Tennessee Association for Childhood Education International

International Journal of the Whole Child

Volume 10, Number 2
August 2025 – December 2025
ISSN 2474-297X

International Journal of the Whole Child

International Journal of the Whole Child

Table of Contents

Volume 10 Number 2 2025

Introduction

This Fall issue provides readers with insight on the implications of cell phone bans in school, the impact of children growing up in digital world, and how school counselors can support AI literacy in rural school districts. Moreover, readers will have the opportunity to explore the outcomes of an eight-grade math acceleration program that is supported MTSS and understand the numerous definitions of play. Lastly, readers will experience the benefits of connecting art and social emotional literacy in an afterschool program and the power of inclusion for middle school students of color and first-generation immigrants. The International Journal of the Whole Child continues to be committed to promoting holistic learning and the development of the whole child.

Article #1:
Predictors and Outcomes of Eighth Grade Math Acceleration in a Florida District
Sara Comella, Garret J. Hall

The authors investigate a math acceleration program that is supported by the diamond multi-tiered system of support (MTSS) model which provides interventions and strategies for academic, behavior, and mental health challenges in a Florida School District. Outcomes are discussed.

Tech Talk
Balancing Benefits and Barriers: Exploring the Impact of School Cellphone Bans on Student Engagement, Well-Being, and Learning
Leslie Trail, Nancy Caukin

The authors examine the benefits and challenges of cell phone bans policies on students, parents, and teachers. Positive outcomes of cell phone bans discussed include students spending more time reading for pleasure, increased physical activity, more free play, and reduced classroom distractions and cyberbullying. On the contrary, cell phone ban policies were challenging because students rely on phones for academic functions such as multifactor authentication for dual enrollment courses and teachers face the strain of enforcing bans. Lastly, some scholars argue that there is insufficient evidence to suggest that banning cell phones will achieve all that is hoped.

Science, Technology, Engineering, Art, and Mathematics: STEAM
Children Growing Up Digital: Applying Bronfenbrenner's Ecological Systems Theory to Technology and Play
Jennifer Sullivan

The author investigates the impact of digital technology on childhood development through the lens of Bronfenbrenner's Ecological Systems Theory and his later bioecological model. As

children grow up immersed in digital environments, their experiences of play, learning, and relationships are increasingly shaped by technology. The author examines how each layer of Bronfenbrenner's model (microsystem to chronosystem) is influenced by digital integration, highlighting both the benefits and risks of "technologized" childhoods. While technology offers opportunities for creativity, collaboration, and inclusion, it also poses challenges to traditional play, social-emotional development, and cultural diversity. Moreover, the author advocates for a balanced approach that preserves essential elements of unstructured, sensory-rich play while embracing the educational and developmental potential of digital tools.

Families and Children: Health and Wellness

From Access to Empowerment: School Counselors Supporting AI Literacy in Underserved K–8 Communities

Tyreeka Williams, Michael Brooks, Maylee Vazquez, Shirlene Coopwood

The authors examine a strategic plan for K-8 school counselors to promote AI literacy and career readiness among underserved student populations. As AI continues to rapidly transform K-8 education, access to AI literacy resources remains limited for underserved communities in rural areas. The lack of exposure to AI for students will juxtapose the mission and vision of the school counselors' role in adequately preparing students for socio-emotional, academic, and career success, thereby widening existing educational gaps and inequities.

Play: Development, Learning, Therapy

Embedding Mental, Behavioral Health and Social Emotional Literacy Services into an After Care Program

Jacob Womack, Jennifer Bearden, Susan. Elswick, Corey Latta, Marissa Gray, Jerry Watson, Gregory Washington, Bridgette Okunmokun

The authors discuss emotional literacy and its relationship to the arts. By combining mental health, behavioral health, SEL, and an art program in an aftercare program, children were provided avenues for self-expression, to increase emotional literacy, to process trauma, and to reduce aggressive and depressive symptoms.

Education by the Numbers

Use of AI in Education

Donald Snead

The author discusses AI in K-12 Education. The data details how AI is commonly used and the attitudes that teachers and students have toward AI utilization in K-12 education.

Education: Words and Meanings

Exploring the Term: "Children's Play"

Sandra Stone

The author discusses the various meanings of children's play, the importance of play, and the power of play. Moreover, the author highlights how understanding these various meanings can help families, caregivers, and educators can support the holistic development of children.

Pictures for Reflection

Nature: A Holistic Experience

Kathleen Burriss, Larry Burriss

The authors express the need to incorporate feelings and emotions to holistically experience nature.

Page Turners: Books for Children

Katrina Bartow Jacobs, Carla K. Meyer, Michelle J. Sobolak, Patricia Crawford, Maria Genest

In this article, different children's books are listed with descriptive summaries on each one. The books include: *Almost Underwear: How a Piece of Cloth Traveled from Kitty Hawk to the Moon and Mars*; *And There Was Music; Buffalo Fluffalo; Luigi the Spider Who Wanted to be a Kitten; No More Chairs; Orris and Timble: The Beginning; A Mischief of Mice; Home.*

Emerging Scholars

Beyond Inclusion: A Conceptual Framework for Cultivating Authentic Belonging for Middle School Students of Color and First-Generation Immigrants

Tzu Yu Cheung

For middle school students of color and first-generation immigrants, the author advocates for an understanding of belonging as more than mere inclusion or representation, but rather an active and intentional cultivation of an environment where students' identities are not merely seen, but rather, affirmed as integral to the learning process. Representational Belonging (curriculum and environments), Pedagogical Belonging (instructional practices), and Relational Belonging (teacher-student and peer relationships) are synthesized and implications for practice are discussed.

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Predictors and Outcomes of Eighth Grade Math Acceleration in a Florida District

Sara Comella[a], Garret J. Hall[b]
[a-b]Florida State University

Sara Grace Comella is a fourth-year doctoral student in the Combined Counseling and School Psychology Program at Florida State University. She originally earned her Bachelor of Arts in Psychology at Bellarmine University and a Master of Science in Psychological Science from the University of North Florida. Sara is passionate about partnering with children, families, and school staff to support comprehensive mental health care and promote academic success.

Garret Hall, PhD is an Assistant Professor of School Psychology at Florida State University. His research focuses on assessment, prevention, and intervention in academic, cognitive, affective, and behavioral domains as well as quantitative methods and psychometrics.

Predictors and Outcomes of Eighth Grade Math Acceleration in a Florida District

Students who take higher level math coursework during high school have increased chances of entering a four-year college or university, specifically in the science, technology, engineering, and mathematics (STEM) related fields (Miller 2012; Schneider et al., 1990). Students demonstrating exceptional mathematics performance are often encouraged to take algebra during Grade 8, setting them on a pathway to complete higher-level college-level mathematics coursework in high school (Clotfelter et al., 2015; Dougherty et al., 2017; McEachin et al., 2020; Penner et al., 2015). For several decades, there has been a nationwide push to increase student enrollment in advanced math coursework during middle school (Loveless et al., 2008). The impacts of math acceleration in Grade 8 (e.g., taking algebra or higher by Grade 8) has demonstrated heterogeneous effects across studies, with some demonstrating unintended negative consequences of acceleration (e.g., Clotfelter et al., 2015; Penner et al., 2015) compared with positive long-term impacts to math performance and even English language arts (Rickles, 2013; McEachin et al., 2020). Moreover, the relations of acceleration to later achievement may vary considerably across schools as acceleration decisions may be somewhat dependent on contextual factors that shape individual schools' decision-making criteria (McEachin et al., 2020).

Algebra has long been viewed as a "gatekeeper" to future educational and economic opportunities, though there is mixed evidence for the success of policies instituting college preparatory math requirements early in high school (Allensworth et al., 2009; Nomi & Allensworth, 2009) or earlier (Clotfelter et al., 2015). Importantly, the impacts of math acceleration may largely depend on students' exposure to high-quality pre-algebra coursework; uniform requirements for all students to take algebra in Grade 8 may fall short of their intended consequences because this coursework does not make up for instructional and performance gaps

preceding Grade 8 (Penner et al., 2015). These potential issues facing math acceleration programs can be framed within the diamond multi-tiered systems of support (MTSS) model (Green et al., 2013), which emphasizes tiered strategies of enrichment for students' strengths in addition tiered intervention and prevention strategies for academic, behavioral, and mental health difficulties. High-quality core mathematics coursework throughout middle school is necessary to increase the likelihood that students are successful within accelerated programs and not inadvertently discouraged from enrichment coursework. By viewing math acceleration through this diamond approach that emphasizes prevention and enrichment for all students (Bianco, 2010; Green et al., 2013; Robertson & Pfieffer, 2016), it may possible simultaneously shore up the lower tails of the achievement distribution by providing tiered preventative and remedial supports while also promoting tiered enrichment for students demonstrating excellence beyond the core curriculum expectations (Rollins et al., 2009).

Nevertheless, increased Grade 8 algebra opportunities may reshape not only average performance but the distribution of performance, particularly by lowering performance at upper quantiles of math performance (Penner et al., 2015). However, Penner et al., (2015) note that these results may stem from short-term disruptions of typical practices, which further emphasizes the need to carefully attend to the system-wide practices in place when implementing large curricular changes. The authors highlight that system-wide impacts (e.g., improved average math performance) often do not emulate the impacts on a given individual (e.g., an individual student being accelerated). These findings are important in light of framing acceleration as a form of MTSS given that efforts to substantially reform course taking opportunities or criteria to accelerate may not reveal immediate and uniform short-term benefits, but this may be a byproduct of the implementation process rather than the curriculum itself.

Algebra in Grade 8 and Achievement Outcomes

According to the National Center for Educational Statistics, approximately 26% of students during the 2020-2021 school year took algebra I in Grade 8. Since 2023, the percentage of students taking algebra during Grade 8 has remained relatively stable but has decreased to 24% (National Center for Education Statistics, 2025). Evidence from the Trends in International Math and Sciences Study indicated that with students from the United States in Grade 8, performing below average, falling behind 21 other countries (von Davier et al., 2024). Moreover, despite economic affluence in the United States and more districts pushing to enroll students in these higher-level math courses during Grade 8, there are present difficulties with student achievement. However, by providing opportunities for math acceleration earlier in middle school to high-achieving students, schools provide an additional mechanism to attain college preparatory achievement benchmarks earlier in schooling (Dougherty et al., 2015).

Several patterns consistently emerge regarding students who are successful in Grade 8 Algebra. These patterns typically include a combination of academic, socio-economic, behavioral, and institutional factors (Stein et al., 2011; Loveless, 2008; Hattie, 2009). Loveless (2008) found that the students who were successful in Grade 8 Algebra were more likely to come from suburban or rural White and affluent families. However, California's recent efforts to reduce racial disparities in math coursework demonstrate potential unintended consequences in more advanced coursework (Huffaker et al., 2023). For example, Peters and Cater (2023) found that

Black and Hispanic students and students from low-income households have lower enrollment in accelerated math courses, despite these courses being offered. External factors such as teacher educational level and teaching experience and school district access to enrichment opportunities are outside the students' control but related to access to algebra coursework in Grade 8 and successful completion of the course (Burris et al., 2004; Peters & Carter, 2023).

Evidence on impacts of math acceleration in middle school from a large, southeastern public school district demonstrated that a quantitative acceleration criterion in middle school increased the number of students projected to meet algebra benchmarks by Grade 8 and also reduced the relation between student demographic characteristics and acceleration opportunities (Dougherty et al., 2015). However, studies of acceleration enrollment patterns and acceleration impacts have also not traditionally attended to the between-school variation in enrollment patterns and acceleration outcomes. McEachin et al. (2020) demonstrated noticeable between-school variation in Grade 8 algebra impacts to subsequent high school math and ELA achievement.

A key feature of Dougherty et al. (2015) and McEachin et al. (2020) is the use of regression discontinuity designs, which leverage a strict quantitative criterion for Grade 8 math acceleration and allows a clearer inference (at the score cutoff) acceleration impacts to later achievement. The stringency with which districts adhere to quantitative criteria to determine acceleration may vary across school contexts for myriad reasons, resulting in other systematic and random factors affecting decisions of teachers, parents, and school administrators to recommend students' acceleration in math, even if they meet quantitative criteria. Indeed, Dougherty et al. (2015) demonstrated that stricter quantitative criteria for acceleration reduced racial-ethnic acceleration opportunity gaps. Districts with strict adherence to these acceleration cutoffs lend themselves to clearer causal evaluation of acceleration's impact on math achievement, but noncompliance with acceleration criteria muddies the impact of acceleration on achievement. Substantial between-school variation within a district may compound the complexity of understanding how schools fare in promoting students' success in math acceleration (and for whom) at the system level.

In the context of a diamond MTSS approach, the criteria for acceleration can have an important impact on how resources are allocated toward enrichment opportunities, much like intervention entry/exit criteria for Tier 2 or 3 intervention. Within a district, strict acceleration cutoffs may result in stability of the proportion of accelerated students if achievement levels remain somewhat stable over time. The use of more qualitative factors in combination with achievement cutoffs to determine acceleration may have some advantages, such as promoting students who may not perform as well on achievement measures but otherwise demonstrate exceptional mathematical thinking skills. The downside of this is that there is less predictability in accelerated math placement and the process may involve too much subjectivity, which could result in students ending up in acceleration courses that may not demonstrate the requisite skills, which can strain the tiered enrichment system. Students who were otherwise eligible may also not be accelerated.

In addition, instructional quality within accelerated courses is important to ensure that these opportunities are incentivizing for students and encourage their persistence in advanced coursework. Evidence from a recent Grade 9 Algebra de-tracking study (Dee & Huffaker, 2024) indicated that providing differentiated support for low-performing students enrolled in Grade 9

algebra resulted in markedly higher math achievement later in high school. Earlier enrichment opportunities like math acceleration can be successful for a wide range of students with proper differentiation of instructional strategies and content, which is particularly necessary if districts opt to implement requirements for more eighth graders to take Algebra (or higher). Appropriate differentiation may also be necessary to ensure that students of a variety of backgrounds with potentially heterogenous prior math courses are able to successfully access the core Algebra curriculum.

The Current Study

The current literature on Grade 8 math acceleration into algebra coursework suggests that impacts are likely heterogenous and attributable to numerous contextual factors, including instructional context and course availability throughout elementary and middle school as well as the type of acceleration criteria used (e.g., strictness of prior achievement criteria). However, there remains a gap in understanding who receives access to acceleration opportunities in lieu of strict achievement cutoffs and, thereby, the likelihood of meeting achievement benchmarks in accelerated math relative to grade-level math coursework.

In the current study, we examined math acceleration enrollment patterns based on student demographic characteristics as well as the relation between math acceleration enrollment in Grade 8 to the attainment of end-of-year achievement benchmarks. We use data from 30 middle schools and approximately 3,500 students in a Florida district to investigate these patterns with particular attention to the between-school variation in acceleration patterns and achievement. We address the following exploratory research questions:

> **Research Question 1 [RQ1]:** Is there demographic variation in accelerated math placement and to what extent does this vary across middle schools within the school district?
>
> **Research Question 2 [RQ2]:** What is the relation between placement in a math acceleration course (algebra or geometry) in Grade 8 and meeting Grade 8 end-of-year achievement benchmark?

Method

Sample and Procedure

The current sample included 3,470 Grade 8 students from 30 middle schools in a large, suburban Florida school district. Sample demographic factors are reported in Table 1. Deidentified data were shared with the authors by the school district. The authors' institutional review board determined this study did not meet criteria for human subjects research.

Table 1

Sample Demographic Characteristic Percentages.

Female	48.44%

White	59.33%
Hispanic	21.72%
Black	6.62%
Asian	6.58%
Multiple Races/Ethnicities or American Indian or Pacific Islander	5.28%
English Learner	8.49%
Has IEP	17.74%
Eligible for Free/Reduced Price Lunch	33.17%

Note. Racial/ethnic indicator names are those provided in the district data. IEP = individualized education plan.

We define two comparison groups to examine RQ 1: *unaccelerated students* (*n* = 1,507) and *accelerated students* (1,963). Unaccelerated students consisted of eight graders who scored 3 (out of 5) or higher on the prior year (2022-23) state summative math assessment (Florida Assessment of Student Thinking (FAST) but did not take any algebra or geometry in 2024. The FAST system provides coordinated screening and progress monitoring to assess how well students are mastering the state's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards (Figueroa, 2025). Accelerated students consisted of those that attained a 3 or higher and did take algebra or geometry in 2024. In Florida, schools are provided an acceleration "score" that reflects the proportion of students that attain a 3 or higher on the end-of-course (EOC) assessments in accelerated math (*acceleration numerator*) over the total number of students in acceleration courses (*acceleration denominator*). Schools with a larger share of students successful in math acceleration will receive higher acceleration scores from the state department of education. For RQ2, we use a slightly smaller sample size due to differences in eligibility for end-of-year summative assessment.

Measures

Outcome. The math achievement measures in this study include either (a) FAST Math or (b) End-of-Course (EOC) assessments. As noted above, the Grade 8 acceleration criterion is based on prior year FAST Math scores (scoring ≥3 out of 5). We used observed accelerated course enrollment in Grade 8 as the outcome for RQ1.

Once students are in an accelerated math course, they take the EOC for that specific course, which also result in an achievement level ranging from 1-5. Students who do not take an accelerated math course in Grade 8 take FAST Math, which again provides the same achievement levels. In addition to the math acceleration score, Florida Department of Education (FLDOE) defines an achievement score for schools that consists of the number of students scoring ≥3 on FAST Math or the EOC (numerator) over the number of students taking FAST or EOC in the school (denominator). As a result, the *achievement numerator* serves as a key indicator for districts and schools in judging students' success on their respective summative assessments (Florida Department of Education, 2024). Following from this, for RQ2, we use the *achievement numerator* as the primary outcome in this study (1.7% of students were not in the achievement denominator and thus not eligible to be in the numerator, resulting in an analytic sample of 3,411). In other words, we are interested in whether taking accelerated math in Grade

8 makes it more likely that a student reaches the state achievement numerator criterion on their respective assessments (Algebra or Geometry EOC or Grade 8 FAST Math).

Predictors and Covariates. For RQ1, our predictors include the demographic characteristics listed in Table 1, Grade 7 FAST Math score, and Grade 7 FAST Math Grade Level (because some students in Grade 7 were taking either above- grade FAST [Grade 8] or on-grade FAST [Grade 7], which also accounts for prior likelihood of acceleration if students were already taking above-grade math in prior years).

For RQ2, the primary predictor is students' acceleration status (enrolled in accelerated math or not). For RQ2, we also adjust for background demographic characteristics, prior (Grade 7) achievement, and prior FAST grade level.

Analytic Plan

RQ1

For RQ, we used the following multilevel logistic regression model:

$$\log\left(\frac{p(Accelerated\ Math_{ij})}{1-(p[Accelerated\ Math_{ij}])}\right) = \beta_0 + \beta_1 FRL_{ij} + \beta_2 Race/Ethnicity_{ij} + \beta_3 EL\ Status_{ij} + \beta_4 Female_{ij} + \beta_5 SwD_{ij} + \beta_6 Prior\ FAST\ Math_{ij} + \beta_7 Prior\ FAST\ Grade\ 8_{ij} + u_{0_j} + u_{X_j} X_{ij} + e_{ij} \quad (1)$$

In this model, we estimate the log of the odds of student *i* being placed in accelerated math in Grade 8 in school *j* in as a function of binary demographic factors (β_{1-4}), disability status (β_6) prior FAST Math standardized scores (β_6), and binary prior FAST Math grade level (β_7). β_2 actually comprises five separate coefficients, each representing one demographic factor with White (and a small number of Pacific Islander students) serving as the reference group. u_{0_j} represents the between-school variability in the proportion of students in algebra/geometry (i.e., the random intercept). We allow all predictors to vary across schools as random slopes, which we indicate as $u_{X_j} X_{ij}$, where *X* represents the vector of predictors that vary across schools *j*. e_{ij} is the latent scale of the logistic function. All predictor variables were school mean-centered in order to yield within-school estimates of each predictor (Hoffman & Walters, 2022).

RQ2

For RQ2, we used the following model (Model 2):

$$\log\left(\frac{p(In\ Numerator_{ij})}{1-p(In\ Numerator_{ij})}\right) = \beta_0 + \beta_1 Alg/Geo_{ij} + \beta_2 FRL_{ij} + \beta_3 Race/Ethnicity_{ij} + \beta_4 EL\ Status_{ij} + \beta_5 Female_{ij} + \beta_6 SwD_{ij} + \beta_7 Prior\ FAST\ Math_{ij} + \beta_8 Prior\ FAST\ Grade\ 8_{ij} + u_{0_j} + u_{1_j} Alg/Geo_{ij} + e_{ij} \quad (2)$$

The predictor Alg/Geo_{ij} is a school-mean centered binary indicator of whether a student *i* in school *j* was enrolled in algebra or geometry in Grade 8. We also added the school random slope term $u_{1_j} Alg/Geo_{ij}$, which estimates the between-school variability in the relation of algebra/geometry to numerator status.

This modeling approach differs substantially from prior studies employing regression discontinuity designs (RDD; e.g., Dougherty et al., 2017; McEachin et al., 2020). In the current study, acceleration did not depend on a sharp cut score of prior achievement, and the lack of adherence to a cut score was too strong to justify a fuzzy RDD approach that accounts for noncompliance to the cut score. As a result, we take a more standard regression approach that adjusts for demographic factors that may be related to the probability of being accelerated and the probability of reaching the achievement criterion at the end of Grade 8.

Model Interpretation

Because these Models (1) and (2) are multilevel, they include estimates of relations that reflect the average within the sample as well as between-school variability in relations. We quantify between-school variability in relations using random slopes that are included in Models (1) and (2), which allow us to estimate relations for specific schools in addition to the overall sample average estimate.

We used Bayesian estimation for models (1) and (2) (Kaplan et al., 2023) in the `brms` R package (Bürkner, 2017). Bayesian methods allow the incorporation of prior distributions into the model estimation process (i.e., distributional constraints placed on model parameters based on prior information; Kaplan, 2023). In our case, we used weakly information priors for each log-odds regression coefficient by placing a normal distribution prior of ~*N*(0, 3) on each fixed effect regression parameter (fixed, or constant, effects are the average regression parameters across all upper-level [i.e., schools] units). This merely implies that coefficients closer to 0 are somewhat more likely than those at the tails (e.g., </> +/- 6). We used the default priors of ~ *half-t* (3, 0, 2.5) for random effects, which is a general weak prior for random effects (Bürkner, 2017).

We applied Bayesian methods for practical convergence reasons as well as the interpretation advantages over traditional maximum likelihood estimation (MLE). Fully Bayesian multilevel modeling is advantageous because it facilitates convergence of more complex models by "feeding" the model with additional parameter information contained in prior distributions (compared to MLE that estimates all model information based only on the available data). Bayesian estimation also results in intuitive estimates of parameter uncertainty in the form of posterior distributions and credible intervals. This facilitates more straightforward and flexible interpretation of posterior estimates compared to *p*-values that emphasize only statistical "significance" rather than the full breadth of parameter uncertainty.

We report key parameter estimates with their average estimate, their posterior standard deviation (*p*SD) and the 95% credible interval (this interval value is arbitrary but is used for convention; McElreath, 2020). For fixed effect parameters (i.e., the average parameter estimates across all schools), we also present an estimate of the percentage of posterior estimates that fall in the *region of practical equivalence* (ROPE; Kruschke, 2018), which we calculated using the

bayestestR package (Makowski et al., 2019). The percentage of posterior estimates that fall inside the ROPE (-0.18 – 0.18 in log-odds, a typical ROPE range for logistic regression coefficients; Kruschke, 2018) can provide one indication of the certainty that an estimate is equivalent to 0 or not (we use the 89% highest density interval [HDI] for all ROPE calculations, which is the ROPE default in bayestestR). Given the exploratory nature of the study and the desire to be more conservative in our inferences, we defined any log-odds estimates in which the 95% credible interval includes 0 (1 for odds ratios) as not detectably different from zero. However, it is not necessary to bifurcate statistically significance in Bayesian analyses (Kruschke, 2018), so the percentage of estimates in the ROPE can be used in conjunction with credible intervals to understand the broader range of uncertainty in the parameter estimates when using different posterior interval methods and widths (89% HDI and 95% CI).

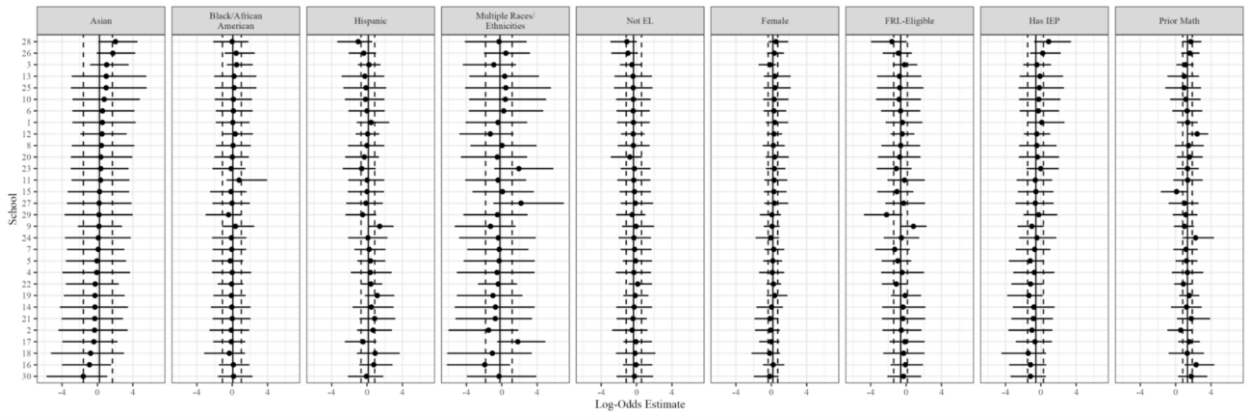
Results

RQ1

The results of this regression analysis are presented in Table 1 and Figure 1. When we adjust for prior FAST grade level, the only statistically detectable predictors of math acceleration are prior FAST Math performance and prior FAST grade level. Scoring 14 points higher (1 standard deviation) on FAST Math in the prior year corresponds to being about 3.5 times more likely to be in accelerated math even when students have the same demographic characteristics and had the same FAST grade level. However, the strongest predictor of acceleration was whether a student was already accelerated (adjusting for their prior math achievement). Previously accelerated students were >100,000 times more likely to be in accelerated math in Grade 8.

Figure 1

Model 1 Constant and School Varying Effect Estimates of Demographic Factors Predicting Math Acceleration



Note. School-specific estimates ordered by magnitude of first panel. FRL = free/reduced price lunch, IEP = individualized education plan, EL = English learner. Prior math is the FAST score Grade 7. FAST grade level coefficient (the grade level of the FAST assessment the student took) not displayed. Race/ethnicity coefficients are relative to primarily White students and a small number of American Indian or Pacific Islander students. School numbers are random.

Between-School Variation

In Figure 1, we present school-specific log-odds estimates from the multilevel model for each demographic factor and prior math scores. The vertical lines in Figure 1 represent the sample-average estimates (solid line) and 95% credible interval range (dotted lines). Some demographic factors have substantially more between-school variability in their estimates. There are few instances in which a school-specific demographic estimate's 95% credible interval does not include zero, indicating that the amount of between-school variation in these predictors is not substantial. The school-specific estimates of prior math are more precise, although the variability in these effects is comparable to other predictors. The narrower credible intervals for prior math results in prior math being a more detectable predictor of enrollment in some contexts but not others. Nevertheless, no prior math school-specific estimates are substantially different from the average estimate.

RQ2

For the second research analysis, we examined if it was more likely that accelerated students in Grade 8 would score ≥3 on the respective assessments (EOC or FAST). We estimated two versions of Model 2: the model presented previously (Model 2a) as well as a model that removes prior math performance and math grade level. Table 2 provides the log-odds and odds ratio coefficients for the two models. In the model that adjusts for prior FAST Math performance (Model 2a), accelerated students were not substantially more likely to obtain ≥3 on their EOC than students in grade-level math taking FAST (b = 0.46, pSD = 0.35, 95% CI = -0.21 – 1.15, OR = 1.58). Twenty percent of the 89% HDI of this estimate falls in the ROPE; however, math acceleration demonstrates some potential multicollinearity with prior FAST grade level (i.e., those who were already accelerated remain accelerated), so this ROPE estimate is not accurate (Kruschke, 2014). This estimate has 91% chance of exceeding zero given a pSD of 0.35; however, the 95% CI substantially covers 0, so the estimate does not meet the desired level of certainty.

Without adjusting for prior FAST Math and math grade level, the likelihood that accelerated students scored ≥3 is substantially larger (b = 1.12, pSD = 0.19, 95% CI = 0.84 – 1.41, OR = 3.06). Accelerated students are already by definition higher-performing, so when prior performance is not adjusted, they are noticeably more likely to score ≥3 on their EOC than students in grade-level math who take FAST. The 95% interval of this effect falls 100% outside the ROPE.

Table 2
Multilevel Logistic Model Parameters for Predicting Algebra/Geometry Enrollment in Grade 8

			95% Credible Interval			
Parameter	Estimate	Posterior Standard Deviation	Low	High	Odds Ratio	% Inside ROPE
Model 1						
Constant Effects	Log-odds					
Intercept	3.67	0.80	2.17	5.32	39.25	0.00%
EL	-0.33	0.45	-1.17	0.60	0.72	23.58%
FRL-Eligible	-0.60	0.40	-1.42	0.19	0.55	11.99%
Has IEP	-0.57	0.46	-1.51	0.29	0.56	15.50%
Female	0.18	0.28	-0.38	0.75	1.20	43.76%
Asian	0.24	0.83	-1.60	1.68	1.27	16.32%

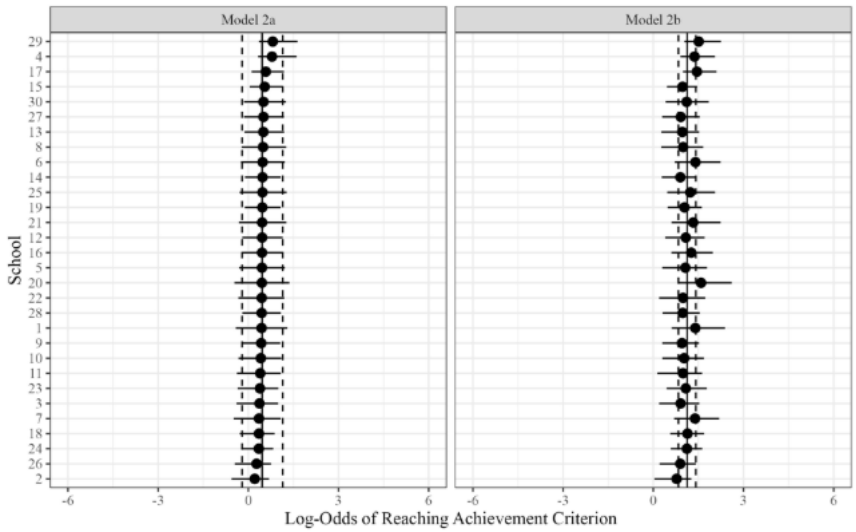
Black	0.05	0.55	-1.13	1.06	1.05	27.53%
Hispanic	0.16	0.40	-0.67	0.91	1.17	33.46%
Multiple Races/Ethnicities	-0.22	0.77	-1.84	1.20	0.81	20.00%
Prior FAST Math (Standardized)	1.34	0.27	0.81	1.87	3.80	0.00%
Prior FAST Math Grade Level	11.82	1.12	9.82	14.19	135495.78	0.00%
Varying Effects	*SD*					
Intercept	3.52	0.64	2.42	4.93		
EL	0.77	0.49	0.05	1.90		
FRL-Eligible	1.13	0.45	0.30	2.08		
Has IEP	1.03	0.55	0.08	2.15		
Female	0.53	0.39	0.02	1.46		
Asian	1.66	0.82	0.21	3.46		
Black	0.81	0.61	0.03	2.26		
Hispanic	1.03	0.46	0.17	1.99		
Multiple Races/Ethnicities	1.94	0.93	0.20	3.93		
Prior FAST Math (Standardized)	0.89	0.33	0.30	1.60		
Prior FAST Math Grade Level	1.31	0.97	0.05	3.59		
Model 2a						
Constant Effects						
Intercept	2.29	0.23	1.84	2.75	9.87	0.00%
Enrolled in Algebra/Geometry	0.46	0.35	-0.21	1.15	1.58	19.58%*
Varying Effects						
Intercept	1.13	0.19	0.81	1.55		
Enrolled in Algebra/Geometry	0.32	0.19	0.02	0.72		
Model 2b						
Constant Effects						
Intercept	1.82	0.19	1.45	2.20	6.17	0.00%
Enrolled in Algebra/Geometry	1.12	0.14	0.84	1.41	3.06	0.00%
Varying Effects						
Intercept	0.94	0.16	0.67	1.30		
Enrolled in Algebra/Geometry	0.38	0.18	0.05	0.75		

Note. ROPE = region of practical equivalence using 89% highest density interval of posterior distribution. White students (in addition to a small percent of American Indian or Pacific Islander students) are the race/ethnicity reference group. EL = English learner, FRL= free/reduced lunch, IEP = individualized education plan.

Between-school Variation

Table 2 provides the estimates of $u_{1_j} Alg/Geo_{ij}$ (school varying effect $\beta_1 Alg/Geo_{ij}$), and Figure 2 school-specific log-odds estimates $\beta_1 Alg/Geo_{ij}$ in Models 2a and 2b. In both cases, the lower bound of the 95% CI of $u_{1_j} Alg/Geo_{ij}$ is close to zero, and this is also reflected in the minimal between-school variation in log-odds estimates in Figure 2. Most school-specific estimates are close to the model average estimate, and in Model 2a, most school-specific 95% CIs also cover zero (except for a few), suggesting that there is minimal between-school variability in the relation between acceleration and achievement level.

Figure 2
Model 2a and 2b Constant and School Varying Effect Estimates



Note. School-specific estimates ordered by Model 2a panel. Model 2a corresponds to the Model 2 equation provided in the text. Model 2b removes prior math achievement and prior math grade level as predictors. School numbers are random.

Discussion

The current study expands previous research on math acceleration enrollment patterns by providing new evidence from a large, suburban school district. Moreover, this study builds upon prior research on acceleration enrollment patterns and outcomes by attending specifically to between-school variation in relations between demographics and enrollment as well as the relations of acceleration to achievement level (McEachin et al., 2020). Our findings suggested no detectable relations of demographic factors (race/ethnicity, EL status, disability status, FRL eligibility, or sex) to math acceleration after accounting for prior math performance and students' prior math grade level. This suggests that students who are already accelerated in Grade 7 continue to remain accelerated in Grade 8. Nevertheless, there is a small but robust relation between prior FAST scores and subsequent acceleration, suggesting that despite the substantial stability in accelerated students, prior achievement does predict some mobility in acceleration. However, this varies to some extent across schools, suggesting that in some settings prior math scores carry more weight in acceleration decisions than others (McEachin et al., 2020).

When we adjust for students' prior math performance and prior FAST grade level, accelerated and unaccelerated students have similar odds of scoring ≥3 on their respective end-of-year assessments. Accelerated students may have a slight advantage in odds, but this estimate did not meet our desired level of certainty, and the advantage in odds is quite small (1.58x greater odds). In other words, students with similar prior performance have similar probability of scoring ≥3 on the end-of-year assessment regardless of which assessment and class (algebra/geometry or grade-level math) they took. The between-school variation in this relation is minimal with schools only at the far tails of the distribution showing estimates demonstrably different from the average.

Implications for Applied Research

In this study, we addressed similar research questions as previous work with the added nuance of examining variability of acceleration enrollment and outcomes across schools. Our findings demonstrate that demographic factors were generally not related to acceleration enrollment over and above prior math scores and prior acceleration. However, Grade 8 acceleration is highly downstream as an indicator of math enrichment need. For example, Koon and Davis (2019) used data from Mississippi to demonstrate that Grade 5 math achievement was a stronger predictor of attaining Grade 11 college readiness benchmarks than students' math course-taking patterns through middle and high school. This suggests considerable stability in math attainment across late elementary and middle school. In addition, Hall et al. (2025) demonstrated that math growth between Grades 6-8 demonstrated substantial between-person stability; students that performed high in Grade 6 were highly likely to remain in that relative position by Grade 8. Moreover, there was a small, positive correlation between growth slopes and intercepts, potentially suggesting that students "fan out" across middle school, widening individual differences in math performance. Math growth is highly stable within the school year in Grades 6 and 7 and Fall math performance in each grade also demonstrates a strong correlation with Fall reading performance (r = .7-.8; Clark & Hall, 2025), which indicates general stability in students' achievement at these grade levels. Deceleration of math growth across elementary and middle school is common (Shanley et al., 2016; Shi et al., 2023), further underscoring the increasing between- and within-person stability of math gains as students transition to adolescence.

These developmental trends are key to consider in developing tiered enrichment models parallel to tiered intervention models. With the increasing stability in math performance, students are unlikely to make gains in math competence comparable to that in early elementary years. This is likely due in part to an interaction between typical course-taking pattern mobility in addition to the developmental deceleration during this period where students who are not accelerated early in math are much less likely to be accelerated later in middle school. The stability in acceleration patterns between Grades 7-8 in the current study provide further evidence for this, although students who score 1*SD* higher on prior year state exams are twice as likely to be accelerated. Additional research is needed to understand how MTSS structures for math can both enrich learning opportunities beyond typical expectations while supporting essential grade-level competencies for all students. This is particularly essential in late elementary school as students encounter increasingly higher expectations for prealgebra and rational number competencies, both of which are key predictors of later algebra success (Booth & Newton, 2012; Siegler & Braithwaite, 2017).

Continued investigation of mechanisms to support students within late middle school enrichment is necessary, particularly at the school-wide level, to ensure that adequate supports are in place to promote students' success once they are accelerated (or continue to be accelerated). This may be particularly the case for students who are newly accelerated by Grade 8, who may then be transitioning to assessment on EOC exams instead of typical grade level performance. McCoy (2005) reported that the students with higher success during Grade 8 algebra had teachers who were more experienced in teacher high level concepts, perceived usefulness in mathematics, and were more inclined to motivate students taking math coursework.

Implications for Practice

The current work demonstrates that schools should attend to both the upstream and downstream patterns of acceleration and link tiered enrichment supports across grade levels to ensure continuity in coursework access opportunities. The natural differentiation of math coursework through middle school can easily stabilize course taking patterns that may unnecessarily limit enrichment opportunities. However, the combination of tiered enrichment and alternative math pathways must be implemented carefully in order to avoid disincentivizing students from taking advantage of enrichment opportunities or inadvertently creating more barriers. Large-scale course-taking pathway reforms may not enact the intended disparity-reducing changes (Huffaker et al., 2023). Sources of within-district heterogeneity are key to consider when enacting acceleration policies (McEachin et al., 2023), particularly when considering that system-wide impacts to these policies may not reflect acceleration patterns among individual students (Penner et al., 2015).

Altogether, our current findings suggest that continued tiered math enrichment through middle school with data-based decisions to inform acceleration can provide added opportunities and acceleration mobility even as math gains tend to slow down. Nevertheless, a large share of accelerated students are likely exposed to those enrichment opportunities much earlier than the end of middle school. Districts should focus establishing continuity across elementary and secondary school in the continuum of tiered math prevention, intervention, and enrichment services. This is particularly important to consider given that fifth grade math achievement may be a stronger indicator of later math college readiness than middle and high school math courses (Koon & Davis, 2019). Proactive instructional supports can facilitate access to early high school algebra and promote later achievement (Dee & Huffaker, 2024).

Limitations

Several key factors limit the current work. First, this study provides evidence from a single district. Although diverse across several demographic dimensions, generalizability is limited due to the specific district and state policies governing acceleration, math instruction, and assessment methods. Moreover, the current work cannot be interpreted as causal evidence for the impact of math acceleration given the numerous unexplained factors determining placement of students within accelerated math coursework. Adherence (even approximate) to a specific prior score for acceleration eligibility was not evident, limiting the use of more rigorous techniques like regression discontinuity methods. Finally, the outcome measurement differs across accelerated and nonaccelerated classes, further confounding the relation of acceleration to achievement. Similar performance levels on FAST and EOC do not imply measurement invariance, so inferences about how acceleration impacts similar dimensions of math skills are untenable.

Conclusions

Math acceleration is an important feature of tiered support models that emphasize enrichment and preventative supports for all students. However, opportunities for acceleration are often not equally distributed across demographics or grade level given the confluence of decelerating achievement over time as well as stabilizing individual and group differences in math attainment.

The current work provides another source of evidence demonstrating that acceleration opportunities were invariant to demographic factors in this context, and students with similar prior math performance were approximately equally likely to reach end-of-year benchmarks in either accelerated or unaccelerated courses. More attention in research and practice is needed to understand how an effective continuum of support for math enrichment and prevention can be implemented across elementary and secondary schooling to support high expectations and access to rigorous, core curricula for all students.

References

Allensworth, E., Cashdollar, S., & Cassata, A. (2022). Supporting change in instructional practices to meet the common core mathematics and next generation science standards: How are different supports related to instructional change? *AERA Open*, *8*. https://doi.org/10.1177/23328584221088010.

Allensworth, E., Nomi, T., Montgomery, N., & Lee, V. E. (2009). College preparatory curriculum for all: Academic consequences of requiring algebra and English I for ninth graders in Chicago. *Educational Evaluation and Policy Analysis*, *31*(4), 367–391. https://doi.org/10.3102/0162373709343471.

Bianco, M. (2010). Strength-Based RTI: Conceptualizing a multi-tiered system for developing gifted potential. *Theory into Practice*, *49*(4), 323–330.

Booth, J. L., & Newton, K. J. (2012). Fractions: Could they really be the gatekeeper's doorman? *Contemporary Educational Psychology*, *37*(4), 247–253. https://doi.org/10.1016/j.cedpsych.2012.07.001.

Bürkner, P.-C. (2017). Brms: An R package for Bayesian multilevel models using Stan. *Journal of Statistical Software*, *80*(1), 1–28. https://doi.org/10.18637/jss.v080.i01.

Burris, C. C., Heubert, J. P., & Levin, H. M. (2004). Math acceleration for all. *Educational Leadership*, *61*(5) 68-71.

Cameron, C. E., Grimm, K. J., Steele, J. S., Castro-Schilo, L., & Grissmer, D. W. (2015). Nonlinear Gompertz curve models of achievement gaps in mathematics and reading. *Journal of Educational Psychology*, *107*(3), 789–804. https://doi.org/10.1037/edu0000009.

Clark, K. N., & Hall, G. J. (2025). Academic screening in middle school: Exploring bivariate and intraindividual relations in reading and math performance. *School Psychology.* Advance online publication. https://doi.org/10.1037/spq0000680.

Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2015). The aftermath of accelerating algebra: Evidence from district policy initiatives. *The Journal of Human Resources*, *50*(1), 159–188. https://doi.org/10.3368/jhr.50.1.159.

Dee, Thomas S, and Elizabeth Huffaker. (2024). Accelerating opportunity: The effects of instructionally supported detracking. (EdWorkingPaper: 24-986). Retrieved from Annenberg Institute at Brown University. https://tom-dee.github.io/files/Dee_Huffaker_A1_Initiative.pdf.

Dougherty, S. M., Goodman, J. S., Hill, D. V., Litke, E. G., & Page, L. C. (2015). Middle school math acceleration and equitable access to eighth-grade algebra: Evidence from the Wake County public school system. *Educational Evaluation and Policy Analysis*, *37*(1S), 80S-101S. https://doi.org/10.3102/0162373715576076.

Dougherty, S. M., Goodman, J. S., Hill, D. V., Litke, E. G., & Page, L. C. (2017). Objective course placement and college readiness: Evidence from targeted middle school math acceleration. *Economics of Education Review*, *58*, 141–161. https://doi.org/10.1016/j.econedurev.2017.04.002.

Figueroa, A. (2025). Is the Florida assessment for student thinking promoting increased formative processes? *The Clearing House*, *98*(1), 7–14. https://doi.org/10.1080/00098655.2025.2470207.

Florida Department of Education. (2024). *Guide to calculating school grades, district*

grades, and the federal percent of points index. *https://www.fldoe.org/core/fileparse.php/18534/urlt/SchoolGradesCalcGuide24.pdf*.

Green, J., Matthews, S., Carter, E., Fabrizio, J., Hoover, J., & Schoenfeld, N. A. (2013). The diamond model: A unique elementary RTI model that meets the needs of all learners. *Intervention in School and Clinic*, *48*(4), 240–245. https://doi.org/10.1177/1053451212462883.

Hattie, J. (2009). Visible learning: A synthesis of over 800 meta-ana lyses related to achievement. London: Routledge.

Hall, G. J., Low, S., Smolkowski, K., & Garbacz, A. (2025). The ecosystem of middle school math achievement: Intersections of student demographic, parent, and school factors. *Psychology in the Schools, 62*(3), 678–689. https://doi.org/10.1002/pits.23345.

Huffaker, E., Novicoff, S., & Dee, T. S. (2023). Ahead of the game? Course-taking patterns under a math pathways reform. *Educational Researcher*, *54*(2), 91–102. https://doi.org/10.3102/0013189X241309642.

Kaplan, D. (2023). *Bayesian statistics for the social sciences* (2nd ed.). Guilford.

Koon, S., & Davis, M. (2019). Math course sequences in grades 6–11 and math achievement in Mississippi. *National Center for Education Evaluation and Regional Assistance.* http://ies.ed.gov/ncee/edlabs.

Kruschke, J. K. (2018). Rejecting or accepting parameter values in Bayesian estimation. *Advances in Methods and Practices in Psychological Science*, *1*(2), 270–280. https://doi.org/10.1177/2515245918771304.

Loveless, T. (2008). The misplaced math student: Lost in eighth-grade algebra. *The Brown Center Report on American Education*.

Ma, X. (2003). Effects of early acceleration of students in mathematics on attitudes toward mathematics and mathematics anxiety. *Teachers College Record (1970)*, *105*(3), 438–464. https://doi.org/10.1111/1467-9620.00246.

Makowski, D., Ben-Shachar, M. S., Chen, S. H. A., & Lüdecke, D. (2019). Indices of effect existence and significance in the Bayesian framework. *Frontiers in Psychology*, *10*, 2767–2767. https://doi.org/10.3389/fpsyg.2019.02767.

McEachin, A., Domina, T., & Penner, A. (2020). Heterogeneous effects of early algebra across California middle schools. *Journal of Policy Analysis and Management*, *39*(3), 772–800.https://doi.org/10.1002/pam.22202.

Mccoy, L. P. (2005). Effect of demographic and personal variables on achievement in eighth-grade algebra. *The Journal of Educational Research*, *98*(3), 131–135. https://doi.org/10.3200/JOER.98.3.131-135.

McEachin, A., Domina, T., & Penner, A. (2020). Heterogeneous effects of early algebra across California middle schools. *Journal of Policy Analysis and Management*, *39*(3), 772–800. https://doi.org/10.1002/pam.22202.

McElreath, R. (2020). *Statistical rethinking : A second Bayesian course with examples in R and Stan*. CRC Press/Taylor & Francis Group.

Miller, J. D., & Kimmel, L. G. (2012). Pathways to a STEMM Profession. *Peabody Journal of Education*, *87*(1), 26–45. https://doi.org/10.1080/0161956X.2012.642274.

National Center for Educational Statistics. (2022). High school mathematics and science course completion. *Condition of Education*. U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/programs/coe/indicator/sod.

Nomi, T., & Allensworth, E. (2009). "Double-dose" algebra as an alternative strategy to remediation: effects on students' academic outcomes. *Journal of Research on Educational Effectiveness*, *2*(2), 111–148. https://doi.org/10.1080/19345740802676739.

Nomi, T., & Allensworth, E. M. (2013). Sorting and supporting: Why double-dose algebra led to better test scores but more course failures. *American Educational Research Journal*, *50*(4), 756–788. https://doi.org/10.3102/0002831212469997.

Peralta, Y., Kohli, N., Kendeou, P., Davison, M. L., & Lock, E. F. (2023). Modeling the interrelation of reading and mathematics achievement trajectories: Is their development intertwined? *Reading and Writing,* 1-21. https://doi.org/10.1007/s11145-023-10442-2.

Penner, A., Domina, T., Penner, E. K., & Conley, A. (2015). Curricular change as a collective effects problem: A distributional effects approach. *Social Science Research, 52*, 627-641. https://doi.org/10.1016/j.ssresearch.2015.03.008.

Peters, S. J., & Carter, J. A. (2023). The where and why of accelerated middle-school mathematics. *The Gifted Child Quarterly*, *67*(3), 235–243. https://doi.org/10.1177/00169862231168472.

Rickles, J. H. (2013). Examining heterogeneity in the effect of taking algebra in eighth grade. *The Journal of Educational Research*, *106*(4), 251–268. https://doi.org/10.1080/00220671.2012.692731.

Robertson, S., & Pfeiffer, S. (2016). Development of a procedural guide to implement response to intervention (RTI) with high-ability learners. *Roeper Review*, *38*(1), 9–23. https://doi.org/10.1080/02783193.2015.1112863.

Rollins, K., Mursky, C. V., Shah-Coltrane, S., & Johnsen, S. K. (2009). RtI models for gifted children. *Gifted Child Today Magazine*, *32*(3), 20–30. https://doi.org/10.1177/107621750903200308.

Schneider, B., & Lee, Y. (1990). A model for academic success: The school and home environment of east Asian students. *Anthropology & Education Quarterly, 21,* 358-377. https://doi.org/10.1525/aeq.1990.21.4.04x0596x.

Shanley, L. (2016). Evaluating longitudinal mathematics achievement growth: Modeling and measurement considerations for assessing academic progress. *Educational Researcher, 45*(6), 347-357. https://doi.org/10.3102/0013189X166624.

Shi, Q., Erbeli, F., Rice, M., & Butner, J. E. (2023). The predictive role of early childhood dysregulation profile on the parallel growth trajectories of reading and math performance across elementary and middle school. *Contemporary Educational Psychology,* 102200.

Siegler, R. S., & Braithwaite, D. W. (2017). Numerical development. *Annual Review of Psychology*, *68*(1), 187–213. https://doi.org/10.1146/annurev-psych-010416-044101.

Stein, M. K., Kaufman, J. H., Sherman, M., & Hillen, A. F. (2011). Algebra: A challenge at the crossroads of policy and practice. *Review of Educational Research*, *81*(4), 453–492.https://doi.org/10.3102/0034654311423025.

von Davier, M., & Kennedy, A. (2024). PIRLS 2026 assessment frameworks. *International Association for the Evaluation of Educational Achievement.*

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Tech Talk

Balancing Benefits and Barriers: Exploring the Impact of School Cellphone Bans on Student Engagement, Well-Being, and Learning

Leslie Trail[a] Nancy Caukin[b]

[a]Middle Tennessee State University, [b]North Greenville University

Leslie Trail, Ed.D., has 17 years of experience as a High School English Teacher at Eagleville School and is now serving as a 6-12th grade Instructional Coach in Rutherford County, Tennessee and an adjunct professor at Middle Tennessee State University. She has presented at numerous National and Local teacher conferences with a focus on Argument Writing and Technology Integration in the Classroom. Her publications focus on technology in schools as well as effective professional development. She believes in the importance of becoming a lifelong learner and strives to constantly reflect on her own teaching practices.

Nancy Caukin, Ed.D. is the Associate Dean and Full Professor in the College of Education at North Greenville University where she prepares future educators for the classroom. She serves as the Tech Talk editor for the *International Journal of the Whole Child*. She began her career in outdoor education before her fifteen-year tenure as a high school science teacher. She has been a teacher educator in higher education since 2013.

Abstract

Students in 2025 classrooms represent some of the first individuals to grow up entirely in the smartphone era, never knowing a world without apps, notifications, and constant online access. In response to concerns about student academic performance, engagement, and mental health, many U.S. states and school districts have implemented restrictions or bans on the use of cellphones during the school day. This article examines the emerging evidence on the benefits and challenges of such policies on students, parents, and teachers. Reported advantages include more time spent reading for pleasure, increased physical activity, more free play, and reduced classroom distractions and cyberbullying. At the same time, obstacles arise: parents express safety concerns, students rely on phones for academic functions such as multifactor authentication for dual enrollment courses, and teachers face the strain of enforcing bans. Importantly, some scholars argue that there is insufficient evidence to suggest that banning cell phones will achieve all that is hoped.

Where Are We Now?

Students sitting in classrooms in the year 2025 were born between 2008 and 2020. This means that these students have grown up in the era of smartphones, without ever knowing a world

before apps, notifications, and the internet at their fingertips. In the book *Anxious Generation*, Jonathan Haidt (2024) explores the impact of smartphones on children by examining what he deems "underprotection in the virtual world" (Loc. 207). Through the claim that students are underprotected, Haidt encourages schools to remove smartphones from the classroom and from the school day. As his work and that of others have gained attention in schools and homes across the nation, states are considering the impact that phones have on the classroom and are actively engaged in legislation to ban them (Panchal & Zitter, 2024; Zapien, 2025).

As of 2025, 35 states have policies or legislation around cellphone use. So far, 11 states have statewide bans or restrictions, 17 states have introduced statewide legislation, and seven states have Department of Education policies or pilot programs (Panchal & Zitter, 2024, with updates in 2025; Zapien, 2025). The following map, cited by Panachal and Zitter as sourced from KFF, depicts the states with statewide cellphone bans, statewide cellphone legislation, and State Department of Education-issued cellphone policy recommendations or pilot programs.

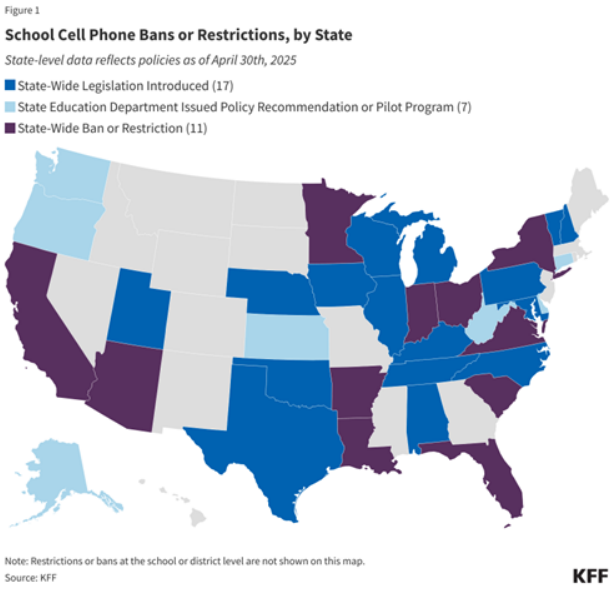


Image from: https://www.kff.org/affordable-care-act/a-look-at-state-efforts-to-ban-cellphones-in-schools-and-implications-for-youth-mental-health/

With the shift in policy and legislation surrounding cellphones, surprising benefits and potential opportunities are emerging.

Benefits of Cellphone Ban Policies

Schools anticipated some natural benefits of the elimination of cellphones. Assumed in advance of the removal and shown in some schools were increased student engagement, decreased cyberbullying, easing of loneliness, reduction in student mental health issues, and decreased texting at school; and a more equitable learning environment (Carrillo, 2025; NCES, 2025; Panchal & Zitter, 2024; Twenge, 2025; Zapien, 2025).

With new policies restricting phone use in schools, some states have banned phones altogether, while others have restricted their use during instructional time. As a result, students are adjusting

their use of free time at school. In September 2025, *Newsweek* (Miller, 2025) published an article that highlighted a clear benefit of decreased use: increased book circulation. Miller (2025) notes that in one Kentucky school, library circulation has already increased by 39% from last year. With restrictions on cellphones, students may now turn to books for pleasure. It has already been documented that increased technology use, including the use of cellphones, decreases the time spent reading, exercising, and engaging in other activities (Alotaibi, et al., Arundel, 2025; 2020; Caukin, 2024).

Additionally, with mandates that keep phones out of recess time, students are likely to engage in more exercise and free play. Pawlowski et al. (2021) conducted a study that preceded some of the legislation in United States schools, using a trial ban on cellphones in schools in Denmark. Through the trial ban, it was shown that these students had a decrease in sedentary behavior and an increase in their self-reported physical activity. In this case, taking away phones led to an increase in physical activity among students when they are given time in recess. Haidt (2024) proposes that time spent in free play is a factor in raising children who have lower instances of anxiety and depression. When given the choice between using a cellphone, reading, or exercising, students typically choose the cellphone. However, when that option is removed, they may be more likely to engage in one of the other positive forms of entertainment.

Potential Obstacles in Removing Cellphones

Even with the best of intentions, challenges can arise from banning or changing cellphone policies. Parents and students rely on the ability to communicate throughout the school day. Some parents express safety concerns when cellphones are not readily available during the day, such as during school emergencies and the ability to record what is happening at school (Mediaer, 2024; Parents, Television, and Media Counsel, 2025).

Teachers note that the shift in cellphone bans has presented challenges. Students sometimes rely on apps on their cellphones for classroom activities, and some use apps for homework and for organizational purposes (Carrillo, 2025; Mediaer, 2024). Additionally, when students in high school classes attempt to connect to dual enrollment Learning Management Systems (LMS), they are frequently required to authenticate into their LMS using a cellphone. Teachers in these situations still need to allow students access to their phones in order for this to successfully occur. Some students prefer to use their phones to listen to music while working independently (Amy, 2025). Others welcome the reduced stress of not being video recorded by other students (Carrillo, 2025).

Schools have different approaches to managing student cellphones. Some schools opt for boxes or locked pouches for cellphones, which can be costly; for instance, one state spent $250,000. Students have been known to use dummy phones as decoys for their real phones, which presents additional challenges to schools (Torchia, 2025). Some schools have banned all personal electronic devices, such as smartwatches, electronic games, wireless earbuds, and similar devices (Arundel, 2025).

Teacher morale is impacted when teachers spend their days policing cellphone usage (Twenge, 2025). Additionally, teachers in a school may not enforce the policy similarly or consistently (Carrillo, 2025). Although teachers generally support cellphone restrictions more than students

(Carrillo, 2025; Walker, 2024), perhaps overlooked is how younger teachers have grown up in the era where smartphones are integral to daily life. These teachers don't necessarily oppose cellphone bans, but they value access to their devices during breaks and planning periods when they're not supervising students. The specific implementation of cellphone policies, therefore, can affect these younger teachers' work experience and satisfaction (Booth, 2025).

Inconclusive Evidence for Cellphone Bans

Some argue that there is insufficient evidence of the benefits of banning cellphones. For example, Lumanlan (2025) disagrees with Haidt's (2024) argument that dropping test NAEP scores are due to cellphone use. Additionally, she argues that countries with continued cellphone use should see a decline in test scores, but points out that Norway and Singapore, countries that allow cellphones in schools, have maintained or improved test scores, while Hong Kong, the UK, Israel, and Sweden had flat, rebounded, or improving trends in scores. Campbell et al. (2024) reviewed 22 relevant articles from an initial list of over 1,300 published articles between 2007 and 2023. Due to the highly variable study criteria and inability to make generalizations, they found no conclusive evidence to ban cellphones. Goodyear et al. (2025) found in their UK study of 30 schools (20 with restrictions for recreational cellphone use in schools and 10 without restrictions for recreational use of cellphones in schools) that involved 1,227 students ages 12-17, that there was no difference in mental well-being or social media use between the group with cellphones. Note that the study did not involve a complete ban on cellphones in schools.

Conclusion

While evidence suggests that restricting cellphone use can enhance student engagement, reduce distractions, and promote healthier behaviors, the concerns of parents, the practical needs of students, and the enforcement burden on teachers cannot be ignored. The debate is further complicated by inconclusive evidence regarding the overall impact of such bans on academic performance and mental well-being.

The challenges and concerns associated with removing cellphones from classrooms may be addressed when schools prepare for the needs of their students. Some examples include providing students with agendas to keep track of assignments when cellphones are not available; ensuring mechanisms are in place to enhance school communication with parents regarding school safety and any concerns that may arise; and implementing policies that reduce the burden on teachers. Additionally, providing alternatives, such as increased library time, may ensure that students have ways to engage with texts and materials when they previously turned to their cellphones.

If cellphone bans demonstrate, through evidence, one or more of the following: that students learn how to better interact with their peers, reduce cyberconflict at school, become more active, read more books, and become more engaged in instruction, then these bans will have proven to be successful. As educational institutions continue to navigate these challenges and opportunities, an approach that considers the diverse needs of all stakeholders is crucial. Future policies should consider banning cellphones in a way that supports educational goals while minimizing potential drawbacks, ensuring that the evolving landscape of learning is both practical and beneficial.

References

Alotaibi, T., Almuhanna, R., Alhassan, J., Alqadhib, E, Mortata, E., Alwhaibi, R. (2020). The relationship between technology use and physical activity among typically-developing children. *Healthcare, 8*(4),488. doi: 10.3390/healthcare8040488

Amy, J. (2025, August 21). Students face new cellphone restrictions in 17 states as school year begins. *Associated Press*. https://apnews.com/article/schools-cellphone-bans-social-media-parents-d6464fbfdfae83189c752fe0c40fd060

Arundel, K. (2025, August 25). 6 ways administrators are handling cellphone bans in the new year. K-12 Drive. https://www.k12dive.com/news/school-administrators-advice-cellphone-bans-digital-literacy/758109/

Booth, M. (2025, September 30). There is a generational difference in how teachers use cellphones. *Education Week*. https://www.edweek.org/leadership/opinion-theres-a-generational-difference-in-how-teachers-use-cellphones/2025/09

Campbell, M., Edwards, E., Pennel, D., Poed, S., Lister, V., Gillett-Swan, J., Kelly, A., Nguyen, D.Z. (2024). Evidence for and against banning mobile phones in school: A scoping review. *Journal of Psychologists and Counsellors in Schools, 34*(3), 242-265. https://doi.org/10.1177/20556365241270394

Carrillo, S. (2025, September 1). *More students head back to class without one crucial thing: Their phones*. NPR. https://www.npr.org/2025/09/01/nx-s1-5495531/more-states-now-ban-cell-phones-in-schools

Caukin, N. (2024). Screen time: Issues and recommendations. *International Journal of the Whole Child, 9*(1), 47-53. https://libjournals.mtsu.edu/index.php/ijwc/article/view/2500/1475

Goodyear, V. A., Randhawa, A., Adab, P., Al-Janabi, H., Fenton, S., Jones, K., Michail, M., Morrison, B., Patterson, P., Quinlan, J., Sitch, A., Twardochleb, R., Wade, M., & Pallan, M. (2025). School phone policies and their association with mental wellbeing, phone use, and social media use (Smart Schools): A cross-sectional observational study. *The Lancet Regional Health - Europe*, *51*, 101211.https://doi.org/10.1016/j.lanepe.2025.101211

Haidt, J. (2024). *The anxious generation: How the great rewiring of childhood is causing an epidemic of mental illness*. Penguin Books.

Lumanlan, J. (n.d.). *What research really shows about school phone bans*. Psychology Today. https://www.psychologytoday.com/us/blog/parenting-beyond-power/202507/what-research-really-shows-about-school-phone-bans

National Center for Education Statistics. (2025, February). More than half of public school leaders say cell phones hurt student academic performance. https://nces.ed.gov/whatsnew/press_releases/2_19_2025.asp

Mediaer. (2024, September 20). *What the science says: Smartphones in schools*. The Digital Wellness Lab. https://digitalwellnesslab.org/articles/what-the-science-says-smartphones-in-schools/

Miller, J. R. (2025, September 21). *Students turn back to books as more school districts implement phone bans*. Students Turn Back to Books as More School Districts Implement Phone Bans. https://www.newsweek.com/phone-ban-surge-library-books-kentucky-bell-bell-2132524

Panchal, N., Zitter, S. (2024, September 5). A look at state efforts to ban cell phones in schools and implications for youth mental health. KFF. https://www.kff.org/affordable-care-act/a-look-at-state-efforts-to-ban-cellphones-in-schools-and-implications-for-youth-mental-health/

Pawlowski, C. S., Nielsen, J. V., & Schmidt, T. (2021). A ban on smartphone usage during recess increased children's physical activity. *International Journal of Environmental Research and Public Health*, *18*(4), 1907. https://doi.org/10.3390/ijerph18041907

Parents, Television, and Media Council (2025). Smartphones out of the classroom: July 2025 update. https://www.parentstv.org/resources/PDF/Studies/2025-School-Phone-Policies-Update.pdf

Torchia, R. (2025, April 2). CoSN2025: Why are cellphone bans in K-12 classrooms sparking controversy? *EdTech Focus on K-12*. https://edtechmagazine.com/k12/article/2025/04/cosn2025-why-are-cellphone-bans-k-12-classrooms-sparking-controversy

Twenge, J. M. (2025, June). The consequences of smartphones in schools. Testimony to House Committee on Education and the Workforce. https://edworkforce.house.gov/uploadedfiles/twengeschoolphonepoliciestestimony6-6-25.pdf

Walker, T. (2024). Take cellphones out of the classroom, educators say. NEA Today. https://www.nea.org/nea-today/all-news-articles/take-cellphones-out-classroom-educators-say

Zapien, P. (2025, September 12). The rise and impact of phone bans in U.S. public schools. Close Up Washington DC. https://www.closeup.org/public-schools-phone-bans/

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Science, Technology, Engineering, Art, and Mathematics: STEAM

Children Growing Up Digital: Applying Bronfenbrenner's Ecological Systems Theory to Technology and Play

Jennifer Sullivan

Northern Arizona University

Jennifer Sullivan has a B.S. Early Childhood Education, M.Ed. Educational Leadership, Ph.D. Candidate in Curriculum and Instruction, and Graduate Certificate in Educational Technology. She has worked in the field of early childhood education for over thirty years, serving as a director of early childhood programs for more than twenty years and teaching graduate courses at Northern Arizona University for two years. Her research and publication interests include early childhood leadership, social-emotional learning, mobile learning technologies, and learner experience design. Grounded in Bronfenbrenner's bioecological systems theory, her work examines how digital environments can support inclusive and developmentally responsive learning.

Abstract

This paper investigates the impact of digital technology on childhood development through the lens of Bronfenbrenner's ecological systems theory and his later bioecological model. As children grow up immersed in digital environments—from smart toys to online learning platforms—their experiences of play, learning, and relationships are increasingly shaped by technology. The article examines how each layer of Bronfenbrenner's model (microsystem to chronosystem) is influenced by digital integration, highlighting both the benefits and risks of "technologized" childhoods. While technology offers opportunities for creativity, collaboration, and inclusion, it also poses challenges to traditional play, social-emotional development, and cultural diversity. The paper advocates for a balanced approach that preserves essential elements of unstructured, sensory-rich play while embracing the educational and developmental potential of digital tools.

Keywords: play, technology, systems theory

Introduction

In 1962, an outlandish and far-reaching cartoon called *The Jetsons* first debuted. It had flying cars, talking houses, and a robot housekeeper. At the time, this kind of technology was only a dream of science fiction with no basis in reality. However, the modern world is fully integrated with technology that rivals and even surpasses that which was displayed on *The Jetsons*. There is

not an aspect of modern-day life that does not involve some form of technology. However, the conveniences of technology may be coming with a steep price for one of our most vulnerable populations – children.

Children's lives are saturated with connectivity, from tablets at school to smart toys at home. The immersion of technology has changed how they learn, play, and build relationships. To better understand how technology affects children's growth and development, this paper uses Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979) and his later bioecological model of development (Bronfenbrenner & Morris, 2006). His models explain how children grow and develop within connected systems. This process begins at home and evolves when children reach school; it also expands to include social and cultural influences. This paper explores the impact of technology on children's relationships, play, and learning across all levels of development within a whole-child perspective.

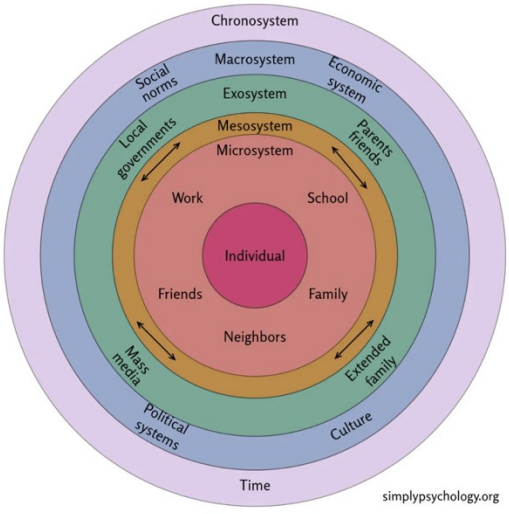
Bronfenbrenner's Ecological Systems Theory and Technology

Bronfenbrenner's ecological systems theory (see **Figure 1**) can provide a framework for understanding how technology influences a child's development. First introduced in *The Ecology of Human Development* (1979), Bronfenbrenner's model places children within interconnected systems, including: microsystem (child's immediate surroundings), mesosystem (connections between child's various microsystems), exosystem (indirect influences on the child), macrosystem (cultural contexts), and chronosystem (time and life transitions).

Bronfenbrenner's later expanded theory, called the Process–Person–Context–Time (PPCT) model (Bronfenbrenner & Morris, 2006), provides a deeper understanding of ways people evolve and mature over time. The model explains that development happens through back-and-forth interactions between a person and their environment—like talking, playing, or learning from others. These everyday interactions, called proximal processes, are what drive growth and learning.

Figure 1

Bronfenbrenner's Ecological Systems Theory



How a person develops also depends on who they are—their personality, motivation, and abilities, and on the contexts in which they live, such as family, school, community, and culture. The model also includes time, recognizing that both people and their environments change. Time encompasses both short-term experiences and long-term changes.

Building on this theory, Navarro and Trudge (2022) suggest the "technosphere," which integrates technology across all levels of children's environments. Likewise, Johnson and Puplampu (2008) describe a "techno-subsystem," explaining that "this subsystem mediates children's proximal processes with

parents, peers, and teachers through the use of ICT [Information and Communication Technology]" (p. 10). In simple terms, this means technology shapes how children communicate, play, and learn from the people closest to them. These ideas show that technology has become an inseparable part of children's everyday life, shaping how they learn, play, and think about the world.

Applying the Ecological Systems Theory to Children's Digital Environments

Referencing the model, the microsystem level is the most intimate relationship influencing a child. Technology has replaced some of those influences and has become a more substantial part of their daily routines. Livingstone and Blum-Ross (2020) note, "digital media have become interwoven with family life in ways that make them difficult to separate from broader parenting practices" (p. 3). For example, children may have screen time before bed instead of a parent reading a book. At the mesosystem level, schools and families can stay connected through digital platforms like Google Classroom or ClassDojo.

Parents' use of technology can indirectly affect children at the exosystem level. When families choose social media or scroll on their phones instead of playing with their children, they are less responsive and may disrupt family bonds. This situation is called "technoference." McDaniel and Radesky (2018) found that "parental problematic digital technology use predicted greater technoference in mother–child and father–child interactions." In Bronfenbrenner's model, this shows how factors outside of a child's direct control, like parents' work demands or media habits, can still shape what happens in their closest relationships and daily learning experiences.

The macrosystem level represents societal beliefs about children and technology. Many adults today describe kids as "digital natives," meaning they believe children are naturally good with technology because they have grown up surrounded by it (Prensky, 2001). This idea has become a familiar narrative; however, that is not always the case. Parents and educators still need to ensure that children understand basic skills like online safety and digital literacy. In Bronfenbrenner's framework, these societal beliefs directly influence how technology is integrated into children's everyday lives.

The chronosystem examines significant changes in society, such as the digital revolution. Bronfenbrenner and Morris (2006) suggest "the chronosystem encompasses change or consistency over time, not only in the characteristics of the person but also of the environment in which that person is living" (p. 820). The chronosystem draws attention to the influence of time and change on a child's growth. Young children today have never known a life without smartphones and constant internet access. These devices have a direct impact on how they interact with others and build relationships. Children now develop many of their communication skills, such as language and emotional expression, through digital tools, often blurring the lines between online and real-world experiences. As Navarro and Tudge (2022) explain, "technology has become an integral part of the ecology of human development, influencing processes at every level of the system" (p. 19339).

The Technologisation of Childhood

In modern society, technology is not just a tool we use but an essential part of our daily lives. This is known as the "technologisation of childhood," where digital devices shape children's experiences of learning, play, and socialization (Plowman, McPake, & Stephen, 2010). From smart speakers in our homes to tablets at schools, technology is integrated into childhood in ways that were unimaginable just twenty years ago. The normalization of technology becomes especially clear when it suddenly disappears. For example, when technology is turned off, children's reactions often reveal how dependent their social routines have become on connectivity.

This growing reliance on technology reminds us that children's environments should remain balanced across the different layers of influence described by Bronfenbrenner. Each system—from family and school to the broader community—plays a role in shaping how children learn and grow, both online and offline. Within the microsystem, children need regular opportunities for hands-on, sensory experiences, such as reading books, engaging in sensory play, and exploring outdoor spaces, which spark curiosity and support physical, cognitive, and emotional development. As Burdette and Whitaker (2005) emphasize, "time for free play may be an important, but often overlooked, part of optimizing children's social-emotional health" (p. 47).

At the ecosystem level, communities play a role in maintaining spaces for unstructured play, such as parks, libraries, and nature centers that encourage social connection and creativity beyond screens. Children can run and use their imagination without being hindered by technology. Within the mesosystem, partnerships between families and early childhood programs can balance non-digital forms of play and exploration with the integration of technology. The macrosystem creates the structures for cultural and societal views of technology and the importance of play. Often, technological readiness is valued more than unstructured play.

Finally, the chronosystem reminds us that these dynamics are evolving; the normalization of digital childhood represents a recent historical shift. This perspective shows that as technology continues to evolve, it also changes the way children grow up and interact with the world.

Although children are growing up in a tech-filled world, they still need a balance between technology and play. They need technology-free spaces to explore and connect with the people and world around them. They need outdoor space to run and play, explore nature, and have hands-on sensory experiences.

The Evolution of Play: From Tradition to Technology

Historically, children's play has evolved due to changing resources and cultural values. Power (2000) suggests that "play appears to be a universal feature of childhood, found in all cultures and evident throughout recorded history" (p. 5). In Native American cultures, games were used to prepare children for adult roles, such as practicing survival skills. Roberts and Sutton-Smith (1962) note that "games served as a training ground for both the skills and values required by the culture" (p. 167). During agrarian eras, play was connected with work. Children turned chores into games, combining imagination with necessity. With industrialization, manufactured toys emerged, shifting play toward a more consumer-driven focus. By the mid-20th century, play

became a ritualized form of independence. Children roamed their neighborhoods freely, playing outside "from sun-up to sun-down" and returning only when streetlights came on. This type of unstructured play encouraged resilience, social skills, and creativity.

Currently, much of children's play has shifted indoors and online. From video games to streaming media, technology provides new ways for children to connect and engage, yet it also limits their opportunities for physical fitness, imaginative play, and social experiences. As Frost (2010) cautions, "commercialized play environments threaten to replace children's self-directed play with adult-directed experiences" (p. 84). Within Bronfenbrenner's ecological framework, this shift represents a disruption to the microsystem. When digital media begins to mediate these relationships, children's development becomes shaped more by technological and commercial influences than by genuine human interaction. Over time, the mesosystem and exosystem—the links between home, school, and community—are also affected, as technology reduces opportunities for outdoor exploration, collaborative play, and creative engagement with the natural world.

Gains of Technology for Early Childhood Development

The benefits of technology in childhood are evident. The internet enables access to an infinite amount of knowledge, such as interactive field trips to the other side of the world and connections with students from different cultures. Online games like Minecraft can promote collaboration, problem-solving, and creativity. As Gray (2011) states, "Even video game play can provide children with opportunities to practice problem solving, persistence, and collaboration" (p. 448).

Technology also prepares children for a rapidly evolving workforce. Voogt and Roblin (2012) emphasize that "information literacy, media literacy and ICT literacy are considered essential skills for living and working in the 21st century" (p. 305). Digital fluency is now seen as essential. Some scholars point out that "digital technologies afford ample opportunities for children's development, identity formation, imagination, and sociability through free play" (Livingstone & Pothong, 2022), suggesting digital play can still support autonomy and imaginative play in new forms.

Technology is preparing children for the fast-changing world in which they will grow and develop. Children are expected to know how to use technology to find information, think critically, and do basic coding (Voogt & Roblin, 2012). For example, platforms like Minecraft and Roblox let children build their own virtual worlds, work with friends, and solve problems together —activities that are very similar to traditional play (Dezuanni, 2020; Donoughue & Mesoudi, 2023).

In Bronfenbrenner's model, this type of play demonstrates how technology now shapes everyday interactions where learning occurs. So, even though play looks different today, it still helps children grow through imagination, cooperation, and self-expression. Additionally, technology can help promote inclusion. With the support of assistive devices, children with disabilities can participate more fully in both learning and play. Alper and Goggin (2017) emphasize that "for many children with disabilities, digital media provide new opportunities for expression, connection, and participation" (p. 728).

Sacrifices and Risks

At the same time, the costs can be considerable. The decline in unstructured outdoor play has increased childhood obesity. Burdette and Whitaker (2005) suggest, “play that involves free outdoor activity is essential not only for physical health but also for social and emotional development” (p. 47).

Social skills are at risk as well. Screens now mediate conflict resolution and face-to-face collaboration. Turkle (2015) warns that “we expect more from technology and less from each other” (p. 11), pointing out how dependence on devices diminishes empathy and relational depth.

Imaginative play, which is key to many developmental domains — including cognitive, language and communication, and social and emotional —is declining because children have constant entertainment and stimulation from digital devices. As Lester and Russell (2008) explain, “boredom creates space for imaginative play to emerge” (p. 33). Children have fewer moments to daydream, invent games, or use their imagination.

Culturally, digital play risks homogenizing children’s experiences across the globe. As Frost (2010) points out, the commercialization of play “narrows the scope of children’s cultural imagination” (p. 112). In the past, children’s games were often based on their local traditions, helping them feel connected to their communities. Today, however, digital play is mainly created by large global companies that design the same games and toys for kids everywhere. These toys are enjoyed worldwide, but they often do not differentiate between cultures and limit self-expression and imagination. Frost (2010) points out, “commercialized play environments threaten to replace children’s self-directed play with adult-directed experiences” (p. 84).

Balancing Technology and Play: A Bronfenbrenner Perspective

The goal with technology should be to find a balance within the ecological systems of childhood. At the microsystem level, families can create tech-free routines, such as mealtimes or bedtime. At the mesosystem level, teachers can use technology time to incorporate physical activity through interactive lessons. At the macrosystem level, society should advocate for play over technology. Bronfenbrenner (1979) reminds us that development thrives when children experience diverse contexts. Technology can enhance childhood, but it cannot replace the unstructured and imaginative play that has shaped human growth and development throughout history. The challenge is not to reject technology but to ensure that, in embracing it, we do not lose the relationships within the ecological system. Technology is only one of many systems, and children needs a balance among all of them.

References

Alper, M., & Goggin, G. (2017). Digital technology and rights in the lives of children With disabilities. *New Media & Society, 19*(5), 726–740. https://doi.org/10.1177/1461444816686323

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design.* Harvard University Press.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology* (6th ed., Vol. 1, pp. 793–828). John Wiley & Sons.

Burdette, H. L., & Whitaker, R. C. (2005). Resurrecting free play in young children: Looking beyond fitness and fatness to attention, affiliation, and affect. *Archives of Pediatrics & Adolescent Medicine, 159*(1), 46–50. https://doi.org/10.1001/archpedi.159.1.46

Dezuanni, M. (2020). *Minecraft and education: An exploration of possibilities.* Springer.

Donoughue, T., & Mesoudi, A. (2023). Collaborative creativity in Minecraft: Children's social learning through cooperative digital play. *Computers in Human Behavior, 139*, 107523. https://doi.org/10.1016/j.chb.2022.107523

Frost, J. L. (2010). *A history of children's play and play environments: Toward a contemporary child-saving movement.* Routledge.

Gray, P. (2011). The decline of play and the rise of psychopathology in children and adolescents. *American Journal of Play, 3*(4), 443–463. https://files.eric.ed.gov/fulltext/EJ985541.pdf

Johnson, G. M., & Puplampu, K. P. (2008). Internet use during childhood and the ecological techno-subsystem. *Canadian Journal of Learning and Technology, 34*(1), 9–24. https://doi.org/10.21432/T2859X

Lester, S., & Russell, W. (2008). *Play for a change: Play, policy and practice: A review of contemporary perspectives.* Play England. https://doi.org/10.13140/RG.2.1.1452.9687

Livingstone, S., & Blum-Ross, A. (2020). *Parenting for a digital future: How hopes and fears about technology shape children's lives.* Oxford University Press.

Livingstone, S., & Pothong, K. (2022). Imaginative play in digital environments: Affordances for identity, creativity and connection. *Journal of Children and Media, 16*(2), 243–259. https://doi.org/10.1080/17482798.2022.2034785

McDaniel, B. T., & Radesky, J. S. (2018). Technoference: Parent distraction with technology and associations with child behavior problems. *Child Development, 89*(1), 100–109. https://doi.org/10.1111/cdev.12822

Navarro, J. L., & Tudge, J. (2022). Technologizing Bronfenbrenner: Neo-ecological theory. *Current Psychology, 42*(31), 19338–19354. https://doi.org/10.1007/s12144-022-02738-3

Plowman, L., McPake, J., & Stephen, C. (2010). The technologisation of childhood? Young children and technology in the home. *Children & Society, 24*(1), 63–74. https://doi.org/10.1111/j.1099-0860.2008.00180.x

Power, T. G. (2000). *Play and exploration in children and animals.* Lawrence Erlbaum Associates.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon, 9*(5), 1–6. https://doi.org/10.1108/10748120110424816

Roberts, J. M., & Sutton-Smith, B. (1962). Child training and game involvement. *Ethnology, 1*(2), 166–185. https://doi.org/10.2307/3772916

Turkle, S. (2015). *Reclaiming conversation: The power of talk in a digital age.* Penguin Press.

Voogt, J., & Roblin, N. P. (2012). A comparative analysis of international frameworks for 21st century competences: Implications for national curriculum policies. *Journal of Curriculum Studies, 44*(3), 299–321. https://doi.org/10.1080/00220272.2012.668938

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Families and Children: Health and Wellness

From Access to Empowerment: School Counselors Supporting AI Literacy in Underserved K–8 Communities

Tyreeka Williams[a], Michael Brooks[b], Maylee Vazquez[c], Shirlene Coopwood[d]

[a-d]North Carolina Agricultural and Technical State University

Dr. Tyreeka Williams is an Assistant Professor of Counseling at North Carolina A & T State University, specializing in school counseling and counselor preparation. She has published in flagship counseling journals and leads research focused on school counseling practice, AI in counseling, and trauma-informed care for refugee and immigrant youth. Dr. Williams recently secured a $1.24 million Department of Education grant to advance innovative K–12 counseling initiatives. She brings diverse professional experience in higher education, private practice, addiction treatment, and K–12 settings, and has held multiple leadership roles in Chi Sigma Iota. Dr. Williams earned her Ph.D. in Counselor Education and Supervision from North Carolina A & T State University.

Michael Brooks is the Counselor Education and Program Coordinator and Professor at North Carolina A & T State University (NCAT) in Greensboro, North Carolina. His research centers on Black male success factors, Counselor Education Pedagogy, ex-offender recidivism, and global mental health. Dr. Brooks leads the Ph.D. Program in Counselor Education & Supervision, the only Ph.D. CACREP-accredited program at an HBCU. Brooks received a BA in Psychology from Morehouse College (1996) and his MA and Ph.D. in Counselor Education and Supervision from the University of Central Florida (2000, 2003, respectively). Dr. Brooks has been a faculty member for 20 years. Before A & T, he worked in the counselor education program at UAB and UF (Gainesville). Lastly, Dr. Brooks occasionally practices counseling and supervises licensure candidates.

Dr. Maylee Vazquez, a Latina Bilingual Counselor, is an Assistant Professor in the Department of Counseling at North Carolina Agricultural and Technology State University. She graduated with a PhD in Counselor Education and Supervision Program from the University of North Carolina at Charlotte. She received her master's degree in Counselor Education from East Carolina University and a bachelor's degree in psychology from the University of North Carolina in Greensboro. Dr. Vazquez is a licensed Professional School Counselor (K-12) and National Certified Counselor in North Carolina. She has a certification in College Counseling and Student Affairs. As a bilingual counselor, Dr. Vazquez has experience working in integrated

care and K-12 schools. Dr. Vazquez's research interests include equitable access to education for all students, Latine family functioning and community development, anti-oppressive teaching styles, cross-cultural counseling, and best practices.

Dr. Shirlene Coopwood is an Associate Professor and the School Counseling Program Coordinator in the Department of Counseling at North Carolina Agricultural & Technical State University. Dr. Coopwood has extensive experience in the delivery of counseling services, education, and administration both in the United States and internationally. Her scholarly work includes publications on school counseling in Belize, spirituality in school counseling, mental health issues in school counseling, cultural competence, international immersion, women and disabilities, and funded grants in the areas such as program development, academic advising, teenage pregnancy, impact of COVID, and suicide prevention. Dr. Coopwood is a recipient of the Southern Association for Counselor Education and Supervision (SACES) of the Outstanding Tenured Counselor Educator Award.

Abstract

Artificial Intelligence (AI) literacy is no longer optional; it is a critical equity issue that directly aligns with the mission of the school counselors (and school counseling). As AI continues to rapidly transform K-8 education, access to AI literacy resources remains limited for underserved communities in rural areas. The lack of exposure to AI for students will juxtapose the mission and vision of the school counselors' role in adequately preparing students for socio-emotional, academic, and career success, thereby widening existing educational gaps and inequities. This article examines a strategic plan for K-8 school counselors to promote AI literacy and career readiness among underserved student populations.

Keywords: AI literacy, K-8 education, school counselor

Academic and Career Readiness

School counselors are change agents, leaders, advocates, and key stakeholders in promoting change and best practices in the school climate (Lopez-Perry & Mason, 2025). The school counseling role, as defined by the American School Counseling Association (ASCA, 2023), is to cultivate students' academic, socioemotional, and career success. Integral to the role of school counselors is the ability to adapt to new curricula and resources, contributing to the overall success of students. In this rapidly evolving technological age, school counselors must position themselves as pioneers of change for students, families, and communities to stay abreast of innovative Artificial Intelligence (AI) technologies (Madeline, 2025).

Career readiness is a comprehensive term that focuses on aligning students' interests and attributes, guiding them in decision-making, and promoting employability and lifelong skills to navigate post-secondary education and employment successfully (ASCA, 2023). The school counselor plays a pivotal role in enhancing career development through several ongoing initiatives, such as college and career advising, professional development opportunities, and, most importantly, identifying gaps in college and career access. However, career readiness may look very different based on the communities that surround and are served by the schools. For

instance, schools in rural environments often have access to limited funding, all-year round educational development programs and other resources which negatively impact students' educational motivation and achievement (Hardré & Hennessey, 2010; Rodriquez, 2019). Therefore, as new disciplines and fields emerge as a result of AI advancement, K-8 students in all schools must gain early exposure to AI technologies.

Emotional Development and Mental Health

School counselors are trained to nurture students' psychological well-being, encompassing both emotional and mental health (Johnson et al., 2023). Through the implementation of preventive initiatives, such as social-emotional learning programs (SEL) and responsive interventions for addressing emotional and mental health disorders, school counselors consistently promote students' self-esteem, self-confidence, and emotional regulation skills (Su et al., 2024). Since the COVID-19 pandemic, school counselors have gradually incorporated technological resources to support emotional development and mental health services. However, in rural school communities, there has since been an exacerbation of mental health crises, particularly among the K-8 student population (De La Mora, 2023; Nava, 2025). This has resulted in a shortage of school counselors and high turnover, due to a lack of economic support and resources to assist the influx of students battling with mental health disorders.

Ethical and Critical Thinking

According to ASCA (2022), school counselors are responsible for promoting ethical and critical thinking skills for all students. When working with AI technologies, the demand for moral and critical thinking skills heightens due to the influx of misinformation and unreliable information (Rusandi et al., 2023). Students must learn to critically analyze, evaluate, and assess the credibility of data sources received from AI platforms before integrating AI use into their daily practice. A lack of ethical and critical thinking skills may lead to increased plagiarism, widespread misinformation, exacerbated biases in AI output, and potential overreliance on AI technologies. To develop ethical and critical thinking skills in K-8 students, school counselors should incorporate case vignettes into group counseling and classroom guidance curricula, providing opportunities for students to reflect on real-world scenarios (Walter, 2024).

Advocacy and Systemic Responsibility

School counselors have both an ethical and professional mandate to engage in advocacy, as a central tenet of the ASCA National Model (ASCA, 2024). Moreso, the antiracist school counseling advocacy framework identifies advocacy and systemic responsibility as critical mechanisms to alleviate the influence of systemic oppression and racism on underserved and marginalized communities (Rutledge & Smith-Durkin, 2025). As leaders, school counselors' advocacy involves assessing their own personal biases and stereotypes and seeking resources to improve counseling services for students from diverse backgrounds (Zyromski et al., 2022). School counselors are also responsible for teaching students how to advocate for themselves and evaluate their own biases and stereotypes (Cigrand et al., 2015). Lastly, systems-level advocacy involves the school counselor identifying systemic barriers, policies, and protocols that are harmful to marginalized students and utilizing data to advocate for systemic change within the

school climate (Betters-Bubon et al., 2022). Ultimately, school counselors can champion advocacy initiatives by promoting inclusivity for all families and students through programmatic efforts, policy, and infrastructure improvements, as well as cultivating equitable partnerships.

Equity and Access

AI is a fluid and rapidly changing technological resource, projected to transform the workforce in the next 20 years (Lokesh et al., 2024). AI Literacy refers to one's ability to understand, evaluate, and ethically utilize AI technologies (Mills et al., 2024). Underserved K-8 rural communities, in particular, are at risk due to the consistent lack of exposure to cutting-edge AI technologies. Their limited access to computers and high-speed technology, combined with socio-economic barriers, widens the achievement and opportunity gap for students in rural areas (Madeline, 2025; Zhao et al., 2021).

Rural schools often face digital divides compared to inner-city institutions due to economic disparities, income attainment, and geographical factors (Zhao et al., 2021). The digital divide is marked by outdated technology and low-bandwidth internet connections. This inequality positions rural institutions at a disadvantage when considering the integration, introduction, and utilization of evolving AI technologies. However, due to the widespread advancement of AI in the workforce, students must become AI literate as an equitable component of career and college readiness (Wong, 2024). As various industries continue to refine their practice with the use of AI technologies, students need to be equipped with educational and practical resources to navigate emerging disciplines effectively. Even though, rural K-8 communities are at-risk of becoming systemically excluded due to lack of access, literacy, and exposure, further augmenting educational and workforce inequities and injustice (Farahani & Ghasemi, 2024), it is incumbent on education leaders, like school counselors, to develop and implement strategies designed to mitigate this risk.

School counselors are a transformative force in mitigating systemic exclusion for K-8 rural communities. As change agents in the school climate, school counselors are uniquely positioned to address educational inequities and disparities by designing strategic interventions to mitigate systemic exclusion. This article proposes a strategic plan, composed of six interconnected domains: a) Systems Level Advocacy, Curriculum and Program Development, b) Creating Equitable Partnerships, c) Student Empowerment and Exposure, d) Family and Community Engagement, and e) Outcome Evaluation, for school counselors to serve as the impetus for equitable AI literacy and career/college readiness for K-8 students. The proposal is grounded in emerging research on how rural institutions have piloted and implemented AI literacy initiatives (Kim & Wargo, 2025; Chen & Delaney, 2025). Education leaders and administrators are tasked with championing such initiatives to foster community, parental, and school-wide engagement. Moreover, such efforts provide a critical foundation in addressing educational inequities and barriers faced by rural K-8 institutions.

Systems Level Advocacy. School counselors are tasked by ASCA Ethical Standards (2016) and the Council for Accreditation of Counseling and Related Educational Programs(CACREP) competencies to advocate for and engage in policy conversations focused on dismantling systemic barriers for students (CACREP, 2024). To advocate for enhanced and modernized

technology capacity, school counselors can establish a task force comprising collective families and school stakeholders committed to advancing AI literacy for K-8 underserved student populations. Together, groups can take a unified approach to advocate for legislators, school boards, and macro-level school administrators to secure funding for the purchase of AI software and hardware, as well as professional development training for teachers/school staff, to enhance AI literacy. Additionally, school counselors are equipped to collect and analyze data sets that contribute to AI literacy deficits among the school population. School counselors can utilize aggregated data to support microsystem, mesosystem, and macrosystem advocacy efforts.

Curriculum and Program Development. School counselors are responsible for creating and sustaining comprehensive school counseling programs that promote academic, social-emotional, and career readiness for all students (ASCA, 2023). Through appropriate exposure and training, school counselors in K-8 schools may integrate equitable AI literacy components into their curriculum, advising, counseling interventions, and classroom lessons/workshops. K-8 school counselors begin introducing career opportunities to students as early as 3rd grade (Ockerman et al., 2023). School counselors must integrate AI platforms into career readiness initiatives to provide students with age-appropriate exposure to relevant career opportunities while intentionally teaching students how to utilize AI as an intentional educational tool. With their specialized training and understanding of academic development, school counselors are equipped to select equitable and culturally responsive AI technologies that cater to diverse student populations (ASCA, 2023).

Creating Equitable Partnerships. In an effort to address AI literacy as a critical equity issue, school counselors may seek equitable partnerships with technology companies that are interested in educating and promoting literacy among underrepresented youth. K-5 students may benefit from partnerships with AI literacy-based programs, such as Day of AI, which are specifically designed to target teachers and elementary students with limited tech backgrounds with resources, education, and access to major AI platforms. Moreover, K-6 and K-8 students may benefit from advanced AI literacy programs for middle schoolers, such as the Massachusetts Institute of Technology (MIT) AI in Education program, designed to introduce and educate teachers and middle schoolers on specific AI concepts, including generative AI and the ethics of AI.

Student/Staff Empowerment and Exposure. Rural school communities have unique social dynamics due to their limited funding and resources compared to those in urban and suburban areas (Amri et al., 2021). To champion AI literacy initiatives, the school counselor must learn and utilize culturally responsive strategies to address the fear and resistance anticipated when introducing new concepts. According to Prochaska and DiClemente (1983), the stages of change are outlined as follows: a) precontemplation, b) contemplation, c) determination, d) action, e) maintenance, f) recurrence.

To increase AI literacy for students, the school counselor must first gain buy-in from the teachers and staff who will integrate AI into the curriculum. The school counselor may collaborate with the administration to host a series of professional development workshops to educate teachers on the fundamentals of AI and provide opportunities for guided hands-on practice. Once teachers are exposed to AI and start to integrate it into the curriculum and classroom activities, school

counselors can develop early pipeline programs, such as AI boot camps or AI after-school clubs, to provide students with age-appropriate exposure to AI technologies.

Family and Community Engagement. To cultivate the sustainable integration of AI in rural community settings, school counselors must foster family and community support (Yu et al., 2024). In many rural communities, 38% of primary caregivers for students are between 50 and 65 years old (Sempeles & Cui, 2024). The digital divide from youth to this age group contributes to the equity issue of AI literacy. To engage parents and caregivers, school counselors can host AI literacy nights to educate them on how to utilize AI technologies and equip them with future-forward career readiness skills, as well as their students. Familial and community support will empower students to trust digital resources and sustain motivation for integrated use, both in the short and long term. Genuine family and community engagement within schools have been linked to students' academic, emotional and social success (Wriston & Duchesneau (2024).

Outcome Evaluation. To assess initiatives for promoting AI literacy within rural school communities, it is imperative to conduct both formative and summative evaluations before and after the launch of AI literacy efforts. The school counselor can conduct pre-assessments using Qualtrics surveys to understand students' and families' initial perspectives on AI and tailor initiatives to help address specific areas, such as fear, knowledge, or competence. To creatively evaluate the outcomes and impact of AI literacy training, the school counselor can utilize inquiry based learning where students can complete a capstone or portfolio project that demonstrates their understanding, practical use, and competence related to AI technologies. Inquiry based learning, like capstone projects and portfolios have been supported in the literature as an effective instructional approach (Chang, 2019; Ayaz & Gok, 2023). Moreso, K-8 school counselors can utilize observation and tracking software systems to evaluate the short and long-term integration of AI within the school community.

Case Illustration (K-8)

The following case illustration demonstrates how school counselors can successfully integrate AI technology within their school environment. In this case illustration school counselors will propose a strategic plan where school counselors serve as the impetus for equitable AI literacy and career/college readiness for K-8 students. The Case Illustration is as follows:

At Green Valley Elementary, a small rural K-8 school serving a predominantly low-income student population, the school counselor noticed a widening gap in students' exposure to technology. While urban peers were already using AI-powered learning tools and coding platforms, many Green Valley students had limited access to high-speed internet and outdated devices at home.

In response, the school counselor will begin identifying system-level advocacy by collaborating with local stakeholders to design a three-tiered AI literacy initiative. The school launched teacher professional development workshops introducing AI basics and ethical considerations. Next, the school counselor implemented AI career exploration units in classroom guidance sessions, where fifth- to eighth-graders engaged in lessons about emerging AI-driven careers (e.g., healthcare robotics, agricultural technology). Finally, the school hosted "Family AI

Nights," in which parents and caregivers explored how AI tools can support career readiness and daily problem-solving.

Throughout the school year, students participated in after-school "AI Bootcamps," creating simple projects, including chatbot scripts and image recognition demonstrations. Making note of outcome data from teachers reported increased student engagement, particularly among those who previously struggled with motivation in STEM-related activities. Parents expressed gratitude for being included in the learning process, noting that their children's excitement about AI carried over into conversations at home. Importantly, the school counselor administered pre- and post-intervention surveys, demonstrating measurable growth in students' confidence with AI-related concepts and their ability to evaluate online information critically.

Implications for School Counselor Training

The integration of AI literacy into K–8 school counseling highlights the urgent need to expand counselor training programs. Counselor preparation curricula must include modules on digital equity, AI literacy, and ethical considerations surrounding emerging technologies. This training would prepare school counselors to support students' academic, social-emotional, and career development in increasingly AI-driven environments. While considering the ethical use and handling of student data in a fast-changing world of technology. By learning how to engage with AI critically, counselors can confidently model digital citizenship, integrate AI awareness into counseling interventions, and address the digital divide as both an equity and access issue. Training programs should therefore prioritize equipping future school counselors with strategies to bridge technological gaps in rural and underserved schools.

Implications for School Counselor Education Research

The role of AI literacy in counselor education opens new avenues for scholarly inquiry. Research is needed to examine how AI literacy initiatives influence students' career readiness, especially in underserved rural K–8 communities. Studies could investigate the effectiveness of school counselor-led interventions—such as AI bootcamps, classroom guidance lessons, or family engagement nights—in reducing inequities in technological access and preparing students for emerging career pathways. Additionally, counselor education researchers might explore systemic barriers, such as limited funding, infrastructure gaps, or educator resistance, to gain a deeper understanding of the intersection between AI integration, equity, and student development. This body of work would provide evidence-based practices that inform both policy and counselor education pedagogy.

Implications for the Practice of School Counseling

In practice, school counselors must assume leadership roles in advocating for AI literacy as a component of career readiness and educational equity. This involves collaborating with teachers, administrators, families, and external partners to create sustainable AI-focused programming. Practitioners will need to integrate AI exposure into existing counseling frameworks, such as college and career readiness initiatives, social-emotional learning, and equity-driven advocacy. Counselors in rural settings are called to act as systemic change agents who not only support students' academic and emotional needs but also prepare them to navigate an evolving

workforce. By incorporating AI literacy into their counseling practices, school counselors can bridge the digital divide, transforming it into an opportunity for empowerment. This ensures that all students, regardless of their geographic location or socioeconomic status, are prepared for the future.

Conclusion

School counselors have an opportunity to become pioneers of change for students, families, and communities in rural areas by embracing AI tools and technologies. The authors of this article propose a strategic plan with six key areas to assist school counselors in integrating AI into school environments: a) System-Level Advocacy, Curriculum Program and Development, b) Creating Equitable Partnerships, c) Student Empowerment and Exposure, d) Family and Community Engagement, and e) Outcome Evaluation. By developing comprehensive programming that incorporates AI, school counselors can help close critical opportunity gaps for K-8 students in rural areas and prepare them for a technology-driven future.

References

American School Counselor Association. (2023). *The school counselor and social/emotional development* [Position statement]. https://www.schoolcounselor.org/Standards-Positions/Position-Statements/ASCA-Position-Statements/The-School-Counselor-and-Social-Emotional-Developm

Amri, M. W., & Khayru, R. K. (2021). The dynamics of social mobility: A comparison between urban and rural communities. *Journal of Social Science Studies, 1*(2), 39–43.

Ayaz, M., & Gok, B. (2023). The effects of e-portfolio application on reflective thinking and learning motivation of primary school teacher candidates. *Current Psychology, 42*, 31646-31662. https://doi.org/10.1007/s12144-022-04135-2

Betters-Bubon, J., Pianta, R., Sweeney, D., & Goodman-Scott, E. (2022). Antiracism starts with us: School counselor critical reflection within an multitiered systems of support framework. *Professional School Counseling*, *26*(1a), https://doi.org/10.1177/2156759X221086747.

Chang, J. (2019). The instructional design and effects of capstone project course embedded inquiry-based learning in Technical High School. *US-China Education Review A*, *9*(2), 41-64. doi:10.17265/2161-623X/2019.02.001.

Chen, J. J., & Delaney, V. (2025). Leveraging AI to enhance children's learning: Anchoring policy and practice in equity, AI Literacy, and ethics for education leaders and teachers. *Early Childhood Education Journal*, 1-11.

Cigrand, D. L., Havlik, S. G., Malott, K. M., & Jones, S. G. (2015). School Counselors United in Professional Advocacy: A Systems Model. *Journal of School Counseling*, *13*(8), n8.

Council for Accreditation of Counseling and Related Educational Programs. (2024). *2024 CACREP standards.* https://www.cacrep.org/wp-content/uploads/2024/04/2024-Standards-Combined-Version- 4.11.2024.pdf

De La Mora, A. (2023). Impact of COVID-19 School Closures on Low-Socioeconomic Hispanic K-8 Students.

Farahani, M., & Ghasemi, G. (2024). Artificial intelligence and inequality: Challenges and opportunities. *Int. J. Innov. Educ*, *9*, 78-99.

Hardré, P., & Hennessey, M. (2010). Two rural worlds: Differences of rural high school students' motivational profiles in Indiana and Colorado. *Journal of Research in Rural Education, 25*(8).

Johnson, K. F., Kim, H., Molina, C. E., Thompson, K. A., Henry, S., & Zyromski, B. (2023). School counseling prevention programming to address social determinants of mental health. *Journal of Counseling & Development*, *101*(4), 402-415.

Kim, J., & Wargo, E. (2025, April). Empowering educational leaders for AI integration in rural STEM education: challenges and strategies. In *Frontiers in Education* (Vol. 10, p. 1567698). Frontiers Media SA.

Lokesh, G. R., Harish, K. S., Sangu, V. S., Prabakar, S., Kumar, V. S., & Vallabhaneni, M. (2024,). AI and the future of work: Preparing the workforce for technological shifts and skill evolution. In *2024 International Conference on Knowledge Engineering and Communication Systems (ICKECS)* (Vol. 1, pp. 1-6). IEEE.

Lopez-Perry, C., & Mason, E. C. M. (2025). *Equity-Driven Leadership in School Counseling: How to Champion Justice for All Students*. Taylor & Francis.

Madeline, A. (2025). Enhancing school counseling with technology and case studies. In *Enhancing School Counseling with Technology and Case Studies* (pp. 1-24). IGI Global Scientific Publishing.

Mills, K., Ruiz, P., Lee, K. W., Coenraad, M., Fusco, J., Roschelle, J., & Weisgrau, J. (2024). AI literacy: A framework to understand, evaluate, and use emerging technology. *Digital Promise*.

Nava, J. (2025). *Understanding the impact of the post-COVID environment on school Climate, student behavior, and social-emotional learning: a mixed-methods case study in an urban K-8 school in orange county* (Doctoral dissertation, Concordia University Irvine).

Ockerman, M. S., Patrikakou, E., & Novakovic, A. (2023). Fostering continuity in college and career counseling k–12: Training and perceived confidence between k–8 and high school counselors. *Professional School Counseling*, *27*(1), https://doi.org/10.1177/2156759X231190328.

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change of smoking: toward an integrative model of change. *Journal of consulting and clinical psychology*, *51*(3), 390.

Rodriguez, S. (2019). Educator and school-based personnel's advocacy for undocumented youth in K-12 settings. *Sociology Policy Briefs.* https://www.policybriefs.org/briefs/school-based-personnel .

Rutledge, M. L., & Smith-Durkin, S. D. (2025). Antiracist school counseling framework counseling advocacy framework. *Professional School Counseling, 29*(1), https://doi.org/10.1002/jcad.12422

Rusandi, M. A., Ahman, Khairun, D. Y., & Mutmainnah. (2023). No worries with ChatGPT: building bridges between artificial intelligence and education with critical thinking soft skills. *Journal of Public Health, 45*(3), 10.1093/pubmed/fdad049

Sempeles, E., & Cui, J. (2024). *Parent and family involvement in education: 2023* (NCES 2024-113). U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. https://nces.ed.gov/pubs2024/2024113.pdf

Su, S. W., Hung, C. H., Chen, L. X., & Yuan, S. M. (2024). Development of an AI-based system to enhance school counseling models for Asian elementary students with emotional disorders. *IEEE Access*.

Walter, Y. (2024). Embracing the future of Artificial Intelligence in the classroom: the relevance of AI literacy, prompt engineering, and critical thinking in modern education. *International Journal of Educational Technology in Higher Education*, *21*(1), 15.

Wong, L. P. (2024). Artificial intelligence and job automation: challenges for secondary students' career development and life planning. *Merits*, *4*(4), 370-399.

Wriston, B., & Duchesneau, N. (2024). *How student, family, and community engagement impacts students' social, emotional, and academic development (SEAD*). Education Trust.

Yu, L., Zhou, H., Shao, J., & Djatmiko. (2024). The theory and practice of home-school-community collaborative education in the era of artificial intelligence. In *Envisioning the future of education through design* (pp. 339-363). Singapore: Springer Nature Singapore.

Zhao, L., Cao, C., Li, Y., & Li, Y. (2021). Determinants of the digital outcome divide in E-learning between rural and urban students: Empirical evidence from the COVID-19 pandemic based on capital theory. *Computers in Human Behavior*, *130*, 107177.

Zyromski, B., Wolfe, T. E., Choi, J., Shrewsbury, S., & Hamilton, M. (2022). Applying an advocating student-environment lens to foster protective factors: School counselors' role in buffering ACEs. *Journal of Child and Adolescent Counseling*, *8*(1), 1-15.

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Play Therapy: Development, Learning, and Therapy

Embedding Mental, Behavioral Health and Social Emotional Literacy Services into an After Care Program

Jacob Womack[a], Jennifer Bearden[b], Susan Elswick[c], Corey Latta[d], Marissa Gray[e], Jerry Watson[f], Gregory Washington[g], Bridgette Okunmokun[h]

[a-h]University of Memphis

Jacob Womack is a graduate of the University of Memphis, School of Social Work, MSW program.

Jennifer Bearden is a current DSW student at the University of Memphis, School of Social Work. She is also an LCSW and runs a local private practice in the Mid-South region.

Dr. Susan Elswick, LCSW, LSSW, IMH-E, RPT-S obtained her Master of Social Work at University of Tennessee in 2006 and her Doctor of Education in Instructional and Curriculum leadership with a specialty in Applied Behavior Analysis at the University of Memphis in 2011. She is currently a Full Professor and Interim Department Chair within the Social Work Department. Dr. Susan Elswick has over 18 years of clinical mental health experience that includes community mental health, case management, residential programming, ABA-based programming, school-based programming, parent coaching, integrated behavioral health, infant mental health, and home-based services. Her research interests include the use of evidence-based behavioral interventions for addressing clients' needs, supporting schools in developing effective school-based mental health programs that are trauma-responsive, the use of expressive art therapies/ experiential therapies in the field of social work practice, and the use of informatics and technology in the field of social work. Dr. Elswick is an LCSW in AR, MS, and TN, and she is a licensed school social worker in TN. She is a nationally certified CBITS, TFCBT, AutPlay, and EMDR clinician. She is endorsed in Infant Mental Health in the state of TN, is Certified as an Animal Assisted Interventionist, and she is also a Registered Play Therapist- Supervisor (RPT-S). She is also a national trainer and supervisor for several evidence-based modalities and trauma-based interventions.

Corey Latta, MA, PhD, LPC, holds graduate degrees in philosophy, literature, and counseling. He is an educator and private practice therapist. Corey specializes in the connections between experiential therapy, addiction recovery, and trauma processing. Corey leads trainings on narrative therapy and the therapeutic use of creative writing. Corey is the author of four books and numerous creative pieces.

Dr. Marissa Gray is a board-certified Psychiatric Mental Health Nurse Practitioner with a Doctorate in Nursing Practice from The University of Tennessee Health Science Center. She has extensive experience in pediatric, adult, and recovery mental health specializing in resilience, holistic wellness, and trauma-responsive psychiatric care with a focus on empowering self-efficacy, emotional regulation, and mindfulness-based stress reduction. Her interests lie at the intersection of advocacy, education, community networking, and program development. Her intention is to empower healthcare providers and leaders in interdisciplinary teamwork that promotes mental health, wellness, and resilience.

Dr. Watson received his PhD in Urban Higher Education from Jackson State University in 2006, his MBA in Marketing and Management from Dominican University in 2003, his MSW in Management and Policy from the University of Illinois in 1997. Dr. Watson was and will always be remembered as a mentor and leader in the field of social work. He was an Assistant Professor of Social Work at the University of Memphis.

Gregory Washington, LCSW, Ph.D. is Director of the Center for the Advancement and Youth Development (CAYD); and a Full Professor in the School of Social Work at the University of Memphis. Dr. Washington is a Licensed Clinical Social Worker (LCSW that works as a community clinical practitioner and has practiced as an individual, family and group therapist in Illinois, Georgia, Arkansas and Tennessee. His research interests include culturally-centered empowerment methods and the risk and protective factors associated with youth and family development. A major goal of his work is to identify and promote the use of innovative mental health interventions. He has a particular focus on culturally-centered group interventions that reduce the risk for disparities in behavioral health and incarceration outcomes among young people of color.

Bridgette Okunmokun is a graduate of the University of Memphis, School of Social Work, MSW program.

Introduction

Nadia Boulanger, who is referred to as music's greatest teacher, said, "Art is the medium in which emotion is expressed" (Robin, 2021). The expression of emotion is a measure of our well-being. As this expression is nurtured and developed, we become in tune with ourselves and others. We can be in harmony with our emotions and the environment. Art provides a stage, a canvas, a story, a poem, a song, a dance, and many other forms of expression as an interpretation of our existence.

In this paper, emotional literacy and its relationship to the arts will be examined. From the individual level to community concepts, these frameworks come together to support children, providing multiple avenues for discovering emotional balance and understanding.

Emotional Literacy and Why It is Important

Emotional literacy is the ability to understand and interpret our own emotional well-being as well as the emotional well-being of those around us. This enables us to acknowledge our emotions

and ask ourselves the question, “How are you doing?” while being fully present to listen to the answer (Orbach, 1999). The development of emotional literacy comes from listening and empathy. This leads to an understanding of our own experienced emotions and a compassion for the emotions of others. This understanding evolves into an emotional language that helps us communicate our feelings succinctly in our own personal power, leading to improvements in our relationships, quality of life, and community (Steiner & Perry, 1997). Our rational and intellectual capacities function to their full potential when we can utilize and manage emotions rather than being consumed by them or acting on them without reflection (Killick, 2006).

Emotional intelligence begins at birth. Babies are born with a range of eight to ten built-in feelings, most of which are apparent within the first few days of life (Holinger, 2009). We enter the world with a built-in structure of emotional literacy that is ready to expand through guidance and cognizance. We have the ability to talk about feelings as soon as we can form a sentence (Steiner, 2003). These existing traits can develop into community-wide emotional literacy.

Emotional aptitude is a meta-ability that regulates how well we function given the skills and mental capacities we possess (Goleman, 1995). Our emotional literacy influences our interactions with others and is essential to learning. It serves as a bridge to connections between people, enabling them to work with their differences and similarities, while also handling any ambiguity and contradiction that may arise (Matthews, 2006).

Ways Emotional Literacy is Taught to Children

Emotional literacy is fundamental to children’s growth. Children are being shown how to behave through their interactions with adults. Modeling emotional literacy can build a foundational vernacular for communication. The context of cooperation that exists in adult relationships should also apply to relationships between children and adults. Equality, honesty, and respect are also pillars in relationships with children (Steiner, 2003). The responsibility for supporting and teaching young people, as well as learning from them, is shared by everyone (Park et al., 2003).

In school, teachers and administration can incorporate an awareness of the symptoms of emotional distress in the preschool and elementary years. This will help the organizational structure of these schools to promote the emotional well-being of all children (Koplow, 2002). Westborough High School in England practices emotional literacy with the objective of making sure all students know each other and enjoy working together. This is a momentous task. It is achieved by recognizing that students may have to be challenged to cooperate, but the benefits for the individual and the school require the maximum effort. Based on this effort, Westborough High School has experienced a 30% or more increase in achievement scores (Park et al., 2003). The congruent emotional state helps create a more academic focus.

A whole-school approach to emotional literacy can be woven into the existing curriculum and structure, while also informing all actions and interactions throughout the school and community (Killick, 2006). Students at Westborough are continually encouraged to discuss distress experienced in and out of school. A former teacher at Westborough said, “If there is a problem, it is talked about and dealt with. Things are never allowed to become issues.” Discrimination is not

tolerated, and methods are developed to foster collaboration through differences, enabling students to learn the importance of respecting each other's cultures (Park et al., 2003).

The city of Southampton is prioritizing emotional literacy for all children, aiming to achieve community-wide success. Educational Psychologists worked with school administrators and the Education Services Chief Inspector to first consider their own emotional literacy. Once that was determined, they analyzed how the community could work together to support and share communal emotional literacy across the entire city (Sharp, 2000).

Communities focused on consciously shared emotional literacy showcase opportunities to explore emotions through songs, poems, games, theatre, art, performance, and writing. Storytelling contributes to children's vocabulary growth, listening skills, emotional recognition, and self-esteem by showing relatable emotions and experiences through characters (Figueroa-Sanchez, 2008). In group involvement, children develop important cognitive skills by engaging in interactions and teamwork with both children and adults. Observational participation also encourages emotional growth, and art provides a vast opportunity for emotional engagement.

In children, emotional literacy can also be procured by picture books. Children may not know how to verbalize that someone is sad or happy in a specific context, but they will respond to an illustration of these emotions. Picture books often focus on emotions such as joy, distress, fear, and anger, which are emotions closely tied to empathy (Nikolajeva, 2013). The illustrations in books produce a context for feelings that words cannot fully emote. The premise of Bibliotherapy is that books can provide the information, guidance, and solace that we need for support. Books are referred to as “medicine for the soul” (McNicol, 2018). These book-focused therapies offer a lens through which to view emotions from different perspectives, which can help mitigate their emotional impact, provide education, and foster understanding.

Creative activities from multiple disciplines are essential in developing competencies such as relationship building, self-discipline, and decision-making. These creative activities may include writing, drawing, theater, music, or artistic expression, creating opportunities for students to learn problem-solving skills, communication, and deeper self-expression. These activities further develop students' cognitive functioning and emotional regulation (Stanley et al., 2024).

Literature Review

The development of emotional literacy is essential to emotional intelligence. Emotional intelligence guides our awareness towards the roles our emotions play in our environments and the way these emotions are expressed in society (Brackett et al., 2006). People who have developed skills related to emotional intelligence understand and express their own emotions, recognize emotions in others, regulate affect, and use moods and emotions to motivate adaptive behaviors (Salovey & Mayer, 1990).

Social and emotional learning (SEL) is the process by which students develop and grow in their capacity to acquire developmental skills that enable them to succeed in school and in life (Muller et al., 2024). SEL helps students develop a deeper understanding of themselves and others by enhancing their social and emotional skills, including prosocial interactions and positive

relationships. It also reduces emotional distress and conduct problems by increasing a student's emotional literacy level.

Emotional literacy helps students understand and relate to one another. When students can express themselves in group discussions designed to promote positive experiences, they can develop well-rounded self-concepts (Lotecka, 1974). This deepens our understanding of social interactions and fosters a sense of communal association with others. Emotional literacy refers to the ability to understand one's own emotional experiences (Nixon, 2016). School director Karen Stone McCown said, "Our kids learn that you always have choices about how you respond to emotion, and the more ways you know to respond to an emotion, the richer your life can be" (Goleman, 1995). Direct communication about emotions normalizes the process of feelings that we all experience. The visual arts offer an opportunity to provide time and space for children to reflect on their emotional experiences and interactions in social settings. The arts provide a safe and supportive space to explore and communicate a student's hopes, dreams, fears, and goals.

The resources and benefits of emotional literacy are available and beneficial to adults as well. Emotional literacy can be reconstructed in individuals who have experienced trauma. Imagery used in psychotherapy helps clients open up to the possibility of discoveries on both metaphorical and sensory levels. Relaxation techniques accompanied by emotional imagery cards build vocabulary to describe emotions and process traumatic events (Bayne & Thompson, 2018).

Predictors of depression in older adults can be evaluated by examining their emotional management, and how one's emotionality could become more positive by reframing perceptions that enable depression (Lloyd et al., 2012). Fernandez-Berrocal (2006) conducted a study with 250 high-school students to examine the relationship between emotional intelligence, anxiety, self-esteem, and depression. The study revealed that the ability to repair emotional states was positively related to self-esteem, the ability to discriminate clearly among feelings, and regulating emotional states was a predictor of lower anxiety and depression.

Expressive Arts Therapy, Art Therapy, and Multi-Modal Approaches to Programming

The arts serve as a language to communicate and educate about emotional literacy, offering endless opportunities for emotional exploration and growth. The American Journal of Public Health (Stuckey & Nobel, 2010) conducted a review of research to analyze the relationship between art and healing. They found that the tested modalities of music engagement, visual arts, movement-based creative expression, and expressive writing proved successful in reducing anxiety, stress, and mood disturbances.

Creative arts therapy encompasses various modalities, as outlined by the National Coalition of Creative Arts Therapies Association (2020), including art therapy, dance and movement therapy, drama therapy, music therapy, and poetry therapy. These therapeutic activities can alleviate or mitigate the effects of traumatic experiences by engaging multiple senses simultaneously, while facilitating connection with inner feelings and unconscious thoughts (Perryman et al., 2019).

The International Expressive Arts Therapy Association (IEATA) (2020) views expressive arts as a combination of performance, visual arts, movement, drama, music, writing, and other creative processes to explore personal growth and community development. IEATA recommends an evolving, multi-modal approach that utilizes psychology, community arts, and education to foster positive growth. The arts are a broad medium, so the multi-modal approach encourages integration with an extensive range of approaches that build on the artistic strengths and interests of the individual and organization.

The American Art Therapy Association (2020) views art therapy as an opportunity to engage the mind, body, and spirit in ways that are distinct and not accessible through verbal articulation alone. Personal expression enriches the lives of individuals, families, and communities by combining the creative processes of applied psychological theory with the human experience in a psychotherapeutic relationship. Kinesthetic, sensory, perceptual, and symbolic methods invite alternative modes of receptive and expressive communication.

The use of music as therapy dates back to the origins of music. Music therapy is the clinical and evidence-based use of music within a therapeutic relationship to address the physical, emotional, cognitive, and social needs of individuals (American Music Therapy Association, 2020). Music is a sensory-based technique that accesses and stimulates specific areas of the cerebral cortex, as well as their relationship to emotion. If music is to be considered a language it is one of healing (Trimble & Hesdorffer, 2017).

Drama therapy is an interactive framework that utilizes storytelling, projective play, purposeful improvisation, role-playing, witnessing, and performance to achieve therapeutic goals (North American Drama Therapy Association, 2020). Drama therapy incorporates different forms of expression and observation. Modalities can be organized according to individual or group needs, as well as personal interests. The focus is on curating an active, experiential practice that allows both the participant and observer to gain therapeutic insight.

Artistic expression personifies the experiences, relationships, aspirations, regrets, successes, and traumas that the artist has lived through (Edgar & Elias, 2021). The arts provide a gateway for learning more about oneself and the world around them while expressing deep emotions and experiences.

Arts Programming in Social Work

Nicholas Mazza, the founder of the Journal for Poetry Therapy, says, “It is important to recognize that social work is an art. The arts offer the means to reach and validate clients by allowing them to, ‘tell their stories' in a variety of ways, that is a respectful and strengths-based approach” (Jackson, 2015). The profession of social work has been built from a deep need for social imagination. According to Glowacki (2004), the Hull House co-founders included in their pursuit to, “uphold the right of all to art and conditions of daily life that could feed the creative impulse.”

Portland State University’s social work department adopted a community-based approach by bringing together social work students and art students to collaborate on problem-solving and

exploring how social workers and artists approach societal issues. By examining how each discipline approaches solving a problem, the social worker and the artist collaboratively educate each other and grow from the different perspectives on the same issue (Ortega, 2019).

A study was conducted with a group of 45 students using school-based art therapy to draw portraits over the course of three years. The students shared their progress, stating that drawing the portraits provided an outlet for expression, openness, and instilled self-confidence, while also helping them cope with anger, sadness, and stress (McDonald et al., 2019).

Theatre activities, storytelling, and participatory video have been shown to be effective coping mechanisms for stress and as a tool to develop hope for adolescents who have been affected by war (Mitchell et al., 2019). An applied theatre study conducted in Spain demonstrated the effectiveness of combining theatre with one-on-one sessions as a powerful tool in social work, fostering the development of individual, group, and community capacities among homeless individuals (Muñoz-Bellerín & Cordero-Ramos, 2020).

Photography can be applied as an outlet for reflection and expression. In Canada, an art-based project was done using photography to build collages for refugee children to share their stories. The photography collages were an empowerment exercise to build a here and now expression for the children based on their home life, school, classrooms, after-school care programs, parks, and neighborhoods (Yohani, 2008).

Mogro-Wilson and Tredinnick (2020) looked at the use of combining a SEL curriculum with a visual art and music curriculum for high school students. The study provided further evidence supporting the use of SEL and the arts as practical tools to increase positive behaviors, enhance school success, and reduce aggression in students.

Arts programming can have a dramatic effect on the social work framework. Arts and SEL related research can contribute to a vast number of contemporary health challenges and build robust evidence-based programming into the field (Travis et al., 2019).

Methods

Participants/ Setting

Participants included 24 children and youth in an after-school program hosted by a local theatre group in Memphis, Tennessee. The ages of the children range from 8 to 13, and the demographic makeup included 21 African American children and 3 Hispanic children. The gender of participants included 15 females and 9 males.

Intervention & Materials Needed

This intervention was a 6-week group-based intervention with daily sessions across the week that ran for 45–60 minutes, utilizing various forms of expressive-arts activities (visual arts, music, movement, drama, creative writing) mapped to specific SEL domains (self-control, thankfulness, peace, gentleness, love, and patience). A facilitation and program manual was provided, along

with session guides that included objectives, materials, timed activities, and debrief prompts, all of which linked artmaking to SEL concepts. All research assistants, who ran the group intervention, were trained to 100% fidelity prior to starting the groups. A two-hour facilitator training was provided and covered the topics of arts facilitation, SEL, trauma-informed practices, and fidelity procedures.

Research Design

The purpose of this study was to evaluate whether an expressive-arts afterschool program focusing on SEL increases children's and youths' social–emotional skills and yields high participant satisfaction.

The following are the research questions posed for this work:

Knowledge Gain: Do SEL domain/skill scores increase from pre- to post, across participants?
H1: Mean posttest > mean pretest (within participants).

Satisfaction: Are youth satisfied with the expressive-arts SEL activities?
H2: Mean satisfaction ≥ pre-specified benchmark (e.g., ≥4 on 1–5 scale).

This study utilized a quasi-experimental pretest–posttest within-subjects design in an after-school program serving elementary through middle school youth across one or multiple sites.

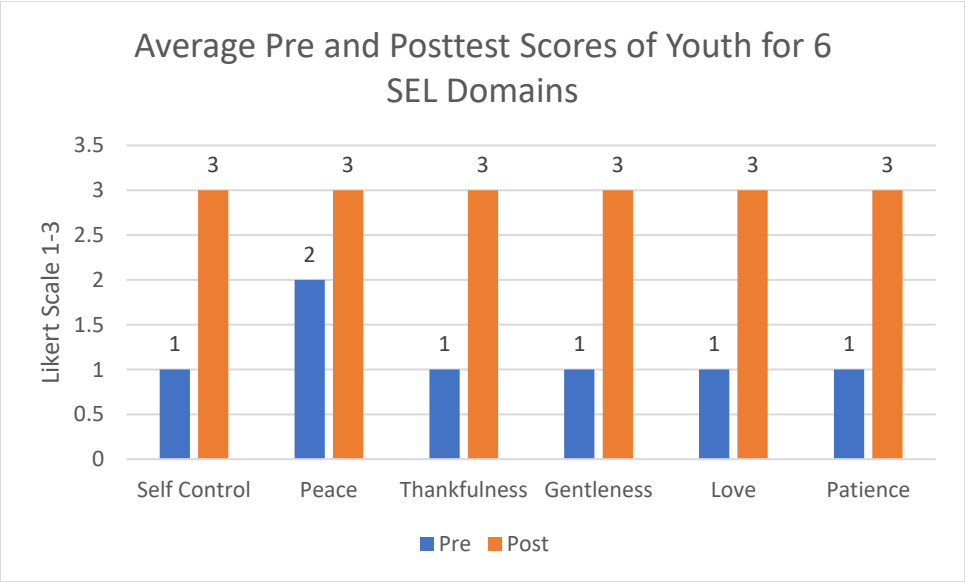
Data Collection

Data collection included pre- and post-test skill-based assessments on the attainment of SEL skills across identified domains following each weekly SEL topic. A Likert scale (1, 2, 3) was used to determine, after each SEL skill was trained, whether the youth felt that they had improved in that skill/domain (pretest) or if they had increased their skill (posttest), assessed before and after the training. (1= not at all, 2= sometimes, and 3= always.) The domains of SEL assessed included the following skills: self-control, thankfulness, peace, gentleness, love, and patience.

A final social validity assessment was completed at the final session to determine the level of satisfaction in participation in the intervention. The Child Intervention Rating Profile (CIRP) was used for the posttest social validity measure. This is a 5-point Likert scale, indicating the respondent's level of satisfaction with the intervention. The CIRP that was used for this study (Turco & Elliot; 1986a) was adapted from an earlier version (Witt & Martens; 1983). The CIRP is a 7-item instrument on a 5-point Likert scale (Strongly Disagree, 1, to Strongly Agree, 5). Three of the items were reversed. The maximum score is 35. A higher score indicates a higher positive perception and acceptability of the intervention. The CIRP has been found to have good validity and reliability (Turco & Elliot; 1986a; 1986b).

Results and Findings

Results indicated that across all 24 participants, their reported increase in the SEL skill across domains improved after each of the training sessions concluded.



The results of the CIRP also indicated that all 24 participants appreciated the use of the expressive arts intervention in the program to address the need for the development of SEL. The CIRP asks students questions about their perceptions of the intervention and whether they will be impacted by it. The posttest data indicated that all 24 respondents (100%) found the intervention to be very helpful and would recommend it to their peers.

Discussion

Limitations/ Future Implications

The findings of this study should be interpreted in light of several important limitations. First, the relatively small sample size limits statistical power, reducing the ability to detect true effects and increasing the potential influence of individual outliers on the results. With fewer participants, estimates of mean scores, effect sizes, and correlations are less stable, and confidence intervals are wider, resulting in more uncertain precision of the findings. The small sample also constrains the ability to examine outcomes across subgroups, such as grade level or gender, and reduces the generalizability of results to broader populations.

Second, the absence of a comparison group prevents strong causal conclusions. Without a group of similar youth who did not participate in the program, it is not possible to determine whether observed improvements in social–emotional knowledge were the result of the expressive-arts intervention or due to other factors, such as natural developmental changes, exposure to related content in school, or testing effects from seeing similar questions twice. External events occurring during the study period could also have influenced the results (historical effects), and statistical phenomena such as regression to the mean may explain a portion of the gains. In

addition, the voluntary nature of participation introduces the possibility of self-selection bias, whereby youth who chose to participate may differ in motivation or baseline skills from those who did not.

Taken together, these limitations suggest that the current results should be viewed as exploratory. While they provide preliminary evidence of the program's potential to enhance social–emotional knowledge, further research using larger samples and a comparison group is needed to attribute observed gains to the intervention itself more confidently.

Conclusion

Combining mental health, behavioral health, SEL, and the arts into programming for children and youth has the potential to impact students now and into the future by providing avenues for self-expression, increasing emotional literacy, processing trauma, and reducing aggressive or depressive symptoms. Arts programs provide a way for complicated feelings to be expressed and understood. This is vital to the overall well-being of children, youth, and adults, as we are all emotional beings, seeking to understand and be understood.

References

American Art Therapy Association. (2020). About Art Therapy. https://arttherapy.org/

American Music Therapy Association. (2020). Music Therapy & AMTA. https://www.musictherapy.org/

Bayne, H. B., & Thompson, S. K. (2018). Helping Clients Who Have Experienced Trauma Gain Emotional Literacy. *Journal of Creativity in Mental Health*, *13*(2), 231–242.

Brackett, M. A., Rivers, S. E., Shiffman, S., Lerner, N., & Salovey, P. (2006). Relating emotional abilities to social functioning: A comparison of self-report and performance measures of emotional intelligence. *Journal of Personality and Social Psychology, 91*(4), 780–795.

Edgar, S. N. & Elias, M. J. (2021). Setting the stage for Social Emotional Learning (SEL) policy and the arts. *Arts Education Policy Review*, *122*(3), 205-209.

Fernández-Berrocal, P., Alcaide, R., Extremera, N., & Pizarro, D. (2006). The ole of motional intelligence in anxiety and depression among adolescents. *Individual Differences Research*, *4*(1), 16–27.

Figueroa-Sánchez, M. (2008). Building Emotional Literacy: Groundwork to Early Learning. *Childhood Education*, *84*(5), 301–304. https://doi.org/10.1080/00094056.2008.10523030

Glowacki, P. (2004). Bringing art to life: The practice of art at Hull House. In C. R. Ganz & M. Stroebel (Eds.), *Pots of promise: Mexicans and pottery at Hull House*, 1920–40 (pp. 5–29). Chicago, IL: University of Chicago Press.

Goleman, D. (1995). *Emotional Intelligence*. New York: Bantam.

Holinger, P. C. (2009). Your baby's earliest feelings. *Psychology Today* blog. Retrieved December 09, 2020, from https://www.psychologytoday.com/us/blog/great-kids-great-parents/200905/i-your-babys-earliest-feelings

International Expressive Arts Therapy Association. (2020, Dec. 7). About Us. Who We Are. https://www.ieata.org/who-we-are

Jackson, K. (2015). Creative arts therapies in social work. Retrieved December 10, 2020, from https://www.socialworktoday.com/archive/051815p22.shtml

Killick, S. (2006). *Emotional Literacy at the Heart of the School Ethos*. SAGE Pub. Ltd.

Koplow, L. (2002*). Creating schools that heal: Real-life solutions*. Teachers College Press.

Lloyd, S. J., Malek-Ahmadi, M., Barclay, K., Fernandez, M. R., & Chartrand, M. S. (2012). Emotional intelligence (EI) as a predictor of depression status in older adults. Archives of *Gerontology and Geriatrics*, *55*(3), 570–573.

Lotecka, L. (1974). A project advocating humanistic education: An evaluation of its effect on public school teachers. *Journal of Drug Education*, *4*(2), 141–149.

Matthews, B. (2006). *Engaging education. Developing emotional literacy, equity and co-education*. Buckingham: McGraw-Hill/Open University Press.

McDonald, A., Holttum, S., & Drey, N. (2019). Primary-school based art therapy: Exploratory study of changes in children's social, emotional and mental health. *International Journal of Art Therapy*, *24*(3), 125-138

McNicol, S., & Brewster, L. (2018). *Bibliotherapy.* Facet Publishing.

Mitchell, C., Linds, W., Denov, M., D'Amico, M., & Cleary, B. (2019). Beginning at the beginning in social work education: a case for incorporating arts-based approaches to

working with war-affected children and their families. *Journal of Family Social Work*, *22*(1), 63–82.
Mogro-Wilson, C., & Tredinnick, L. (2020). Influencing social and emotional awareness and empathy with a visual arts and music intervention for adolescents. *Children & Schools*, *42*(2), 111-119.
Muller, E., Naples, L. H., Cannon, L., Haffner, B., & Mullins, A. (2024). How an integrated arts program facilitated social and emotional learning. *International Journal of Early Years Education*, *32*(1), 204-219.
Muñoz-Bellerín, M., & Cordero-Ramos, N. (2020). The role of applied theatre in social work: Creative interventions with homeless individuals. *British Journal of Social Work*, *50*(5), 1611–1629.
National Coalition of Creative Arts Therapies Association. (2020). About NCCATA. https://www.nccata.org/
Nikolajeva M. (2013). Picture books and Emotional Literacy. *The Reading Teacher*, *67*(4), 249–254.
Nixon, M. (2016). Knowing me knowing you: Enhancing emotional literacy through visual arts. *International Journal of Education through Art*, *12*(2), 181-193.
North American Drama Therapy Association. (2020). What is Drama Therapy? https://www.nadta.org
Orbach, S. (1999). *Towards emotional literacy*. London: Virago.
Ortega, B. (2019). Where social work meets art and social practice in conversation with Dr. Laura Burney Nissen. Retrieved December 11, 2020, from http://psusocialpractice.org/where-social-work-meets-art-and-social-practice/
Park, J., Haddon, A., & Goodman, H. (2003). *The emotional literacy handbook: A guide for schools*. David Fulton Publishers.
Perryman, K., Blisard, P., & Moss, R. (2019). Using creative arts in trauma therapy: The neuroscience of healing. *Journal of Mental Health Counseling*, *41*(1), 80–94.
Robin, W. (2021, July 30). She was music's greatest teacher. *The New York Times Music*. https://www.nytimes.com/2021/07/30/arts/music/nadia-boulanger-bard-music.html.
Salovey, P., & Mayer, J. D. (1990). Emotional Intelligence. *Imagination, Cognition and Personality*, 9(3), 185–211.
Sharp, P. (2000). Promoting emotional literacy: Emotional literacy improves and increases your life chances. *Pastoral Care in Education*, *18*(3), 8.
Stanley, J. A., Picot, C. J., & Hopkins-Flory, J. (2024). Artful echoes: Amplifying SEL through interactive read-alouds and arts engagement. *Early Childhood Education Journal*, *53*, 2245-2254.
Steiner, C. & Perry, P. (1997) *Achieving emotional literacy*. London: Bloomsbury.
Steiner, C. (2003). *Emotional literacy: Intelligence with a heart*. Personhood Press.
Stuckey, H. L., & Nobel, J. (2010). The connection between art, healing, and public health: of current literature. *American Journal of Public Health*, *100*(2), 254–263.
Travis, R., Flynn, M. L., & Sela-Amit, M. (2019). All awareness and no action: Can social work leverage creative arts' potential? *Research on Social Work Practice*, *29*(6), 708–720.
Trimble, M., & Hesdorffer, D. (2017). Music and the brain: The neuroscience of music and musical appreciation. *BJPsych. International*, *14*(2), 28–31.
Turco, T. L., & Elliott, S. N. (1986). Students' Acceptability Ratings of Interventions for

Classroom Misbehaviors: a Study of Well-Behaving and Misbehaving Youth. *Journal of Psychoeducational Assessment*, *4*(4), 281-289. https://doi.org/10.1177/073428298600400404

Witt, J. C., & Martens, B. K. (1983). Assessing the acceptability of behavioral interventions used in classrooms. *Psychology in the Schools, 20*(4), 510–517. https://doi.org/10.1002/1520-6807(198310)20:4<510::AID-PITS2310200420>3.0.CO;2-1

Yohani, S. (2008). Creating an ecology of hope: Arts-based interventions with refugee children. *Child & Adolescent Social Work Journal*, *25*(4), 309–323

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Education by the Numbers

Donald Snead[a]

[a]Middle Tennessee State University

Donald Snead (B.S.in Natural Science, M.A. Teaching in Curriculum & Instruction, Ed.D. Curriculum & Instruction in Science Education) is the Department Chair and Professor in the Educational Leadership Department at Middle Tennessee State University. Committed to a social constructivist philosophy, he teaches courses in curriculum, leadership, and research methods. Dr. Snead is an inductee into the Kentucky Distinguished Educators Cadre. His research interests focus on improving learning for all students.

Use of AI in Education

AI in education refers to the use of artificial intelligence technologies to support teaching and learning. While the present data on AI use in education is limited, research has shown that AI can improve teaching practices, motivate students to actively engage in learning processes, provide quality feedback that enhances learning, create individual learning modules, and aid in creating a favorable learning environment.

The use of AI in K-12 is increasing at a rapid place, raising concerns about the positive and negative effects on students. What do the numbers say about the use of AI? Here is a breakdown of the most common AI tools used in education

How AI is Commonly Used in Education

How AI is Used	To what degree
AI-powered educational games	51%
Automated grading and feedback systems	41%
Chatbots for student support	35%
Adaptive learning platforms	43%
Intelligent tutoring systems	29%
None	06%
Others	05%
No Sure	03%

Attitudes of Teachers and Students Toward AI use in Education

Attitude	Teacher	Student
Used AI technologies	64%	65%
Excited about AI in education	50%	39%
Neutral about AI role in education	10%	20%
AI have not influenced the learning experience	34%	45%

References

AIPRM (2025). AI in Education Statistics. Retrieved on October 16, 2025, from https://www.aiprm.com/ai-in-education-statistics/#:~:text=Global%20AI%20in%20education%20market%20statistics,-As%20of%202022&text=With%20as%20many%20as%2030,43.3%25)%20between%202023%2D32.

Cemper, C. C. (2024). Artificial Intelligence tools for Math Help: Prompted to improve learning. Retrieved on October 16, 2025, from https://www.aiprm.com/education/ai-tools-for-mathematics.

Hanover Research (2024). AI Best practices in K-12 Education. Retrieved on October 16, 2025, from https://www.hanoverrsearch.com/reports-and-briefs

Seril, Lindsey (2025) 20 Statistics on AI in Education to Guide Your Learning Strategy in 2025. Retrieved on October 16, 2025, from https://www.engageli.com/blog/ai-in-education-statistics#adoption.

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Education: Words and Meanings

Exploring the Term: "Children's Play"

Sandra Stone[b\a]

[a]Northern Arizona University

Dr. Sandra J. Stone is Professor Emeritus at Northern Arizona University. Her research and publication interests include multiage education, early childhood, play, and literacy. She consults nationally and internationally.

Children's Play

The word "play" is, as play expert Brian Sutton-Smith (2005) explains, "a highly complicated phenomenon and has never yet been adequately explained in any agreeable scientific terms. On the other hand, the one thing that most scholars do agree about (and then forget) is that play is primarily intrinsically motivated . . . play is fun" (p. xiii). Elkind (2003) agrees that play does not have an aim other than the child enjoying the experience. As Johnson et al. (2005) state, "When playing, children are in a special state of being in which they are not concerned about adult evaluations of them or achieving an external goal. They are in a blissful state of play in which external pressures do not matter" (p. xviii).

Of fundamental and critical importance, is the understanding that play is essential for the *well-being* of children (Burriss & Stone, 2025; Elkind, 2007; Gray, 2013; Gray et al., 2023; Robinson, 2015; Stone, 2017). Unfortunately, Gray (2011) notes how children's play has declined during the past fifty years which has increased children's feelings of helplessness, anxiety, and depression; these increases are not indicators of children's well-being.

Hundreds of books have been written regarding children's play with many theories about its purpose and value. From Plato, to Piaget, and to Vygotsky, play has been evaluated and promoted as important for not only children's happiness and well-being, but also for their development. Organizations such as NAEYC (National Association for the Education of Young Children) and ACEI (Association for Childhood Education International) recognize the importance of play and its essential role in children's healthy development. Nancy Carlsson-Paige, in her 2013 TedTalk, appreciates how "When we watch children play, we understand how central play is to healthy development – to children's emotional, social, and cognitive health and learning . . ." Burriss and Stone (2025) add how play is a risk-free endeavor where there is no failure and children can try out different ideas.

The Merriam-Webster dictionary definition states that the purpose of play is "to engage in activity for amusement or recreation." The Oxford dictionary defines play as engaging in "activity for enjoyment and recreation rather than a serious or practical purpose." However, these definitions are seriously limited when we consider the true importance of children's play.

Burriss and Stone (2025) convey how "play provides children with the inspiration, motivation, enjoyment, and abilities to engage future ideas" (p. 25). Play offers children the freedom to imagine, create, and invent. Play supports avenues for children to be resourceful, to persevere, to be resilient, to solve life's problems, and negotiate life's challenges (Burriss & Stone, 2025; Gray, 2013, 2017; Stone, 2017). Stone (1993) shares how children use play to 'test ideas, discover relationships, abstract information, express their feelings and ideas, define themselves, and develop peer relationships" (p. 1). Play is the primary way children learn about our world and themselves within this world (Bergen, 2009). A simple dictionary definition of children's play is not able to provide the vast depth of what play means for children and how it provides for their well-being and development. Volumes of research and literature support a positive relationship between children's play and children's well-being and learning (Carlsson-Paige, 2008; Copple & Bredekamp, 2009; Dickey et al., 2016; Elkind, 2007; Fiorelli & Russ, 2012; Gray 2013, 2014, 2017; Leong & Bodrova, 2001; Piaget, 1952, 1962; Stone, 2017; Stone & Burriss, 2019; Vygotsky, 1976, 1978).

In defining play, its important characteristics include that play is intrinsically motivated, freely chosen, process not product-oriented, nonliteral, and enjoyable (Johnson et al.,1999; Stone, 1995, 2017; Stone & Burriss, 2019). Exploring these characteristics provides a deeper understanding of children's play.

- *Intrinsically-motivated* means that no one is guiding or directing children's play; a child pursues play for his or her own satisfaction.

- *Choice* is an important characteristic of play. It means that the child freely chooses what he or she wants to play, and with whom, and how the play unfolds. Importantly, "the child controls the play, not an adult" (Stone & Burriss, 2019).

- Children's play is *process, not product, oriented*. The process is more important than the product. As Stone (2017) suggests, "The absence of a goal *frees* children to try many different variations of the experience, which is why play tends to be more flexible than goal-oriented behavior" (p. 307). Play prepares the setting for multiple possibilities for the child's divergent thinking.

- *Non-literal* means that a child can create his or her own reality. Non-literal gives room for children's imagination to flourish. The child can change reality to what he or she wants it to be. The child can experiment with new possibilities. For example, a block can become a car, a stick can become a magic wand, the child becomes a roaring lion, and so forth. The child can experiment with an array of new possibilities.

- And finally, play is *enjoyable*. A child finds pleasure in play; the child is filled with self-satisfaction (Burriss & Stone, 2025; Johnson et al., 2005; Stone & Burriss, 2019).

In defining play, researchers have identified four different types of play: Functional, constructive, dramatic, and games with rules (Johnson et al., 1999; Stone, 1993). *Functional play* usually revolves around the child's senses (taste, hear, see, touch, smell) and fine and gross motor play: blowing bubbles, jumping in a puddle, splashing water, making mud pies, climbing a tree, listening to birds, and chasing a friend. In functional play, the child finds pleasure playing and interacting with his or her environment. The child learns about the world and what he or she can do in the world.

For *constructive play*, the child is building a tower, painting a flower, sculpting a sand castle, experimenting with paint colors, and creating a robot. With constructive play, the child engages thinking skills as he or she hypothesizes, solves problems, invents, and creates. Mentally, the child learns to symbolize such as drawing a picture to stand for a tree, or using blocks to stand for a house.

In *dramatic play*, the child engages in the most highly developed form of symbolic play (Stone & Burriss, 2016; Stone & Stone, 2015.) The child uses a stick to stand for a horse, a block to stand for a car, a box to stand for a boat. The child can change himself into Spiderman, or she can change herself into Bluey. In dramatic or sociodramatic play, the child is imagining, creating, symbolizing, organizing, and inventing. The child is able to see the world from another person's perspective.

For *games with rules*, the child is learning and creating rules of play. With age, the child begins to understand the complexity of games with rules, along with understandings of fairness, cooperation, turn taking, and sharing. The child is learning to "decenter" and consider another person's point of view.

As children play, they are personally constructing their own lives cognitively, socially, emotionally, and physically. Cognitively, children are engaged in active brain development. Play provides children with opportunities for the ability to symbolize, engage in diverse thinking, and problem solving (Fromberg, 2002; Stone, 2017; Stone & Stone, 2021). Elkind (2008) shares how play "nourishes the child's curiosity, imagination, and creativity" (p. 2). In play, children are free to take risks, without the fear of failure, and experience the joy of playing with possibilities (Gray, 2013).

Socially, children are developing social awareness and learning how to deal with the different feelings and attitudes of playmates. They are learning how to solve social conflicts, how to be patient, to take turns, to cooperate, and to share. Play is a natural framework to make friends and get along with others.

Emotionally, children can express feelings of happiness, sadness, anger, worry, and passion through play. Play provides children with a safe context to play out unhappy feelings as well as to show joy. Play provides the environment for children to not only express their feelings but to learn to cope with them as well.

Play is also the predominate way children develop physically. Children run, jump, throw and catch balls, and skip and hop as they develop a command of their own bodies. They develop

hand-eye coordination as they cut, paste, and paint. Over time, they become physically confident as they explore how their bodies work.

In exploring the meaning of children's play, a simple dictionary definition is not adequate. Play is dynamic, vibrant, brilliant, vital, exciting, energetic, thoughtful, personal, important, necessary, imaginative, creative, and the list goes on. Understanding children's play from an adult's point of view necessitates careful action and protection of the gift of play for our children.

Thus, it is important to note the role of adults in regard to children's play. It is essential for parents, caregivers, and educators to understand that play is not a curricular goal designed to reach a standard or objective. Play belongs to the children. For example, a classroom teacher had set up a wonderful environment that included play for the children. However, the teacher informed the children that they had to "write" about each of the choices they made in the environment. As one child walked around the room, he wanted to play with the blocks but remembered he had to write about it. He then went to the home center where he could pretend to be the dad, but he remembered he would have to write about it. The young boy walked around the entire room thinking about where he would want to play and enjoy the different experiences. However, he decided to opt out of the experiences as he didn't want to write about them. The curricular literacy objective averted the young boy's play experiences which would have contributed to his holistic development. In another example, a young child was playing with toy farm animals when the teacher intervened in his play by trying to teach him to count and classify the animals (Stone & Burriss, 2019). As a result, the child disengaged in the play, because the teacher used the child's play as a tool to reach an instructional goal.

Bergen (2009) writes, "All human beings are active seekers of knowledge, and play is an integral facet of this ongoing quest. The pedagogical value of play does not lie in its use as a way to teach a specific set of skills through structured activities called 'play.' Rather, play is valuable for children primarily because it is a medium for development and learning" (p. 416). As Stone & Burriss (2019) note, "If we value play in our environments, then we must protect play as being under the child's control" (p. 214). For play to be *meaningful* for the children, play must be in their control.

Adults can support children's play by providing a rich environment where children choose what and how they play, and with whom they play. By providing play materials and play areas, adults can enhance children's play opportunities without using the play experiences to meet curriculum objectives. Distinguishing between the two approaches is important. Again, play belongs to the child, not to the adult. Elkind (2003) shares how play does not have an aim other than the child enjoying the experience. Or, as Johnson et al. (2005) suggest, playing children should not have to be concerned about achieving a goal set by an adult or their play being evaluated as to whether they meet the desired curricular objective.

However, as Robinson (2015) states, "play is absolutely fundamental to learning: it is the natural fruit of curiosity and imagination" (p. 96). Gray (2013) emphasizes how "[P]lay is the means by which children learn to make friends, overcome their fears, solve their own problems, and generally take control of their own lives. It is also the primary means by which children practice

and acquire the physical and intellectual skills that are essential for success in the culture in which they are growing" (p. 5). According to Wasserman (1992), play supports the "true empowerment of children" (p. 133). Adults in children's lives can greatly support children's play without controlling their play. Controlling play is not synonymous with the meaning of children's play.

As children enjoy the play experience, we must remember that play is the natural way children learn (Robinson, 2015). Children's play is important. Adults, in children's lives, can rest assured that play is critical and essential for children's overall well-being, as well as their development cognitively, socially, emotionally, and physically. As Wasserman (1992) concludes, play empowers "children to make discoveries that go far beyond the realm of what we adults think is important to know" (p. 133). Knowing how play is vitally important for children's overall healthy development, we, as adults, are reminded that for children the definition of play is "fun."

References

Bergen, D. (2009). Play as the learning medium for future scientists, mathematicians, and engineers. *American Journal of Play, 1*(4), 413-428.

Burriss, K. G., & Stone, S.J. (2025). Dreaming a playground: Supporting children's imagination. *International Journal of the Whole Child, 10*(1), 25-43.

Carlsson-Paige, N. (2008). Reclaiming play: Helping children learn and thrive in school. *Exchange: The Early Childhood Leaders Magazine Since 1978, 180*, 44-48.

Carlsson-Paige, N. (2013). When education goes wrong: Taking creativity and play out of learning. TEDxTheCalhounSchool. https://www.youtube.com.

Copple, C., & Bredekamp, S. (Eds.). (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.) National Association for the Education of Young Children (NAEYC).

Dickey, K., Castle, K., & Pryor, K. (2016). Reclaiming play in schools. *Childhood Education, 92*(2), 111-117.

Elkind, D. (2003). Thanks for the memory: The lasting value of true play. *Young Children, 58*(3), 46-51.

Elkind, D. (2007). *The power of play*. Da Capo Lifelong Books.

Elkind, D. (2008). The power of play: Learning what comes naturally. *American Journal of Play, 1*(1), 1-6.

Fiorelli, J., & Russ, S. (2012). Pretend play, coping, and subjective well-being in children. *American Journal of Play, 5*(1), 81-103.

Fromberg, D. (2002). *Play and meaning: Early childhood education.* Allyn and Bacon.

Gray, P. (2011). The decline of play and the rise of psychopathology in children and adolescents. *American Journal of Play, 3*(4), 443-463.

Gray, P. (2013). *Free to learn. Why unleashing the instinct to play will make our children happier, more self-reliant, and better students for life.* Basic Books.

Gray, P. (2014). School overload. *Education Canada, 54*(2), 9-11.

Gray, P. (2017). What exactly is play, and why is it such a powerful vehicle for learning? *Topics in Language Disorders, 37*(3), 217-228.

Gray, P., Lancy, D., & Bjorklund, D. (2023). Decline in independent activity as a cause of decline in children's mental well-being. Summary of the evidence. *The Journal of Pediatrics, 260*, 1-8.

Johnson, J., Christie, J., & Yawkey, T. (1999). *Play and early childhood development*. Allyn & Bacon.

Johnson, J., Christie, J., & Wardle, F. (2005). *Play, development, and early education*. Pearson Education, Inc.

Leong, D., & Bodrova, E. (2001). Lev Vygotsky: Playing to learn. *Early Childhood Today, 15*(4), 48.

Merriam-Webster dictionary. Definition of "child's play." Merriam-Webster.com. https://www.merriam-webster.com/dictionary/child%27s%2)play

Oxford English dictionary. Definition of "play." https://oed.com

Piaget, J. (1952). *The origins of intelligence in children*. International Universities Press.

Piaget, J. (1962). *Play, dreams and imitation in childhood.* Norton.

Robinson, K. (2015). *Creative schools*. Penguin Publishing Group.

Stone, S. J. (1993). Playing: A kid's curriculum. Glenview, IL: GoodYear Books.
Stone, S. J. (1995). Wanted advocates for play in the primary grades. *Young Children, 50*(6), 45-54.
Stone, S. J. (2017). The essential role of play in school contexts for the well-being of children. *Learning Landscapes, 10*(2), 305-318.
Stone, S. J., & Burriss, K. G. (2016). A case for symbolic play: An important foundation for literacy development. *The international Journal of Holistic Early Learning and Development, 3*, 59-72.
Stone, S. J., & Burriss, K. G. (2019). *Understanding multiage education*. Routledge.
Stone, S. J., & Stone, B. A. (2015). Play and early literacy: An analysis of kindergarten children's scaffolding during symbolic play transformations *The International Journal of Holistic Early Learning and Development, 3*, 59-72.
Stone, S. J., & Stone, B. A. (2021). Play and emerging literacy: A comparative analysis of kindergarten and mixed-age (K-2) children's scaffolding during symbolic play transformations. *Play and Literacy: Play and Culture Studies* (pp. 91-112). Hamilton Books.
Sutton-Smith, B. (2005). Foreword: Play as a fantasy of emergency. In Johnson, J., Christie, J., & Wardle, F., *Play, Development, and Early Education*, 2nd ed. (pp. xiii-xix). Pearson Education, Inc.
Vygotsky, L. (1976). Play and its role in the mental development of the child. In J. S. Bruner, A. Jolly, & K. Sylva (Eds.), *Play: Its role in development and evolution* (pp. 537-544). Basic Books.
Vygotsky, L. (1978). *Mind in society: The development of psychological processes*. Harvard University Press.
Wasserman, S. (1992). Serious play in the classroom: How messing around can win you the Nobel Prize. *Childhood Education, 68*(3), 133-139.

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Pictures for Reflection

Kathy Burriss[a], Larry Burriss[b]

[a-b]Middle Tennessee State University

Kathy Burriss (B.A. and M.Ed. Elementary Education, Ed.D. in Early Childhood Education) taught diversity, research, and curriculum courses in the Department of Elementary and Special Education at Middle Tennessee State University. She remains an advocate for children's play, outdoor activity, and multiage learning.

Larry L. Burriss (bachelor's and master's degrees in broadcast journalism, master's degree in human relations, Ph.D.in communication, as well as a law degree) is a professor in the School of Journalism and Strategic Media at Middle Tennessee State University where he teaches Introduction to Mass Communication, Media Law, Mass Media & National Security, and Quantitative Research Methods. Dr. Burriss retired from the U.S. Air Force as a lieutenant colonel.

Nature: A holistic experience.

When we observe nature, we often only think of the five senses. However, feelings and emotions also play a role in our appreciation of the natural world.

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Page Turners: Books for Children

Katrina Bartow Jacobs[a], Carla K. Meyer[b], Michelle J. Sobolak[c], Patricia Crawford[d], Maria Genest[e]

[a]University of Pittsburgh, [b]Duquesne University, [c-d]University of Pittsburgh, [e]Endicott College

Almost Underwear: How a Piece of Cloth Traveled from Kitty Hawk to the Moon and Mars
Written and Illustrated by **Jonathan Roth**
Hachette Book Group, 2024
ISBN 978-0-3165-2554-1
How could a plain muslin cloth, destined for practical undergarments in 1905, end up on Mars? That is the question this fun and informative picture book is answering for readers. With a combination of photographs and playful illustrations of a smiling swatch of beige fabric, Roth tells the wonderful story of how this bolt of cloth was initially purchased by the Wright brothers, to wrap the wings of their new flying invention. Once the cloth became part of this exciting successful endeavor, it was considered an important historical artifact, leading to further adventures with Neil Armstrong and a trip on a Mars rover! This well-written nonfiction text cleverly guides readers along this amazing cloth's journey through time and space. Ages 5-9.

And There Was Music
Written and Illustrated by **Marta Pantaleo**
Translated by **Debbie Bibo**
Eerdmans Books for Young Readers, 2025
ISBN 978-0-8028-5640-1
"Music is everywhere." And so this vibrant picture book begins, highlighting the power of music in the lives of people around the world. The author takes the reader on a journey, highlighting the emotional connections we have to music and noting that even language differences can be bridged through shared musical experiences. Colorful, engaging illustrations appear to show musicians mid-drumming or bagpiping, and with minimal text on each page, this delightful text would be a great read-aloud choice even for the youngest of readers. In addition, there is a visual glossary of global musical instruments and equipment provided at the end of the book to support deeper understanding of the illustrations. Ages 3-5.

Buffalo Fluffalo
Written by **Bess Kalb**
Illustrated by **Erin Kraan**
Random House Studios, 2024

ISBN 978-0593564530
This rhyming tale of a not so mighty buffalo who uses his fluff to hide who he really is reminds all of us of the importance of embracing our true selves and that those who love us will love us more if we are authentic. Prior to learning this important lesson, Buffalo Fluffalo tries to intimidate all the other prairie animals with his very fluffy fur and his surly disposition. As each animal tries to engage with Buffalo Fluffalo, he reminds them to leave him alone because he has had enuffalo. A sudden prairie rain shower reveals that Buffalo Fluffalo is really quite small. His prairie friends embrace him for who he really is and remind him that that is surely enough. Ages 2-6.

Luigi the Spider Who Wanted to be a Kitten
Written by **Michelle Knudsen**
Illustrated by **Kevin Hawkes**
Candlewick Press, 2024
ISBN 978-1536219111
This story follows a big, hairy and self-assured spider as he searches for a new home with dark corners and crevices to happily spin his web. He thinks he finds just the right place when an older woman mistakes him for a kitten and makes him her adored pet, Luigi. Luigi isn't sure he likes that name or being a kitten but quickly learns he loves the companionship and love his new owner shows him and decides he wants to be a kitten. This wholesome tale follows the spider's antics as he pretends to be a kitten all to find out that his owner figured out he was a spider. She loves him all the same and did not want to ruin the fun Luigi seemed to be having pretending to be a kitten. This tale of being true to yourself and the acceptance you will find from those who love you will engage young and old alike. Ages 4-8.

No More Chairs
Written by **Dan Gill**
Illustrated by **Susan Gal**
Little, Brown, 2025
ISBN 978-0-316-55269-1
The kids in Mr. Gill's class want to know many things. Most of all they want to know why there is always an empty chair at the front of their classroom. Their teacher tells them a childhood story about a time when he was welcomed into someone's home and his best friend was not; excluded with the untrue excuse that there were "no more chairs" for guests. This picture book memoir highlights the pain of racism and exclusion, but also conveys the hopefulness of friendship, solidarity, and a commitment to make sure there will always be "enough chairs"; the classroom will always be a place where everyone is welcome. Words and beautiful watercolor illustrations work together to convey this powerful story of belonging. Ages 4-10.

Orris and Timble: The Beginning
Written by **Kate DiCamillo**
Illustrated by **Carmen Mok**
Candlewick, 2024
ISBN 978-1-5362-2279-1
Orris is a timid rat who lives in the solitude of his comfy barn nest. He takes solace in his few possessions, including an old sardine can that bears the words, "Make the good and noble

choice!!" When a large, scary owl is caught in a trap, Orris must put these words to the test. Should he hide or should he help? This charming beginning chapter book is classic Kate DiCamillo—full of quirky animals, unlikely friendships, and the power of stories, and gentle nudges to choose goodness and kindness even when it seems a bit scary. This heartwarming story is the first installment of a three-book trilogy, just right for young readers ready to step into an early chapter book series. Ages 4-8.

A Mischief of Mice
Written and Illustrated by **Christie Matheson**
Sourcebooks, 2024
ISBN 978-1-7282-7207-8
A mystery is afoot in the forest. A *mischief* of mice has disappeared, and the *scurry* of squirrels is worried. But don't fret - they are found safe and warm at the end. This delightful book offers our young readers a glimpse into the woods at night, right as fall is turning to winter. As the squirrels track down the mice, we are introduced not only to other animals but also to the fun and engaging collective nouns used to describe these animal groups. The narrative has a natural and supportive rhythm and rhyme and beautiful images capture the natural world. There is also a helpful appendix at the back that both reviews the collective nouns for animal groups and supports younger readers in learning how to use nonfictional resources. This book would be wonderful for elementary teachers who are studying animal habitats or just wanting to teach children how to use nonfiction tools. Ages 5-8.

Home
Written by **Matt de la Peña**
Illustrated by **Loren Long**
Putnam, 2025
ISBN 978-0-5931-1089-8
Written by the award-winning author of *Last Stop on Market Street*, among other bestsellers, *Home* opens with a reminder of the various spaces and places we all call home. From a truck to a houseboat to a busy apartment building, the illustrations and words explore the range of dwellings we create for ourselves as humans. But then the book takes a sadder turn - reminding us that there are times when home is hard to find - when disasters, personal and physical - can shake our faith in home. In the final pages of the book the authors bring us all back home, reminding us where we find love and peace in the people and places of the earth, we find home. The poetic, lyrical narrative and beautiful full-spread pictures draw you into the collective conditions the book describes. This book would be an excellent addition to an older elementary classroom or even middle school class exploring themes of what it means to call a place home, and how we deal with the unexpected crises that life can throw our way. Ages 8-14.

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Emerging Scholars

Beyond Inclusion: A Conceptual Framework for Cultivating Authentic Belonging for Middle School Students of Color and First-Generation Immigrants

Tsz Yu Cheung[a]

[a]Florida State University

Tsz Yu (Kelly) Cheung is a Clinical Mental Health Counseling graduate student at Florida State University, originally from Hong Kong. With a background in psychology and family social science, she approaches her work through a strong multicultural and trauma-informed lens shaped by her lived experience and international training. Clinically, she has provided care across inpatient psychiatry, telehealth, forensic state hospital, and applied behavior analysis settings. Her research focuses on eating disorders among LGBTQ+ populations and on sense of belongingness among marginalized groups such as college students with disabilities and international students. Kelly's work is grounded in culturally responsive, evidence-based practices that center inclusivity, empowerment, and holistic well-being.

Abstract

The "whole child" approach emphasizes the need to nurture all aspects of a student's development. For middle school students of color and first-generation immigrants, a fundamental aspect of this development is a sense of authentic belonging. This conceptual paper critically argues for an understanding of belonging as more than mere inclusion or representation; it is the active, intentional cultivation of an environment where students' identities are not merely seen, rather, they are affirmed as integral to the learning process. We synthesize theories of culturally relevant pedagogy (Ladson-Billings, 1995), the mirror and window framework (Style, 1988), and the psychology of belonging (Allen et al., 2021) to propose a multi-dimensional framework for fostering belonging. This framework posits that authentic belonging is achieved through the synergistic implementation of Representational Belonging (curriculum and environments), Pedagogical Belonging (instructional practices), and Relational Belonging (teacher-student and peer relationships). The paper concludes with implications for practice, urging educators to move beyond passive inclusion and toward the active and scholarly cultivation of spaces where every child's cognitive, social and emotional development is rooted in a profound sense of being valued and connected.

Keywords: belonging, culturally relevant pedagogy, identity, first-generation immigrant, students of color

Introduction

The education of the "whole child" is a holistic endeavour, concerned with the cognitive, physical, social, emotional, and psychological development of every student (ASCD, 2018). At the heart of this development lies a foundational, often elusive condition - a sense of belonging. For early adolescents in middle school, a period characterized by identity exploration and a heightened need for peer connection, belonging is particularly critical. However, for students of color and first-generation immigrant children, systemic barriers, curricular erasure and microaggressions can make school feel like a place where they must leave their identities at the door in order to be successful (Kumar et al., 2018).

This conceptual paper argues that to truly support the whole child, it is important for educators to move beyond a superficial understanding of inclusion. It is not enough to simply have diverse students in the room; we proactively create conditions for what we term authentic belonging. We define authentic belonging as the felt sense of being a valued and integral member of a community, where one's unique identity, background and lived experiences are not merely tolerated, but are recognized as essential assets to the collective learning. To this end, we propose a tripartite framework for conceptualizing and operationalizing authentic belonging in the middle school context.

Theoretical Foundations

The proposed framework is grounded in a synthesis of established pedagogical and psychological theories that collectively argue for an active, rather than passive, approach to fostering belonging. The foundational principle is drawn from Culturally Relevant Pedagogy (Ladson-Billings, 1995), which posits that meaningful education for students of color concurrently advance academic achievement, cultural competence, and sociopolitical consciousness. This triad provides the pedagogical imperative, insisting learning be connected with students' cultural identities to be truly empowering. Complementing this understanding, is the conceptual metaphor of "mirrors and windows" (Style, 1988), which articulates the critical need for the curriculum to reflect students' own realities back to them while also providing a view into the experiences of others. The absence of such mirrors constitutes a form of symbolic erasure that undermines a student's sense of legitimacy within the academic space. Finally, the framework is underpinned by the robust psychological science of belonging, which identifies it as a fundamental human motivation (Maslow, 1943) and additionally, a key predictor of academic and well-being outcomes (Allen et al., 2021). Together, these theories establish that belonging is not a soft skill, but a core condition for learning, necessitating intentional design in school environments.

A Tripartite Framework for Authentic Belonging

From this theoretical grounding, we conceptualize authentic belonging as an ecosystem cultivated through three interdependent dimensions: Representational, Pedagogical and Relational Belonging. The first dimension, Representational Belonging, addresses the visible environment and narrative landscapes of the school; it is vital students see their identities, histories, and languages reflected in the curriculum, physical spaces and instructional materials to feel they are legitimate members of the academic community. The second dimension,

Pedagogical Belonging, moves beyond static representation to the dynamics of the learning process itself, requiring instructional practices that actively position students' cultural knowledge and lived experiences as assets. This involves designing lessons that draw upon Moll et al.'s (1992) "funds of knowledge" and create opportunities for co-constructing understanding; thereby, students' voices are not just present but are integral to knowledge creation. The third and foundational dimension is Relational Belonging, which constitutes the affective core of the framework, built through teacher-student and peer relationships characterized by unconditional positive regard, cultural affirmation and deliberate community-building. It is the synergistic interaction of these three dimensions, embedded in the environment, valued in the pedagogy and known in relationships, that creates the conditions for the deep, authentic belonging essential for the whole child to thrive.

Limitations and Future Research

A primary limitation in the broader discourse on belonging for mobile student populations is the pronounced lack of empirical data and targeted research focusing on internationally mobile children under the age of kindergarten. This constitutes a significant niche population that is often statistically invisible in educational literature. However, their exclusion from the research landscape does not diminish their importance or the unique challenges they face. The children of diplomats, multinational corporate employees, military personnel and academic researchers often experience a highly mobile, globally dispersed childhood, moving between countries and educational systems with frequency. This transient lifestyle can profoundly impact their early sense of place, cultural identity and ability to form stable attachments, all foundational to the whole child's development. Therefore, future research intentionally expands to include this demographic, investigating how early childhood educators and systems can foster a portable sense of belonging that can traverse national borders and support these children's socio-emotional and academic needs from their earliest years.

Discussion and Implications for Educating the Whole Child

The power of this framework lies in the synergy of its parts. Representational belonging without pedagogical belonging is tokenism, a poster on the wall without a change in practice. Pedagogical belonging without relational belonging can feel transactional. It is the intertwining of all three that creates the ecosystem for authentic belonging to flourish. For the whole child, the implications are profound.

The critical partnership between school counselors and classroom teachers is essential for bridging the macro and micro levels of school life to cultivate authentic belonging. School counselors operate at the macro-level, designing systemic supports, auditing school-wide climates, and leading professional development to create an inclusive foundation. Classroom teachers implement this vision at the micro-level through their daily pedagogical choices and relational interactions within the classroom. Together, they ensure that broad institutional commitments to equity translate into the consistent, day-to-day experiences that make each student feel seen, valued, and connected.

When these three domains are actively cultivated, cognitive development is enhanced as students feel safe to engage and take intellectual risks. Simultaneously, social-emotional development is supported through the construction of a secure identity and the practice of empathy. Finally, this environment nurtures moral development, as students learn to value justice, equity and the inherent dignity of all people.

Conclusion

Fostering authentic belonging is not a program to be implemented; rather, a fundamental orientation to teaching and learning. It requires educators to engage in continuous, critical reflection on their curriculum, their pedagogy, and their relationships. The proposed framework of Representational, Pedagogical and Relational Belonging provides a concrete conceptual model for this work. By committing to this multi-dimensional approach, we move beyond simply including the diverse child to truly educating the whole child, ensuring that their journey through middle school is one where they are seen, heard, valued and empowered to thrive in all their complexity.

References

Allen, K.-A., Gray, D. L., Baumeister, R. F., & Leary, M. R. (2021). The need to belong: A deep dive into the origins, implications, and future of a fundamental construct. *Educational Psychology Review*, *34*(2), 1–24. https://doi.org/10.1007/s10648-021-09633-6

ASCD. (2018). *The ASCD whole child approach*. https://www.ascd.org/whole-child

Kumar, R., Zusho, A., & Bondie, R. (2018). Weaving cultural relevance and achievement motivation into inclusive classroom cultures. *Educational Psychologist*, *53*(2), 78–96. https://doi.org/10.1080/00461520.2018.1432361

Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal*, *32*(3), 465–491. https://doi.org/10.3102/00028312032003465

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, *50*(4), 370–396.

Moll, L. C., Amanti, C., Neff, D., & González, N. (1992). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory Into Practice*, *31*(2), 132–141. https://doi.org/10.1080/00405849209543534

Style, E. (1988). *Curriculum as window and mirror*. The National SEED Project. https://nationalseedproject.org/key-seed-texts/curriculum-as-window-and-mirror

International Journal of the Whole Child
2025, VOL. 10, NO. 2

Updates

Thank you for your continued support of the International Journal of the Whole Child and our commitment to holistic learning and to the development of the whole child. In our Summer 2026 issue, we will be introducing a new section titled “Nature, Nurture, and Childhood”. This section will highlight the impact nature has on child development and how nature can enhance learning, support social and emotional development, and promote overall well-being. When integrated with nurturing relationships, and intentional educational practices, these influences provide a robust framework for fostering resilience and the holistic growth in childhood. We are very excited to add this section to our journal. Again, we sincerely thank you for your continued support of the International Journal of the Whole Child. We look forward to seeing you in Summer 2026.