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The Longitudinal Study of Adult Learning: Challenging Assumptions

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*When Professor Stephen Reder presented the Longitudinal Study of Adult Learning (LSAL) at The Centre's 2011 Fall Institute –
IALS: Its Meaning and Impact for Policy and Practice – we recognized that the findings had implications far beyond assessment, and invited him to host a webinar in February 2012 and to write this brief. Based on evidence from the ten-year study of more than a thousand adult high school drop-outs, Dr. Reder challenges many deeply-held assumptions about the impacts of, and links between, formal programs, self-study, proficiency gains and literacy practices on learners over time. The author suggests implications from LSAL and makes recommendations for adult basic education policy, program and system design, and assessment.*

This brief is meant to generate questions and discussion about factors that influence the impacts and results of adult basic education and seed new ways to think about the implications for workplace learning.

Professor Reder will participate in the 2012 Summer Institute on Workplace Literacy and Essential Skills: Shaping a New Learning Culture.

• WHY A LONGITUDINAL STUDY OF ADULT LITERACY DEVELOPMENT?

To understand and support adult literacy development, we need research that examines changes in literacy in multiple contexts and over significant periods of time. Most prior research has examined change in adult literacy in a single context over relatively short periods of time in which adults participate in basic skills classes. In most of these, the follow-up intervals are too short to observe meaningful change. In many studies, only program participants are observed, making it difficult to understand program participation and persistence patterns or assess the impact of program participation (Beder, 1999; Brooks, Davies, Duckett, Hutchinson, Kendall, & Wilkin, 2001). Research is needed that looks at life-wide and lifelong trajectories of adult learning and literacy development. The Longitudinal Study of Adult Learning (LSAL) is one such study.

• LSAL: THE STUDY

The Longitudinal Study of Adult Learning (LSAL) was designed as a panel study on a target population for adult literacy education over a relatively long period of time. For nine years it followed an adult population not limited to program participants, gathering information not limited to program settings or short follow-up intervals. Through addressing four major research questions [see BOX], it offers a richer picture of adult literacy development than is typically captured through short-term and more narrowly focused pre- and post comparisons among participants in basic skills programs.

LSAL RESEARCH QUESTIONS

LSAL addressed four major questions about the development of literacy in adult life:

- To what extent do adults' literacy abilities continue to develop after they are out of school?

- What are adult learners' patterns of participation over time in literacy training and education? In other learning contexts?

- What life experiences are associated with adult literacy development? How do formally organized basic skills programs contribute to these learning trajectories? Workplace training? Other contexts and activities?

- What impacts does adult literacy development have on social and economic outcomes?

Design and methodology   The design and methodology of LSAL are detailed elsewhere (e.g., Reder, 2007, 2009a; Reder & Strawn, 2001a). The study randomly sampled about 1,000 high school dropouts from 1998-2007. At the beginning, they were age 18-44, proficient but not necessarily native English speakers, and residents of the Portland, Oregon metropolitan area. The methodological advantage of using a local target population is that most individuals attended the same school systems as

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children and encountered the same labor market and educational options as adults. These shared contexts cast into relatively sharp relief differences among individuals' literacy, family, education and work histories.

Population studied   At the beginning of the study, the population had an average age of 28, evenly divided among males and females. Approximately one-third were from minority groups, about one in ten were born outside of the United States, and about one-third self-described as having a learning disability. Some defining characteristics of LSAL's population changed over the time of the study. Everyone's age increased. Some individuals received alternative high school credentials (GEDs or even college degrees), while others moved outside the Portland area. Despite these changes, LSAL staff kept contact with respondents and about 90 percent of the original sample was retained at the end of LSAL in 2007.

Data collected   LSAL conducted a series of six periodic "waves" of in-depth interviews and skills assessments in respondents' homes. In every wave, literacy proficiency, engagement in everyday *literacy practices* and self-perceived wave-to-wave *changes in literacy skills and practices* were assessed. [See BOX for measurement instruments] Other skills – such as oral vocabulary, reading fluency and holistic writing – were assessed only in particular waves. The first wave interview questions gathered background information (e.g., demographics, family-of-origin characteristics, K–12 school history). Interview sections repeated in each wave captured information about social, economic and educational status and activities (e.g., participation in basic skill programs, post-secondary education and training, employment, job characteristics and earnings, household and family composition, life goals and aspirations). Administrative data about program participation, education and employment/earnings was also collected with permission from the individual.

MEASUREMENT INSTRUMENTS IN LSAL

Literacy proficiency measure   The Document Literacy scale of the Test of Applied Literacy Skills (TALS) developed by the Educational Testing Service was used. The TALS assesses adults' abilities to extract and process written information in a variety of everyday document formats, such as forms, maps, tables, text displays, labels, and so forth. TALS instruments are highly similar to instruments used in the International Adult Literacy Survey, the U.S. National Assessment of Adult Literacy, the Adult Lifelong Learning Survey and other large-scale adult literacy assessments

Literacy practices measures   Measures of engagement in everyday reading, writing and math activities were constructed from interview questions about how often respondents performed each of a set of specific reading, writing, numeracy and computer activities in various everyday contexts (home, community, work). Two questions were asked about each practice. Respondents were first asked if they ever engaged in a practice, for example, "Do you ever read the news section of the newspaper?" (yes or no). If they answered yes, they were asked about the frequency (e.g., "How often do you read the news section of the newspaper?"), on a five-point scale ranging from 1 ("rarely") to 5 ("every day"). Answers to the two questions for each practice were combined so the possible range of scores for each practice was from 0 ("never") to 5 ("every day").   Analyses identified two longitudinally stable scales, engagement in *literacy practices and numeracy practices* (Reder, 2009a).

Perceived changes in literacy   Respondents were asked to make judgments, at each interview, about *perceived changes* that had occurred in their reading, writing and math skills and activities since their previous interview (Reder, 2010a).

• KEY FINDINGS

Literacy continues to develop in adult life after leaving school   LSAL's central finding is that adults' literacy and numeracy skills continue to develop slowly after they leave school. Although program testing data typically show short-term proficiency gains, LSAL displays longer-term trajectories of changes in literacy proficiency and practices among adults who attend programs and those who do not (Reder, 2009a). Adults are aware of some aspects of these ongoing literacy changes (Reder, 2010a).

Literacy development varies   Changes observed in all literacy measures varied systematically across individuals. Some adults' proficiencies or engagement in literacy or numeracy practices increase over time, some decrease, while some change relatively little. The changes observed

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systematically depend on demographic and background characteristics and on specific life events and experiences. Growth-curve models are a useful analytical framework for understanding the longitudinal interplay of individual characteristics, program participation and other life activities in shaping literacy development (Reder & Bynner, 2009). Literacy development may also be closely related to prevailing local economic conditions (Reder, 2010b).

Age has an effect on literacy growth   Age is a good example of how background variables influence the variations in proficiency growth. The rate of proficiency change is negatively related to the individual's age: younger adults show higher rates of change (i.e., the younger they are, the more proficiency they gain over time); middle-aged adults show small or no rates of change; and older adults show the lowest, often negative, rates of change (i.e., they lose proficiency over time). This age-graded pattern is closely related to the "inverted-U" cross section of proficiency by age in many national and international surveys, showing literacy lowest among young and old adults and at intermediate levels among middle-aged adults (Reder, 2009a).

Literacy measures are correlated   There are important similarities and differences in the changes observed among the various measures or dimensions of literacy and numeracy. As one might expect, the measures are positively correlated. Individuals with relatively high levels of literacy proficiency also have relatively high levels of engagement in literacy and numeracy practices. Despite the moderate positive correlations between proficiency and engagement in literacy practices at each point in time, the dynamics of change are quite different for these two types of measures (Reder, 2009a). This difference will be particularly important when we look at the effects of program participation on literacy development.

Life history events have effects on literacy development
Key life history events, for example, starting a job after a period of non-employment, have a significantly positive effect on the likelihood of reading better. The recent addition of a child to the household has a positive impact on reading more often. The presence of a new partner in the household significantly enhances the likelihood of doing math more often, whereas a recent increase in household income is associated with increased likelihood of doing math with new kinds of materials (Reder, 2010a).

Participation in programs and self-study   Detailed data was collected in each wave about participation in formal basic skills programs and self-directed learning activities aimed at improving reading, writing or math skills. Through Wave 5, about half of the population (49%) had participated in a basic skills program. A significant fraction of program participants "stop out" and restart later, either in the same or a different program, showing fragmented patterns of program participation. The majority (71%) of the population had self-studied. Over half (54%) of the

adults in the programs' target population who had never attended a class had self-studied to improve their basic skills.

Data indicates that self-study sometimes precedes any formal program participation, sometimes follows or overlaps with participation, and sometimes occurs between disjointed periods of participation. Most adults who have tried to improve their basic skills try *both* self-study *and* participating in a course. Some individuals use only one approach, many use both, and some use neither. The largest group uses both. Self-study and program participation thus appear to be partially complementary approaches to improve basic skills. In fact, many of the formal programs offered participants teacher-supervised "practice time" in computer labs, effectively facilitating self-study for adult learners (Reder, 2007; Reder & Strawn, 2006).

Participation and self-study have patterns of effect on literacy development   LSAL found no relationship between proficiency change and participation in adult basic skills programs. This lack of impact may seem at odds with the small learning gains that programs typically report for participants' pre- and post-test scores on proficiency tests. However, analyses of program gains typically do not compare the gains made by comparable groups of adults not in programs. Like many program evaluations, LSAL found both overall small proficiency gains among program participants, and equivalent gains among comparable non-participants (Reder, 2009a).

In sharp contrast, the data exhibit a strong positive relationship between program participation and changes in literacy and numeracy *practices* measures. With many statistical controls in place, there are strong relationships between participation in adult education programs and increased engagement with literacy (e.g., reading books) and numeracy (e.g., using math at home) practices. The sequence of the observed changes makes it clear that program participation influences practices rather than vice-versa (Reder, 2009a).

This finding is consistent with research by Purcell-Gates and colleagues (2004, 2000) who found that adults in programs that focus instruction around authentic literacy practices report greater changes in their literacy practices than do students from programs not centered around such practices. Sheehan-Holt and Smith (2000) analyzed the U.S. National Adult Literacy Survey (NALS) data, looking at cross-sectional differences between recent program participants and non-participants. With many background characteristics statistically controlled, they found no significant proficiency differences between participants and non-participants, but significant differences in measures of reading practices. Their findings are consistent with the longitudinal findings in LSAL. Three reviews of research on the impact of program participation on literacy proficiency have also concluded that there are no systematic effects

in studies that involved comparison groups and statistical controls (Beder, 1999; Brooks *et al*, 2001; Smith, 2009).

LSAL also shows strong effects of program participation on adults' subsequent perceptions of improved literacy. Significantly more improvement is reported over periods that include program participation than over periods that do not. Substantial effects on reading, writing and math are apparent with many other factors statistically controlled. The most change is reported by adults who both participate in programs and self-study; the least is reported by those who do neither. Intermediate amounts are reported by those who do one of the two. A strikingly similar pattern of effects is seen when the dependent variable is the percentage of adults who passed the GED Tests. This is noteworthy because GED attainment is a "hard" outcome variable, based on administrative records rather than on self-reports of literacy changes (Reder, 2010a).

Long-term effects on proficiency: Practice engagement theory   (Reder, 1994; Sheehan-Holt & Smith, 2000) holds that engagement in literacy practices leads to growth in literacy proficiency. Using LSAL's repeated measures of proficiencies and practices, the predictions of practice engagement theory were tested and validated (Reder, 2009b). More frequent reading and writing activities lead over a long period of time (approximately 5-6 years) to greater proficiency. The estimated practice engagement effect – leading from engagement in literacy practices to increased literacy proficiency – remains significant with numerous demographic and background variables controlled.

Literacy development in adulthood affects employment and earnings   Like many large-scale adult literacy assessments, LSAL exhibits strong relationships among literacy proficiency, employment and earnings. The relationship between proficiency and earnings among high school drop-outs replicates Tyler's (2004) findings for GED test takers. Econometric analyses of individual earnings over the LSAL time period indicate that individuals' starting literacy proficiency affects both their initial earnings level *and* their rate of subsequent earnings growth. Beyond the effects of proficiency *level* on earnings, the rate of proficiency *growth* also affects earnings. It is thus essential not only for adults to enter the labor market with adequate levels of literacy proficiency, but to keep developing their literacy over time (Reder, 2010b).

• LSAL IMPLICATIONS FOR POLICY AND PROGRAMS

Before examining implications, it is worth noting that LSAL is a study of the adult population in Portland, Oregon. Although this population may differ in certain ways from those in other geographical areas, there is reason to believe that the major findings apply elsewhere. The relationships between age and literacy, for example, as well as the differential

effects of programs on proficiency and practices measures, are consistent with findings from cross-sectional national and international studies cited above. Longitudinal comparisons of adult literacy changes observed in a birth cohort study in England also show broad similarities (Bynner, Reder, Parsons & Strawn, 2010).

Strengthen the economic case for investments in adult literacy development   Adults need to improve their literacy and essential skills *after* they leave school. School improvement efforts alone will not meet future workforce development needs. LSAL findings indicate that the development of literacy and essential skills during adult life has substantial economic benefits to individual adults and society. Programs that elevate and sustain the rate of literacy skill growth over time are needed to raise future levels of employment and earnings.

LSAL findings about program impact pose a critical dilemma for adult education design. On one hand, programs have demonstrable short-term impact on measures of literacy and numeracy *practices* but not on proficiency measures as short-term outcomes. At the same time, the production of increased proficiency – and its associated economic benefits – is the justification for investments in literacy and essential skills programs. We need to reconcile these findings and argue that programs should be designed and evaluated in terms of the increased engagement they produce in literacy and numeracy practices.

Use multiple measures for accountability and continuous improvement efforts   Although policies and public investments are frequently rationalized in terms of programs' impact on adults' proficiency, LSAL shows programs have a direct and immediate effect *only* on adults' literacy and numeracy practices. There is thus a major misalignment between the effects programs have on literacy and numeracy development and the short-term proficiency gains for which they are held accountable. Short-term proficiency gains have only limited utility as an outcome measure in continuous program improvement efforts. Rather than hold programs accountable for short-term proficiency gains, LSAL findings suggest that changes in literacy and numeracy practices would be a more effective way to assess short-term program impacts.

The findings demonstrate *practice engagement effects* on long-term proficiency development. Programs generate increased levels of engagement in literacy practices in the short-term and lead to increased proficiency levels in the long term. Without literacy practices measures, the LSAL data do not show a systematic connection between programs and proficiency.

Broaden the conception of a literacy program   LSAL found that many adults, including many who never attend a program, work independently to improve their basic skills. Many engage in "self-study" between periods of program

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participation. This suggests that programs could increase their outreach, enrollment and students' persistence by connecting self-directed learning activities with traditional classes. There is potentially an important role for technology, in offering distance education, and in connecting different learning modalities and activities over time. With the largest gains made by individuals who both participate in programs and engage in self-study, LSAL suggests strategies that facilitate and connect both types of learning could improve support for adult literacy and essential skills development.

Develop learning support systems   Most literacy programs retain learners for relatively short periods of time, and learners often have fragmented patterns of participation in multiple programs and services. Service providers are often unable to coordinate their offerings and services. Learners are then left to assemble and coordinate these learning experiences into coherent wholes. New types of *learning support systems* are needed that provide persistent structures or pathways for adults. These pathways might combine periods in which adults attend programs, use online materials to work independently or with tutors, or receive support services from local community-based organizations (CBOs) and volunteer programs, for example. Local communities can develop such life-wide and lifelong learning support systems, perhaps using technology to share information between learners and providers that can help coordinate and integrate services around the needs and plans of individual adults.

Develop special programs for older adults   The loss of proficiency over time among older adults – and according to LSAL, this decline may start as early as thirty-five years of age – has far-ranging implications. Traditionally there have been two sources of new adults with basic skills needs in a society: youth leaving school and immigrants arriving without the skills they need. LSAL suggests there may be a third source: older adults who have lost skills they once had. With graying workforces and societies, there may be increasing need for programs that focus on skill retention among older adults. Practice engagement theory may provide a useful starting point to design such programs.

Develop a new logic model for research and evaluation of programs   Although LSAL found systematic relationships between program participation and increased engagement in literacy practices, it did not find this relationship between the *amount* of participation and those gains. Recent experimental classroom studies of reading instruction similarly found no significant effects of hours of attendance on a wide range of outcome measures (Condelli et al, 2009; Miller et al, 2011). These findings suggest a need to rethink the traditional logic model that links participation in adult education programs and the amount of instruction to learning outcomes.

Leander (2009) has described this prevailing logic model as the "parking lot" model; what matters is how long students

are "parked" in the program. He suggests we replace it with a "busy intersection" model in which what matters is not how long students spend waiting in the intersection but the direction they take when they leave it. In this conception, students come to the program from different directions and depart towards different destinations. The adult education program helps them choose the best path as they leave the program and provides them with the resources and supports to become persistent lifelong learners and reach their destinations (Lesgold & Welch-Ross, 2012; Miller et al, 2011). With this logic model, the program's impact on learning is best seen in different ways at different points along the adult's trajectory. According to LSAL research, the initial impact of adult literacy and essential skills programs is best measured in terms of changing literacy practices. Over time, these changes in practice will lead to increased proficiency levels and enhanced economic development.

To support adults along these life-wide and lifelong pathways, we should be guided by William Butler Yeats: "Education is not filling a bucket, but lighting a fire."

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