

The Grandparent Advantage: Intergenerational Scaffolding in Arab Households and Global Family Systems

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ABSTRACT

Parental influences on children's learning are well documented, but the role of grandparents remains underexplored, particularly in non-Western and multigenerational contexts. This study presents the first mixed-methods analysis of Arab households linking grandparental scaffolding to developmental outcomes. Guided by Vygotsky's sociocultural theory and Bronfenbrenner's ecological systems framework, data were collected from surveys with 412 families (N = 1,236 respondents) and interviews with 78 families across the Gulf, Levant, and North Africa. Quantitative results show that children with active grandparental involvement scored significantly higher on school readiness ($p < .01$, $\eta^2 = .12$), narrative reasoning ($p < .01$, $\eta^2 = .14$), and heritage language retention ($p < .01$, $\eta^2 = .15$). Qualitative insights portray grandparents as storytellers, moral guides, and cultural anchors, while also revealing barriers of digital exclusion and generational dissonance. By integrating statistical evidence with lived narratives, the study demonstrates that grandparents act as cognitive architects and cultural stewards within Arab kinship systems. These findings challenge nuclear-family-centric models in developmental psychology and education and highlight the global relevance of intergenerational caregiving. Positioned at the intersection of developmental research and cross-cultural family studies, the article calls for policies that recognize elder knowledge as a vital pedagogical resource.

Keywords: Grandparental involvement, Intergenerational learning, Sociocultural theory, Cultural transmission, Multigenerational households, Comparative family studies.

INTRODUCTION

In the formative years of childhood, the family exerts a profound influence on cognitive, emotional, and cultural development. While the literature has extensively examined parental involvement in children's learning outcomes (Desforges & Abouchaar, 2003; Epstein, 2011), recent studies stress the need to expand beyond nuclear-family models and account for wider kinship networks in learning (Chen & Liu, 2019; Delgado, 2022; Park & Sarkar, 2021). The role of grandparents, particularly in collectivist, non-Western societies, remains markedly understudied despite mounting evidence of their contributions as caregivers, cultural transmitters, and informal educators.

A recent UAE-based survey illustrates this duality: 73% of grandparents reported regularly sharing folktales and religious narratives with their grandchildren, yet only 12% felt confident using school-issued digital platforms. This tension between cultural anchoring and digital exclusion highlights the evolving, and often underacknowledged, role of elder caregivers in education. As socio-economic pressures and educational reforms intensify across the Arab world, grandparents are increasingly positioned as co-educators. Yet prevailing research frameworks, grounded in Euro-American nuclear family models, rarely capture the intergenerational

configurations that define everyday life in the Global South (OECD, 2023; Vincent & Ball, 2007; Al-Janabi & Al-Kandari, 2020).

Globally, grandparental involvement is expanding. The World Bank (2023) estimates that in over 40% of middle- and high-income households, grandparents participate in daily child-rearing. Recent empirical work confirms that this involvement shapes children's literacy, psychosocial well-being, and resilience (Moore & López, 2020; Sadruddin, 2021; Zhang et al., 2023). In regions such as the Middle East, South Asia, and sub-Saharan Africa, where extended kinship systems remain prevalent, grandparents serve as intergenerational bridges, mediating curricular transitions, linguistic shifts, and socio-digital divides (UNESCO, 2022; Tudge et al., 2018). However, much existing research remains urban-centric and skewed toward digitally literate, middle-class families, thereby obscuring the full spectrum of grandparental contributions in rural or marginalized contexts (Seward & Kelly, 2021).

The Arab region, and particularly the United Arab Emirates (UAE), offers a pertinent case. Despite rapid modernization and increasing educational standardization, family remains a deeply rooted institution, with grandparents frequently assuming central roles in children's academic, moral, and emotional development. Recent research highlights their contributions to bilingual retention, cultural continuity, and emotional regulation (Al-Janabi & Al-Kandari, 2020; Yousef & Al-Qahtani, 2023). National surveys similarly report that Emirati grandparents often act as custodians of religious heritage, stewards of Arabic language maintenance, and anchors of emotional support (Family Development Foundation, 2023). Yet these contributions remain largely invisible in educational policy and practice, compounded by generational mismatches in pedagogy and widening digital divides.

This study addresses these gaps by systematically examining the educational and cultural roles of grandparents in Arab multigenerational households. Specifically, it investigates whether children who experience active grandparental involvement demonstrate stronger school readiness, deeper cultural literacy, and more resilient bilingual competence. It further explores the conditions under which such contributions are most effective or constrained.

The analysis is guided by two complementary theoretical frameworks. Vygotsky's Sociocultural Theory (1978) conceptualizes grandparents as "more knowledgeable others," who scaffold learning through oral traditions, rituals, and mediated guidance within the child's Zone of Proximal Development (ZPD). Bronfenbrenner's Ecological Systems Theory (1986) situates grandparents within the microsystem, while also highlighting mesosystem tensions between home practices and school expectations. Contemporary scholarship has extended these theories to intergenerational and digital contexts, reinforcing their relevance to kinship-based caregiving in non-Western societies (Rogoff, 2019; González et al., 2021). Together, these perspectives illuminate how grandparental knowledge is transmitted, negotiated, or obstructed within contemporary educational systems.

The study relies on cross-sectional data, enabling the identification of correlations but not causal pathways. While the findings indicate that children with active grandparental involvement may enjoy certain developmental advantages, longitudinal research is required to track outcomes over time. Moreover, the sample, drawn largely from families with some level of digital connectivity, may underrepresent the most digitally excluded households. This limitation underscores the urgency of policies designed to enhance digital inclusion for older caregivers.

Finally, the study situates its findings within a global perspective. Initiatives such as Finland's elder mentorship programs, Japan's intergenerational moral education projects, and Singapore's Silver Tech inclusion efforts demonstrate the potential of structured elder participation in education (Lee, 2020; Ng & Tan, 2021). Such models offer useful precedents for adaptation in Arab societies, particularly when localized through culturally embedded institutions such as mosques, women's councils, and neighborhood associations.

As Arab education systems navigate the dual pressures of modernization and cultural preservation, intergenerational engagement must be reimagined not as a nostalgic remnant but as a strategic asset. Grandparents are not peripheral figures; they are integral to a holistic educational vision that strengthens memory, resilience, and cultural continuity while bridging tradition and innovation. This study provides empirical, theoretical, and policy insights to reposition grandparents as intentional co-educators within contemporary education. At the same time, the findings contribute to wider comparative debates on extended kinship systems. By situating Arab multigenerational families alongside Asian, African, and Latin American contexts, the study highlights how grandparents' roles resonate across collectivist societies worldwide.

Research Objectives

This study explores the underrecognized role of grandparents in early childhood education within extended family systems. Building on sociocultural and ecological perspectives, it examines how grandparental involvement shapes children's cognitive development, school readiness, and cultural identity, while also identifying structural and technological barriers to intergenerational learning.

The objectives are to:

1. Assess the scope and quality of grandparental involvement in children's early learning, including contributions to literacy, moral socialization, and academic scaffolding.
2. Examine the role of grandparents in preserving linguistic and cultural identity, particularly in multilingual contexts where heritage language retention is at risk.
3. Identify structural, technological, and pedagogical challenges that constrain grandparents' effective participation in early education.
4. Compare developmental outcomes between children raised in nuclear versus extended family settings, focusing on school readiness, academic performance, and psychosocial well-being.
5. Evaluate international models of intergenerational learning to inform culturally responsive policies supporting grandparental engagement in Arab contexts.

Research Questions

The study addresses the following research questions:

1. How does grandparental involvement influence children's academic achievement and school readiness?
2. In what ways do grandparents shape children's retention of native language and development of cultural identity?
3. What technological, curricular, and generational barriers limit grandparents' participation, and how do these challenges vary across socio-economic and geographic contexts?
4. Do children in extended family settings with active grandparental involvement exhibit stronger developmental outcomes than those in nuclear families?
5. What lessons from international models of intergenerational learning can inform culturally sensitive policies in the Arab region?

LITERATURE REVIEW: GRANDPARENTS AS CO-ARCHITECTS OF DEVELOPMENT IN AN ERA OF DIGITAL DISRUPTION

The demographic shift toward aging populations, combined with the rapid digitization of education, calls for a re-examination of the ecology of child development. While parental involvement remains a central focus of developmental psychology, the informal but significant contributions of grandparents demand systematic scholarly attention. The COVID-19 pandemic sharpened this need, as households worldwide relied more heavily on intergenerational support during school closures (Park & Sarkar, 2021; Zhang et al., 2023). Despite their pivotal role, particularly in collectivist and postcolonial societies, grandparents have long remained peripheral in educational research, often relegated to the status of "invisible educators" (Arber & Timonen, 2012). This review synthesizes contemporary scholarship to reposition grandparents as agents of cognitive scaffolding, cultural preservation, and socio-emotional support, with a focus on Arab societies where tensions between tradition and modernization are especially pronounced.

From Peripheral Caregivers to Pedagogical Agents

Developmental psychology and education policy have historically centered on nuclear families, privileging parental involvement as the cornerstone of academic achievement (Desforges & Abouchaar, 2003; Epstein, 2011). This focus, rooted largely in WEIRD contexts, has obscured the educational influence of grandparents. Recent research broadens this scope: Kenner et al. (2007) demonstrated that Bangladeshi grandparents in London supported bilingual literacy through storytelling, while Chase (2020) documented Latino and Filipino grandparents' roles in fostering numeracy and emotional regulation. Newer work has reinforced these insights, showing that intergenerational caregiving enhances children's cognitive resilience and social competence across cultural settings (Moore & López, 2020; Delgado, 2022). In the Arab region, Al-Khatib and Al-Khatib (2022) highlight Emirati grandparents' roles in moral education and academic reinforcement. Yet comparative, quantitative studies remain scarce, limiting the ability to isolate grandparent-specific contributions from broader family effects.

Linguistic Stewardship and Identity Formation

Grandparents are often central to sustaining heritage languages and cultural identity, particularly in multilingual and postcolonial societies. Intergenerational narratives provide children with identity coherence and socio-emotional security (Fivush et al., 2011). García-Sánchez (2020) found that children who regularly interacted with grandparents demonstrated stronger heritage language proficiency and bicultural competence. More recent studies add that sustained grandparental input fosters not only linguistic skills but also resilience against cultural assimilation pressures (Tudge et al., 2018; Yousef & Al-Qahtani, 2023). In the UAE, however, English-dominant schooling and reduced Arabic use at home accelerate language attrition (Schvaneveldt et al., 2005; Al-Janabi & Al-Kandari, 2020). These risks are intensified by digital platforms, most of which privilege Anglo-centric content. The

intersection of digital education and intergenerational language transmission remains critically underexplored, particularly in the Arab world.

Cognitive Scaffolding in Everyday Life

Vygotsky's (1978) sociocultural theory conceptualizes grandparents as "more knowledgeable others" who scaffold children's learning within the Zone of Proximal Development (ZPD). Their guidance is often embedded in everyday practices: Qur'anic recitation, storytelling, cooking, or market exchanges, where cognitive and moral lessons are transmitted in lived contexts. Rogoff's (2003) concept of "learning through intent participation" reinforces this view. Recent work in cultural neuroscience demonstrates that such embodied, relational learning has measurable effects on memory and executive function in children (Liu et al., 2019; Park & Gutchess, 2020). In Japan, *sobokune* (grandparental caregiving) has been associated with school readiness and secure attachment (OECD, 2023). Yet in Arab societies, research remains largely descriptive, with little use of validated tools to quantify grandparental scaffolding. This limits visibility in educational policy debates and contributes to their marginalization as informal actors.

The Digital Divide

The generational digital divide represents a major barrier to intergenerational participation in education. Over 60% of older adults in MENA lack basic digital literacy (OECD, 2023; World Bank, 2023). This exclusion creates what Schvaneveldt et al. (2005) termed "pedagogical dissonance," where oral knowledge practices are sidelined by digitally mediated schooling. More recent studies argue that this divide is not simply technical but cultural, as platforms rarely reflect the languages, literacies, and pedagogies familiar to older caregivers (Ng & Tan, 2021; Seward & Kelly, 2021). In Finland, ICT literacy programs for seniors have allowed grandparents to co-navigate school platforms (Lee, 2020), while Singapore's Silver Infocomm Initiative offers a scalable model of intergenerational digital inclusion (UNESCO, 2021). Comparable large-scale, culturally tailored initiatives remain absent in the Arab region, exposing a significant policy gap.

Global Policy Innovations and Local Imperatives

International models illustrate the benefits of systematically integrating grandparents into education. Finland's mentor-grandparent programs boost literacy and resilience, Japan's elder-led storytelling strengthens ethical reasoning, and Singapore's digital upskilling demonstrates scalability (OECD, 2023). Recent participatory design research in edtech highlights how co-creating tools with older adults increases both usability and cultural resonance (González et al., 2021). Despite the cultural prominence of elders in Arab societies, equivalent models are underdeveloped. Locally adapted programs, embedded in mosques, women's councils, and neighborhood associations, could provide culturally grounded pathways for intergenerational inclusion. Importantly, situating these emerging Arab initiatives within comparative cross-cultural evidence underscores that the grandparental role is not culturally idiosyncratic but part of a broader global reconfiguration of intergenerational education.

Integrative Theoretical Framework

This study applies a streamlined theoretical approach. Vygotsky's Sociocultural Theory provides the primary lens, framing grandparents as scaffolding agents. Bronfenbrenner's Ecological Systems Theory (1986) situates them within children's microsystems and mesosystems, clarifying tensions between home practices and school expectations. Bourdieu's Social Capital Theory (1986) highlights the transmission of cultural and linguistic capital, while Tornstam's Gerotranscendence Theory (2005) adds psychosocial depth by conceptualizing aging as conducive to intergenerational mentorship. Recent adaptations of these theories emphasize how kinship-based caregiving interacts with digital and globalizing contexts (Rogoff, 2019; Delgado, 2022). This integrative model balances analytic clarity with multidimensional insight.

Gendered Pedagogies

Grandparental roles are deeply shaped by gendered expectations in Arab and Islamic contexts. Grandmothers often provide emotional support, academic help, and daily caregiving, while grandfathers act as moral authorities and transmitters of family history (Yousef & Al-Qahtani, 2023). Global studies echo these patterns, showing that gender mediates the form and frequency of intergenerational scaffolding (Sadruddin, 2021; Zhang et al., 2023). Yet much literature continues to treat "grandparents" as a homogenous category, overlooking differentiated pedagogical roles. A gender-sensitive approach is therefore essential for both research precision and policy design.

Research Gaps and Contributions

Several critical gaps remain: the lack of longitudinal studies tracking grandparental impact; minimal integration of intergenerational learning into digital education policy; limited research on multilingual dynamics (e.g.,

Amazigh–Arabic–French in Morocco); and inadequate attention to socio-economic and gender stratification. Table 1 summarizes these gaps alongside the contributions of the present study.

Table 1. Critical Gaps and the Contribution of the Present Study

Thematic Area	Established Knowledge	Research Gaps	Contribution of Present Study
Conceptual Role	Grandparents provide distinct educational support in collectivist cultures (Kenner et al., 2007; Chase, 2020)	Lack of comparative data isolating grandparental influence in Arab contexts	Uses mixed-methods to measure grandparent-specific contributions
Language & Identity	Grandparents preserve heritage languages (Fishman, 1991; García-Sánchez, 2020)	Little research on digital disruption of language practices	Examines how digital exclusion affects intergenerational language use
Cognitive Scaffolding	Informal scaffolding enhances learning (Rogoff, 2003)	No validated tools to measure scaffolding in Arab settings	Pilots and evaluates culturally adapted survey instruments
Policy & Practice	Global models show success (Finland, Japan, Singapore)	Arab states lack localized intergenerational models	Proposes evidence-based, culturally responsive policy recommendations
Theory	Vygotsky and Bronfenbrenner widely applied	Few integrated frameworks in MENA	Applies a streamlined integrative model tailored to regional context

Toward Intergenerational Cognitive Justice

This review underscores that grandparents are not peripheral caregivers but central co-educators in children's developmental trajectories. Yet their contributions remain empirically underexamined and theoretically underdeveloped. The present study addresses these shortcomings by investigating mechanisms of grandparental involvement in Arab households and advancing the paradigm of Intergenerational Cognitive Justice. This framework asserts that education systems carry an ethical obligation to preserve elder knowledge not merely as cultural heritage, but as a vital pedagogical resource for cognitive resilience, cultural continuity, and holistic development.

METHODOLOGY

This study employs a convergent mixed-methods design to examine how grandparental involvement in Arab multigenerational households shapes children's school readiness, language retention, and cultural identity. Guided by Vygotsky's Sociocultural Theory and Bronfenbrenner's Ecological Systems Theory, the design captures both structural patterns and lived experiences of intergenerational learning.

Research Design and Rationale

A convergent parallel design allowed for the simultaneous collection and integration of quantitative and qualitative data. This approach strengthens validity by combining:

- Quantitative surveys to map prevalence, predictors, and outcomes of grandparental engagement.
- Qualitative interviews to capture caregiving narratives, cultural practices, and intergenerational dynamics.

This dual strategy was selected to balance statistical generalization with contextual depth, essential in heterogeneous Arab settings.

Sampling Strategy and Participants

A purposive stratified sampling framework ensured socio-cultural diversity across:

- Family type (nuclear vs. extended)
- Co-residency (cohabiting vs. non-cohabiting grandparents)
- Socioeconomic strata (low, middle, high income)
- Educational attainment (parents and grandparents)
- Geographic spread (urban/rural households across Gulf, Levant, and North Africa)

Final Sample

- Survey sample: 412 families (N = 1,236 respondents: 412 grandparents, 412 parents, 412 children aged 6–12).
- Qualitative sample: 78 semi-structured interviews (40 grandparents, 20 parents, 18 children).

Recruitment occurred through schools, NGOs, mosques, and community centers. Response rate was 68%. Inclusion criteria required at least one grandparent involved in caregiving and a child enrolled in primary school. Exclusion criteria eliminated families without direct grandparent contact.

A CONSORT-style flow diagram is provided in Supplementary Appendix A, and a Cultural Context Matrix details urban–rural, tribal–nuclear, and multilingual distributions.

Survey Instrument and Measures

A structured survey instrument was developed, combining validated scales and newly designed items. Constructs included:

1. Grandparental Educational Involvement
 - Adapted from Hoover-Dempsey & Sandler’s Parental Involvement Scale.
 - Expanded into the Grandparent Educational Involvement Scale (GEIS), developed and validated for this study.
2. School Readiness
 - Measured with the Early Development Instrument (Janus & Offord, 2007).
3. Cultural and Linguistic Transmission
 - Assessed via adapted items from the Multigroup Ethnic Identity Measure (Phinney & Ong, 2007).
4. Psychosocial Development
 - Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997).

Validation

The GEIS underwent exploratory factor analysis (EFA; $N = 200$) followed by confirmatory factor analysis (CFA; $N = 212$). Reliability was high ($\alpha = .86$; $\omega = .88$). Full scale items, loadings, and fit indices are reported in Appendix B.

Qualitative Component

Seventy-eight semi-structured interviews were conducted across diverse contexts. The protocol included questions on:

- Educational and cultural roles of grandparents
- Storytelling, rituals, and religious practices
- Experiences with digital technologies
- Intergenerational tensions and synergies

Procedures:

- Interviews lasted 45–70 minutes, conducted in Arabic or English, transcribed, and translated with back-translation checks.
- Two coders independently analyzed transcripts using Braun & Clarke’s (2006) thematic framework.
- Intercoder reliability: $\kappa = .82$.
- Saturation was achieved by the 65th interview; the remaining 13 confirmed thematic stability.

A coding framework diagram and saturation chart are provided in Appendix C.

Data Collection Procedures

- Surveys: Administered online (Google Forms, WhatsApp, school portals) and offline (paper copies in community centers).
- Interviews: Conducted face-to-face, via Zoom, or by phone, depending on participant preference.
- Translation: All instruments and transcripts were translated and back-translated between Arabic and English.

This multimodal approach minimized digital exclusion and increased participation across diverse regions.

Data Analysis

Quantitative Analysis

- Descriptive statistics (means, SDs, frequencies).
- Bivariate tests: ANOVA, χ^2 .
- Regression models predicting school readiness and cultural identity.
- Effect sizes (Cohen’s d , η^2 , OR) reported throughout.
- Advanced modeling: SEM tested whether cultural identity mediated links between grandparental involvement and school readiness. Multilevel modeling accounted for clustering at family and regional levels.

Qualitative Analysis

- Thematic coding with NVivo 12.
- Comparative analysis across nuclear vs. extended households and across regions.

Integration

- A joint display table (Appendix D) links quantitative results with qualitative insights.
- A Mixed-Methods Integration Map demonstrates how statistical trends and narratives converge to generate new hypotheses on cultural transmission.

Ethics and Cultural Sensitivity

The study received approval from the Institutional Review Board (IRB) at Mohamed Bin Zayed University for Humanities (Ref: MBZUH/IRB/2024/031).

- Consent: Written consent from adults; verbal assent + parental consent for children.
- Assent protocols: Scripts adapted for child comprehension (Appendix E).
- Training: Interviewers trained in cultural sensitivity, gender norms, and intergenerational respect.
- Bias mitigation: Reflexivity memos, triangulation across methods, and anonymization procedures.

Ethical protocols were designed not only for compliance but to reflect culturally responsive research practice, sensitive to tribal dynamics, gendered roles, and intergenerational hierarchies.

Regional and Linguistic Considerations

To capture the socio-cultural diversity of the Arab world, sampling was stratified by region (Gulf, Levant, North Africa) and by linguistic ecology (Arabic-dominant, Arabic-English bilingual, Arabic-French bilingual, Arabic-Amazigh multilingual). This ensured the inclusion of families navigating varied educational and cultural contexts.

- Gulf households: Tribal heritage and rapid urbanization shaped grandparental roles as custodians of religious and linguistic continuity.
- Levant households: Economic precarity and migration positioned grandparents as surrogate parents, often mediating between traditional values and modern schooling.
- North African households: Linguistic complexity (Arabic-French-Amazigh) revealed tensions in heritage language preservation and intergenerational identity formation.

Table 2. Cultural Context Matrix of Sample Coverage.

Region	Urban	Rural	Nuclear	Tribal/Extended	Dominant Languages
Gulf	60%	40%	45%	55%	Arabic-English
Levant	55%	45%	50%	50%	Arabic
North Africa	65%	35%	40%	60%	Arabic-French-Amazigh

This matrix demonstrates the breadth of cultural ecologies represented, strengthening the validity and transferability of findings. By foregrounding intra-regional diversity while also engaging with cross-cultural parallels, the study positions Arab households within broader comparative family research. This approach not only enhances internal validity but also ensures that the findings can speak to international debates on how kinship ecologies shape child development in both Global South and Global North contexts.

FINDINGS

This section presents the results of the mixed-methods analysis, organized around the study's research objectives and questions. Survey data from 412 families and interviews with 78 participants across the Gulf, Levant, and North Africa provide a multi-layered account of how grandparents shape children's school readiness, linguistic identity, and cultural continuity, as well as the barriers that limit their participation. The findings are interpreted through the integrated theoretical lenses of Vygotsky's sociocultural theory, Bronfenbrenner's ecological systems theory, and Bourdieu's concept of cultural capital.

Scope and Quality of Grandparental Involvement

The first objective was to assess the scope and quality of grandparental contributions to children's early learning, while also testing whether extended family structures offered advantages over nuclear households (RQ1 and RQ4). The survey results demonstrate that grandparents play active and multifaceted roles in supporting literacy, moral education, and cultural knowledge. As shown in Table 3, grandparents in extended households were significantly more involved than those in nuclear families across all key domains, including storytelling ($M = 4.3$ vs. 2.9 , $p < .001$), Arabic language reinforcement ($M = 4.0$ vs. 3.1 , $p < .001$), and religious instruction ($M = 4.1$ vs. 3.0 , $p < .001$). Effect sizes for these differences ranged from 0.74 to 0.88, indicating large practical significance.

The only area without notable difference was digital learning support, where engagement remained low across both household types.

Table 3. Frequency of Grandparental Educational Support by Family Structure

(Likert Scale: 1 = Never, 5 = Always)

Activity Type	Extended Families (Mean)	Nuclear Families (Mean)	Effect Size (d)	p-value
Storytelling and oral history	4.3	2.9	0.88	< .001
Arabic language reinforcement	4.0	3.1	0.74	< .001
Religious and moral education	4.1	3.0	0.81	< .001
Homework supervision	3.5	2.8	0.48	.02
Digital learning support	2.1	2.3	ns	ns

These patterns support Vygotsky's notion of the "more knowledgeable other," where learning is scaffolded within everyday activities. The qualitative interviews provided vivid illustrations of these practices. A grandmother in Sharjah described nightly Quran recitations with her grandchildren as "not just for prayer, but for rhythm, memory, and speaking Arabic beautifully." Similarly, a father in Amman noted that his son began asking historical questions after hearing his grandfather recount stories of Palestine's past. Such examples highlight how grandparents transmit both cognitive skills and embodied cultural capital in ways that schools rarely replicate.

At the same time, the findings also expose a tension between traditional modes of teaching and the demands of contemporary schooling. A Jordanian father observed that while his father's approach to mathematics was rooted in memorization, it sometimes "confused" his son, underscoring the need for alignment between home-based and school-based pedagogies.

Grandparental Involvement and School Readiness

The second research question asked how grandparental involvement influences children's academic readiness and school achievement (Objectives 1 and 4). The data show a consistent positive association between higher levels of grandparental engagement and indicators of school readiness. As reported in Table 4, children with high levels of grandparental support scored significantly higher on measures of attentiveness ($M = 4.2$ vs. 3.5 , $p < .001$), early literacy ($M = 4.3$ vs. 3.6 , $p < .001$), and emotional regulation ($M = 4.1$ vs. 3.4 , $p < .001$). Effect sizes for these outcomes were moderate to large ($d = 0.68$ – 0.77), confirming not only statistical significance but meaningful developmental impact.

Table 4. Reported School Readiness Scores by Level of Grandparental Involvement.

(Scale: 1 = Strongly Disagree, 5 = Strongly Agree)

Indicator	High Involvement (M)	Low Involvement (M)	Effect Size (d)	p-value
Child is attentive during tasks	4.2	3.5	0.70	< .001
Child shows early literacy skills	4.3	3.6	0.72	< .001
Child demonstrates emotional regulation	4.1	3.4	0.68	< .001
Child enjoys storytelling and books	4.5	3.8	0.77	< .001
Child is comfortable in school routines	4.2	3.7	0.52	.03

Interviews with parents and children reinforced these findings. A Lebanese father reflected that his mother's guidance in Quran recitation "taught my daughter to sit still, listen, and not interrupt, the same skills that helped her adjust to the classroom." This account exemplifies Vygotsky's Zone of Proximal Development, where guidance in one domain transfers into readiness for formal schooling.

Bronfenbrenner's ecological perspective is also evident here: grandparents, positioned within the child's microsystem, provide stability and attentional discipline that interact with school routines in the mesosystem. The interplay between these systems explains why children exposed to sustained intergenerational scaffolding demonstrate smoother adaptation to academic structures.

Preservation of Linguistic and Cultural Identity

The third research question (RQ2) addressed grandparents' contributions to heritage language retention and cultural identity, directly linked to Objective 2. The findings reveal that extended family households significantly outperform nuclear families in fostering linguistic confidence and cultural pride. As shown in Table 5, extended-family children reported higher confidence in speaking Arabic ($M = 4.4$ vs. 3.6 , $p < .001$), stronger knowledge of family rituals ($M = 4.3$ vs. 3.2 , $p < .001$), and greater cultural pride ($M = 4.1$ vs. 3.3 , $p < .001$). Effect sizes in these domains were consistently large ($d = 0.82$ – 0.90).

Table 5. Reported Cultural and Linguistic Identity Scores by Household Type (Scale: 1 = Strongly Disagree, 5 = Strongly Agree).

Domain	Extended Families (M)	Nuclear Families (M)	Effect Size (d)	p-value
Child speaks Arabic confidently	4.4	3.6	0.86	< .001
Child knows heritage and rituals	4.3	3.2	0.90	< .001
Child shows pride in culture	4.1	3.3	0.82	< .001
Child participates in traditions	4.2	3.5	0.61	.02

The qualitative narratives underscore the mechanisms behind these patterns. A grandmother in Kuwait described teaching grandchildren to prepare Arabic coffee while recounting tribal stories, “things they do not learn in school.” Similarly, a Moroccan parent explained that “without my father, my son would barely know Arabic. School is in French and English, and games are in every language but ours.”

These examples highlight how grandparents act as custodians of cultural capital in Bourdieu’s sense, transmitting both practices and dispositions that anchor identity. They also resonate with Fishman’s early warnings about intergenerational language loss, positioning grandparents as essential buffers against cultural erosion in multilingual societies.

Together, these findings answer RQ2 by showing that grandparents not only preserve linguistic continuity but also reinforce cultural pride, which in turn strengthens psychosocial resilience in children navigating globalized education systems.

Gendered Dimensions and Regional Variation in Grandparental Involvement

The analysis revealed distinct gendered patterns and regional differences in how grandparents contributed to children’s educational and cultural development. These variations help answer Research Questions 2 and 4, by showing both the differentiated roles of grandmothers and grandfathers, and the influence of cultural context across regions.

Gendered Roles: Grandmothers as Pedagogical Anchors, Grandfathers as Moral Guides

Survey data (Table 6) demonstrated clear differences in educational involvement by gender. Grandmothers emerged as pedagogical anchors, engaging consistently in daily learning practices such as oral storytelling, shared reading, homework assistance, and supervision of digital use. Grandfathers, by contrast, were positioned more as moral guides, with stronger involvement in religious teaching, ethical reasoning, and the narration of family and tribal histories.

This division of roles reflects culturally embedded gender norms within Arab households, yet it also aligns with broader cross-cultural patterns where caregiving and pedagogical intimacy are feminized, while authority and moral narration are masculinized (Yousef & Al-Qahtani, 2023; Chase, 2020). Importantly, the Arab data show that these roles are not static: in some Gulf households, grandfathers also engaged actively in numeracy tutoring, while in North African households grandmothers were the primary transmitters of multilingual repertoires (Arabic–French–Amazigh).

Framed through Bronfenbrenner’s ecological lens, this finding underscores that gendered grandparental contributions are shaped not only by individual preference but also by systemic structures, school expectations, religious authority, and household organization. At a global level, this highlights the need for comparative research that examines how gendered pedagogical roles are negotiated differently across kinship systems in collectivist societies.

Table 6. Reported Educational Activities by Grandparent Gender (n = 200).

Educational Activity	Grandmothers (%)	Grandfathers (%)
Reading or storytelling	72	41
Helping with homework	65	32
Teaching prayers or morals	48	63
Discussing cultural values	51	57
Supervising screen time	61	29

Interviews contextualized these numbers. A Jordanian mother explained: “My children run to their grandmother for writing and numbers, but when they misbehave, it is their grandfather’s voice they listen to.”

These findings reinforce feminist critiques that women’s invisible labor in caregiving is often underacknowledged, while men’s symbolic authority is disproportionately valued. They also confirm Bronfenbrenner’s microsystem dynamics, where daily interactions provide scaffolding, and Bourdieu’s symbolic capital, where cultural authority is unequally distributed.

Regional Variation: Gulf, Levant, and North Africa

Regional analysis revealed striking heterogeneity in how grandparental involvement is configured across Arab contexts. In the Gulf, rapid modernization and reliance on domestic nannies limited routine pedagogical engagement, yet grandparents retained symbolic centrality in religious instruction and ritual participation. In the Levant, economic constraints and high rates of migration positioned grandparents as primary co-educators, with strong involvement in tutoring, homework supervision, and emotional regulation. In North Africa, linguistic complexity, particularly the intersection of Arabic, French, and Amazigh, rendered grandparents key brokers of multilingual identity, shaping both linguistic proficiency and cultural belonging.

These variations underscore that Research Question 4 cannot be reduced to a singular “grandparent effect.” Rather, extended families create distinct ecological conditions, contingent on regional histories of urbanization, labor migration, and language politics. From a Bronfenbrennerian perspective, the macrosystem (economic structures, linguistic hierarchies) profoundly shapes microsystem interactions within the household. At the same time, Bourdieu’s notion of cultural capital helps explain why grandparental influence is most visible in domains undervalued by schools, ritual, oral narrative, and heritage language.

Comparatively, these findings echo global evidence that intergenerational roles are deeply context-dependent: Japanese *sobokune* practices emphasize moral education, while Finnish elder mentors contribute primarily to literacy. The Arab data contribute a novel case by showing how economic precarity and linguistic plurality intensify the salience of grandparental involvement, offering a comparative lens for rethinking family systems beyond Western nuclear models.

Taken together, these patterns highlight the conditional nature of grandparental influence, answering RQ4 by showing that developmental outcomes hinge less on the presence of grandparents per se than on the ecological structures that mediate their pedagogical capital. This provides a conceptual bridge into the discussion, where we interpret how these differentiated roles illuminate broader questions of cultural transmission, identity formation, and educational equity.

Structural Barriers and the Digital Divide

A consistent theme across the dataset was the gap between grandparents’ pedagogical potential and the structural conditions that restricted their participation. This section addresses Research Question 3, which asks how technological, curricular, and generational barriers constrain involvement.

Digital Literacy Gaps Among Grandparents

Survey results (Table 7) confirmed limited digital engagement. While most grandparents were comfortable with WhatsApp and basic messaging, fewer than one-third could navigate school portals or assist with online assignments.

Table 7. Digital Engagement Capacity Among Grandparents (n = 200).

Digital Task	Confident (%)	Struggle (%)	Unable (%)
Using WhatsApp/messaging	54	31	15
Accessing school portals	22	48	30
Navigating English content	18	42	40
Assisting with online homework	27	36	37

Interviewees frequently described feelings of exclusion. One Lebanese mother observed: “*My children’s school sends links in English. My mother speaks only Arabic and barely uses her phone. She feels useless, and that hurts her pride.*”

These findings extend Bourdieu’s concept of social capital, showing that institutional choices (e.g., English-only platforms) actively devalue grandparents’ cultural contributions by privileging digital literacy over embodied knowledge.

Institutional Blind Spots

Only 9% of families reported that schools involved grandparents directly in communication or activities. A Saudi grandfather noted: “*They send emails to my son and his wife. No one asks me, even though I am the one who helps with the Quran and morning prep.*”

This neglect illustrates Bronfenbrenner’s exosystem blind spot, where institutions shape children’s development but systematically exclude informal caregivers. It highlights the mismatch between actual caregiving ecologies and school assumptions, a key policy gap for Arab education systems.

Intergenerational Pedagogy Typology

The qualitative data yielded four recurring pedagogical roles, offering a new conceptual framework that answers Research Questions 1 and 2. This typology (Table 8) captures the diversity of educational contributions grandparents make, moving beyond generic categories of “support” to show differentiated strategies.

Table 8. Intergenerational Pedagogy Typology.

Pedagogy Type	Core Practices	Illustrative Quote
Storyteller	Oral history, folktales, heritage narratives	<i>“I tell them our village stories, so they know where they come from.”</i>
Ritual Keeper	Religious instruction, traditional customs, family ceremonies	<i>“Every Eid, I teach them the prayers and why we gather.”</i>
Moral Guide	Ethical reasoning, discipline, intergenerational values	<i>“I remind them what is right and wrong, even if schools don’t.”</i>
Practical Coach	Academic help, routines, daily homework, digital monitoring	<i>“I sit with her to finish her reading before bed.”</i>

This typology demonstrates how Vygotsky’s scaffolding concept takes distinct cultural forms, and how Bronfenbrenner’s mesosystem interactions (home–school–community) are mediated through intergenerational practice. It also operationalizes the emerging paradigm of Intergenerational Cognitive Justice, by showing how diverse grandparental roles enrich learning ecologies.

Taken together, the findings demonstrate that grandparents play a multidimensional role in children’s development, extending beyond caregiving into literacy scaffolding, moral instruction, cultural preservation, and psychosocial regulation. Quantitative evidence showed that high levels of grandparental involvement were significantly associated with improved school readiness, stronger Arabic language use, and higher cultural pride, particularly in extended households (Tables 4 and 5). Qualitative data enriched these patterns, highlighting the differentiated pedagogical roles of grandmothers and grandfathers (Table 6) and the ways in which these contributions vary across the Gulf, Levant, and North Africa.

At the same time, barriers such as limited digital literacy, lack of school recognition, and structural exclusion constrained the full potential of intergenerational learning (Table 7). These tensions reveal a paradox: while grandparents remain central to children’s cultural and cognitive development, formal education systems continue to marginalize their contributions.

The development of the Intergenerational Pedagogy Typology (Table 8) provides a conceptual framework for understanding how grandparents act as storytellers, ritual keepers, moral guides, and practical coaches. This typology extends existing sociocultural and ecological theories by articulating culturally specific modes of scaffolding and by operationalizing the principle of Intergenerational Cognitive Justice.

In summary, the findings confirm that grandparental involvement enhances academic readiness and cultural identity (RQ1, RQ2), while also revealing how structural and digital barriers (RQ3) and family configurations (RQ4) shape developmental outcomes. Lessons drawn from international models further underscore the absence of culturally adapted frameworks in Arab contexts (RQ5).

These integrated insights provide the foundation for the Discussion section, which moves beyond descriptive patterns to interrogate their theoretical significance, cross-cultural resonance, and policy implications.

DISCUSSION

This study provides empirical evidence that grandparents in Arab multigenerational households play a substantive role in children’s early educational development. Far from being peripheral caregivers, they contribute to literacy, school readiness, and identity formation through practices rooted in sociocultural traditions. Interpreted through Vygotsky’s sociocultural theory and Bronfenbrenner’s ecological systems model, the findings reveal both the mechanisms of intergenerational scaffolding and the systemic barriers that constrain its effectiveness.

Mechanisms of Grandparental Scaffolding

Addressing RQ1, the study confirms that grandparents act as scaffolds within children’s Zones of Proximal Development. Their involvement is domain-specific: strongest in storytelling, moral education, and heritage practices, and weakest in digital learning support. Quantitative data indicated that children with high levels of grandparental engagement scored significantly higher on narrative reasoning, while qualitative narratives illustrated how practices such as Quranic recitation or oral folktales served not only cultural ends but also cognitive ones, supporting phonemic awareness, memory, and reasoning.

Yet these informal pedagogies face a legitimacy challenge. Within the microsystem, they are valued and effective; within the exosystem of schools, they are often dismissed as “non-academic.” This points to a crucial extension of Vygotsky: the efficacy of scaffolding depends not only on the skill of the guide but also on institutional recognition of their pedagogical form.

Cultural Capital and Linguistic Identity

RQ2 focused on heritage language and cultural identity. The findings confirm that co-residency and frequent interaction with grandparents correlate with stronger Arabic fluency and cultural pride. Survey data showed robust associations, while interview accounts revealed that this role is increasingly strategic rather than automatic. In North African multilingual settings, grandparents consciously reinforced Arabic against the dominance of French or Amazigh in schools and media. In urban Levantine families, by contrast, English-dominant schooling rapidly displaced heritage practices, weakening intergenerational transmission.

This dynamic illustrates Bourdieu’s concept of cultural capital under market pressure. Grandparents are not only transmitters but also defenders of cultural capital in an environment where its symbolic value is diminishing.

Ecological Misalignment at the Home–School Interface

Findings related to RQ3 highlight the stabilizing role of grandparents in the microsystem. They provide consistent routines and moral anchoring, often compensating for parental absence. Quantitative analyses confirmed this stabilizing function, while qualitative interviews exposed how the exclusion of grandparents from school communication, particularly via English-only digital portals, created a sense of invisibility.

This exclusion is more than a skills gap; it represents an ecological misalignment that weakens the developmental coherence Bronfenbrenner emphasized. Children thrive when microsystem actors are recognized across settings. Where that recognition fails, grandparents’ contributions risk marginalization.

Nuancing the Developmental Advantage of Extended Families

RQ4 asked whether extended families confer measurable advantages. The answer is yes, but with qualifications. Quantitative data show stronger school readiness and cultural identity among children in extended households. Yet qualitative evidence suggests two distinct pathways: in lower-income households, grandparents often serve a compensatory role, filling educational and caregiving gaps, while in more affluent households, their role is complementary, emphasizing cultural enrichment and moral instruction.

This distinction underscores the importance of contextualizing the so-called “grandparent advantage.” The developmental impact is real but mediated by socioeconomic conditions, family structure, and institutional engagement.

Implications for Research and Policy

Addressing RQ5, the study suggests targeted, evidence-based strategies rather than broad prescriptions. For research, longitudinal designs are needed to trace causal pathways, and new metrics should be developed to capture “invisible literacies” such as ethical reasoning and narrative coherence. For policy, feasible interventions include digital access programs to equip grandparents with basic platform skills in culturally appropriate settings (e.g., community centers, mosques) and recognition of oral practices within early curricula (e.g., “storytelling portfolios” as part of literacy assessment).

These interventions align with the broader principle of intergenerational alignment: ensuring that education systems recognize and integrate the pedagogical capital grandparents provide. Such strategies resonate with global precedents in Finland, Japan, and Singapore, but their adaptation to Arab societies offers a novel contribution to international debates on family and education.

LIMITATIONS AND FUTURE RESEARCH

This study is subject to several limitations. First, reliance on self-reported measures introduces bias, as caregivers may overstate or understate their contributions. Triangulation with teacher reports or independent assessments would strengthen validity.

Second, the cross-sectional design limits causal inference. Longitudinal cohort studies are needed to track how grandparental involvement influences developmental trajectories over time. Diary studies of daily routines could capture interactional detail often lost in retrospective accounts.

Third, while the newly developed Grandparent Educational Involvement Scale (GEIS) demonstrated strong reliability, further validation across subregions and linguistic groups is required. Comparative testing in other cultural contexts would confirm its broader applicability.

Finally, although the sample was regionally diverse, rural and nomadic populations remain underrepresented. These groups may reveal alternative modes of intergenerational pedagogy not visible in urban-focused studies.

These limitations should not be viewed as constraints alone but as opportunities for advancing the field. By developing culturally sensitive metrics, expanding regional coverage, and adopting longitudinal approaches, future research can position the Arab region at the forefront of global debates on intergenerational education.

CONCLUSION

This study provides robust, mixed-methods evidence that grandparents in Arab households are not supplementary caregivers but systematic and influential agents of early childhood development. Their contributions are qualitatively distinct: storytelling, moral guidance, and ritual-based practices emerged as culturally embedded forms of scaffolding that significantly correlate with children's school readiness and cultural identity. These findings extend sociocultural and ecological theories by showing that pedagogical influence depends not only on the skill of elder caregivers but also on the structural recognition of their knowledge within educational systems.

The central insight is that grandparental efficacy is contingent on ecological alignment. Within the microsystem, grandparents function as intuitive masters of the Zone of Proximal Development, yet their pedagogical capital is diminished when the exosystem, particularly schools and digital platforms, fails to accommodate them. This digital and linguistic gatekeeping creates a paradox: those most skilled at fostering resilience and cultural continuity are simultaneously excluded from formal learning ecosystems. To address this, the study advances the concept of *Cultural Scaffolding Fidelity* as a framework for evaluating how education systems preserve or disrupt intergenerational knowledge transmission.

These results challenge nuclear-family-centric models that dominate developmental psychology and policy, shifting the question from whether grandparents matter to how, when, and under what conditions their involvement yields the greatest developmental benefits. Future research should adopt longitudinal and cross-national designs to test causal pathways, examine the neurocognitive mechanisms of narrative-based learning, and explore how digital interventions can amplify rather than replace intergenerational mentorship.

The policy implications are concrete: co-designed digital literacy programs for older caregivers, curricular recognition of oral storytelling as a valid pedagogical form, and inclusive school communication systems that treat grandparents as educational stakeholders. Such reforms are not nostalgic gestures but evidence-based strategies for strengthening developmental ecologies.

In sum, grandparents are not peripheral figures but cognitive architects whose scaffolding integrates academic, emotional, and cultural domains. Honoring this role requires more than symbolic inclusion, it demands redesigning educational systems to align with, rather than erase, intergenerational wisdom. Doing so positions grandparental involvement not as a tradition preserved, but as a vital resource for building resilient and culturally coherent educational futures.

Research Highlights

- First mixed-methods study in Arab households showing how grandparental scaffolding enhances school readiness, cultural identity, and bilingual competence.
- Introduces the paradigm of Intergenerational Cognitive Justice, reframing elder knowledge as a core dimension of educational equity.
- Demonstrates grandparents' dual role as cultural anchors (storytelling, moral guidance, language preservation) and digitally excluded caregivers facing systemic barriers.
- Provides evidence-based policy pathways, including digital literacy initiatives and curricular recognition of oral traditions.

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AI Usage Statement

No generative artificial intelligence (AI) tools were employed in the conceptualization, data collection, analysis, or interpretation of this study. The manuscript was written solely by the author. Standard digital tools (e.g., grammar checkers, reference managers) were used exclusively for language refinement and formatting.

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