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Research Article

The Roles of Education and Literacy in the Digital Divide Among Middle-Aged Adults: Cross-National Evidence from the United States, Japan, and South Korea

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Abstract

Internationally representative data of middle-aged adults 45 – 65 years old [n(United States) = 2,150; n(Japan) = 2,318; n(South Korea) = 2,800] from the 2012 Program for International Assessment of Adult Competencies were analyzed to examine the roles of education and literacy in relation to the digital divide. Results from survey-weighted binary logistic regressions showed that both educational attainment and literacy were positively associated with all four measures of information and communication technology (use of the computer, email, online information and transaction) use in all three countries. The middle-aged adults in the United States benefited more from the educational attainment than those in Japan, in terms of email and online information use. The middle-aged adults with lower education and basic skills (i.e., literacy) may benefit from the educational intervention and additional information and communication technology training, and in turn, improve the digital divide in later life, regardless of differences in culture and economy.

Keywords: International; education; information technology; East Asian countries

Disproportionate access to information and communication technology (ICT) by sub-populations such as older adults and adults with lower socioeconomic status, referenced as the digital divide, was a significant concern of economically developed nations in the late 20th and early 21st century (Light, 2001). While the overall patterns of the digital divide have been documented, a large amount of heterogeneity in both ICT use and skill levels remains among adult populations (Ono & Zavodny, 2007). Considering the importance of ICT use to help prevent socioeconomic and health disadvantages in later life (Pruchno, 2019), this study focuses on middle-aged adults.

The present study was framed by two theories: resources and appropriation theory (van Dijk, 2013) and diffusion of innovation theory (Rogers, 2003). The first posits that ICT use is largely determined by a collection of personal and positional characteristics, and the latter emphasizes a need to examine these characteristics from a life course perspective. Personal and positional characteristics include sociodemographic factors that reflect one's rank within a hierarchical distribution of resources (e.g., income,

time, motivation, human capital) over the life course. For example, those with higher income, more available time, and greater motivation (both to learn and use ICT) are likely to use ICT more. In turn, one's rank can be understood to either limit or enhance ICT use (van Dijk, 2017).

ICT use is further determined by one's digital literacy (van Dijk, 2013). ICT disparities reflect a balance between opportunity and risk exposure in earlier life stages, and this balance differs across age groups (Ferraro et al., 2009). In view of the diffusion of innovation theory (Rogers, 2003), middle-aged adults whose formative years occurred prior to the 1990s, when ICT infrastructure was limited, may have lacked opportunity to develop strong digital literacy skills. Moreover, middle-aged adults may also have diverse perceptions and attitudes towards ICT (Backonja et al., 2014). These issues point to a need to develop a greater understanding of the digital divide among middle-age adults (Morris, 2007).

Aside from age, other important personal characteristics include sex and health. Men typically have greater ICT access and usage (Friemel, 2016; Kim et al., 2016), as do individuals who are healthy and/or non-disabled (Fang et al., 2018). Key positional characteristics include educational attainment, employment status, income, and social network. Education (Elena-Bucea et al., 2020; Fang et al., 2018; van Dijk, 2012), employment (Paggi & Jopp, 2015; Tikkanen, 2017), income (Fang et al., 2018; Friemel, 2016), and social support are all positively associated with greater ICT access and usage (Hong & Cho, 2016; Kim et al., 2016; van Dijk, 2012). Among these key indicators, educational attainment is by far the strongest predictor.

Understanding the link between ICT use and education among middle-aged adults is complicated by two issues: First, formal education is typically completed by one's late 20s (National Center for Education Statistics, 2018), so there is often a gap between formal education and current literacy skills that reflect a foundation for digital literacy and ICT use (van Dijk, 2017). Second, education is an important determinant of ICT use regardless of age, but efficacy is particularly important by the time one reaches middle to later life. (van Dijk, 2012). Therefore, middle-aged adults with low literacy may have difficulty using ICT (Yamashita et al., 2019), but whether the digital divide differs by basic literacy skills remains unknown. Relatedly, it should be noted that this study does not address

specific pathways between education, literacy, and ICT use. However, the education-ICT use relationship could be explained by multiple pathways, including personal and positional characteristics. For example, education-related outcomes, such as literacy proficiency and income, are the indicators of economic access to digital devices and the Internet across adult life stages.

A Cross-Cultural View: Gaps in the Literature

The digital divide is understood to differ substantially across countries due to cross-national variation in economic conditions, digital infrastructure, and collective attitudes toward ICT (Drori & Jang, 2003). Yet, nationally representative cross-national research in terms of individual-level ICT use is scare (Ono & Zavodny, 2007), and little is known about whether personal and positional determinants of ICT use differ cross-nationally. The present study focuses on the United States, Japan, and South Korea, which includes a Western country with an individualistic-oriented culture and Eastern countries with a group-oriented culture (i.e., Confucianism). All three nations have high technology usage rates (e.g., internet usage rate: Untied States = 85%, Japan = 91%, and South Korea = 96%) (World Bank, 2019). These differences and similarities provide useful contexts from which to exam cross-national differences in the importance of education and literacy for ICT use.

The current study contributes to the existing literature by providing cross-national evidence surrounding the links between both education and literacy with ICT use at the individual level, while taking the demographic and socioeconomic characteristics into account. Several international reports examined the bivariate relationships between literacy and ICT use across nations but detailed examinations with the statistical control have not been conducted to date (Grotlüschen et al., 2016). Moreover, while the links between education and ICT use are well-established (van Dijk, 2012), at least within a single-nation context, the role of adult literacy skills has not been extensively studied. This is important because literacy skills are a possible underlying mechanism that links ICT use with educational attainment (van Dijk, 2013). Additionally, the current study adds much needed refinement to the measurement of both ICT use and literacy by focusing

on specific ICT use types (i.e., general, email, online information, and online transaction) and a detailed measure of literacy (De Haan, 2004). In particular, population-level large scale assessments of adult literacy data have not been fully utilized in the digital divide research. Finally, whether theoretical understandings of the digital divide (van Dijk, 2013) extend to middle-aged adults, in general, and in a specific cross-cultural context, remains an open question.

Research Questions

The present study focuses on establishing associations of both education and literacy skills with ICT use among middle-aged adults in three developed, but culturally distinct, nations, and whether these associations differ by ICT use type (e.g., general, email, information, and transaction).

1. Are education and literacy associated with ICT use among middle-aged adults in the United States, Japan, and South Korea?

2. Are associations of education and literacy with ICT use among middle-aged adults moderated by country?

It is hypothesized that education and literacy are independently and positively associated with ICT use across all three nations. However, it is expected that the impact of education and literacy on ICT use differs by type and by country.

Methods

Data

Data were derived from the 2012 Program for the International Assessment of Adult Competencies (PIAAC) public use file (Organization for Economic Co-operation and Development [OECD], 2016), which includes respondents between 16 and 65 years old in 24 countries. PIAAC used a computer-adaptive assessment of basic skills, which provided 10 sets of plausible values for literacy skills. Skill assessments were conducted in each country's primary language (OECD, 2019). The sample was limited to those between 45 and 65-years old (Total n = 7,268; United States n = 2,150; Japan n = 2,318; South Korea n = 2,800). Appropriate sampling and replicate weights were used to adjust for non-response bias and the complex sampling design, respectively.

Measures

Dependent Variables

ICT use was measured by a set of four dichotomous indicators. *Computer User* indicates whether a respondent uses a desktop, laptop, or hand-held electronic device in everyday life. Those who answered no were excluded by the PIAAC from the following usage questions: *Email User* denotes whether a respondent uses email at least once a month. *Online Information User* indicates whether a respondent uses the internet for information seeking at least once a month. *Online Transaction User* indicates that a respondent uses the internet for purchasing, selling, and/or banking at least once a month.

Independent Variables

Educational Attainment indicates whether a respondent has at least a bachelor's degree. PIAAC provides more detailed educational attainment classifications but for the purpose of this study, cross-national comparability and the interpretability of results, the dichotomous variable (i.e., 0 = less than a bachelor's degree vs. 1 = bachelor's degree or higher) was created. *Literacy Skills* were based on a set of 10 plausible values with scores that range between 1 (low) and 500 (high). On a related note, this study adopted literacy rather than other available PIAAC skill measures such as numeracy and problem-solving skills in technology-rich environment, because literacy is the foundational skills, which are likely comparable across countries. Other available measures may not be cross-nationally comparable, due to, for example, the varying focuses of education systems and cultural differences (e.g., mathematics and computer science education).

Covariates

Models were adjusted for personal, positional, and resource factors. Personal factors: *Age* was recorded in 5-year increments (45-49; 50-54; 55-59; and 60-65 years old) because a continuous age measure was not available in the U.S. public use file. *Sex* included options for female or male. *Self-Rated Health* was measured on a five-point scale from poor to excellent. Positional factors: *Paid Work* indicates whether a respondent had a paid job in the last 12 months. *Parents' Education* was dichotomized to indicate whether at least one parent/guardian had

at least a post-secondary degree. *Living with a Spouse/ Partner* is a dichotomous indicator (0 = no, 1 = yes). *Child* indicates whether a respondent had at least one child in their household. Resource factors: *Income* was measured in terms of monthly earnings and was recorded in deciles. In PIAAC, any respondent who reported no paid work in the past twelve months was assumed to have no income. As such, they were assigned to the lowest decile to be included in this study. *Country* was denoted by three dichotomous indicators (i.e., United States, Japan, or South Korea).

Analytic Approach

A weighted descriptive summary was computed for the overall analytic sample and each respective country, which was accompanied by bivariate tests to assess crude unadjusted differences. First, weighted binary logistic regression models without the covariates were used to establish bivariate relationships between each dependent variable and both independent variables, respectively. Subsequently, moderator functions (Muthén et al., 2016) were included for both independent variables by country to account for the cross-national design. Finally, fully adjusted and weighted models with the covariates were constructed to address both research questions. Statistical significance was evaluated at the 0.05 level. All programs were generated using the IDB analyzer version 4.0 (IEA, 2016) and executed in SAS version 9.4.

Sensitivity Analysis

Alternative models that included different measurement strategies for the independent variables and different combinations of covariates were examined to establish robustness of findings. Multicollinearity was assessed by the variation inflation factor (VIF > 4.0) (Allison, 1999), and model quality was evaluated with the area under the receiver-operating characteristics (ROC) curve (Hosmer & Lemeshow, 2013). Sampling weights (SPFWT0) and replicate weights (SPFWT1-80) with the jackknife2 variance estimation technique were applied in all models (OECD, 2016). Per the PIAAC (2016) technical report, the number of recommended replications for the United States was increased by 35 so that the three countries were comparable in the weighted analysis.

Results

Weighted descriptive summaries are shown in Table 1. South Koreans (83%) were more likely to be computer users compared to American (80%) and Japanese (78%) adults. However, among computer users, Americans were more likely to be email users, and online information users, compared to South Korean or Japanese adults. While there is no significant difference in the online transaction users between Americans and South Koreans, South Koreans were more likely to be online transaction users than Japanese. Americans were more likely to have at least bachelor's degree (29%) compared to Japanese (23%) and South Korean (14%) adults. The average literacy skills score was higher in Japan (284) compared to the United States (264) and South Korea (253).

Regression results are displayed in Tables 2 through 5. Model 1 results show that educational attainment and literacy skills are both associated with ICT use across all three nations, and this is relatively consistent across ICT usage type. Middle-aged adults with at least a bachelor's degree had a greater likelihood of using a computer in everyday life [Odds-ratio (*OR*) = 2.29, *p* < 0.05]. This educational pattern was consistent across all examined ICT types: email (*OR* = 5.69, *p* < 0.05), online information (*OR* = 3.54, *p* < 0.05), and online transaction (*OR* = 1.45, *p* < 0.05), while the differences in the estimated ORs between Japan and the United States were detected for email and online information (see the next section for more details). Similarly, higher literacy skills were consistently associated with greater odds of using computers, email, online information, and online transaction. A one unit increase in literacy skills is associated with a 0.01 increase in the odds of ICT usage. Given that literacy skills were measured on a 500-point scale, seemingly small, estimated odds ratio reflects a substantial effect. For example, we expect the odds ratio to be about 1.5 when the literacy proficiency improved by 50 points. In comparison to the findings about education (e.g., *OR* = 1.45 in the online transaction), potential effects of literacy seem equivalent, if not larger.

In regard to research question 2, the moderator functions in Model 2b and Model 2c show that the association between ICT use and education partially differs cross-nationally only between Japan and the United States, and that the association between ICT and literacy skills is comparable across all three nations. Specifically, higher

education appears to be a weaker determinant of email (*OR* = 0.20, *p* < 0.05) and online information (*OR* = 0.46, *p* < 0.05) in Japan compared to the United States. In other words, the positive effects of education on email and online information use were lower among middle-aged Japanese adults than those in the United States.

Results were robust. There was no sign of multicollinearity (VIF = 1.17 – 2.18 < 4.0), and all fully adjusted models demonstrated acceptable predictive accuracy (i.e., ROC curve scores between 0.70 and 0.78) Additionally, a series of alternative models (e.g., models with/out race/ethnicity and immigrants in the U.S. data) was examined to investigate potential sources of omitted variable bias, but these models produced substantively consistent results. While race/ethnicity and immigrant status are relevant in the U.S. sample, their inclusion makes cross-national comparison less feasible.

Discussion

Education and literacy skills were both associated with all four types of ICT use (i.e., general, email, online information, and online transaction) among middle-aged adults, and in a positive direction. These findings align with the proposed theoretical framework (van Dijk, 2013), and they add to previous research that has typically focused on adult populations (Fang et al., 2018; Hong & Cho, 2016; Morris, 2007). Education likely determines ICT exposure and access in earlier stages of life. The timing of formal education completion may differentiate initial adaptation of ICT innovations (e.g., see the diffusion of innovation theory, Rogers, 2003), which has implications for usage in subsequent life stages. Moreover, educational attainment is closely linked to socioeconomic status (i.e., resource factor), which largely determines access to ICT (Elena-Bucea et al., 2020; van Dijk, 2017). The central role of education for ICT use was further substantiated by the literacy skills findings.

Literacy skills were consistently associated with ICT use. Basic literacy skills are the foundation for more complex skill sets like digital literacy and health literacy (van Dijk, 2017; Yamashita et al., 2019). Present findings add to the education-related literature by showing that ICT use is independently associated with literacy skills net of education among middle-aged adults. Given close

links between literacy skills and education, literacy could have explained the association between education and ICT use. Those with greater education and literacy likely have ICT-related advantages (e.g., familiarity, confidence, and interest in ICT) (van Dijk, 2012), whereas those with relatively lower education and literacy likely face barriers to ICT use (e.g., access to, experience with, and necessary skills to use ICT).

In regard to cross-national differences, computer use was more prevalent among middle-aged South Koreans compared to American or Japanese adults. Among middle-aged computer users, Americans were more likely to engage in email, online information, and online transaction than Japanese adults. The differences between Americans and South Koreans in the engagement in email and online information were identified, while no statistical difference was observed in the online transaction. These cross-national differences were not observed in the regression results, which suggests that they are likely due to cross-national differences in the prevalence of education and literacy, as well as socioeconomic and cultural factors (Drori & Jang, 2003; Ono & Zavodny, 2007; Rogers, 2003). In addition, in view of the resources and appropriation theory, and diffusion of innovation theory, the differing ICU use could have been impacted by the sociohistorical context to the cohort of middle-aged adults, and timing of ICT diffusion in each country (Rogers, 2003; van Dijk, 2013).

Associations of education and literacy with ICT use were largely comparable across the United States, Japan, and South Korea, with a couple exceptions. Education was a stronger determinant of both email and online information use among Americans compared to Japanese middle-aged adults. These findings may speak toward cross-national differences in education systems. For example, the primary and secondary Japanese systems focus on traditional education and the U.S. curriculum is relatively more applied (Wieczorek, 2008), which may result in the differences in developing literacy skills and use of ICT (Liu, 2018). Disentangling these education-related findings with respect to the education system, infrastructure and culture warrant future attention.

Significant covariates such as income and self-rated health may help refine the interpretation of the computer use-related findings in future research. By the same token, the statistical significance of sex and paid work

in relation to the email use need further exploration to study gender, types of job (e.g., technology-intensive) and relevant socioeconomic differences in the common communication method (Tikkanen, 2017). Moreover, the roles of parents' education and age in relation to online information use and online transaction use should be investigated more to contextualize the findings from this study when more cross-national data become available. Interestingly, Park and Jun (2003) reported that South Korean adults and U.S. adults showed different online transaction behaviors in terms of risk tolerance and time spent. Presumably, parent's educational attainment and age might have been linked with the cultural differences (i.e., perceived risk and online shopping). Yet, more future research is needed to empirically examine the role of parent's education in relation to the digital divide and cultural differences (e.g., individual vs. group-oriented culture) across East Asian and Western nations.

Limitations

The present study sought to establish associations of both education and literacy with ICT use, and thus provided cross-national evidence to help provide robust findings. Future research that includes higher-level constructs and/ or societal-level factors is needed to explore the cross-national differences presented in this study. Also, more in-depth inquiries through qualitative interviews and field observations to refine the interpretations of county-level differences in future research. The PIAAC limited specific ICT use assessments (i.e., email, online information, and online transaction) to self-reported computer users. In addition, specific ICT use measures cannot extend to specific device use (e.g., computer, smartphone, tablet), and as such, the interpretation might have overlooked access to specific digital device. While the application of survey weights was intended to address this issue, some bias due to the over-representation of middle-aged adults who have at least some ICT experience may remain. Finally, omitted variable bias cannot be ruled out.

Strengths and Contributions

Previous research has overwhelmingly focused on general ICT use (De Haan, 2004), and this study examined detailed ICT measures. The present findings are among the first surrounding specific ICT use and literacy skills. Moreover, previous research has largely relied on overly simple measures of literacy, and PIAAC provided refined literacy assessments. This study demonstrated that education and literacy are independent determinants of the digital divide across cultures, which highlights the universal importance of foundational skills. Finally, extant research has almost exclusively focused on older adults (Mitchell et al., 2018), and the current study extends relevant theoretical contexts (Rogers, 2003) to middle-aged adults.

Implications and Conclusion

Investment in malleable and foundational determinants of digital literacy, such as basic literacy skills, may be a fruitful strategy to help close the digital divide. Given that links between technology and aging have become stronger in more recent years (Pruchno, 2019; van Dijk, 2012), it may be advantageous to enhance basic skills in mid-life through adult education (Ferraro et al., 2009). By the same token, such efforts to improve adult literacy may also benefit other life domains, such as health-related issues and social isolation, which are prevalent in later life (Mitchell et al., 2018; Yamashita et al., 2019).

In sum, continuous investment in education, technology, and human capital across the life course is critical for closing the digital divide (Chinn & Fairlie, 2007). It is evident that both basic and digital skills training should be part of such efforts. Private settings and one-on-one sessions for skills training are preferred by adult populations (Friemel, 2016). ICT developers should focus their efforts on designing age-friendly and culturally sensitive hardware and applications (Pruchno, 2019). Finally, the promotion of positive images of ICT use among the aging population is needed to encourage engagement (Fang et al., 2018).

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TABLE 1: Weighted Descriptive Summary by Country

VARIABLES	All (n = 7,268)	USA (n = 2,150)	Japan (n = 2,318)	South Korea (n = 2,800)
	Percentage or mean (S.E.)	Percentage or mean (S.E.)	Percentage or mean (S.E.)	Percentage or mean (S.E.)
ICT use in everyday life				
Computer user	80.03%	80.45%	78.13%	82.55%*†
Email user[a]	82.93%	90.56%	70.08%*	59.77%*†
Online information user[a]	77.45%	84.35%	59.59%*	75.11%*†
Online transaction user[a]	58.47%	68.59%	33.00%*	52.95%†
Personal factors				
Age (5-year age group)			*	†
45-49	25.78%	26.24%	23.48%	28.90%
50-54	25.50%	26.88%	20.73%	29.39%
55-59	22.51%	23.04%	21.41%	22.14%
60-65	26.21%	23.84%	34.38%	19.56%
Sex (female)		47.14%	50.43%	49.77%
Self-rated health (1-5: poor – excellent)	3.13 (0.02)	3.40 (0.03)	2.81 (0.02)*	2.34 (0.02)*†
Positional factors				
Educational attainment (Bachelor's degree or higher)	25.91%	29.16%	22.77%*	14.88%*†
Paid work (yes)	77.57%	77.56%	78.66%	74.87%*†
Parents' education (at least one parent/guardian with a postsecondary education degree)	23.46%	27.41%	23.23%*	8.61%*†
Living with spouse/partner (yes)	84.43%	83.49%	86.28%	84.70%†
Having child/ren in household (yes)	86.07%	85.10%	84.92%*	94.74%†
Resource factors				
Literacy skills (score 0-500)	268.46 (0.85)	264.51 (1.22)	283.82 (1.14)*	252.55 (0.94) †
Income (decile)	4.70 (0.05)	4.87 (0.08)	4.53 (0.08)	4.16 (0.07)* †

* $p < 0.05$ (vs. USA); † $p < 0.05$ (vs. Japan)

Sampling weights and replicate weights were applied. For the bivariate tests, either t-test or chi-square test was used.

a. only computer users were included.

Data source: 2012 PIAAC Public Use File

TABLE 2: Estimated Odds-Ratios for Weighted Binary Logistic Regression of Computer Use on Persona, Positional, and Resource Predictors

EFFECTS	Model 1a Odds ratio (Standard error)	Model 2a Odds ratio (Standard error)
Personal effects		
Age (5-year age group)		0.90 (0.05)*
Sex (female)		0.88 (0.13)
Self-rated health (1-5: poor – excellent)		1.22 (0.07)*
Positional effects		
Educational attainment (Bachelor's degree or higher)	**2.67 (0.34)***	**2.29 (0.32)***
Paid work (yes)		0.88 (0.13)
Parents' education (at least one parent/guardian with a post-secondary education degree)		1.13 (0.18)
Living with spouse/partner (yes)		1.12 (0.19)
Having child/ren in household (yes)		0.85 (0.17)
Resource effects		
Literacy skills (score 0-500)	**1.01 (0.01)***	**1.01 (0.01)***
Income (decile)		1.05 (0.02)*
Japan (vs. USA)	1.71 (0.77)	2.54 (1.28)
South Korea (vs. USA)	2.25 (1.09)	1.84 (1.01)
Moderation effects		
Education x Japan (vs. USA)	0.89 (0.13)	1.00 (0.17)
Education x South Korea (vs. USA)	0.99 (0.18)	1.00 (0.20)
Literacy x Japan (vs. USA)	1.00 (0.01)	0.99 (0.01)
Literacy x South Korea (vs. USA	1.00 (0.11)	1.00 (0.01)
Model fit index (Area under the ROC curve)	0.75	0.78

* p < 0.05; Educational attainment, literacy skills, country and interaction effects were further evaluated in terms of consistency between models; ROC curve = receiver operating characteristics curve; Sampling weights and replicate weights were applied
Data source: 2012 PIAAC Public Use File

TABLE 3: Estimated Odds-Ratios for Weighted Binary Logistic Regression of Email Use on Persona, Positional, and Resource Predictors

EFFECTS	Model 1b Odds ratio (Standard error)	Model 2b Odds ratio (Standard error)
Personal effects		
Age (5-year age group)		0.89 (0.05)*
Sex (female)		0.59 (0.07)*
Self-rated health (1-5: poor – excellent)		1.09 (0.07)
Positional effects		
Educational attainment (Bachelor's degree or higher)	**5.30 (2.18)***	**5.69 (3.04)***
Paid work (yes)		0.58 (0.11)*
Parents' education (at least one parent/guardian with a post-secondary education degree)		1.84 (0.32)*
Living with spouse/partner (yes)		0.91 (0.14)
Having child/ren in household (yes)		0.81 (0.16)
Resource effects		
Literacy skills (score 0-500)	**1.01 (0.01)***	**1.01 (0.01)***
Income (decile)		1.06 (0.02)*
Japan (vs. USA)	0.94 (0.79)	1.47 (1.71)
South Korea (vs. USA)	0.62 (0.60)	0.43 (0.48)
Moderation effects		
Education x Japan (vs. USA)	0.23 (0.10)*	0.20 (0.10)*
Education x South Korea (vs. USA)	0.80 (0.33)	0.66 (0.32)
Literacy x Japan (vs. USA)	1.00 (0.01)	1.00 (0.01)
Literacy x South Korea (vs. USA	1.00 (0.01)	1.00 (0.01)
Model fit index (Area under the ROC curve)	0.73	0.73

* $p < 0.05$; Educational attainment, literacy skills, country and interaction effects were further evaluated in terms of consistency between models; ROC curve = receiver operating characteristics curve; Sampling weights and replicate weights were applied
Data source: 2012 PIAAC Public Use File

TABLE 4: Estimated Odds-Ratios for Weighted Binary Logistic Regression of Online Information Use on Persona, Positional, and Resource Predictors

EFFECTS	Model 1c Odds ratio (Standard error)	Model 2c Odds ratio (Standard error)
Personal effects		
Age (5-year age group)		0.96 (0.06)
Sex (female)		0.82 (0.11)
Self-rated health (1-5: poor – excellent)		1.02 (0.06)
Positional effects		
Educational attainment (Bachelor's degree or higher)	**3.38 (0.73)***	**3.54 (0.92)***
Paid work (yes)		0.93 (0.15)
Parents' education (at least one parent/guardian with a post-secondary education degree)		1.33 (0.18)*
Living with spouse/partner (yes)		1.17 (0.19)
Having child/ren in household (yes)		0.89 (0.16)
Resource effects		
Literacy skills (score 0-500)	**1.01 (0.01)***	**1.01 (0.01)***
Income (decile)		1.01 (0.02)
Japan (vs. USA)	0.27 (0.20)	0.37 (0.32)
South Korea (vs. USA)	1.10 (0.99)	0.81 (0.80)
Moderation effects		
Education x Japan (vs. USA)	0.44 (0.11)*	0.46 (0.12)*
Education x South Korea (vs. USA)	0.57 (0.17)	0.51 (0.17)
Literacy x Japan (vs. USA)	1.00 (0.01)	1.00 (0.01)
Literacy x South Korea (vs. USA	1.00 (0.01)	1.00 (0.01)
Model fit index (Area under the ROC curve)	0.70	0.70

* $p < 0.05$; Educational attainment, literacy skills, country and interaction effects were further evaluated in terms of consistency between models; ROC curve = receiver operating characteristics curve; Sampling weights and replicate weights were applied
Data source: 2012 PIAAC Public Use File

TABLE 5: Estimated Odds-Ratios for Weighted Binary Logistic Regression of Online Transaction Use on Persona, Positional, and Resource Predictors

EFFECTS	Model 1d Odds ratio (Standard error)	Model 2d Odds ratio (Standard error)
Personal effects		
Age (5-year age group)		0.81 (0.04)*
Sex (female)		0.86 (0.11)
Self-rated health (1-5: poor – excellent)		1.06 (0.05)
Positional effects		
Educational attainment (Bachelor's degree or higher)	1.77 (0.28)*	1.45 (0.24)*
Paid work (yes)		1.01 (0.17)
Parents' education (at least one parent/guardian with a post-secondary education degree)		1.57 (0.20)*
Living with spouse/partner (yes)		0.81 (0.14)
Having child/ren in household (yes)		0.97 (0.18)
Resource effects		
Literacy skills (score 0-500)	1.01 (0.01)*	1.01 (0.01)*
Income (decile)		1.01 (0.02)
Japan (vs. USA)	0.65 (0.48)	1.34 (1.16)
South Korea (vs. USA)	1.34 (1.00)	1.45 (0.36)
Moderation effects		
Education x Japan (vs. USA)	0.83 (0.17)	1.05 (0.23)
Education x South Korea (vs. USA)	1.18 (0.25)	1.29 (0.32)
Literacy x Japan (vs. USA)	1.00 (0.01)	0.99 (0.01)
Literacy x South Korea (vs. USA	1.00 (0.01)	1.00 (0.01)
Model fit index (Area under the ROC curve)	0.75	0.76

* $p < 0.05$; Educational attainment, literacy skills, country and interaction effects were further evaluated in terms of consistency between models; ROC curve = receiver operating characteristics curve; Sampling weights and replicate weights were applied
Data source: 2012 PIAAC Public Use File

Report from the Field

Using Universal Design for Learning to Design Self-Paced Professional Development Modules for Adult Education Instructors

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Abstract

Adult education instructors are as diverse as the students they teach. Their professional backgrounds, training, licenses, and modalities of teaching (online, in person, open vs. closed enrollment, etc.) vary widely, which can make the planning of meaningful, effective professional development challenging. Universal Design for Learning (UDL) is a research-based educational framework developed almost 30 years ago by CAST, a non-profit education research and design organization. Using the UDL framework, CAST has developed self-paced professional learning modules that can be accessed freely through the Literacy Information and Communication System website (https://lincs.ed.gov/). The goal of this article is to argue that two key UDL-based design concepts - accessibility and relevance - can be used to increase the effectiveness of professional development for adult educators.

Keywords: universal design for learning, professional development, adult education instructors

Adult educators vary widely in terms of demographics and experience. Many have a background teaching children. Some have never taught before. The reasons adult education instructors are engaging in professional development (PD) also vary. Some instructors may be completing required training to meet local PD requirements, while others may be trying to increase skills or knowledge in a particular subject area. As we consider how to develop effective PD for adult education instructors, we should begin by asking: Has the PD been designed with the same care we expect adult educators to use when teaching their own adult students?

We believe Universal Design for Learning (UDL), a research-based framework to guide the design of inclusive and engaging learning environments, is the place to start. However, through our research we found that while a majority of adult educators feel positively about UDL and understand the importance of supporting all of the learners in their classroom, they struggle with applying the framework in the adult learning context. This is significant since teacher preparedness has a critical impact on student learning (Cook & Rao, 2018; Murphy, 2021).

To understand how to prepare adult educators to use UDL we need to understand *what* adult educators want to know about teaching and learning and *how* they want or need to learn the information. Through this 2-year collaboration between CAST and the Office of Career, Technical, and Adult Education, which funded the project, we found that the best way to improve the learning environment for the adult education students was to model a UDL professional development learning environment by focusing on relevance and accessibility.

Universal Design for Learning

UDL is an evidence-based framework developed at CAST, a nonprofit education research and design group founded in 1984. Echoing the concept of universal design in architecture, which aims to make spaces and information more accessible to individuals with disabilities (Mace et al., 2000), UDL is intended to expand learning opportunities for the widest range of learners. UDL offers concrete suggestions (see Figure 1) for designing learning environments and learning experiences that are flexible, customizable, and accessible to all learners (CAST, 2018; Meyer et al; 2014; Rose & Meyer, 2002).

FIGURE 1. CAST UDL Guidelines.

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Universal Design for Learning Guidelines

Provide multiple means of **Engagement** ➔	Provide multiple means of **Representation** ➔	Provide multiple means of **Action & Expression** ➔
Affective Networks The "WHY" of learning	Recognition Networks The "WHAT" of learning	Strategic Networks The "HOW" of learning

Access

Provide options for **Recruiting Interest** (7) ➔	Provide options for **Perception** (1) ➔	Provide options for **Physical Action** (4) ➔
• Optimize individual choice and autonomy (7.1) ❯ • Optimize relevance, value, and authenticity (7.2) ❯ • Minimize threats and distractions (7.3) ❯	• Offer ways of customizing the display of information (1.1) ❯ • Offer alternatives for auditory information (1.2) ❯ • Offer alternatives for visual information (1.3) ❯	• Vary the methods for response and navigation (4.1) ❯ • Optimize access to tools and assistive technologies (4.2) ❯

Build

Provide options for **Sustaining Effort & Persistence** (8) ➔	Provide options for **Language & Symbols** (2) ➔	Provide options for **Expression & Communication** (5) ➔
• Heighten salience of goals and objectives (8.1) ❯ • Vary demands and resources to optimize challenge (8.2) ❯ • Foster collaboration and community (8.3) ❯ • Increase mastery-oriented feedback (8.4) ❯	• Clarify vocabulary and symbols (2.1) ❯ • Clarify syntax and structure (2.2) ❯ • Support decoding of text, mathematical notation, and symbols (2.3) ❯ • Promote understanding across languages (2.4) ❯ • Illustrate through multiple media (2.5) ❯	• Use multiple media for communication (5.1) ❯ • Use multiple tools for construction and composition (5.2) ❯ • Build fluencies with graduated levels of support for practice and performance (5.3) ❯

Internalize

Provide options for **Self Regulation** (9) ➔	Provide options for **Comprehension** (3) ➔	Provide options for **Executive Functions** (6) ➔
• Promote expectations and beliefs that optimize motivation (9.1) ❯ • Facilitate personal coping skills and strategies (9.2) ❯ • Develop self-assessment and reflection (9.3) ❯	• Activate or supply background knowledge (3.1) ❯ • Highlight patterns, critical features, big ideas, and relationships (3.2) ❯ • Guide information processing and visualization (3.3) ❯ • Maximize transfer and generalization (3.4) ❯	• Guide appropriate goal-setting (6.1) ❯ • Support planning and strategy development (6.2) ❯ • Facilitate managing information and resources (6.3) ❯ • Enhance capacity for monitoring progress (6.4) ❯

Goal

Expert Learners who are...

Purposeful & Motivated	Resourceful & Knowledgeable	Strategic & Goal-Directed

UDL is grounded in three core principles:

1. Using **multiple methods for engaging students in learning** that celebrate diverse neurology, culture, personal relevance, subjectivity, background knowledge, and more (the "why" of learning)

2. Using **multiple methods for representing information**, catering to differences in how learners absorb and process information (the "what" of learning)

3. Using **multiple means of action and expression** that allow learners to best express what they know based on personal preference and talent (the "how" of learning; CAST, 2018; Meyer et al; 2014; Rose & Meyer, 2002).

Designing PD for Adult Education Instructors Using UDL

The first steps in designing PD for adult education instructors that models UDL were to increase our knowledge of the context and conduct a needs assessment. We focused both on learning process needs and content knowledge. First, we gathered information on the adult educator experience. What did educators want or need to know about teaching and learning? We also reviewed current literature on supporting adult learners with disabilities and learning differences, as well as data on the educational backgrounds and training adult educators received. We analyzed effective strategies for designing online learning for adults and the use of UDL in PD (Hartsoe & Barclay, 2017; Kang et al., 2018). In addition, we conducted individual interviews, surveys, and online focus groups. Participants included education instructors, administrators, coordinators, community group facilitators, and state-level directors. We asked questions such as:

- How do you support the variability in learners?

- How do you help students become independent learners?

- How do you support all learners (English learners, racially diverse learners, students who have been traditionally marginalized, and those with learning differences)?

- Where do you find strategies to apply in your classroom?

Using this research, we developed a series of data-driven instructor and learner personas or thoughtfully developed fictional profiles. By considering how these personas would interact we were able to identify a variety of teaching/learning challenges adult educators and their students might face. The personas helped us investigate how adult educators wanted or needed to consume learning, as well. For example, adult education teachers might be younger than the adults they are teaching. Adult learners might not have access to devices such as laptops or computers for completing work but might be solely reliant on their phones; conversely, adult education teachers might not be comfortable using technology or might not know how to use technology to engage learners. Adult educators may have previous experience as elementary or secondary school teachers and may have limited knowledge of how to leverage adults' prior learning and experience in the classroom.

Leveraging UDL

Next, we analyzed the UDL guidelines to identify which design strategies would most effectively address both the preferences and needs of adult educators:

Accessibility

Adult educators reported limited time, knowledge of resources, and access to the internet (e.g., at correctional facilities). Many volunteers and adult educators work in the field part-time and have multiple jobs. They reported a need for PD that provided clear access to the learning and reduced the cognitive load - working memory and attention - needed to understand and utilize the new information.

Chunking (or breaking up) long blocks of text with images, icons or bullets can make it less challenging for learners to identify and absorb important information. We applied this approach to the self-paced PD modules since adult educators reported having limited blocks of time to devote to asynchronous learning. We also highlighted key concepts to assist with retaining and utilizing essential ideas.

To improve access, we recommend designing PD for adult educators that follows a predictable format, uses consistent terms, and easily identifiable icons. UDL-based accessibility features to consider when designing PD for adult educators:

- Can adults access the content before and after the presentation or workshop is complete? For example, the self-paced modules all include downloadable PowerPoint presentations, giving learners access to the information offline, providing them with customizable resources they can Zoom in on, follow along with, and return to later. UDL checkpoints: 1.1, 1.2, and 1.3.

- Are there multiple ways for adults to consume the content? For example, the self-paced modules all include videos with downloadable transcripts and captions, descriptive hyperlinks, as well as headings, titles, and bullets to learners with adult educators with executive functioning differences, as well as those who may be using screen readers. UDL checkpoint: 2.5.

Relevance

Adult educators reported a need to experience strategies in an applied way that felt authentic and valuable. This means selecting content that is contextually specific and appropriate. In other words, rather than use an interview from a first-grade teacher talking about teaching reading, highlight strategies used by adult educators.

Considerations for designing PD for adult educators:

- Does PD include real world scenarios and perspectives or examples from the field? For example, the self-paced modules all begin with case studies that highlight problems of practice experienced in adult learning contexts, as well as video interviews with adult educators. Including content like this in PD offers a source of personal motivation and connection, and highlights experiences, big ideas, strategies, or patterns in adult educators use across the country. UDL checkpoint: 3.2.

- Are there ways for adult educators to immediately apply the content? For example, the self-paced modules all include "Try it Yourself" activities educators can use in their classroom. In addition, administrators are encouraged to repurpose the downloadable PowerPoints to design PD experiences that meet local educator needs. UDL checkpoint: 7.2.

We further increased the value of the modules by basing the content on educators' needs, hosting them on the LINCS website (https://lincs.ed.gov/), and by offering a certificate of completion at the end of each module (see Figure 2).

FIGURE 2: UDL Self-Paced Professional Development Modules

TITLE	DESCRIPTION
It All Starts with the Goal	This module focuses on the why and how of helping adult learners set goals. This module will help adult educators feel better equipped to develop and teach a wide range of learners to create and monitor meaningful, obtainable goals.
Learning that Works for All	The purpose of this module is to identify how research-based learning strategies can increase engagement and access for all learners. Through this module adult educators are introduced to the Universal Design for Learning (UDL) along with strategies they can start to use immediately.
Making Math Matter	The purpose of this module is to improve math instruction for all adult learners, including those with learning differences.
Making Reading & Writing Matter	This module expands the view of literacy to include reading, writing, and other forms of media. The concepts in this module will help adult educators reflect on current approaches and consider new strategies to ultimately help adult learners see why reading and writing truly matter.
Building Communities for Learning	Adults need to feel a sense of belonging in the classroom. In this module adult educators will learn why teaching adults is different than teaching children and identify how they can support community building.
Self-Advocacy for Work & Learning	The purpose of this module is to introduce adult educators to two key terms: self-advocacy and learner agency. Through the module educators will learn the value these concepts bring to the classroom and identify ways they can design learning environments to facilitate and build learner agency.
Improving Systems for Adult Education	This module will be especially useful to administrators who seek to create "expert learning systems" - interrelated learning communities — where all individuals (teachers, volunteers, administrators, etc.) are expert learners who can assess their own needs, set personal and professional learning goals, and monitor their progress.

Conclusion

In designing the new self-paced PD modules, we thought critically about how information was represented and displayed, who would be using the modules, and the ways adult educators would consume and use the content from the modules.

We have designed the new self-paced PD modules to teach and model how UDL can be used to improve the learning experience - for *all* learners. By using UDL to increase the accessibility and relevance of the self-paced PD modules available on LINCS, we hope adult instructors will experience a learning environment that was designed intentionally with their needs in mind, one they will be equipped and inspired to emulate in their own classrooms.

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Reinventing a Basic Literacy Program

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Abstract

At Literacy NJ, the decline in our basic literacy services has caused us to reevaluate and reinvent our program. The cornerstone of our new plan is to offer an 8-week vestibule program called Steps to Success for new basic literacy students, focused on goal setting, crucial digital skills, and the development of independent learning strategies. We intend to implement Steps to Success statewide as a way to rebuild our capacity to serve basic literacy students. Ultimately, we believe this will allow us to serve many more students and increase their retention in the program by improving their learning experience.

Keywords: basic literacy, adult basic education, tutor training

Literacy NJ is a statewide network of volunteer-based adult literacy programs. Most serve a combination of ESOL, basic literacy, and high school equivalency students. We are the statewide organization within this network and provide direct service in 12 of New Jersey's 21 counties as well as partnering with affiliate programs throughout the others. We consider basic literacy students to be those whose primary goals are to improve their reading and writing and who are not ready to prepare for a high school diploma or who may already have one. Originally formed in 1979 with a mission specifically to serve these students and with a current student prioritization policy that brings them to the top of our waiting lists, our organization has nonetheless found itself in recent years with a diminished capacity to do this work.

The decline in basic literacy students happened gradually over many years and mirrors the national trend of decreased participation in federally funded adult literacy, particularly in the adult basic education student population (Pickard, 2022). For over 10 years leading up to the pandemic, basic literacy instruction had been a small percentage of our total statewide student population, typically between 20-25%. Our number of basic literacy students declined even more significantly between 2017 and 2019, by then accounting for only about 14% of our statewide services. After the pandemic

began, and services temporarily became virtual, all of our student numbers declined, but whereas our ESOL student numbers shrunk by 25%, we lost almost 50% of our already small basic literacy student population.

Challenge

Our volunteer-based programs are well-suited to help basic literacy students succeed. Like many volunteer-based programs, we have flexible schedules**,** small group sizes, and use student goals to inform instruction. In most communities there are no other programs to which we can refer basic literacy students, and we are typically the referral destination for our partner agencies. Because our basic literacy student population has decreased, however, we have had a smaller corps of tutors trained to help them, and therefore fewer spaces available for new basic literacy students. As this trend continued, we trained fewer basic literacy tutors, and eventually incorporated fewer basic literacy tutoring strategies in our training for new volunteers.

This downward cycle gained momentum in a funding climate that increasingly creates pressure to produce short-term student gains and places a high value on standardized test scores and employment-related

outcomes. By focusing our efforts on the short-term outcomes required to maintain funding, we became less adept at serving students who both need the most time in the program and face the greatest external barriers to participation. We were training fewer tutors to do this work and becoming an organization less and less prepared to do it well.

Although our diminished capacity may be related to national trends of declining enrollment, we still see a greater need than we are able to meet, a condition pervasive throughout the nation and linked to each state's investment in adult literacy (Waldman et al., 2022). New Jersey's system consists largely of WIOA Title II programs. Our most recent investigation into the need for services found that our system may be serving as few as 3% of those in need (Jacobson, 2013). While this data is now out of date, there is no evidence that there has been any further investment since, nor has there been further inquiry into the problem. Steps to Success is part of a strategic effort to respond to both a funding climate that encourages programs to de-prioritize ABE students with low literacy levels and a system that lacks the capacity to offer adequate levels of service.

Steps to Success

In order to address the need, and position ourselves to welcome new basic literacy students, we had to rebuild our organization's expertise. We refocused our efforts on the needs of our basic literacy students by organizing the first eight weeks of tutoring into a discrete program. This organization of the curriculum allowed us to create a focused training session that prepares all new volunteers to offer it. As that corps of tutors grows, we will be able to conduct more outreach to basic literacy students.

Steps to Success is intended as a vestibule for new students. These first eight lessons give both tutors and students guidance as they establish a foundation for further teaching and learning. The lessons were created by our staff in Literacy NJ Burlington, one of our county-wide local programs. We have now adopted an organization-wide initiative to offer it in each of our local programs.

The curriculum gives basic literacy students strategies and techniques they can use independently and while working with a tutor. In Steps to Success, we have packaged these

strategies, many of which were already included in our tutor training and will be familiar to most in the field, into a cohesive curriculum. This allows us to provide clear direction to tutors and an additional focus on these strategies during tutor training. Tutors work with students to identify goals, establish daily reading habits, and assess digital resources. Each 2-hour lesson includes: reading, writing, and technology strategies; an exploration of online and community resources; and conferencing to reflect on which strategies and resources the student will adopt for use. The purpose of the lessons is to build confidence in students' ability to reach their learning goals by helping them to establish their priorities and create a realistic plan for their learning process.

The eight initial lessons are tailored to the specific students' skills and interests, but they provide clear guidance, even for a tutor or staff member new to this work. We recognize that there is no pre-service training given in a few hours that can make a volunteer an expert in all the varied needs of our learners, but these lessons give tutors, as well as students, a solid place to start. Because the curriculum engages students in an ongoing evaluation of resources and reflection of their goals, it leads them to readjust their strategies as they learn, and to be more cognizant of the learning strategies they will use. This helps to create a partnership between the tutor and the student in which they are more able and likely to share the responsibility for student achievement.

Supporting and retaining basic literacy tutors is key to our effort to rebuild our capacity to provide basic literacy services in two ways. The curriculum provides direction to new tutors, helping us grow the corps of tutors ready to work with basic literacy students. We believe that students who complete Steps to Success are also more likely to stay in the program, helping us to avoid losing tutors who may become frustrated and leave when students stop out. Because they are setting attainable expectations for themselves, and continuously evaluating those expectations, students are more likely to persist. It also allows students to experience success quickly as they experiment and add specific strategies to their personal toolbox, avoiding the discouragement that can come from tackling an overwhelming task such as learning to read or getting a high school diploma. Finally, it motivates students by encouraging them to make connections between what they are learning each week and their long-term goals.

To prepare tutors, we added a 2-hour session to our training course for new tutors. The training includes a review of reading, writing, and goal-setting activities, an overview of the eight Steps to Success lessons, and more in-depth practice with key instructional strategies, such as language experience approach. It also includes testimonials from students in the program that speak to the role these lessons played in their skills and their self-confidence.

Goal Setting

Steps to Success starts and ends with an in-depth goal-setting exercise using language experience approach, during which students' responses to questions about their short-term and long-term goals are recorded. This is coupled with a survey that helps students assess how literacy and digital skills are part of their everyday lives and how those skills are connected to their goals. Students set goals that range from the practical (e.g., "I just want to be able to read my own mail, fill out my own forms," "I want to get my GED," and "I wanted to write birthday cards to my kids") to goals that tell us about their needs for personal transformation, confidence, and independence. For example, during goal setting, students told us:

> "My struggle is to be able to express myself and maybe say a speech. I feel that I don't speak well or with confidence." MM

> "I want to be more sociable. I want to conquer my anxiety. I want to be able to have fun again, to see life for what it is and keep moving forward, keep being who I am, and helping as much as I can where I'm needed." RP

This initial goal setting is the core piece of the curriculum, providing the road map for both tutors and students. The lessons that follow are geared towards both specific literacy tasks students want to accomplish and building their independence as learners.

Reading and Writing

Students use recorded stories about their goals as material for building sight word knowledge and fluency. They read and write each week and practice strategies including modeled writing, text annotation, and various before/during/after reading comprehension strategies. Additionally, students read articles, discuss them, and answer comprehension questions.

Technology

Students also create email accounts, do internet searches, learn to use Microsoft Word, and how to type. They use these skills to accomplish learning activities during the lessons and for using online news sites and online software.

Resources

Accessing and exploring resources is an integral feature of the curriculum. Students visit the library to get library cards and to learn about other library services, including online software and the library's apps for downloading books, the events calendar, the adult literacy and high school equivalency materials, dictionaries, laptops, and the reference desk.

Study Skills

Students spend time developing a realistic plan for studying outside of tutoring sessions. Each lesson has homework, including keeping a reading log and using the online resources explored during the sessions.

During each lesson, students are asked to think about which resources are useful to them and whether their plan for studying outside of tutoring is realistic or needs to be revisited. They are encouraged to identify a support person who can help them stay on track with their learning plan.

Reflection

In each lesson, students reflect on their experience. They analyze which activities, learning strategies, and resources are helpful so they can adopt them to use independently and in further tutoring. They also reflect on their goals and learning progress. Because they are revisiting their goals and evaluating their progress along the way, we can see how what they are learning is influencing their experiences outside the classroom. Our students have said:

> "The help my tutor gives, like how to sound out words, has really helped me read more. Now I can write paragraphs. I'm more motivated and not shy or scared of the world but I can understand it better." RP

> "Finally, every night I read to my grandbaby. That makes me feel so good. My daughter was surprised when I started reading to my granddaughter. She said, 'You never read to us when we were little.' I feel so much better about myself because I can read to my granddaughter. My tutor helps me find a book at the library and practices reading it with me." JJ

Early Results

Student numbers are still too small to learn lessons about retention or long-term student success. However, the first program to consistently use Steps to Success now has twice as many basic literacy students as any of our other programs, relative to their size, returning it to their pre-pandemic numbers. Though the program has not significantly increased outreach efforts, staff have been able to identify, support, and retain more basic literacy students. This shows us that we can use this program to reverse the downward cycle and create momentum towards growth by starting with training on Steps to Success for a group of new volunteers. As of now, we have five statewide trainers who can offer the 2-hour Steps to Success workshop and over 60 tutors recently trained.

Regarding the efficacy of the program itself, we are encouraged by the number of goals reached by the students who complete this curriculum. They have an average of four, which is more than double the average number of personal goals reached by the rest of our basic literacy population. Some of the goals include reading to their children, voting, getting a job, or being able to fill out a job application; the most common goal achieved is being able to use a computer and the internet. Testimonials from students suggest that the program's focus on independent learning is linked to their experience of success:

> "I feel nervous and I feel good at the same time. I feel like I'm taking the first steps... I think I'm capable of a lot of things I just didn't have the opportunity to be taught. I think once I'm taught these things I'm able to really flourish and show others, not just myself, what I can really do." BP

> "Reading teaches me a lot about what I could do in life.... There's a big difference after working with my tutor. My confidence is higher. I'm more open and not afraid to do what I want to do. I'm ready to live life where I'm feeling ok. I'm ready to start more relationships with people.... I've read seven books so far since I started this program. I never finished a book before this program." RP

> "I feel great. I used to feel bad, degraded.... I used to be shy when I went out. A lot of the time I used to ask my family to do something for me. If they were not around, I couldn't do anything like sending texts or emails. I always had to wait for someone to help me. I don't have to wait now. My son said, 'Mom, you're doing great! You read a lot and know a lot of things.' My kids are very proud of me.... I'm just happy about this program. I wouldn't be in the position I'm in today without it." MM

Next Steps

One advantage of our statewide structure is the ability to replicate successful local programs, and when a program is implemented widely, to generate enough data to make informed decisions about how to improve it. We will continue to expand the use of Steps to Success, learn from the results, and revise it as we continue to learn what works. As new tutors continue to work with students using this material, the results will inform future training and support for basic literacy tutors. We look forward to having enough students participate so that we can analyze student retention, use that information to develop further internal measures of success, and be able to conduct more outreach to potential students.

We expect that this program may help us to redesign intake and the initial tutoring sessions for our ESOL and high school equivalency students as well. This program may be a good model for integrating digital literacy assessments and personal learning plans into the intake process for all students. Already, after first including the curriculum in our pre-service tutoring training as an optional component, the potential benefits to all students became clear, and we recently began offering it to each new volunteer tutor we train.

Ultimately, to be successful, we will need to grow funding sources that are amenable to the timeline and resources required for students to make significant progress, so that we can continue to adapt to the needs of our students and the changing demands on literacy programs.

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Forum: The Power of Partnership

Introduction to the Forum

David J. Rosen, Newsome Associates

I joined our field in the 1980s as an adult basic education program director and then as the executive director of an adult literacy education professional development center, because I saw our field's potential to help low-literate adults meet their learning goals, escape from poverty, get family-sustaining wages or salaries, bring up children who love reading, writing and numeracy/mathematics, and be productive members of their communities and our society. In many ways, I have seen our field become more sophisticated and accountable, but I have also seen a shift away from serving the lowest levels of learners, those who may not have as a goal getting a job or on a career pathway or preparing for post-secondary education. I have seen public funding focus on jobs, careers, or postsecondary education at the expense of native speakers of English who need the most basic levels of literacy, and of immigrants who need the most basic levels of English speaking, listening, reading, and writing skills. I have also seen evidence showing that the major source of public funding for adult education and literacy, the Workforce Innovation and Opportunity and Act Title II, *Adult Education and Family Literacy,* now serves well under 2% of the adults in need of basic education.[1] These concerns urgently need to be met by a broader and more ambitious vision for whom our field should be serving, significantly increased funding, and with specific examples of how those needs can best be addressed.

One promising way to reach more adult learners is with partnerships between adult (foundational) education programs (i.e. adult basic literacy, adult basic education, adult secondary education, and English for adult immigrants and refugees) and other service providers such as senior services, parks and recreation services, digital inclusion services, health and medical services, affordable housing providers, battered women's services, public libraries, and other organizations whose primary mission is not education, but whose adult clients, patients, residents, patrons and others need basic education services in order to meet their needs and goals. A "go to where adult learners are" in addition to a "come to us" model can benefit the field, its programs, and the communities our field serves. The three articles that follow are examples of some of the ways that our field has supported partnerships that meet that wider range of learners' goals.

The first article in this Forum provides a detailed account of lessons learned by the City of Philadelphia's Office of Children and Families, as they set out to systematically implement a "go to the learners" digital literacy instruction model. The authors provide a brief history of the City's past involvement in community computer skills delivery to adults, how they tried to rebuild that capacity after the Covid-19 pandemic, and lessons learned from more recent efforts that focused on learners' articulated needs, and meeting those needs in the trusted community spaces in which the learners were already comfortable. It describes partnerships for meeting these needs with older adult centers, and parks and recreation centers. With the advent of several new pieces of federal legislation, including multi-year, state-provided funding beginning in 2024 through the federal Digital Equity Act, experience from projects like this one are especially helpful to city and town administrators, and adult (foundational) educators who want to benefit from this new funding to address the digital literacy needs of adults and young adults in their communities.

The Mayor's Office for Adult Literacy in Houston, Texas, has developed a comprehensive plan for adult literacy that builds participation of a wide range of public and private organizations for adult literacy education partnerships. In addition to long-time and new adult

literacy providers in the Houston metropolitan area, it encourages and supports a wider community-based approach that includes delivery of services in other venues, e.g., in digital equity and inclusion programs, financial institutions, faith-based organizations, health care services, for City of Houston employees, and in the City's public library department as well as in workforce preparation programs. Although cities such as Philadelphia, Boston, Nashville, and others have developed city-based adult literacy initiatives, Houston's blueprint is the best current example of a comprehensive city-based effort to support adult education ecosystem partnerships. This article describes five kinds of partnerships and provides more information on the work of the Mayor's Office for Adult Literacy. The effort in Houston is a good example of current work in building a collective impact model in adult literacy education.

Portland (Oregon) State University's Department of Applied Linguistics has a partnership with an affordable housing project for low-income seniors that since the mid-1990s has served older adult immigrants who need English language learning. The Community ESL Project enables

ESL Master's degree candidate teachers-in-training to provide English classes to these adults in locations that are convenient and that enable them to attend despite their physical challenges. It enables older adult immigrants to have English lessons focused on their needs and enables their English teachers-in training to experience supervised instruction in authentic adult immigrant teaching and learning settings.

All three partnerships described here are examples of "go to where the learners are." Such an approach needs to be more than offering the same class that is currently available at an adult (foundational) education program in a new location but with the same curriculum and in the same way. Instead, and there are good examples of this in these articles, with this approach it needs to begin with specific learners' needs, purposes and goals, and the curriculum and instruction need to be customized to them. As the articles describe, these kinds of partnerships involve more planning and maintenance time, especially between partner organizations. There are also different kinds of challenges in maintaining these partnerships over time, including achieving stable funding.

Endnotes

[1] According to the National Reporting System for Adult Education, in program year 2001- 2002 2,788,218 adult education and literacy learners were served, the highest annual number in the last two decades. (Source: NRS National Reporting System for Adult Education, an official website of the United States government https://nrs.ed.gov/rt/reports/aggregate). Since then, there has been a steady decline in the number of adult learners served with these funds provided by the Workforce Innovation and Opportunity Act, Title II. In program year 2019-2020, the year before the pandemic when enrollment dropped even more precipitately, only **1,113,571** adult learners were served through Title II federal funds. By 2020, nearly two decades later, 40% fewer adults were served by the major source of federal public funding in the U.S. The latest U.S. data show that the current need for adult literacy and education services is 48 million people. Of this 48 million, WIOA Title II now annually serves under 2% of those in need.

Forum: The Power of Partnership

(*Part 1 of 3*)

Digital Skills Partnerships: Philadelphia Office of Children and Families, Adult Education Division

Anne Pyzocha and Sylvia Boateng, Philadelphia Office of Children and Families, Adult Education Division

Based on lessons learned over the past 9 months of programming in 2023, the Office of Children and Families, Adult Education has key recommendations for literacy providers looking to provide basic digital skills for adult learners: build partnerships with organizations that serve atypical learning locations and meet learners where they already are, both physically and skills-wise.

During the COVID-19 pandemic, The City of Philadelphia, like many literacy providers across the country, quickly discovered that a significant number of residents needed support learning about digital skills. This specific skillset quickly became a necessity to access so many aspects of life that moved online after previously being conducted in-person. When faced with these computer-based tasks, many residents lacked the ability to navigate them with confidence. Significant work was done at that time by employees within City government, alongside volunteers and workers at community-based organizations, to ensure the residents who needed assistance were reached so that they could receive the supportive services they needed for digital skills. And while many aspects of life today have nearly returned to a pre-pandemic rhythm, the work around digital equity has only gained more momentum.

In recognition, the Office of Innovation and Technology in Philadelphia released a Digital Equity Plan in January 2022 to address the myriad ways it continues to tackle the digital divide facing its residents. The main barriers residents face were identified as affordability, digital literacy and support, housing insecurity, and language, cultural, and racial barriers. To address these barriers, the City outlined a series of goals to help residents with these issues. Embedded in the goal of providing digital skills support for Philadelphians is the expectation that this training be centered around both the work and personal lives of residents. The three of the key strategies encompassed in this goal are building a coordinated system of digital literacy providers across the City, standardizing digital literacy assessments and curriculum for all learners across providers in Philadelphia, as well as ensuring multi-lingual outreach to residents. This is where our office saw an opportunity to contribute to this goal.

To best align with and support these strategies, the Philadelphia Office of Children and Families, Adult Education Division (OCFAE) made a commitment to prioritize funding and supporting basic digital literacy programming for adult learners aged 16 and up. One baseline activity included OCFAE's funding of Northstar Digital Literacy subscriptions for interested literacy providers within the City, which is still in place today. Through taking on this cost, OCFAE has enabled providers to access this online platform free of charge.

Northstar, an online platform created and maintained by Literacy Minnesota, offers basic digital skills assessments and certificates, self-directed online learning for participants, and pre-written teacher lesson plans. These tools allow literacy organizations who are interested in launching digital literacy programming to do so without undertaking the massive task of creating curriculum, materials, and lesson plans from scratch. Currently, there are materials available in both English and Spanish, with plans for future translations into additional languages. By absorbing the cost of Northstar for providers, as well as purchasing a significant amount of licenses for organizations across the City, OCFAE was able accomplish two goals. One was to build a coordinated system of digital literacy providers across the City. The second was to support the standardization of digital literacy assessments and curricula for all learners. The idea here was that if a

learner started Northstar at one organization and had to switch to another for any reason, they could continue their digital literacy progress in any part of the City. Additionally, the City created advertising materials in multiple languages that allowed for speakers of many languages to learn about digital skills classes and ways to access them.

Beyond investing in Northstar Digital Literacy, another aspect of OCFAE's support of this programming is through a partnership with the Philadelphia Parks and Recreation (PPR) department that brings basic digital skills classes into older adult centers (OACs) in the City. OCFAE has worked extensively to bring digital skills workshops to PPR sites. Originally launched in 2011, adult digital skills training was based on a network of public computing centers called KEYSPOTS. These KEYSPOTS were housed in community-based organizations, libraries, and PPR recreation centers where learners could access computers and digital skills training. Only a few KEYSPOTS remained open as access centers during the COVID-19 pandemic, while most were shut down. As the world began to re-open after COVID hit, PPR decided to re-establish eight of their public computing centers which were now branded as KEYSPOT Innovation and Technology (KIT) centers, locating them within their recreation centers. Building on the foundations of the KEYSPOT investments, OCFAE sought to reimagine the partnership with PPR.

With this in mind, and considering that adult education is typically connected to workforce entities, libraries, and community-based organizations, OCFAE was interested in exploring other locations where adult education could succeed. A partnership with PPR to bring digital skills to the recreation centers seemed like a logical move. OCFAE released a request for proposal to hire a local literacy provider to develop workshops at courses to be held at the KIT centers, schedule and proctor Northstar assessments, use a train-the-trainer model to build more capacity for PPR computer instructors, and connect interested learners with additional adult education support and opportunities.

The KIT centers, however, proved to be complicated spaces to facilitate classes due to several factors. The main pain points that caused logistical complications were the timing and space sharing limitations related to children and adults being in the same space at the same time, as well as the different schedules for the summer camps being held at the recreation centers. All of this

was compounded against low participation at one-off workshop sessions. And although the classes did not work in the manner they were originally envisioned, there was high confidence in the potential of the PPR model.

This led the OCFAE and PPR teams, along with the provider, to conduct a strengths, weaknesses, opportunities, and threats analysis. This analysis highlighted a few key areas related to programming. The first major conclusion from the analysis was that adult education is most sustainable in adult-centered spaces, which the KIT recreation centers were clearly not. Classes and workshops needed to be held in places where adults already had a presence rather than figuring out how to weave adult programming into child-centric spaces.

The second conclusion was that stand-alone workshops were not the ideal structure for meaningfully reaching adult learners. Cohort or rolling-admissions classes seemed to be a more effective model for learners looking to improve their basic digital skills. Learners both wanted and needed multiple workshops to earn a Northstar Digital Literacy certificate. They required more time and practice to truly gain confidence in their new skills. Finally, the OACs run through PPR had previously requested adult digital literacy programming but had been unable to secure stable, reliable, and quality programming across their sites. With that in mind, these centers seemed like logical places to apply resources.

Across the City of Philadelphia, there are six OACs located in a variety of neighborhoods. Unlike other adult education class locations which are open to all ages (e.g., recreations centers, libraries, and workforce sites), OACs have an age requirement of 55 and older for entrance. These centers offer extensive programming to those who decide to utilize them, ranging from exercise and health programs to social services, volunteer opportunities, art programs, recreational and cultural programs, door-to-door transportation, daily lunch, as well as lifelong learning programs. The OACs see up to 100 visitors over the course of each day. The case for moving the classes away from the KIT recreation centers to the OACs continued to become clearer due to the robust programming already in place, as well as a consistent group of visitors.

OCFAE began by bringing in programs to three of the OACs. As programming got off the ground and word

spread through PPR about the new classes, more OAC site managers began to reach out about securing digital literacy programming in their locations as well. Slowly but surely, more OAC locations were slated to have digital skills classes. The classes at each site currently have between 5-10 learners, and attendance is very consistent. We saw these attendance numbers increase immediately by moving the location of the classes to a space where there are already learners. Recruitment also became significantly easier by meeting learners where they already were.

The ethos of meeting the learners where they are skills-wise also holds true for the entire program. Instructors have tailored these in-person classes to respond to the needs of their participants. For example, while there was not a huge demand for learning skills around composing emails, there were numerous requests for how to access telemedicine and social media. The instructors took this into consideration when writing their lesson plans and figuring out what topics to focus on. Additionally, while there were some requests for learning how to navigate computers, most participants wanted to build confidence around using their smartphones to access these resources. Once again, the instructors also took this into consideration and made sure to write their lesson plans in such a way that allowed learners to learn how to complete these skills using either a computer or a smartphone. The lessons were also structured to be highly engaging for participants and to allow for ample time for social connections. By taking these steps, the instructors could make classes accessible to their learners. This work was done in part by spending time getting to know the learners as individuals, discovering what their goals are, learning what skills they can do easily and which ones need more strengthening, setting up classes in such a way that allow for learners to teach and support one another, and allowing for space for learners to demonstrate their newly gained skills to their peers.

OCFAE was also able to bring additional digital supports to the older adult learners in the OAC digital skills classes. A digital needs assessment is done with each learner to identify not only what skills they need and want to learn, but also their internet and device needs. If learners need to get connected to free or low-cost internet, the instructors can connect them to Digital Navigators. The Navigators will then work one-on-one with learners to sign up for the Affordable Connectivity Program (if they qualify). Another

way OCFAE's funding supports digital equity is through device distribution. All of OCFAE's contracts require providers to purchase quality devices for learners in adult education classes. In the coming months, learners in need of a laptop will be identified and provided with a device. It is a goal to ensure that learners can fully utilize the skills gained from their classes with their new computers.

OCFAE still maintains a partnership with the original PPR sites despite programming shifts. The paid provider continues to create a pathway between their classes and the PPR sites through the PPR Computer Instructors. With the pivot to a class model as opposed to one-on-one support, OCFAE wanted to ensure learners continued to have access to an expert to help them through any individual technology needs and questions they may have outside of class. The class instructors now refer learners to the PPR computer instructors, given the new capacity limitations. Learners receive information for locations and times they can drop in at the PPR sites for additional support. They are also to apply what they learn at the OACs at the computer labs at PPR KIT centers.

The partnership with OCFAE and PPR continues to grow, and both public and private OACs have asked for digital skills instruction to be offered at their sites. The demand for the workshops has not only led to more residents gaining the knowledge they need around digital skills, but also led us to identify the technology gaps at the OACs. One location did not have a computer lab, and another had outdated computers. Upon learning this, OCFAE worked with other City departments to bring the computer labs up to date so that these sites could allow patrons to access the online tools and resources that they needed while there. Residents and visitors of the OACs now have an additional avenue for digital access that previously did not exist to them through the establishment of these computer labs. Learners can confidently access the resources they need with their newfound skillset.

Flexibility based on capacity and feedback is key to keeping these continuing partnerships both effective and sustainable. Between working with the PPR to ensure the technology located on-site is current, to working older adult centers to serve their population, the needs of many organizations are being met while working together towards a collective goal: to serve adult learners who want to strengthen their digital literacy skills.

Forum: The Power of Partnership

(Part 2 of 3)

Adult Literacy Ecosystem Partnerships Beyond the Workforce

Jacqueline Aguilera and Federico Salas-Isnardi, Mayor's Office for Adult Literacy

Adult literacy programs are critical for individuals who face challenges in functional literacy and in other areas of literacy required to successfully navigate through everyday living. These programs empower adult learners and have a significant impact on their families and communities. A large percentage of adult learners come from under-resourced and under-serviced areas and come from systemically under-resourced neighborhoods, a number of structures, systems, policies, and practices have resulted in significant gaps in access to equitable resources and support (Mayor's Office for Adult Education, 2021). In order to address the systemic injustice of low literacy, a network of partners from across sectors must come together not just to collaborate but to plan for results (Mayor's Office for Adult Education, 2021).

With the increased focus of adult education on the needs of industry and workforce preparation, employer relations have become a driver for the field. However, employment is not the only challenge for adult learners nor is it the only goal our adults have. Successfully addressing their challenges requires a broader approach to partnership development based on a collective impact model. Understanding the inter-relationship between actively addressing learner challenges and the successful completion of their goals requires a holistic approach to adult education service planning. This inclusive approach incorporates an adult literacy ecosystem comprised of adult learners, adult literacy providers, community non-profit and faith-based organizations, the education system (K-12), wrap-around service and government agencies, and the business community (Mayor's Office for Adult Education, 2021). Together, these partnerships provide opportunities for a provider network that supports the needs of various stakeholders through innovative solutions that are as likely to be initiated by the traditional provider of literacy services as they are by business partners who are coming to understand the impact of these programs on their incumbent workforce. The different partners come together understanding that they each address a different need of the adults and families served and that successfully addressing those needs requires a concerted effort to avoid duplication and maximize outcomes.

The current adult education system plays a vital role in promoting literacy skills and services for adults across the country; however, adult educators alone cannot address the multiple systemic challenges associated with low literacy (Cacicio et al., 2023). This article explores partnerships between large national service groups, financial institutions, global software developers, the faith-based community, health care systems, city government and adult literacy providers. While these partnership descriptions are Houston, Texas. based, they demonstrate the impact working together can have to accomplish common goals and desired outcomes for populations served in under-resourced communities around the nation.

Partnership Description 1: Volunteer Recruitment and The Next Step, Inc.

The Next Step, Inc. (TNSI, 2023), a nonprofit organization addressing digital access and literacy, partnered with Volunteers of America Texas (VOA Texas) to give clients a comprehensive path to financial stability through education and support services. Lakisha Bates, Director of Professional Skills Development at TNSI, says they have been actively working towards adding financial literacy into their Microsoft Office Basics Program in response to

Houston's Adult Literacy Blueprint. The newly developed partnership with VOA Texas ensures their clients are connected to a trusted financial education and financial coaching provided without delay. The partnership between TNSI and VOA Texas exemplifies the collective effort to create a brighter, more inclusive future for underserved communities across the state (TNSI, 2023)

Partnership Description 2: Financial Institutions and EastSide University

Under the Community Reinvestment Act (1977), banking institutions are encouraged to assess and address the financial needs of the communities in which they do business. Part of this process includes financial literacy. EastSide University (ESU), for 25 years a provider of adult basic education, high school equivalency, and digital literacy, is located in an under-served area called the Third Ward community in Houston, Texas. ESU formed a partnership with Houston Money Week, a group of financial education providers and institutions, including area banks, making it possible to offer no-cost personal finance classes and workshops. Learners received information and resources to assist with credit repair, scams, identity theft, and money management skills leading to savings goals. Some learners opened accounts for the first time in their lives, and through a financial essay contest, one ESU mother won contest funds helping her to buy her child a motorized wheelchair.

Partnership Description 3: Xprize and Adult Literacy Providers of Houston

The Xprize (2023), whose mission is to "inspire and empower humanity to achieve breakthroughs that accelerate and abundant and equitable future for all," needed non-profit education providers for a national competition piloting newly developed apps for English as a second language and high school equivalency courses. ESU partnered with two of Houston's larger adult literacy providers, Memorial Assistance Ministries and Community Family Centers, to form a team that led the teacher training to support learner usage of the apps across the city. This team won the national competition. Five months later, COVID-19 forced all schools and businesses to close their physical sites temporarily; the programs that were

now comfortable using educational apps and other online platforms were among the only ones able to continue offering learning opportunities without interruption, resulting in over 9,000 learners continuing to be served despite the mass closures across the city.

Partnership Description 4: Faith-Based Organizations and Aldine Independent School District's Family and Community University

One of Houston area's largest school districts, Aldine Independent School District's (Aldine ISD, 2023) Family and Community University, centers around the central theme of "Empowering Families Look Forward." All lessons and resources are provided in both English and Spanish or Vietnamese. Ivan Tamayo, Family and Community Engagement Specialist, says that the project's success is related to the collaborative efforts of multiple departments within Aldine ISD, the generous participation of nonprofit organizations, and, most importantly, families and community members eager to learn and take advantage of learning opportunities. The program partnered with two local churches to serve 300 families with English as a second language classes. The partnership allows for unique opportunities to engage with the school system through contextualized classroom experiences benefiting their families.

Partnership Description 5: Health Care Services Related Partnerships with Legacy Health Care

The Legacy Little Readers Prescription for Reading program supports family literacy through a unique partnership between books and their attending physicians. As part of wellness visits, families leave with an age-appropriate book and a "prescription" from the caregiver to read. Thanks to partnerships with the Barbara Bush Houston Literacy Foundation, HEB, The Molina Foundation, The Mayor's Office for Adult Literacy (MOAL), and many individual donors, the program has given away more than 231,000 books during well-child visits. Low literacy is associated with many adverse health and preventative care outcomes. Prescription to Read

brings together fundamental literacy with health literacy in the health care setting where caregivers contribute to both the physical and educational welfare of those served. Family literacy within a health care facility is taking the concept of contextualized instruction to a level which reaches the people where they are and creates a model that providers consideration for an alternative that can address the issues of transportation and childcare.

Partnership Description 5: City Government-Based Partnerships with the Mayor's Office for Adult Literacy

MOAL in Houston was opened in September of 2019 through the leadership of Mayor Sylvester Turner and Dr. Rhea Brown Lawson, Houston Public Library Executive Director. The office was created to advocate for adult literacy providers and their learners and to educate the community at large about the impact of low literacy on all aspects of our community. MOAL does not provide direct services but helps literacy providers establish partnerships for service as much as it helps other partners establish in-house educational programs for their employees and clients through collaborations with literacy programs. Through the pandemic, the office played a significant lead in finding ways to support adult literacy providers with alternative solutions to providing services to their learners. An objective of The Mayor's Office for Adult Literacy's leadership has been to change the conversation about literacy and project the need for services in every possible community forum. The results have been significant. In 2020, MOAL was contacted by the Molina Foundation offering a donation that brought 35,000 new books to Houston for distribution to the city's adult education and family literacy programs. Drive-Up 4 Literacy made it possible for literacy providers to pick up cases of new books for their programs when libraries were still closed to the public, collecting age-appropriate materials from the safety of their cars or in open spaces to observe safety protocols at the height of the pandemic.

MOAL and The Molina Foundation successfully partnered for two additional book distributions providing for additional distribution events totaling more than 25,000 new books. The drive-up model of distribution during the pandemic expanded in 2021 to include distributing laptops to adult literacy programs within the city's limits. Whether the events were to distribute books or laptops, the model was made possible because area businesses and foundations near and far initiated the partnership with the office because they understood the impact of their support on the efforts of adult literacy providers to keep adult learners engaged in their educational pursuits.

With the support of the Barbara Bush Houston Literacy Foundation, MOAL was able to work collaboratively on research that would become the nation's first blueprint for adult literacy. Houston's Blueprint for Adult Literacy is a 15-year strategic plan dedicated to addressing the challenge that 32% (1:3) adults in Harris County function at the lowest levels of literacy (Mayor's Office for Adult Education, 2021). Partnerships were an important part of the successful planning process. Over 100 partner organizations participated in the development of the document and suggested sources for the research conducted. Their engagement was important not only because it helped MOAL identify strategic goals that include the partners' needs but also because the Blueprint reflects the input and voices of the partners. The strategic plan would not be a success if those voices had not been integrated. A critical result of the broadened literacy ecosystem has been the number of businesses and agencies that call MOAL to ask about starting adult education and literacy programs in their locations because they see MOAL as a broker of services. So, most recently, a large company providing janitorial services contacted MOAL to help them connect to a literacy provider to start English language classes for their employees. Even other departments of the city, employing hundreds of immigrant and low-skilled workers, have contacted our office to broker discussions with providers to set up adult education classes throughout the city.

MOAL uses the Blueprint to coordinate support for adult literacy providers through professional development topics and strategies that align with the seven goals at the heart of the plan. Pilot projects from grant funds that align to the Blueprint have allowed MOAL to develop unique and innovative opportunities for providers to serve their learners, especially in the areas of digital literacy.

The digital divide is one of the most persistent systemic inequities affecting under-resourced communities. This was made evident during COVID-19 related closures when access was limited for those who did not have

connectivity, devices, or the knowledge needed to access resources vital to daily living, accessing health care, information, applying for assistance or employment, and attending classes that had transitioned to virtual instruction models (Mayor's Office for Adult Education, 2021). Funding for digital equity and inclusion projects allowed MOAL to create opportunities for adult literacy providers that benefit traditional literacy while supporting or advancing digital literacy programming. Through a competitive grant from Literacy Minnesota for AmeriCorps VISTA, MOAL was able to secure VISTA members who worked with providers to establish the Bridge Digital Academy (BDA). The BDA utilizes North Star Digital Literacy to institute a standard digital literacy model within the cohort that also allows for the customization of the model for each provider service population. The BDA includes a unique partnership between the Barbara Bush Houston Literacy Foundation, Houston Community College, and The Mayor's Office for Adult Literacy. The Foundation generously agreed to invest in the BDA to help meet a portion of the costs of the VISTA members for the project. Houston Community College also agreed to help with costs and to provide space and shared supervision of the VISTA members with The Mayor's Office for Adult Literacy. Houston Community College also provides advisory services regarding their certification and degree opportunities for adult learners participating in the BDA. Each adult literacy provider receives individual assistance in developing their digital literacy programming, professional development, and advisory support from MOAL and continues to be supported while expanding their BDA programming from basic digital literacy to upskilling and reskilling for technology-driven employment opportunities.

The successful launch of the BDA and the city's commitment to digital equity brought an additional opportunity for MOAL to develop a digital equity project in partnership with the Houston Public Library and the Complete Communities, Houston's equitable development initiative established by Mayor Sylvester Turner focused on bridging the gap between equity and opportunity in historically under-resourced neighborhoods. This opportunity for a collaborative project utilizes adult literacy providers serving 5 of the 10 complete communities to establish community computer labs for citizens who lack equitable access to digital resources. These digital spaces address the three goals of broadband related funding:

access, connectivity, and training. The project also includes the planned acquisition in 2024 of a mobile digital literacy training vehicle that will allow MOAL to expand the project's impact throughout the Greater Houston area. The grant funds the purchase of a new bus that will not only provide access to traditional digital literacy instruction but also integrates up-to-date technology that includes laptops with VR and AR capabilities and training opportunities for both adult literacy instructors and their learners. Partnerships with entities like Xprize provide the opportunity to engage with adult education app and reskilling software developers for access to pilot versions for the project, making available digital literacy skills experiences that might not be accessible were it not for this collaboration.

Conclusion

Partnerships between agencies and organizations that serve adults living in poverty and adult literacy programs are key as they can bring together stakeholders such as national volunteer service groups, financial institutions, global software developers, the faith-based community, health care systems, city government and adult literacy providers. Cross-sector partnering ensures that the full range of community-serving entities can better meet their objectives by working with adult literacy providers to ensure that adults receive comprehensive support and equitable access to a wide range of services and learning support to address the range of challenges they face in daily life. If those operating in the same space as organizations that provide educational services for adult learners can establish a working relationship with their neighboring adult literacy providers, then improved outcomes that benefit all within the literacy ecosystem can be achieved. Workforce-based outreach to adult literacy providers is strong as demand for an equipped talent pool continues to rise. However, the diverse stakeholders in the business and non-profit community will achieve greater impact in serving adults living in poverty if they include adult literacy providers in their outreach as pointedly as workforce agencies do. This article focused on diverse partnerships between members of the Houston profit and non-profit entities and adult literacy providers. These provider descriptions illustrate how inclusive, innovative partnering can address diverse needs that extend beyond workforce outcomes and create more holistic solutions for adults, their families, and the communities in which they reside.

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Providing English Language Classes Through Partnership

Kathy Harris, Portland State University

> *"According to 2018 American Community Survey data, there are 25.6 million children, youth, and adults who speak English less than very well in the United States. Of those, 11.4 million are adults ages 18 and older. Data on the federally funded adult education system under the Workforce Innovation Act (WIOA) Title II show that programs have served fewer than one million of these adults in ESOL classes per year over the last 10 years."* (Uvin et al., 2021)

As the facts in the quote above make clear, federally funded adult education programs serve only a fraction of the adults who need English language (ESL) classes. There are many reasons for this, including barriers related to cost, transportation, class schedule, childcare and family responsibilities, work schedule, access to technology, and digital skills (Bairamova & Dixson, 2019a; Patterson, 2018). Other barriers are more internal to learners and include anxiety or fear, a lack of confidence in themselves, motivation, and health concerns (Bairamova & Dixson, 2019b; Patterson & Wei, 2018).

One way that organizations serving adults with foundational skill needs such as English language can connect adult learners to those services is through partnerships. Many partnerships with adult education providers involve workforce development agencies but for adult English learners whose goals do not include employment, other partnerships are needed.

One such partnership in Portland, Oregon, that arose to meet a specific need not being addressed by existing programs is called the Community ESL Project, a partnership between an affordable housing organization serving seniors and a university training English language teachers.

How the Partnership Began

The Community ESL Project arose in 1995 when a group of high school students with a mission to improve English language instruction at schools across Portland, Oregon, approached the Leaders Roundtable. At the time, the Leaders Roundtable was an ad hoc group of top educational and private sector leaders and elected officials working toward the goal of student success in their local area. The students asserted that their English language instruction would improve with the participation of their parents, but that their parents' participation needed to be supported by improving their own English

skills. The Leaders Roundtable responded by establishing a partnership with Portland State University (PSU) and the department of Applied Linguistics which housed programs to train English language teachers. PSU and the Leaders Roundtable collaborated with the Schools Uniting Neighborhoods program which was established to create service hubs in low-income schools and their communities. In this partnership, the Leaders Roundtable representative would interact with the Schools Uniting Neighborhoods program coordinators to find space at each targeted school, identify a site coordinator, and recruit parents to the English classes. A PSU practicum coordinator would select and supervise English language teachers-in-training and liaise with the school site coordinator to provide local support for the teachers.

The Community ESL Project operated at 10-12 elementary, middle, and high school sites from 1995-2010. The innovative project was a finalist and received a cash prize of $5,000 in 2009 from the Jimmy and Rosalynn Carter Partnership Award for Campus-Community Partnerships. The award showcases examples of campus-community partnerships with academic departments and interdisciplinary teams that leverage the resources of the university for the benefit of both the community and the university and enhance both research and student learning by developing and sustaining reciprocal teaching and/or research partnerships which are foundational to effective community engagement.

At the end of 2010, the Leaders Roundtable disbanded. The Community ESL Project became the Language Teaching Practicum and expanded to provide English language classes taught by English teachers-in-training to settings where they had not been before. Sites included a literacy organization and several affordable housing organizations including Rose Schnitzer Tower.

The Partners

Rose Schnitzer Tower

Built in 1980 by Schnitzer Properties (formerly Harsch Investment Properties), the Rose Schnitzer Tower building was the first high-rise apartment building in downtown Portland for low income seniors and other adults with disabilities. Currently, 40% of the building residents are English learners and 90% are older than 62. The building

is within walking distance from PSU. Schnitzer Properties has since sold the property to Cedar Sinai Park but continues to provide property management services including hiring resident service coordinators who work to connect residents to services through local partnerships. Examples of these partnerships include health services such as foot care and blood pressure checks, support groups of various kinds, information on the process for getting a caregiver, and English language classes.

Portland State University English Language Teaching Practicum

Portland State University is an urban serving university in downtown Portland, Oregon. The department of Applied Linguistics at PSU was formed in 1988, housing a Master's Degree in Teaching English to Speakers of Other Languages and a Teaching English as a Second Language certificate that can be completed in addition to an Applied Linguistics (or other) major or as a post-baccalaureate certificate. In addition to courses on language structure and use and language teaching and learning, a language teaching practicum is required.

The language teaching practicum plays an important role in teacher training programs focused on educating English language teachers (Farrell, 2008; Gebhard 2009). In a practicum, teachers-in-training apply what they have learned in their coursework by teaching their own class; teachers-in-training assess and respond to learner needs, create and implement lessons and materials, and adapt instruction based on formative assessments. Importantly, teachers-in-training work to build positive relationships, trust, and cooperation (Kamhi-Stein et al., 2020).

How the Partnership Works

The Language Teaching Practicum has been offering an ESL class onsite at Rose Schnitzer Tower since 2011 throughout each academic year, in fall, winter, and spring terms. Classes meet for 90 minutes, two times each week for 8 weeks each term. Classes were not held during 2 years of the COVID-19 pandemic. The resident services coordinator at Rose Schnitzer Tower works to ensure that the services are available to residents in relevant languages, and at times and locations that work for the seniors. Specific to the English language class, the resident services coordinator advertises and recruits learners,

makes sure that textbooks are available, works to solve any access issues, and reserves an appropriate room for the class. With the increasing affordances of technology in language teaching, Rose Schnitzer Tower regularly upgrades the room where the English class is held.

To prepare to teach at the Rose Schnitzer Tower, the teacher-in-training observes at least one class the term prior to the term that they will teach. This helps to establish continuity as well as starts to build community with the learners. The incoming teacher-in-training meets at least one more time with the outgoing teacher-in-training and has full access to the assessments, curriculum, and lesson plans of the outgoing teacher-in-training as well as all previous teachers-in-training at Rose Schnitzer Tower. The incoming teacher also meets with the Resident Services Coordinator to get a tour of the facility and learn more about the building residents.

Weekly meetings with other teachers-in-training and the practicum supervisor provide guidance and support throughout the term. Each meeting includes information about teaching, often referring back to pedagogy classes, and discussion of the classroom teaching being experienced by the teachers-in-training. The teachers-in-training keep logs of the learners' attendance, their lesson plans, and reflections for each class. Through discussion and self-reflection, the new teachers learn to focus on the learners and discover how to gauge the teaching practices that are effective for the specific learners in their classroom. As seniors, the adult learners at Rose Schnitzer Tower are third-age learners and may have vision or hearing impairments and do not typically have English needs related to employment or the education of children, both common interests of younger adult English learners but instead have interests related to socializing with others and in learning for its own sake (Kacetl & Klímová, 2021). Third-age learners such as the adult learners at Rose Schnitzer Tower benefit from instruction that leverages their knowledge and experience, in informal ways that is not driven by the need to cover a certain curriculum. The teacher-in-training at Rose Schnitzer Tower designs curriculum, lessons, and activities that meet the needs of the third-age learners in the classroom.

The teachers-in-training receive feedback on their lesson design from the practicum supervisor early in the term and the practicum supervisor observes each teacher-in-training about half way through the term to provide feedback on the teaching. The teachers-in-training select one more way to get feedback based on the specific teaching aspect they are working on, which could be an additional observation, an observation of a peer focused on a specific question, a reading, an individual consultation with the supervisor, or other method of their choice, all with the goal of meeting the needs of the adult learners in their classes.

Opportunities and Challenges

The partnership between Rose Schnitzer Tower and the PSU Language Teaching practicum provides many benefits to both the adult learners and to the English teachers-in-training. For example,

- The English teachers-in-training have an opportunity to teach their own class of adult English learners. They create lessons and materials to meet the needs of the adult learners in their classes with the support of colleagues and supervisor.

- The senior adult English learners get English classes that meet their needs, at no cost to them, at their location. They look forward to ESL classes resuming in the fall (no classes are held during the summer because of the university schedule).

- The adult learners do not have to be U.S. citizens and English learning can help those who are applying to be U.S. citizens.

The partnership faces regular challenges. For example, the successful partnership

- requires coordination between the practicum supervisor employed at the university and the Resident Services Coordinator employed at the affordable housing organization. This can be especially challenging if there is frequent turnover in either role.

- requires getting the word out to elderly residents which is an ongoing struggle, especially if the day and time of the class changes. Attendance sometimes suffers.

- struggles when health issues cause irregular attendance of learners.

- requires teachers-in-training who are warm and friendly, flexible, and with a sense of humor; their

personality makes a big difference to attendance in the ESL classes.

Conclusion

 The low-income seniors living at Rose Schnitzer Tower have goals and interests not typical of WIOA Title II funded programs generally focused on employability (Belzer & Kim, 2018) that "might feel pressure to enroll only learners whose goals align with WIOA core measures, leaving beginning-level learners and adults not in the workforce underserved" (Vaneck et al., 2020, p. 42). In addition, the learners' mobility limitations make it difficult to travel to locations where those programs are held while vision and hearing impairments require pedagogical adjustments that may be difficult to accommodate in larger programs. As a result, a local partnership can serve to meet the needs of these senior adult English learners.

 The partnership has worked for more than 25 years because it changes to meet the needs of both adult English language learners and English teachers-in-training. It is supported by ongoing communication between the resident services coordinator in the building and the practicum supervisor at the university. Annual meetings at the end of each academic year serve as a review of what worked and what did not and where adjustments are made to ensure that the partnership continues to meet the needs of both partners.

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Forum: The Power of Partnership

Conclusion of the Forum

David J. Rosen, Newsome Associates

There are many reasons why our field needs to expand the kinds of partnerships described here by Anne Pyzocha and Sylvia Boateng; Jacqueline Aguilera and Federico Salas-Isnardi; and by Kathy Harris; these kinds of partnerships can increase adults' awareness of the existence of adult (foundational) education classes in their communities; they can meet adult learners' needs that may not align well with the priorities of current public funding but, nevertheless, are important to adult learners, and can achieve worthwhile public goals such as increasing democracy participation skills, intergenerational literacy, technology literacy, reducing corrections recidivism, and reducing poverty. They are a way to expand the number of adults who receive adult (foundational) education services, to significantly increase services to the 48 million adults in the United States who need them. These partnerships can meet the needs of those who cannot take advantage of the services as currently offered because of where and when they are available, and how instruction is provided; and they can help adult (foundational) education providers do their jobs more effectively or provide better service for their clients.

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Book Review

Review of *Teaching and Learning about Family Literacy and Family Literacy Programs*

Jennifer Martinez, Georgia State University

Co-authored by Jacqueline Lynch and Esther Prins, *Teaching and Learning about Family Literacy and Family Literacy Programs* is a small book that packs a big punch. It is the most recent addition to a growing collection of family literacy literature and synthesizes decades of theoretical and program-level research into an insightful analysis of the current family literacy landscape. An informative read for read for academics and practitioners, this book has something for everyone.

Though a slim volume at just over 200 pages, the book comprehensively addresses current knowledge in family literacy programming from both a scholarly and practical lens. It is composed of 14 chapters, divided into four thematic sections: foundations of family literacy, diversity in family literacy, family literacy in practice, and other focused topics. The chapters in each section attend to both micro- and macro-level concerns of the field and pose recommendations at the family, program, research, and policy levels. From the beginning, the authors make clear that their analysis is positioned in a sociocultural perspective of literacy. They follow this thread throughout the book as they discuss the variety of ways that families and programs use literacies across the globe.

Section one provides a historic and theoretical overview of family literacy programming, as well as empirical research demonstrating the contribution of family literacy programming to literacy outcomes. Chapter 1 introduces the concept of *family literacy* and provides a brief history of its development, definitions of key terms within family literacy literature, and the most common issues within the field. The chapters that follow describe social theories of literacy, literacy needs of children, and literacy needs of adults. Notably, in Chapter 4, Lynch and Prins construct an argument that they sustain throughout the rest of the book: that quality programming must offer not only parent-child literacy activities but also literacy skills for parents *and* parental support for a child's transition to school.

Section two addresses topics of diversity and contains chapters about race, ethnicity and culture, and social class. Through a critical examination of relevant literature, the authors identify a need for family literacy programs to develop culturally responsive pedagogical practices that recognize racial, ethnic, and cultural identity, respect cultural variations in literacy practices, and oppose hegemonic practices that position middle class values as the standard. In Chapter 5, the authors
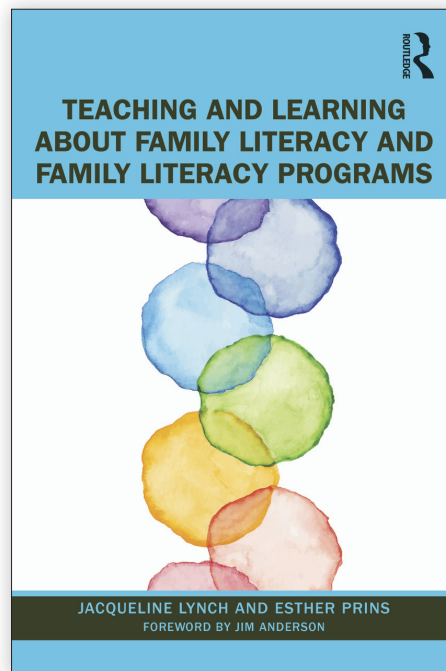
Correspondence: Jmartinez76@student.gsu.edu

offer three conceptual tools that can help educators become aware of colonizing assumptions and behaviors: using cultural models, adopting a funds of knowledge framework, and instituting antiracist educational practices. Lynch and Prins encourage practitioners to analyze their own assumptions surrounding race and culture using suggested principles and strategies listed in Chapter 6.

Section three describes what family literacy looks like in practice. In Chapter 7, the authors outline typical program structures, conventional and unconventional program settings, and general program design features that may encourage success. Chapter 8 describes three exemplary family literacy programs in detail, focusing on their common characteristics: considering parental needs and interests, measuring learning outcomes, supplying free literacy resources, and maintaining long-term funding. Chapter 8 should be particularly interesting to anyone interested in researching or implementing interventions. Unfortunately, readers looking for international success stories will be disappointed; the exemplary programs are all located in North America.

The final section of the book is devoted to topics of concern in the field. One chapter examines father engagement in family literacy and family literacy programming while another chapter addresses the critical role played by other family members, such as grandparents and siblings, in emergent child literacy. In other chapters, the authors lead sensitive and nuanced discussions of current research on digital family literacies, and the problematical demands of program accountability. Finally, the book ends by outlining future directions for family literacy and family literacy programming. The topics of most concern to Lynch and Prins include the need to empirically examine the effects of recent social, economic, and political phenomena such as the COVID-19 pandemic and the Black Lives Matter movement on family literacy practices and programs.

This ambitious work will appeal to a broad range of interested audiences, including researchers and scholars, graduate students, and family literacy practitioners. Though it is certainly a large undertaking to address the needs of such diverse readers, Lynch and Prins manage to do so through careful organization. Not only is each section thematically structured, but every chapter is segmented into introduction, content, and conclusion, and includes a section for suggested activities, recommended further readings, as well as a References section. In particular, the Suggested Activities section includes several reflective questions that encourage readers to extrapolate research findings and theoretical initiatives to real-world contexts. Though researchers may not find these sections useful, their presence transforms the book into an ideal supplemental text for a graduate level literacy course. All in all, this book is an excellent resource for family literacy practitioners and others who are interested in understanding the many layers of this complex topic.

Resource Review

Virginia Adult Learning Resource Center's *Social and Emotional Learning for Adult Multilingual Learners* Online Toolkit

Darlene Fahrenkrug, Arlington Education and Employment Program

■ https://valrc.org/resource/social-and-emotional-learning-for-adult-multilingual-learners-toolkit/
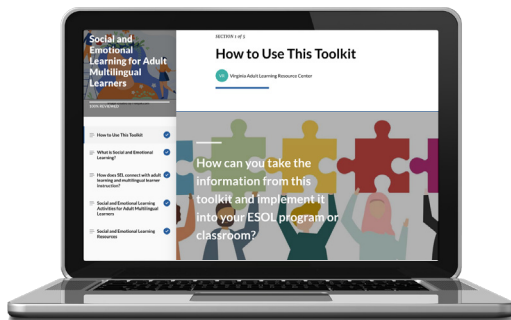
The Virginia Adult Learning Resource Center's (VALRC) *Social and Emotional Learning for Adult Multilingual Learners* toolkit is an online resource featuring evidence-based articles, relevant theory, and activities that can be drawn upon by individuals, professional learning communities (PLCs), and program administration serving adult English learners. The toolkit can be used as a self-paced module for studying how social and emotional learning (SEL) can address the needs of adult immigrants and refugees who are learning English.

VALRC develops resources on topics critical to the field of adult education and offers statewide support and training in person and online covering topics such as digital literacy, foundations of reading, serving refugees, and so much more. VALRC's work brings together volunteers, teachers, and administrators to share evidence-based instructional practices and improve learner gains across levels. The SEL toolkit provides foundational knowledge on SEL concepts, models of effective strategies, and links to additional resources.

The toolkit is clearly organized into five subsections that contain videos, article links, activities, and other resources:

- How to use this toolkit
- What is SEL?
- How does SEL connect with adult learning and multilingual learner instruction?
- SEL activities for adult multilingual learners
- SEL resources

Each of the five sections in the toolkit can be easily accessed through use of the sidebar, or users may engage with the material through a continuous path. The content is linked to source documents that provide additional articles and resources, making it helpful for those just starting to learn about this topic as well as for those who are looking for something more in-depth. Activities contained within the module such as Jamboards, Google Slides, and Google Forms are linked and easily adaptable for differentiation.

Each section reflects the application of current research

into SEL. The individual sections of the toolkit can stand alone or be used together. Each has a clear introduction, specific content with salient links, and a transition to the next section. The user interface is simple to navigate with a sidebar and progress check bar and includes places to engage with the material through reflection and opportunities to expand to subsections and to view additional activities.

Within the first section, there are suggestions for using the toolkit as individuals, PLCs, or at the program level. These helpful ideas provide an outline to support educators across program roles to learn about and reflect on integrating SEL. There is also a feedback form to ensure the toolkit remains a living document that can grow as needs are expressed.

The landing page for foundational SEL definitions and ideas is in the second section. There are two embedded videos to explain the core competencies and key settings as well as the Collaborative for Academic, Social, and Emotional Learning framework, which then leads to a set of VALRC resources on trauma-informed care. After reviewing this section, participants will have a common set of definitions upon which to build.

The third section provides a clear context for connecting existing instructional strategies to SEL. This section discusses SEL connections for: creating a cooperative classroom environment, knowing learners, utilizing self-directed learning, contextualizing instruction, leveraging learners' strengths and knowledge, and providing explicit instruction. For example, in the subsection labeled "Leverage Learners' Strengths and Knowledge," the connection to SEL is reflected when learners are invited to discuss their personal experiences, which the instructor can then draw upon to build authentic and relevant content for future lessons.

An instructor who is looking for SEL activities could quickly access many distinct ideas in the fourth section. There are two activities for emotional check-ins with several linked examples and instructions for teachers which provide a great starting point for someone new to SEL. There are also prompts for developing a growth mindset with additional resources, strategies for differentiation, and presentation. Some of these resources were initially developed for K-12 use but can readily be adapted for adult learners. Next, there are empathy task cards with three different instructional strategies: think/pair/share, jigsaw, and warmups. Reflecting on these situations in discussion or writing would also strengthen navigating systems, higher critical thinking skills, and problem solving—three of the nine central skills in the toolkit. VALRC also concisely explains differentiation strategies, mindfulness activities, pre-teaching SEL activities, and excellent tools for creating or adapting graphic organizers. Teachers can bookmark this page for future use.

The final section of the toolkit includes a list of annotated links to articles and websites. The short descriptions make finding something relevant to one's teaching context straightforward. There are links to websites, articles, presentations, and tips for integrating SEL. The toolkit content is engaging and includes various formats to make viewing more interactive than reading a blog post or article. This valuable toolkit contains a range of activities that could be completed in just a few minutes or as the basis for an entire lesson. This resource would be helpful to a new or experienced volunteer, instructor, or administrator looking for SEL information, activities, or resources. Someone who is new to the subject might go through the five sections from beginning to end, while an experienced instructor might be ready to access the toolkit to incorporate SEL activities and resources into their next class.

Research Digest

Why is Morphological Knowledge and Instruction Important for Adult Education Learners?

Elizabeth L. Tighe and Gal Kaldes, Georgia State University

Morphological knowledge refers to an individual's understanding of the structure and meaning of words based on their familiarity with morphemes (i.e., word parts, including prefixes, suffixes, and bases). This knowledge is crucial to developing various aspects of language and literacy to successfully function in 21st century education and workplace settings, including vocabulary, spelling, phonological awareness, word reading, and reading comprehension. This research digest provides a brief review on why morphological knowledge is important to literacy for adult education leaners. Next, we briefly describe the literature on adult morphological and etymological instruction and provide examples for how to integrate them in the classroom with adult education learners. We conclude with future directions and resources for research and educational practice.

Why is Morphological Knowledge Important to Literacy?

Recognized theoretical frameworks of literacy emphasize that awareness of morphemes and processing morphological information in text supports reading comprehension and other literacy skills, including word reading and vocabulary (Levesque et al., 2021; Perfetti & Stafura, 2014). Moreover, research with adult education learners has found that morphological knowledge is related to better word reading (Tighe et al., 2019), vocabulary (Fracasso et al., 2016), and reading comprehension skills (Tighe & Schatschneider, 2016a, b). Morphological knowledge can help adult education learners because morphemes enhance multiple reading skills (Kirby & Bowers, 2017). Below we list examples of how morphological knowledge can serve as a powerful strategy to enrich these skills:

Vocabulary: Students can use morphemes to break down and infer the meaning of unfamiliar words. For example, the word "unhelpful" contains a <un> prefix (i.e., opposite of), "help" base, and <ful> suffix (i.e., having characteristics of), which helps decipher the meaning (i.e., to be lacking in assistance or support). Students can extend their vocabulary knowledge by identifying word families, or groups of words with a common base. For example, knowing the base word "fort" can extend to other related words, such as "forts," "fortitude," and "fortify."

Phonological Awareness: Some words undergo phonological (i.e., sound) changes when adding a suffix to form a more complex word (e.g., "magic" to "magician"). Increasing learners' cognizance of prefixes, suffixes, and bases in both oral language and written words can help students recognize and manipulate sounds within words (e.g., "magic" has a /k/ phoneme that changes to a /ʃ/ phoneme in "magician").

Pronunciation: Recognition of morphological word boundaries (e.g., mis/hap) can help learners increase reading fluency with correct pronunciation and prosody (i.e., appropriate reading expression). For example, learners who encounter the word "mishap" would likely recognize the <mis> prefix, which helps them avoid reading the <sh> as a digraph (as in "shell").

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Spelling: Consider the word "action" and the rationale behind why this word contains a <t> rather than the <sh> digraph to represent the /ʃ/ phoneme (Bowers & Bowers, 2018). Once the learner is prompted to break down the word "action" into its morphological components (act + ion), the reason for using <t> to represent /ʃ/ becomes transparent because <t> is part of the base word "act."

Reading Comprehension: Morphological knowledge enhances learners' ability to parse unfamiliar words, which improves vocabulary and word reading. This skill can free up additional cognitive resources (e.g., working memory) that are needed for processing longer sentences and paragraphs. Ultimately, comprehension is the goal of reading and morphological knowledge can support many aspects that feed into processing and understanding text.

As illustrated above, increasing learners' morphological knowledge can boost several reading-related skills, which makes instruction in morphological knowledge multi-faceted with many different approaches and types of morphological content. We will next review the scant but existing literature on different types of morphological intervention studies conducted with adult education learners and the benefits of incorporating etymological with morphological instruction.

Morphological Instruction

A few intervention studies have used morphological instruction in settings with adult education learners. For example, Alamprese et al. (2011) observed improvement in adult foundational education students' decoding skills after teaching a reading class that incorporated elements of morphological instruction. Gray et al. (2018) reported overall gains in students' civics vocabulary after teaching etymology, morpheme, and syllable structure. Similarly, Durgunoglu et al. (2021) used morphological instruction with adult English as a Second Language learners and reported improvement in their vocabulary and comprehension.

Instructors of adult education learners can incorporate morphology into literacy instruction to target multiple literacy outcomes (see Resources below for more information). For example, Alamprese et al. (2011) developed an enhanced decoding curriculum for adult foundational education students with low to intermediate reading skills that incorporated morphology-focused activities. Many of the activities asked students to identify morphemes in words that were embedded in adult-centered reading materials. Many of the activities also focused on common spelling conventions, such as dropping the final, silent <e> when adding a suffix (e.g., live + ing → living). Gray et al. (2018) used a semantic mapping organizer to help students analyze morphologically complex civics vocabulary. Specifically, the authors asked students to perform various steps, such as read aloud a target word and its definition (e.g., "alienable" means something that's transferable to another owner), write and read aloud the root of the target word (e.g., Latin *alienus*), write and read aloud a synonym for the target word (e.g., transferable), read aloud and write a word sum for the target word (e.g., alien + able → alienable), read and write other words with the same base of the word (e.g., alienate), and segment the syllables in the word (e.g., a- li- en- a- ble).

One approach to literacy instruction that has not been deeply explored with adult education learners is the use of word matrices to analyze morphologically complex vocabulary words. A word matrix is a graphic organizer that arranges prefixes and suffixes around a common base (Bowers & Bowers, 2018; Bowers & Kirby, 2010). Students use the matrix to build words that share the same base (e.g., "act," "action," "inactive," "actionable"). Additionally, using word matrices considers multiple literacy skills that are required for reading successfully, including orthography, phonology, and semantics (Bowers & Bowers, 2018; Ng et al., 2022). More evidence with using matrices is needed for adult education learners; however, studies with children suggest that word matrices can be an effective tool to help target learning morphologically complex vocabulary (e.g., Devonshire et al., 2013; Freeman et al., 2014).

Incorporating Etymological with Morphological Instruction

Etymology (i.e., word origins or root words) is one of the primary dimensions of the English spelling system, along with morphology and phonology (Hegland, 2021; Venezky, 1999). Some recent intervention studies with adults who require support with literacy skills have begun to incorporate etymological with morphological instruction

to increase their vocabulary and reading strategies (Gray, 2019; Gray et al., 2018; Trexler et al., 2023). For example, Gray (2019) conducted a pilot study that found that adults who were taught Greek and Latin roots outperformed adults who were only taught syllable types on a norm-referenced word reading test.

Morphology instruction can leverage etymology to help adult education learners in a variety of ways. First, etymology can facilitate understanding of the graphemes, or spelling patterns, that do not follow conventional spelling rules in English. For example, a student who struggles with spelling or reading words may wonder why "schemer," someone who plots or plans in a devious manner, is spelled with the <ch> instead of the <k> grapheme. Etymological examination of the word reveals that "schemer" is spelled with a <ch> because the base word is "scheme," which is derived from Greek. The digraph <ch> is a common Greek representation that corresponds to the phoneme /k/.

Second, incorporating etymology with morphological instruction can help students decipher the meanings of unfamiliar words. Students who examine the etymological origin of a word discover that the meaning of the root is oftentimes similar to its modern day use in English. As an example, the base of the word "mortician," a person who plans and arranges funerals, is spelled <mort> and comes from the Latin root *mortuus*, meaning "death." Students can use this information to draw connections to a family of words that have the same base spelling and share a common root (e.g., "mortality," "mortal," "immortal"). A few recent studies have used etymological with morphological instruction to enhance the academic vocabulary skills of developmental college students who require support with literacy skills and attend developmental reading classes (Hastings & Trexler, 2021; Trexler et al., 2023). In combination, these studies have found that the students demonstrated progress with using etymological strategies to read and unpack the meanings of unfamiliar words and also reported that they enjoyed using the strategies to learn more about unknown words.

Finally, teaching etymology can help adult education learners build their vocabulary knowledge even though not all words in modern day English retain the meaning of the root from which they evolved. Let us revisit our example of the Latin root *mortuus*. The word "mortify"

(i.e., to feel shame or embarrassment) and the word "mortician" are from the same word family because they both come from Latin root *mortuus* and have the same base spelling <mort>. However, it is not obvious that these words are related because "mortician" is more closely related in meaning to the root *mortuus*, or death, than the word "mortify." Although the word "mortify" has evolved from the meaning of its root, having discussions with students about the relationship between "mortify" and its etymological origin can provide valuable context that encourages retention and understanding. For example, the hyperbole, "I was so embarrassed, I wanted to die!" may give students additional context for why "mortify" evolved from the root *mortuus*. Similarly, many words in modern day English have evolved in meaning due to the use of figurative language (e.g., metaphors or idioms). A few studies with adults who are English language learners have used an etymology strategy called "etymological elaboration," which encourages students to retain the meaning of idioms by drawing connections between the idioms to the linguistic origins of the words (Bagheri & Fazel, 2010; Soleimani & Azizmohammadi, 2015). These studies have found that teaching etymology helps adult English language learners remember the meanings of idioms.

Brief Summary and Where Do We Head Next?

In summary, increasing adult learners' morphological knowledge can positively influence a host of reading-related skills, including phonological awareness, spelling, decoding, vocabulary, and ultimately reading comprehension. There have been limited but some interventions that include morphological components, including etymology, and these have been found to be effective for adult education learners (adult literacy students and developmental college students). There is a strong need for more studies, developed materials, and interventions to understand the effectiveness of morphological and etymological instruction with adult education learners. Many of the studies described above are initial pilot studies with small samples of adults who vary in reading skills, are short in duration, and include varying morphological and etymological approaches and content. Therefore, it is critical to further understand for

whom, what types of approaches and content, and the intensity of instruction needed to be considered effective.

In addition, there is a strong need for enhancing professional development and providing resources and support for adult education instructors. A recent, informal poll at the 2023 Coalition on Adult Basic Education conference suggested that 80% of adult education instructors do not feel confident and/or do not have the tools needed to teach morphological knowledge (Tighe et al., 2023) This theme is also echoed in research with different educational professionals primarily in K-12 settings (e.g., Fumero & Wood, 2023), who report feeling only moderately confident in their abilities to apply their knowledge of morphological concepts. Thus, much more work is needed to help adult education instructors to feel confident and able to teach morphological and etymological strategies in class.

Resources

The resources below provide examples of how to integrate morphology and/or etymology into instruction to enhance adults' literacy skills.

1. **Making Sense of Decoding and Spelling: An Adult Reading Course**

    https://lincs.ed.gov/publications/making_sense

    Description: This curriculum is open access and was used in Alamprese et al. (2011) to investigate the effects of enhanced decoding instruction on word reading outcomes of beginning to intermediate adult readers. It contains exercises that teach common spelling conventions and breaking down words into their morphological parts (e.g., prefixes, bases, suffixes).

2. **Morpho-Phonemic Analysis Boosts Word Reading for Adult Struggling Readers**

    https://link.springer.com/content/pdf/10.1007/s11145-017-9774-9.pdf

    Description: Gray et al. (2018) is open access and provides a description of how the authors conducted their morpho-phonemic intervention with a group of students in adult foundational education (see pp. 85-86). In particular, Figure 1 on page 86 provides a visual of the morpho-phonemic semantic mapping approach, which also integrates etymology.

3. **Cultivating Possibilities Through Literacy**

    https://human.libretexts.org/Courses/Delaware_County_Community_College/Cultivating_Possibilities_through_Literacy

    Description: This guidebook is open access and was used in Trexler et al. (2023) to teach reading strategies to college students enrolled in developmental reading classes. Students unpack vocabulary in texts by learning about the dimensions of English orthography (morphology, phonology, etymology). Students also learn to use metacognitive strategies to reflect on their comprehension of the texts.

4. **Word Matrix Resources**

    a. *Beyond Phonics: The Case for Teaching Children the Logic of the English Spelling System*

    https://cpb-eu-w2.wpmucdn.com/blogs.bristol.ac.uk/dist/b/403/files/2017/10/Beyond-Phonics-The-Case-for-Teaching-Children-the-Logic-of-the-English-Spelling-System.pdf

    Description: This open access paper provides examples of word matrices and word sums (see pp. 128-131). Table 2 on page 129 provides definitions of linguistic terms, including the difference between a morpheme and a root (i.e., the etymology or origin of a word). These concepts are important to distinguish in order to integrate morphological with etymological instruction.

    b. *Building a Matrix from Word Sums*

    https://youtu.be/cL5-lH3KVlI?si=gxDCbjyktWPBqSQV

    Description: This video shows a worked example for how to build a word matrix. Instructors can use this tool to help students build word families with other words that are connected in structure and meaning.

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Technology and Adult Learning

Improving Reading Skills for Adult Learners with Dyslexia in Incarcerated Settings with The Noah Text®-New Century Program

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Dyslexia affects 20% of the U.S. population (Shaywitz et al., 2021). Research shows that the vast majority of students who are diagnosed with learning disabilities in school are, in fact, dyslexic. Still, many students with dyslexia are not adequately identified, assessed, or supported with research-based interventions. Despite having average or even above-average intelligence, growing up with dyslexia can negatively impact an individual's self-esteem, behavior, academic performance, and overall mental health (Cassidy et al., 2021; Wilmot et al., 2022). Adults with dyslexia report struggling with reading difficulties from as early as kindergarten which impacts their learning experiences over the life span. Providing evidence-based instruction alongside supplementary digitally-mediated reading tools such as The Noah Text®-New Century program described here is critical for improving learning engagement and outcomes among adult learners with dyslexia, especially for the disproportionate number of learners with reading difficulties in incarcerated settings.

In a groundbreaking study among adult learners in prison, Cassidy et al. (2021) applied the federal definition of dyslexia, which recognizes a person's intelligence as distinct from their difficulty with reading, to identify and intervene with inmates who experience dyslexia. The study reports findings on reading and IQ scores among 145 individually-tested incarcerated men and women in two maximum-security prisons in Louisiana. It indicated that almost half (47%) could be classified as having dyslexia, with 36% determined proficient readers and 17% determined to have cognitive impairment. Equally important as these indicators was the self-reported data the adult learners involved in the study provided about

their prior educational experiences, shedding light on the rarely discussed trauma of schooling for learners who struggle with reading. Over half of the participants reported that they had been expelled from school, with significant majorities of 61% and 84% who had failed or repeated a grade and dropped out of school, respectively (Cassidy et al., 2021). This study makes clear the need to integrate reading strategies and supports that are specifically designed for adult learners with dyslexia.

The high prevalence of dyslexia among adult learners in prison has been attributed to inadequate education access, reduced language use in family life, and quitting school before completion because of academic and behavioral issues (Cassidy et al., 2021). Significant efforts are now underway to improve methods for diagnosing and treating dyslexia, including at the federal level. For example, in 2018, the First Step Act (FSA) was the first major criminal justice reform to recognize the need to identify and support adult learners with dyslexia as part of a broader effort to reduce recidivism by improving access to evidence-based educational and rehabilitative programming for justice-impacted individuals.

Dyslexia at its core is a difficulty with word reading (Sabatini, 2022). The primary cause of dyslexia is now linked to variations in functioning in the areas of the brain that deal with language processing, speed, short-term memory, auditory or visual perceptions, speaking, and related motor skills (Ahire et al., 2022). With a deeper understanding of what dyslexia is and how it impacts the whole learner, researchers, educators, and technology developers are now working together to improve reading outcomes for this significant population of adult learners. Technology is not

only changing the way we understand and identify dyslexia, but how we design targeted interventions to specifically support learners with dyslexia. Assistive technology, such as text-to-speech software, has been shown to improve comprehension. Preliminary studies reveal that the word-level scaffolding found in Noah Text® has been shown to build confidence, fluency, comprehension, and orthographic mapping for adults with dyslexia in incarcerated settings (Michigan State University in conjunction with New Century Education Foundation, 2021b).

What is Noah Text®?

Based on the science of reading, Noah Text® is a patent-pending method for adapting text to improve reading fluidity for learners with dyslexia. It was developed by researcher Sarah K. Blodgett, whose son struggled with reading. Noah Text® aims to improve text accessibility at the word level, building critical writing-sound pattern awareness. The tool provides visual cues to make clear the connections between written language and sound in a given text. Noah Text® provides visual scaffolding at the word level that allows readers to see the sound parts within a word in order to improve decoding and enunciating skills. It does so by highlighting syllables and long vowels to ease reading fluency while keeping the words fully intact. It guides the reader toward predictable

patterns in English, which is a largely unpredictable language given the pervasive differences between spelling and speaking. As any reading or English teacher can attest, English is not always phonetic, making it difficult even for native speakers to learn to read and write. Consider the words "though" or "receive." Noah Text® recognizes language patterns to facilitate reading, and over time, the patterns become more intuitive. Noah Text® appears to remove the typical stumbling blocks that struggling readers most often encounter with multisyllabic and/or difficult-to-pronounce words.

Opportunities to Support Reading Fluency for Adults with Dyslexia Using Noah Text®

Reading with Noah Text® is said to be intuitive for learners with dyslexia. Adult educators in and outside of correctional education settings can test the effectiveness of this tool with adult learners who struggle with reading, especially those who experience dyslexia. To generate a reading passage in Noah Text®, educators can convert plain digital text into Noah Text® using the free online StrongReader™ Builder conversion tool via https://noahtext.com/. The tool adapts the text into Noah Text®, creating a more readable version that enables learners to see critical orthographic

Figure 1
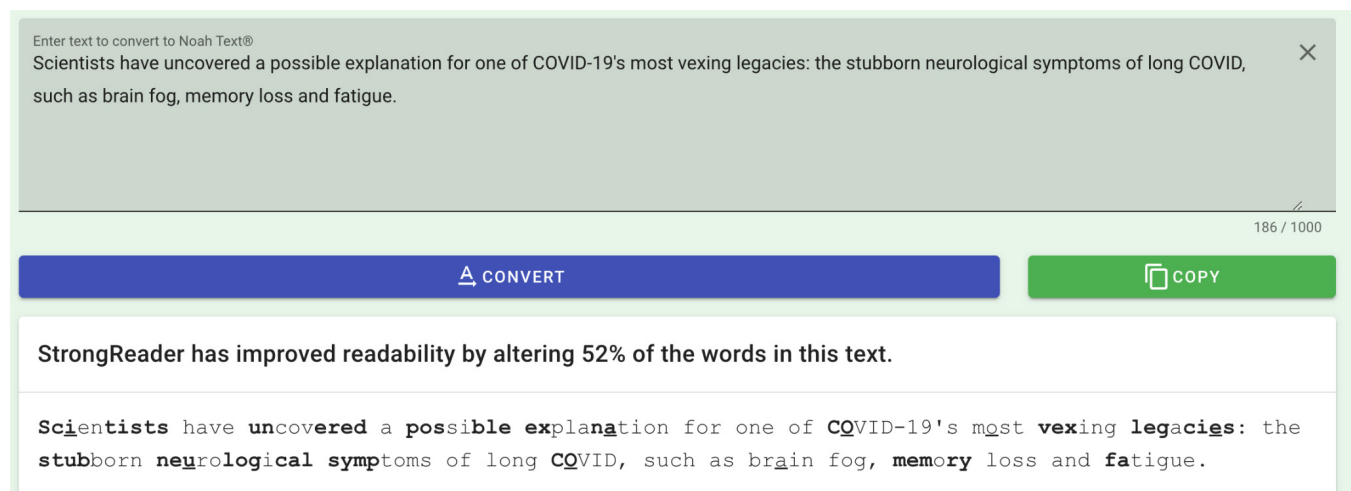
For adult learners with dyslexia, there are multiple factors that impact their reading and learning experiences. Adult educators can use Noah Text® as a conversation starter to better understand the experiences and perceptions of adult learners with dyslexia and support the whole learner.

sound patterns (rimes, syllables, long vowels) to help facilitate the mapping of letter to sound. This word-level scaffold is particularly helpful for learners with dyslexia. To support reading fluency and comprehension for learners with dyslexia, educators might provide a digital or printed version for learners in Noah Text®.

Imagine that you are working on a science or health-related unit with adult learners and want to read and discuss an article about long COVID. Consider the example above. At the top of Figure 1, you can see the topic sentence from an article about long COVID in plain text, "Scientists have uncovered a possible explanation for one of COVID-19's most vexing legacies: the stubborn neurological symptoms of long COVID, such as brain fog, memory loss and fatigue" The text was copied and pasted into the conversion tool to generate the same sentence in Noah Text®. Theoretically, reading this format can aid visual processing and remove stumbling blocks that learners with dyslexia often encounter when reading.

Preliminary Research Using The Noah Text®-New Century Program with Adults in Incarcerated Settings

Since Noah Text® launched in 2016, the technology tool has been continually studied through a collaboration with New Century Education Foundation, a nonprofit that designs, develops, and distributes educational software products for students with special needs, and researchers at Michigan State University. As part of this work, the team developed a set of lessons that use Noah Text®, the word-level scaffolding, throughout the curriculum, a chapter-book based online reading instructional product designed to support essential skills and strategies in word identification (syllabication, segmenting, blending, orthography), morphology, vocabulary, comprehension, and written response to literature. The content used in New Century's lessons comes from young adult books that were also developed by Sarah K. Blodgett and published in Noah Text®. Several pilot studies have been conducted on the effects of The Noah Text®-New Century program on learner reading gains by researchers at Michigan State University in partnership with New Century Education Foundation, including reading gains among adult learners with dyslexia who are experiencing incarceration.

The team found significant gains in reading fluency, comprehension, and vocabulary from a pilot study of 14 male adult learners in a Louisiana prison. In 2 months, all 14 of the adult learners (11 designated as having reading disabilities and three identified as English language learners) demonstrated gains in oral reading proficiency in plain text. Vocabulary scores were shown to improve by a mean of 13% from pre- and post- tests also in plain text. Finally, adult learners achieved an average of an 11-point gain on the TABE Language and Reading Test in plain text. According to Blodget et al. (n.d.), the word-level scaffolding found in Noah Text® builds confidence, fluency, comprehension, and orthographic mapping through application and transfer. Researchers noted that some students who were part of the Noah Text®-New Century program pilot project were even qualified to take and pass their high school equivalency exam in English (Michigan State University in conjunction with New Century Education Foundation, 2021a).

The research team at Michigan State University make clear that this digitally-mediated reading intervention has shown to be most effective among adult readers who start between a third and seventh grade reading level (with scores of 480-550 on the TABE Reading subtest). Among adult learners within that range, results have consistently shown reading improvements, including increased confidence in reading proficiency. Preliminary research also revealed increases in stamina and confidence while building overall reading skills that has been shown to transfer to plain text reading that is not in Noah Text® (Michigan State University in conjunction with New Century Education Foundation, 2021a). The transfer to plain text reading is among the most significant findings, though the mechanisms for those gains are still being studied. The research team continues to explore pilot studies to examine the effects of The Noah Text®-New Century Program intervention on more adult learners in incarcerated settings, including women.

Limitations to The Noah Text®-New Century Program

While initial results on the effectiveness of The Noah Text®-New Century Program for adult learners with dyslexia are promising, findings may not be generalizable to all adult learners, especially learners with emerging

reading skills. Another limitation is the dearth of reading material available in Noah Text®. At this point, there are several novels available through The Noah Text®-New Century Program, but there are limited non-fiction materials across subject areas and literary genres. It is important to note that this program is designed to be a supplementary intervention, rather than a full reading curriculum for learners with dyslexia. Educators still need to make decisions about when and how to integrate the digitally mediated reading intervention with adults who have dyslexia. Finally, the New Century-Noah Text® model is not computer-adaptive. All adult learners move through the same program without the ability to increase or decrease reading difficulty. One area worth exploring would be the integration of this program with other reading programs or technologies designed to measure reading comprehension, such as eye-tracking tools (Meziere et al., 2023).

Conclusion

According to data from the U.S. Department of Justice (n.d.), more than 10,000 individuals are released from state and federal prisons *every week* across communities in the United States, and approximately two-thirds of returning citizens are rearrested within 3 years. This cycle of crime negatively affects the individuals involved, their families, and their broader communities (Steurer, 2020). Studies repeatedly show that participating in educational programs while incarcerated reduces recidivism, indirectly resulting in reductions in crime, taxpayer savings, and positive multi-generational impact for families (Steuer, 2020). Beyond statistics, engagement with prison education has also been shown to improve the overall well-being of individuals in incarcerated settings, leading to increased self-perceptions, academic resilience, and personal development (Baranger et al. 2018). Leveraging digital tools, such as The Noah Text®-New Century Program, has the potential to enhance multiple areas of reading, and even more importantly for adult learners with dyslexia in incarcerated settings, build reading confidence, self-esteem, and increased motivation for lifelong learning. In corrections, access to consistent, high quality literacy support remains a challenge, despite the well-documented benefits to individuals and communities. Using technology can increase participation in literacy-skill building activities for adult learners in incarcerated settings and broaden the impact of educational and rehabilitative programming.

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