results by domain and country. In addition, these websites offer online, individualized education and skills assessments for adult students as well as sample items from all three PIAAC domains; beneficial resources for practitioners designing instructional materials. In my opinion, these resources facilitate communication between and promote collaboration among adult education researchers and practitioners providing a conduit to effectively and efficiently translate research into practice.

Historically and persisting to the present day, adult education in the United States suffers from a dearth of rigorous research, diminished funding for research and education programs, and poor dissemination efforts to integrate research with practice and policy (Bennett, 2007). Specifically, it was reported at the Summer Institute that of the 36 million adults in the United States who function at the lowest PIAAC literacy levels (Levels 1 and 2), only two million of these adults are being served by federally-funded literacy programs on an annual basis. There are an additional three million on waiting lists (Soroui, 2014). Thus, I think PIAAC represents an excellent opportunity for adult educators to take advantage of readily available data to conduct additional research and advocate for increased funding opportunities for the field of adult education. Of course, it is important to recognize that PIAAC data represent merely a starting point in elucidating and resolving issues in the field.

Clearly, outcomes from the Summer Institute indicated that more research is needed on adults' literacy and numeracy skills development and instructional practices. In particular, I think it would be important to consider investigating additional, component skills and predictors of literacy (i.e., decoding, metalinguistic skills, listening comprehension) and numeracy skills (i.e., working memory, rapid automatized naming [RAN], reasoning) to gain a more comprehensive profile of adults' literacy and numeracy skill set. Additional qualitative and quantitative-based research is also warranted to better understand the population demographics and culturally specific characteristics and skills of the diverse minority groups within different countries represented in the PIAAC data. Overall, The Centre for Literacy's Summer Institute was a wonderful, interactive, and informative experience that I would recommend to adult educators interested in engaging in critical thinking, debating, and conversing on a global scale with multiple stakeholders about issues and trends regarding adult education research, practice, and policy.

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