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***Technology Use and Families:
Implications for
Work-Family Balance and Parenting Education***

*Susan K. Walker, Ph.D.
Associate Professor
Department of Family Social Science
University of Minnesota
skwalker@umn.edu*

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The Author

Susan Walker is an Associate Professor of Family Social Science at the University of Minnesota. She holds a PhD in Child and Family Studies from the University of Wisconsin-Madison. The emphasis of her teaching and research is on technology integration in family education, early childhood parenting and child care policy, and parenting education. For 10 years Dr. Walker directed the licensed Parent and Family Education teacher preparation and Master of Education graduate program at the University of Minnesota. She designed and currently teaches an undergraduate course on Families and Technology, one of the few such courses in the world. She is currently writing an open source textbook for the course; one that spans technology's influences on families in society, impacts on children and family relationships and the preparation of family professionals. In her work with practitioners, Dr. Walker designed *parentopia*, an online application to supplement face to face delivery of parenting education. Research from this project identifies technology's impact on parent engagement, learning and trust in schools, and mechanisms for technology implementation in practice.

Prior to 2007, Dr. Walker was a state Extension Specialist in Family Life and Human Development at the University of Maryland, College Park. In that role she researched low income, rural families' use of child care, child care policy, and the preparation and support of child care providers. She provided statewide leadership to USDA-funded grants on rural and urban community-based family education and on afterschool programs for at-risk youth. As part of Dr. Walker's international profile, she held a guest professorship with the University of Iceland, School of Education. This partnership created a parenting education graduate program at the institution; one of the few in the world. She is also the very proud mother of Alice and partner to Patrick.

Executive Summary

Recognizing that digital technology has transformed family life, the Division for Inclusive Social Development of the United Nations Department of Economic and Social Affairs (DESA) identifies technological change for the family as one of four megatrends. Worldwide families continue to face challenges that threaten their food security, income, housing and safety, and by extension the growth and development of children in their care; challenges that today intersect and often depend on access to the internet. New technologies have become a necessity, yet present new challenges. The COVID-19 pandemic has particularly brought attention to the influence of technology on family life, as it has meant for many the continuation of work, school and personal relationships when isolated. And it also exposed more violations to privacy and safety, enriched societal and political divisions, and widened inequalities. Digital technology has embraced the attention of professionals who work with families as both a means for the delivery of service (such as family therapy or parenting education) and as a content focus (e.g., aiding parents in understanding children's privacy online or decision making on smart phone ownership). Yet can we assume that professionals are able to fully support families as they too navigate new devices and a virtual landscape? The selection of New Technologies and Families as one of the themes guiding the preparations for the thirtieth anniversary of the International Year of the Family, 2024 and the 2021 observance of the International Day of Families could not be more timely. Now is the time to understand these impacts and support families in ways that prepare them for a digital future. To do so will only further achievement of the United Nations Sustainable Development Goals (SDGs). Quoting the former UN Secretary General from 2018, *“the achievement of [the sustainable] development goals depends on how well families are empowered to contribute to the achievement of those goals. Thus, policies focusing on the well-being of families are certain to benefit development”* (p.5).

This background report examines the status of technology use and its impact on families and focuses on two key contexts that offer societal support to families: work-family balance and parenting education. Figure 1 depicts an overview of the background paper. Attention is given to policy directions which address the SDGs in particular and that reflect the true intersection of technology as an innovation. For example, while decades of policy attention to work and family has resulted in structural strategies (e.g., flexible parental leave), this report will identify policies and practices reflecting technological realities (e.g., subsidizing employees for technology needed for home-based work). Within the scope of the discussion, this report will reflect family life amidst the global pandemic of COVID-19.

OVERVIEW OF TECHNOLOGY IMPACTS

Technology Use and Impacts on Families

Digital technologies and internet access mean new, more efficient ways for families to manage the tasks of daily life, including health and financial matters, and to secure resources for the family. They are integrated into and facilitate employment and promote family members' participation in formal and nonformal education. During COVID-19 digital technologies enabled adults to continue working from home, especially workers in white collar professions. For children digital technologies means new ways to participate and engage in school and learn and

strengthen cognitive skills and academic achievement. Families use digital technologies for communication and connectivity - not the least of which is in maintaining the relationships within the family, and strengthened connections with extended family, the community and wider social relations. Families experiencing immigration, heightened mobility, displacement and separation (such as in military deployment) are particularly dependent on communication technologies, and for access to the internet for continued connection to resources and information. And family time together can mean using digital technologies for entertainment and leisure. Yet families vary widely in their access to technology, and in their use. Differences in the types of devices, attitudes toward technology, comfort and skill can be seen within families (e.g., through generational differences) and across families (often due to family culture, contexts, and access). To set the stage for applications to work-family balance and parenting education, the report provides focus on children's technology use and its impact on parenting, and on issues of safety and equity as universal interests for families.

Impacts on children and youth

Personal devices and the internet have been a part of children's lives for several decades. Research observations reflect technology's potential impacts on all domains of child development: physical growth, cognition and learning, social and emotional development. They align with the ages and stages of development: early childhood (birth to age 5), middle childhood (5-12), adolescence (13-18) and emerging adulthood (19-25) supporting a lifecourse perspective on parenting. They reflect differentiated effects depending on the child (e.g., susceptibility, personality, health status), context of use, type of device or application, degree of exposure, quality of interaction, and possible displacement (i.e., what the child is not doing while using technology). Depth of concern over impacts also aligns with the child's ability for self-care and decision making to handle potential threats from the internet. Recommendations commit industry to action in the design, dissemination and data gathering from widespread use that promotes children's development. And they advocate for continued research on technology's impacts which is prolific, yet incomplete.

Young Children. Distinct interest in young children's exposure to screens rests with the vulnerable time period for brain development, pre-birth through age 5. Children's neural connections develop paths for future learning during a critical time period of plasticity. Screen exposure can affect young children's sleep quality (e.g., exposure to blue light affecting melatonin release), and a focus on screens can negatively affect babies' need for reciprocal interaction for learning language, sense of self and executive functioning. Guidelines for very young children center more on limiting exposure rather than recommending use, with no screen time for children under 3, and up to 60 minutes for children 3-4 years, providing that there is adult interaction during use. Despite guidelines, young children's time with screens is reported to be just under one hour for children to age 2 (.47), and 2 hours 39 minutes for children 3-5 years, with the majority of time on TV.

Middle Childhood. COVID-19 notwithstanding, the primary developmental concern for children 5-12 years is an overreliance on screens that leaves children exposed to threats. The rise in use of videogames, school-related technology use, communication with friends and overall screen time leads physicians and parents to be alarmed over children's stress, mental health, and

physical impacts on obesity and sleep. To the positive, the area of ‘connected learning’ promotes the value of interactive, creative technologies and children’s learning, and encourages the pursuit of interests across the ‘learning ecology’ through opportunities and relationships. The boom in learning technologies used in the classroom – and teacher competencies to ensure pedagogical value - speak to the promise of digital engagement throughout the school years. Recent policy efforts encourage quality and safe interactions with technology over attention alone to the amount of time children are on screens.

Adolescence and Young Adulthood. The ubiquitous nature of digital technologies in the lives of young people suggests that it is futile to recommend strict time limits, but rather promote healthy use and self-responsibility. Adolescence is an age of independence, critical thought, and maturity. For adolescents and young adults worldwide, proficiency with technology also means preparation for jobs of the future that will rely on automation. Problematic behavior with technology (e.g., feeling addicted to one’s phone) may negatively impact relationships, including those with peers and family members. Yet the majority of teens and young adults do not report negative outcomes.

Parenting impacts

Digital technology offers a range of possibilities for parents. Many parents state that communication with their child is a key reason for securing a mobile phone for children at young (11 or younger) ages. Through texting, voice and video calls, parents can talk with their children, coordinate activities, and remain close. The efficiency of using ICT for communication also makes co-parenting relationships easier, such in the case of divorced parents and maintains parent-child connections during separations.

Digital technology offers parents new resources to gather information (e.g., search tools, discussion forums, apps, web pages) and social support resources through communication tools and media. These connections can help validate parents’ concerns, help boost their confidence in the parenting role, and identify resources. They can also strengthen social capital in parents’ social networks - bonds forged in relationships by trust and reciprocal help - while also expanding the size (number of members) of networks granting parents more access to the flow of information, and people from whom to seek help.

Children’s technology use, safety, and positive engagement is a relatively a new area for parenting. Fully 98% of parents in a recent US study believe it is the parent’s responsibility to protect children from online content (Auxier et al., 2020). Most (71%) believe that widespread use of smartphones might be harmful to their children’s socioemotional learning. There is also concern by most about exposure to online predators (63%), sexually explicit content (60%), and violent content (59%). Restrictions may be technical (limiting use of hardware or software, including taking away technology as a punishment), monitoring (tracking use, messages and the child’s location), and active mediation (talking to children about their technology use). Parental restrictions on children’s technology largely adapt with children’s age and maturity. Parents mediate through interaction and conversation about media’s effects. Co-viewing or co-participation (such as playing games) enables parents to actively mediate and monitor children’s exposure and model healthy use. Research has identified factors that might vary parents’

mediation approaches. For example, mothers may be more likely to demonstrate mediation than fathers, and parents who are higher in income and education and who demonstrate more comfort with technology are more likely to mediate children's use.

Parents' own technology use may present a challenge when monitoring children's safety and well-being. Research with parent-teen pairs indicates that when teens see parents' time on their phones similar to their own, they question parental advice and role modeling. For adults who grew up with a different perspective on technology (or having access to devices and applications less sophisticated than those used by their children), knowing how to recommend or model safe practices can be hard. There may be tension in the parent-child relationship, particularly in lower income and immigrant homes, with a shift in power as children gain more skill with technology than their parents or when children are called on to assist parents in multiple areas including technology use (e.g., language translation).

Widespread Issues Facing Families

Equity and access. Most significantly, access to the internet and to digital technologies is inequitable which means differences in families' ability to take full advantage of technological efficiencies, access to information, connectivity and interactivity for learning and employment.

Household technology use is reflected, in part, by internet access, cell phone ownership and use of social media worldwide. Global data indicate that on average, at least 77% of the world's population has at least some access to the internet (Schumacher & Kent, 2020). Close to 87% of individuals use the internet in developed countries, those in countries with emerging economies report lesser use (47%, on average, from 38% in India to 89% in Lebanon) and those in least developing countries – primarily in Africa – report an average of 19%. Similarly, cell phone ownership is higher in countries with developed economies (e.g., over 90% in European countries). Demographic factors such as younger age, higher household income and level of education encourage greater access and internet and cell phone use. Yet access differences also affect the ability to take full advantage of technological efficiencies and benefits access. Access is particularly critical when families are mobile or relocate due to immigration, live transnationally, or are separated owing to military service or employment. Lack of access and use affects comfort in using technology and possession of basic computer skills. And inequities lead to “knowledge gaps”, particularly in children. As a result, gaps in access only contribute to and exacerbate challenges brought about by disparities in income, education, employment, housing and sanitary living conditions and health care in families' lives.

Scholars assert that equity will remain a prevalent issue for families in the future (Anderson et al., 2021). While equity and internet access as a human right is a macro level policy issue, small scale efforts get technology into the hands of families and children in need. For example, through COVID-19 conditions and before, schools may distribute devices, routers and WIFI hubs, provide additional technology coaching, and train teachers to be sensitive to equity and access needs when integrating technology in coursework.

Privacy and online safety; digital literacy. Online technologies enable telecommunication companies' access to data about the user; data that can be sold to market

products and create a digital footprint that the user (including a child) has no control over. Cybersecurity breaches occur in schools, public access points (such as libraries), and from workplace-issued devices as well personal computers. The majority (60%) of school-connected devices don't provide necessary information about how they collect or use personal information (Commonsense Media, 2019) Identity theft and access to financial and health data are threats facing young adults and parents. And the level of digital literacy for many individuals may only exacerbate these issues. More than half of early teens 12 to 15, for example, believe it's easy to delete their information online (Commonsense Media, 2019).

Safeguards in policy standards such as COPPA privacy protections and the General Data Protection Regulation in the European Union restrict access to social media by age. The newly formed 5 Rights Foundation advocates for policy action as the UN Commission on Child Rights Article 25 has extended children's rights to online environments. Industry recommendations for privacy dictate that children not be tracked nor profiled online, nor subject to ads based on their online activity; that children be able to easily modify the personal information they choose to share; that families educate themselves on privacy options, and agree not to share children's information without their consent.

General policy recommendations regarding families and technology that respond to the Sustainable Development Goals include the following:

1. Ensure access to the internet, to higher speed internet, and to devices for communication and access to the internet. (SDG 1.4, 2.3, 2c, 3.8, 8.10, 9a., b., c.; 10)
2. Help family members gain digital literacy skills (SDG 10) to comfortably and safely use the internet for health information (SDG 3.8) and financial management (SDG 8.10),
3. Empower women with equal access to technology, internet and digital devices. Embolden their use through promoting digital literacy. SDG 5b
4. Higher levels of economic productivity can be achieved by empowering women with equal access to technology, internet and digital devices. Increase all members of developing countries access. Embolden use through promoting digital literacy. (SDG 8.2)

Appendix A identifies specific Sustainable Development Goal targets aligned with policy recommendations that speak to technological transformations for families.

OPPORTUNITIES TO SUPPORT FAMILIES IN THEIR TECHNOLOGY USE

Work and family balance and parenting education are two domains around which policy and practice can lend technology-focused supports for families to reduce stress and optimize families' aims for healthy living.

Work-family Balance

Competing responsibilities from personal (home, family, self) and employment spheres that exceed the individual's ability to manage successfully can negatively impact mental health, work productivity, and family satisfaction. Traditional views of work-home balance consider boundaries of time and space as clarifying when and where responsibilities are fulfilled. These boundaries are considered as fixed or permeable in allowing fluidity in the demonstration of role

demands. Over the decades, and globally, research has explored the range of types and contexts of work (e.g., white collar professions, hourly labor, supervised/unsupervised), individuals (e.g., by age, gender, profession), and family differences to understand conditions which affect the sense of balance. Cultural differences and economic conditions can impact the perception of imbalance by employees with families. Working parents in countries with high rates of inequality, and low rates of economic growth and inflation value the opportunity for longer working hours, thus positively influencing their perception of work-family demands.

Gender equality is of particular interest worldwide. It is harder for employed mothers to achieve balance given expectations for childrearing with work and wages that are less flexible and competitive with men. Higher rates of family vs work conflict are seen in countries that have a wide gender gap.

Policy solutions recommend a vision of employment that shifts to embrace family interests, along with structural changes to workplace conditions that provide employees with supports for the balance. This includes maternal and paternal leave, assistance with child care, and flexible work hours. While the last decade has seen change evidenced by women's greater participation in the workforce worldwide, a backlash to the implementation of family-friendly policies is observed through organizational inequity, spillover, and stigma.

Technology's influence on work-family balance

Information and communications technology use lends a further layer of complexity to understanding work-family balance as a global issue. While ICT have long played a role in workplace operations, and in cross-boundary role maintenance (e.g., the mother who uses a phone to check on her children after school), mobile technologies and virtual environments for physical space-less interaction can corrode time and place boundaries in how and when work gets done. In fact, the fluidity and use of technology across boundaries in the last 20 years leads some to assert that rather than seeing work and home in balance, *mobility in how work gets done* should be seen as the new standard.

Technological innovation may present further divides in the way work, and therefore family life, is characterized. Mobility can create new dimensions of work based on mobility and instability - work may become 'on demand' or dependent on a gig economy, changing expectations for how money is earned. COVID-19 has exposed the viability of work as telework (i.e., working from home) with variation in teleworking rates predicted by a country's economy, worker education and income. Those with a stronger manufacturing and agricultural base have fewer jobs that allow flexibility in work schedules and spaces, and that can be completed through the use of digital technologies.

To date research evidence on technology's impact on work-family balance presents a complicated picture. Researchers consider a wide range of variables or factors that include which technologies are used, reasons for use, individual differences and outcomes of that use. Factors that might serve as antecedents, or predictors of use, or that might moderate the influence from use to outcome. Categories of variables studied include:

Predictors

- workplace (e.g., work status, work demands),
- the individual (e.g., perceived usefulness of technology) and
- the family context (e.g., expectations).

Outcomes

- work (e.g., work performance),
- the individual (e.g., personal stress, feelings of confidence) and
- the family (e.g., family satisfaction).

Moderating factors

- external (e.g., technology support available)
- internal (e.g., time management skills)
- job conditions.

Because the ongoing body of research on technology's influences on work-family balance is at best, complex, recommendations for policy must proceed cautiously. Knowledge to date is incomplete and subject to ongoing innovations available and workplace and family conditions that shift need for balance. After more than a year of isolation due to COVID-19, workplaces are slowly understanding what presence for productivity is needed. And families have identified shifts that might mean the desire for more flexible arrangements. Therefore, policy action should reflect the still evolving, highly individualized picture of work-family balance in the digital age. The dominant message from extant research on these 'new ways of working' is the need *to assist the family member as worker in navigating two significant domains (work and home) with flexibility, rather than depend on traditional notions of space and time that have previously defined roles and responsibilities.*

Policy recommendations to promote work-family balance in the digital world supplement prevailing actions to create more flexible hours, leave policies and supports for child care and education. As these policies promote quality early childhood education and child care, they help address SDG target 4.2 that seeks sufficient access for all young children. To maintain and promote these globally is to work toward *a family-focused work-life vision*. Newer considerations include:

1. As possible, allow employees flexibility in schedules [and work locations] to meet needs in both work and family spheres, yet continue guidance and follow through on organizational policy and workforce requirements. A persuasive observation from the research reviewed is that *employee perception* of balance and *preference* factor strongly in the ability to adapt, and outcomes related to balance.
2. Specific to technology use, help employees develop what scholars have labeled "digital cultural capital," or the awareness, motivation and skill to perform technology management. This aligns with the skill of 'boundary management' which technology can facilitate or invade. A new employee benefit may be *tailored educational supports* on how to manage ICT to support work and family goals. Employers can help foster more personal responsibility to avoid negative spillover in setting spatial and time boundaries for communication, how to use the smartphone properly, deploy privacy management tools, practice good digital citizenship and online self-presentation. Employees can also

be coached on setting boundaries to lower personal stress and enrich family satisfaction and well-being.

3. Provide employees with adequate and reliable technology support and education. Ensure that shared applications are updated and available and if necessary, that employees are provided with necessary devices for mobile, cloud-based access. Wide variation in technology use can reflect differences in attitude, experience with using specific technologies, age and digital skill. Supports available to all help to level the playing field and raise workers to a similar level of competence and comfort. During COVID-19, stipends to purchase technology for a home office was one of the most tangible supports to employees teleworking
4. Relatedly, technology-related policies should be clear, articulated, and reinforced with regard to use of digital devices, data sharing, privacy and security, managing time, and work performance expectations.
5. Expand research on work-family balance with technology integration toward a greater representation of workers, work contexts, family experiences and across countries. Cultural assumptions with regard to technology integration that shape work-family outcomes should also be studied.
6. Individual and family outcomes from technology-integrated work-life balance must be considered on par with those that study workplace well-being. A systemic view of work and families integrative with new technologies and time/space arrangements must regard the reciprocal and transactional costs and benefits to the family. Included in this broadened view are work-family balance effects on children, and fathers' investments in childrearing - areas that to date have received limited attention in the work-family balance/conflict literature.
7. Create a global, dynamic archive of strategies to address the technology-integrated lives of working families.

Parenting Education

Child development experts around the globe speak to the power of parenting education to reduce child abuse and neglect, promote children's academic achievement, connect families to a wide range of emotional and practical supports, and empower parents in their childrearing roles (see Appendix B for examples of non-US programs). Short- and long-term outcome areas of parenting education proposed by UNICEF (Daly et al., 2015, p. 20) include child, parent, parent-child relationship, family and community outcomes (Appendix C). A contemporary interpretation of these outcomes includes new challenges and opportunities for parenting brought about intersections with the internet and digital technologies.

The practice of parenting education is further framed by

- the practitioners or professionals who deliver parenting education, as preparation, qualifications and degree of focus of the work as a parenting educator varies.
- application of evidence-based models (EBP) or use of a ‘local’ effort
- the range of educational modalities, contexts and content foci parenting education dispatches to meet diverse child, parent and family needs and strengths
- delivery alone (as a single prevention or intervention effort) or in concert with other family support services, and most recently
- integration of technology in practice

Parenting education varies from, yet can operate in concert with, family support and connection to resources for adult education, employment, housing and financial assistance. Models of parenting education delivery vary in specific learning theory as a foundation for the selection of instructional methods, yet all appear to remain sensitive to the adult as independent, experienced, and motivated learner.

Despite the widespread existence of research on parenting education, program design, implementation and evaluation to meet myriad family configurations and outcomes, and delivery of programs in countries and cultures worldwide, to date parenting education has not been embraced as an expected strategy when constructing family support investment portfolios.

General Policy and Practice Recommendations for Parenting Education

1. View parenting education as a viable and valuable preventive strategy to reduce child abuse and to support healthy development of children, whether offered alone or as a component of wider family support investments.
2. Consider the inclusion of parenting and techniques to support parents in the work of all in the human services.
3. Continue evidence-based research on parenting education design, delivery and implementation that addresses wider audiences, diverse parent, child, and parent-child outcomes at prevention, intervention and treatment levels, and that integrates a range of contexts and practitioners.

Technology Considerations in Parenting Education

The intersection of parenting education and technology is twofold: 1) as a vehicle through which to assist parents and families with learning *how to effectively use and choose technology for their children* (technology as a content area for parenting education) and, 2) tools and a virtual environment *for the delivery of parent education*. Given parents’ use of technology for acquiring parenting information, sharing content, and supporting their parenting goals, ICT offers an obvious avenue to reach wider audiences and new methods for effective delivery.

Technology as a content area

Parents can be reinforced in using media in healthy ways with their children, particularly for learning and creativity, and understand areas of potential conflict parents and children can resolve together. Guides for parents, such as those from the Council of Europe and Singapore’s Media Literacy Council encourage reflection on parenting style and offer guidance through

clever challenges that encourage constructive technology use and safeguards for cyberbullying, misinformation, and online privacy.

Ongoing shifts in technology device availability and applications used in the child's formal education, informal learning and social worlds (e.g., TikTok, Schoology) means that parents stay current to engage along with their children, anticipate challenges, identify probable hacks, and provide guidance. Parenting education can acquaint caregivers with relevant information on children's developmental domains and age stages to help parents understand what children are capable of and responsible for as they navigate their presence online, face potential threats and reap creative and collaborative rewards.

Educators can also assist parents with vetting the quality of material when choosing what to read. Parents are curious how to know when children are ready for smart phones, how much screen time is healthy, threats to privacy and safety, and preventing cyberbullying. And parents vary in their ability to discern differences in online information; skills that relate to education and literacy. As parents use technology in their roles as parents – texting and video calls to communicate with children, to reassure and coach their children through challenges, learning alongside with children with education technologies, and sharing the joy of gaming - parenting education can help promote the value and how to use these new media and possibly create new rules for parent-child communication. Finally, parents may need help navigating these spaces as they too can be subject to social comparison, bullying and overuse.

When new technologies and workplace policies mean the navigation of flexible work and home time and space boundaries, parenting education can help parents acquire 'digital cultural capital.'

Technology integration in parenting education practice

New technologies and digital media can be integrated for outreach, evaluation and assessment of learning, to foster discussion for sharing information and perspectives, in the delivery of content, and to facilitate social connections beyond face to face meetings. This can reduce the cost of program delivery and reach larger numbers without sacrificing effectiveness or participant satisfaction.

Parents have been using relying on podcasts, websites, blogs, social media, digital apps, videos and messaging over the last 20 years to learn more about childrearing and to be supported in their efforts. Evidence-based and other short-term programs have been adapted to electronic delivery. This is particularly valuable for the completion of mandated parenting education. Research on adaptations to existing face to face programs have demonstrated positive, albeit short term, results.

Parenting education technology researchers observe several areas for growth: program implementation evaluation to include more socioeconomically and culturally diverse populations; attention to device innovation (e.g., the move from desktop to mobile); identifying mechanisms to accommodate wider audience needs and address access inequities, building

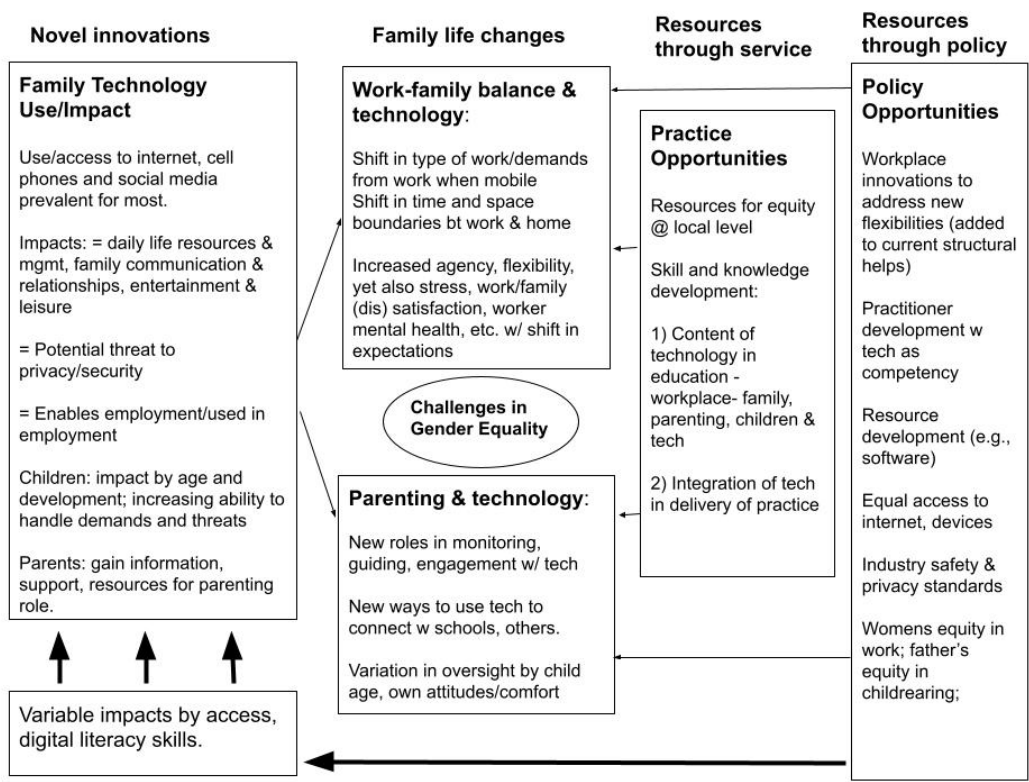
program delivery on learning theory, and comparisons of online-only, and hybrid (face to face plus online) applications.

Practice and policy solutions

1. Parenting educators and parenting education programs are naturally situated to aid children and families with the growing responsibilities and challenges for decision-making and wise use of new media and interactions in a virtual world. This means seeing technology as both a content area for teaching as well as a means for educational program delivery.
2. Parenting educators must feel comfortable and competent as digital educators and integrators. Therefore, they need professional standards that guide preparation and practice. Standards developed for classroom teachers and/or the helping professions (e.g., social work, NASW, 2017) may inform those recommended for parenting educators.
3. Research on technology integration in parenting education is in its early stages. Adapting and testing new ways to communicate, convey information to, assess, and encourage community with parents has yielded valuable information about the costs and benefits from instructor and learner perspectives.
4. Industry can build on the expertise of parenting educators and parents in the design of apps and online platforms. This includes parenting apps, that may build on algorithms to tailor advice to parents yet miss the richer context of childrearing decisions and influences.

Figure 1

Overview of the background paper: Policy and practice support for families regarding technology-centered work family balance and parenting education



Technology Use and Families: Implications for Work-Family Balance and Parenting Education

Rapid changes in digital technology in the last 30 years have revolutionized the ways families live - from making household tasks more efficient through ‘smart’ technologies to mobile devices that facilitate faster communications to applications that support children’s learning in school and out to cloud-based systems that make working from home (for many) possible during the COVID-19 pandemic. ‘Digital technology’ refers to the range of innovations that apply scientific principles for practical benefit and innovation (techterms.com). This includes the digital applications and software, and virtual reality (VR), gaming systems, streaming media services and the range of devices on which the internet can be accessed – personal computers, tablets, phones, watches, and household assistants. Such technological change for the family reflects one of the megatrends identified by the Division for Inclusive Social Development of the United Nations Department of Economic and Social Affairs (DISD/UNDESA). Reflecting these technological transformations of the family, Casimiro and Nico (2018) observe:

The contemporary family is progressively a networked family, adopting a variety of digital technologies to coordinate their lives, to be connected throughout the day, and to bond and share moments online. Technology thus complexifies the very object of family over the life course while also opening up new research avenues based on social change itself.” (p. 145).

As technology is used by families, so too does technology in society impact well-being. Access to the internet¹, use of mobile devices and connectivity through social media and other applications can yield positive outcomes, yet they also come with a cost. For example, invasions of privacy, bullying and sleep effects continue to be at the forefront of societal concerns for children (Coyne et al., 2017). Adults can rely on flexible jobs created by the ‘gig economy,’ yet these can be precarious in longevity (Eins et al., 2019).

Wider distribution of mobile devices and access to the internet, particularly at home and for work, means huge strides to closing what has been labeled the “the digital divide.” Still, existing divides in technology access exacerbate challenges faced by families with limited income and education, and those who face racial disparities.

Given families’ increasing dependence on use of digital innovations for more efficient and connected family lives, while also being subject to the rapid changes brought about by technology’s existence, there is no better time to attend to the realities of what technology means for families, and to help prepare families to be critical consumers in the future. Experts posit that the coming decades only mean steady diet of more cyber-activity, or as one observed, ‘tele-everything’ (Anderson et al., 2021). As an issue of global interest, technological innovation is reflected in the other family megatrends of demographic shifts, international migration, and urbanization and climate change. In September 2020 the UN Economic Network report on megatrends asserted (p.5):

¹ Capitalization conventions for the internet vary. This report will use the format recommended by the American Psychological Association Style Guide, 7th edition.

The digitalization of economies is inevitable and imperative, for instance, but will also deepen inequalities unless accompanied, and in some cases preceded by, policies to create digital infrastructure, ensure universal access at an affordable cost, and provide lifelong education and training to all citizens to take full advantage of new jobs.

Technology is a component of the Sustainable Development Goals², particularly targets within Goals 3 (ensure healthy lives and promote well-being for all ages), 4 (ensure inclusive and quality education and promote lifelong learning for all), 9 (build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation) and 12 (ensure sustainable consumption and production patterns) (Appendix A). And in January 2021, the International Federation of Family Development convened an online focus group of experts to discuss the issues informing policy action for “families and new technologies” (IFFD, 2021).

The former UN Secretary General was quoted in a 2018 report on SDG progress saying, “*the achievement of development goals depends on how well families are empowered to contribute to the achievement of those goals. Thus, policies focusing on the well-being of families are certain to benefit development*” (p.5). Although rapid changes in use and availability of technologies challenge the ability to conduct research on its impacts; our knowledge to date offers direction for policy making and for practice (UNICEF, 2017).

The purpose of this background report is to examine the status of technology in global society and its impact on families, and to spotlight two key contexts that influence family life and family well-being: work-family balance and parenting education. Understanding work-family balance through the lens of technological change adds complexity to research and policy that has long framed this topic³. Working in virtual spaces, using mobile devices and sharing data across systems has given rise to new expectations from employers and workers for how, rather than where and when work gets done. This affects the perception of space and time as fluid or segmented in ways that can heighten ambiguity and challenge work productivity or contribute to family satisfaction and the accomplishment of family responsibilities.

And parenting education offers tremendous potential as a social investment in family life and children’s well-being. Parenting education is useful to all families as few adults feel prepared for the challenges of childrearing. Parenting education offers access to resources and social support, a deeper understanding of children’s development and the importance of safe, consistent relationships (Campbell & Palm, 2018). This context can be particularly useful as families face stresses that have long acted as barriers to their well-being – poverty, violence, racism and discrimination, low employment and inaccessible health care. These can rob a caregiver’s attention from what is required for intentional childrearing. Technology presents new, additional challenges that parenting education can address. In a July 2020 survey of 3640 parents of children 17 and younger in the US (Auxier et al., 2020) the majority (60%) reported

² <https://sdgs.un.org/goals>

³ In 2012 O’Brien provided a comprehensive review of work-family balance effects and policy recommendations. See O’Brien, M. (2012). *Work-family Balance Policies: Background Paper*. Division for Social Policy and Development. New York: United Nations Department of Economic and Social Affairs.

that parenting is harder than twenty years ago. The top reason mentioned (by 26%): technology in their children's lives. Parents expressed feeling underconfident about ways to manage potential dangers with their children from birth through young adulthood, while integrating digital media within the framework of family norms and values. Parenting education -whether offered by a full time, licensed professional, or professional with specific training in parenting - is a natural venue for aiding a new generation of families in feeling confident about their technology choices and ways to keep their children safe in a world where the threats are online and unseen (Livingstone & Blum-Ross, 2020).

This report begins with an overview of technology use by families worldwide. Access and use of the internet, use of social media and mobile phones indicate wide global variations, influenced largely by the country and region's economic development. It will then consider what technology use has meant to family life – impacts on children from birth to adulthood across all developmental domains and impacts on parents, parenting about technology (e.g., mediation), technology use by the family, and extant resources. As available, this section pulls from research representing families around the world, representing children across age groups, and families across socioeconomic categories, culture, language, and location. The first of the two main foci – work and family balance - will then be addressed. Following an overview of research and policy recommendations in the area of work-family balance, the ways in which technology use lends complexity will be discussed. The fluid and blurring boundaries for role execution vary by context and individual and can result in benefits to the family; yet for many, additional strain, family dissatisfaction and reduced work productivity also occur. The section ends with policy recommendations that reflect new realities for families and their employers, and that augment standing policy actions that offer families flexibility, leave protections, and child care. The final section looks at parenting education – what it is and the status of delivery around the world. In light of families' technology use, two emphases for progress in parenting education are offered: technology as a content area – education that aids parents in the decision-making and actions for responsible digital parenting; and technology integrated into practice – employing new media in ways that mean contemporary learners' demands for information, collaboration, and access (Haythornthwaite & Andrews, 2011). Policy recommendations target parenting education programs alone and as a component of a wider system of family supports. They also address an often unseen component of parenting education: the professional parenting educator (or professional whose work with families includes parenting). The report examines the nature of parenting education as a practice and calls for standards of practice to align professionals with the knowledge and skills they need to incorporate technology as an area of their teaching and support to families.

Within the scope of the discussion, this report will reflect family life amidst the global phenomenon of COVID-19. With social distancing for public health, the family is experiencing new meanings of shared space and time, balancing roles for work, family and self and accessing services (Brody et al., 2020). And the impact on children's schooling amplifies technology sharing and internet demand, and for parental involvement in home-based learning (Hillman, 2020; Horowitz, 2020; Parolin & Lee, 2020). Yet, as the UN observes, while the pandemic affects everyone, it does not affect all equally (2020, p. 3). During COVID-19 many families have been challenged to acquire internet or devices needed to keep up with schooling, for children to participate in school (and some have not participated at all, Perez, 2021) or for parents to engage as they would like (Horowitz, 2020; Vogels et al., 2020). Homeless families face extraordinary challenges in maintaining school connections (Shapiro, 2020). And the

isolation raises concerns about parents' heightened stress and mental health. Writing for the New York Times, Jennifer Grose (2020) reminds us that childrearing was never meant to be done alone as families are holed up through social distancing. A number of physicians advocated in the *Lancet* for parenting education and support to stave off the potential consequences of parental stress from COVID-19, including child maltreatment and neglect (Cluver et al., 2020).

Technology Use and Impacts on Families

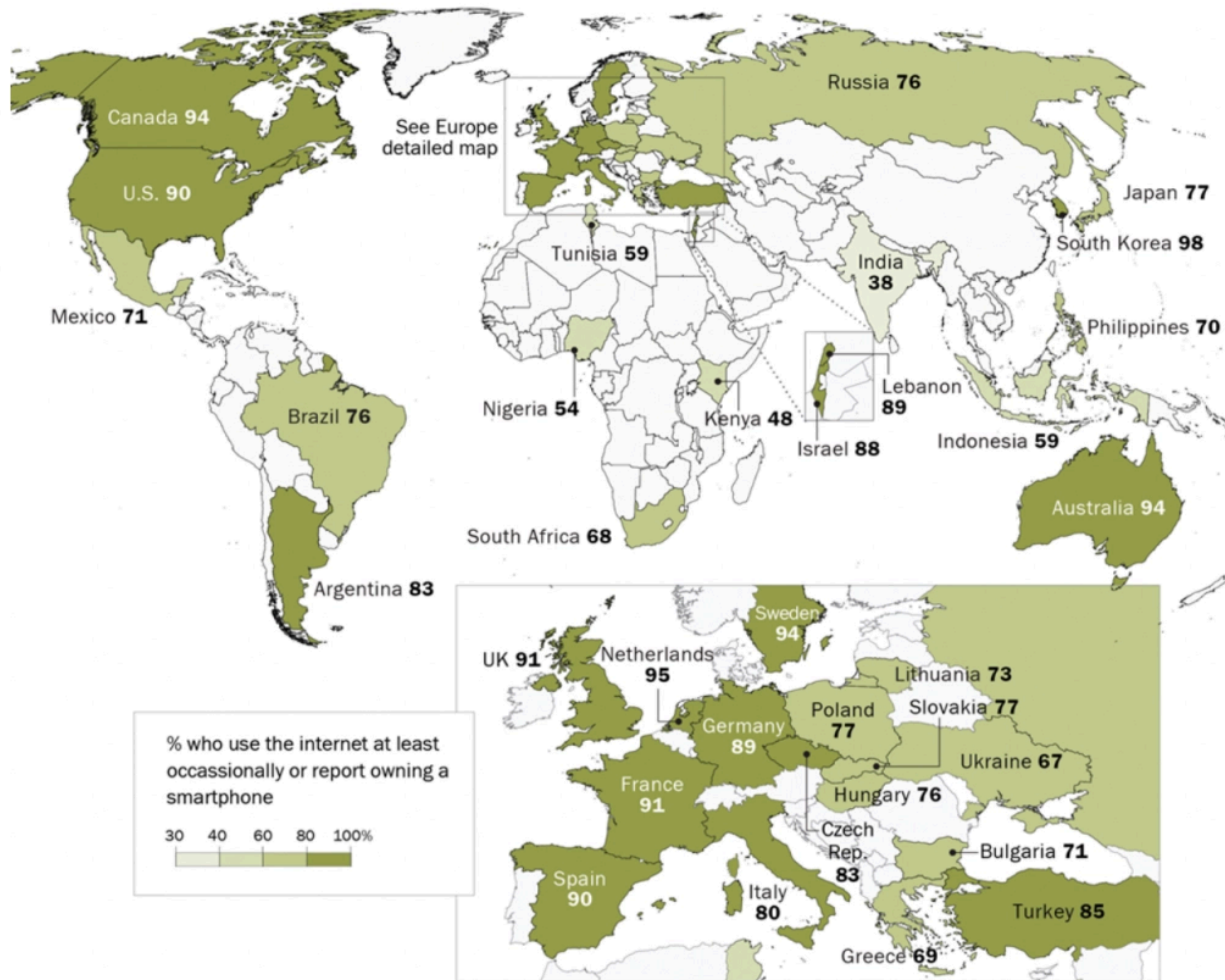
Global data suggest that on average, at least 77% of the world's population has at least some access to the internet (Schumacher & Kent, 2020, figure 2). The International Telecommunications Union (ITU, 2019) report an estimated 4.1 billion people use the internet, or 53%, reflecting a 5.3 percent increase since 2018. Countries with more advanced economies report higher rates of use: Australia, Canada, South Korea, the Netherlands and regions: Europe, the Americas, Commonwealth of Independent States (CIS) (ITU, 2019; Schumacher & Kent, 2020). Close to 87% of individuals use the internet in developed countries, those in countries with emerging economies report lesser use (47%, on average, from 38% in India to 89% in Lebanon) and those in least developing countries – primarily in Africa – report an average of 19%. Within the continent, country averages range from 4.7% saturation in Western Sahara to 87.2% in Kenya (Internet World Stats, 2020). In Latin America, internet use similarly varies, with countries like Argentina (92.2%) and Costa Rica (85.5%) reporting high saturation, and countries such as Nicaragua (30.2%) and Honduras (28.7%) with small percentages of internet users within the country population. Since 2015 overall access to the internet exceeds household computer ownership. In other words, the ITU reports that it is no longer necessary to have a computer at home to access the internet. (ITU, 2019, p. 7).

Figure 2

Worldwide internet and/or smart phone use (Schumacher & Kent, 2020)

Internet use is a prevalent part of many people's lives across the globe

% who use the internet, at least occasionally, or report owning a smartphone



Source: Spring 2019 Global Attitudes Survey. Q51 & Q53. U.S. data is from a Pew Research Center survey conducted Jan. 8-Feb. 7, 2019.

PEW RESEARCH CENTER

Data reported by Pew (Schumacher & Kent, 2020) indicate that the vast majority of those in Europe own a cell phone (93%), with highest rates in Sweden and the Netherlands (97%). In non-EU countries, South Korea (97%) and Lebanon (88%) report high percentages of smartphone users. Mexico and India report especially low numbers with 36% and 30% of smartphone ownership, respectively. The ITU report that nearly the entire world's population (97%) live within reach of a mobile cellular signal (2020). Bandwidth usage has also increased since 2015, with Europe reporting the highest use and the continent of Africa with a large

number of developing countries reporting the least (ITU, 2019). Still, access doesn't imply financial security: 28% of those who have a high-speed connection, or a smartphone plan worry about being able to continue payments (Vogels et al., 2020).

Social media patterns of use as indicated by the percentage of those in the population reporting social media accounts/ regular activity are smaller than phone or internet access, yet still exceed 50% in most countries in Europe (Germany is lowest with 52%; other countries report up to 74%). India is again lower in overall population use of social media, with 31%.

Demographic characteristics of individuals differentiate use and access. Younger individuals are far more likely to be on social media, use the internet and own a smart phone. And educational attainment can vary use. With education level established by country, generally higher access seen in those who have completed more schooling (Schumacher & Kent, 2020). Variations can be narrow, as in the case of South Korea where educational level varies use by 4%. In Nigeria, however, a sixty percent difference occurs: 13% of those with limited education access the Internet compared with 73% with more education. In every region of the world, though to varying differences, internet use is greater for men than women. In more developed countries differences are less (e.g., 1-2%) but in developing and least developed countries (LDCs), men's access exceeds women's by 10-12% (ITU, 2019). And the gap as measured between 2013 and 2019 is growing in developing and least developing countries (ITU, 2019). Developing countries report a 7% increase in the gap, and LDCs report a 15.9% increase in 6 years. Gender differences in mobile phone ownership also exist, with gaps mimicking differences in internet access.

Demographic differences do more than bifurcate our view of who does or does not use or have access to technology. They also reveal equity differences that affect the ability to take full advantage of technological efficiencies, access to information, connectivity, and interactivity for learning and employment. Access is particularly critical when families are mobile or relocate due to immigration, live transnationally, or are separated owing to military service or employment (Carter & Renshaw, 2016; Karraker, 2015). Lack of access and use also can affect comfort in using technology. The ITU report that for 40 of the 84 countries with available data, less than half of the population have basic computer skills (e.g., copying a file, sending an email with an attachment) and fewer than half in 60 countries report having standard skills (e.g., installing software). While lack of access and skills is referred to as the 'digital divide' others characterize the space by the deficits created: the 'access gap' or the 'knowledge gap' (Wei & Hindman, 2011). Blum-Ross and others (2018) suggest that varying levels of skills, literacy and confidence with technology is a new way to understand family diversity. Such gaps only contribute to and exacerbate challenges brought about by disparities in income, education, employment, housing and sanitary living conditions and health care in families' lives.

Technology Use by the Family

For the well-being of the family technology offers opportunities for members to seek and participate in employment, manage finances, seek health information and manage health care records, and otherwise attend to a range of matters. Misuse, exposure to online threats (such as identity theft and bullying), and access challenges can bring stress to the family, but in general, deploying digital media and the internet is viewed as positive for family efficiency and coordination. Future perspectives regard life as 'tele-everything,' with anticipation that the

‘internet of things’ and dependence on technology shaping the economy continue to affect family life (Anderson et al., 2021).

For whole families, technology use can foster connectivity and cohesion through added mechanisms for communication and time spent together. Videoconferencing apps like Zoom, Facetime and WhatsApp can keep extended families connected in ways previously unavailable (Karraker, 2015). Gaming and creating media together⁴ foster closeness while also providing opportunities for communication, learning patience and flexibility (Joyce et al., 2021). These interactive opportunities also enable parents to monitor the content and quality of children’s time with screens and scaffold (or guide) learning on areas of the child’s identity and interests (Ito et al., 2020). Though mothers are more likely than fathers to engage with children and media, fathers are especially likely to play videogames with their children (Livingstone et al., 2018).

And the availability of access to information, time saving devices, and digital assistants can make lives simpler, theoretically leaving more time for family interaction. Yet as previously noted, family members can vary in their comfort, skills, interests and reasons for technology use, which might bring out conflict (for example during dinnertime and expectations around cell phone use). Families are also encouraged to set guidelines and shared rules for using technology⁵.

COVID-19 Impacts on Families and Family Technology Use

Since the outbreak of the COVID-19 pandemic in early 2020, families have been socially distancing with school, work and employment taking place in the home via telework or tele-education. Health care continues for many by virtual of telehealth and electronic home visits (Supplee & Crowne, 2020). With families worldwide finding new ways for children to ‘attend school,’ opportunities for learning are complex (Cobo et al., 2020; Hillman, 2020; Horowitz, 2020; Shapiro, 2020). Pew’s US survey of families with children during COVID-19 indicated that 53% said that the internet was essential with 94% reporting that their children’s schools were online (Horowitz, 2020). For many families this was a challenge; 29% reported that their children needed to do homework by mobile phone and using public WIFI (22%). These numbers are higher for families who are low income and who live in rural or urban areas. Fully 36% of low-income families reported that their children were unable to complete work at home without a laptop. As a result, many families are concerned about their children falling behind (Hillman, 2020). Teachers too, report that a sizeable portion of children simply didn’t log in at all during the school year (Perez, 2021). Compounding these differences, are the ways in which families view learning from home and the need for parental involvement (Sefton-Green, 2013). While some are more engaged – usually higher socioeconomic status families – others believe it is the school’s role to promote learning.

⁴ As an example, the Children of the Force podcast is a collaborative effort of a father and his two children and has been broadcasting for 5 years (www.childrenoftheforce.com). The children have fostered an identity around this shared activity and interest of Star Wars and engagement with technology has motivated individual pursuit of music creation and mining the roles of women in media. Other parents report that listening to the podcast is both motivating and comforting to their school age children.

⁵ See for examples the Family Media Plan from the American Academy of Pediatrics: <https://www.healthychildren.org/English/media/Pages/default.aspx>; and the Family Media plan from the Government of Western Australia: <https://www.natureplaywa.org.au/digital-wellbeing/strategies-to-reduce-screen-time/family-media-plan>

On top of other challenges that COVID-19 produced, including job and income loss, especially for women and immigrants (Kochhar, 2020), digital inequities exacted additional costs. Many families needed to secure children with technology and needed to find extra time to assist children with learning from home (Vogels et al., 2020; *The Rugrat Race*, 2020). As discussed in the section on work-family balance, challenges with sharing space, time and technology during COVID-19 have also bred frustrations and perceived inefficiencies with work and school productivity.

General policy recommendations regarding families and technology that respond to the Sustainable Development Goals include the following (see Appendix A):

1. Ensure access to the internet, to higher speed internet, and to devices for communication and access to the internet. (SDG 1.4, 2.3, 2c, 3.8, 8.10, 9a., b., c.; 10)
2. Help family members gain digital literacy skills (SDG 10) to comfortably and safely use the internet for health information (SDG 3.8) and financial management (SDG 8.10),
3. Empower women with equal access to technology, internet and digital devices. Embolden their use through promoting digital literacy. SDG 5b
4. Higher levels of economic productivity can be achieved by empowering women with equal access to technology, internet and digital devices. Increase all members of developing countries access. Embolden use through promoting digital literacy. (SDG 8.2)

Family Impacts of Technology Use: Children and Adolescents

Interest in technology's effects on children has captured the public and researchers' interest perhaps more than any other topic on technology and family. Personal and mobile devices and the internet have now been a part of children's lives for several decades. Starting with the Millennial generation,⁶ time spent on screens and the quality of exposure to specific content and interactivity raise concern with its influence on development and academic achievement. It is beyond the scope of this review to provide an exhaustive look at existing research on technology's effects on children. Readers are directed to recent reports⁷ from UNICEF (2017), the ICT Coalition for Children Online (Blum-Ross et al., 2018), WHO (2019), European Commission (Chaudron et al., 2017), OECD (Gottschalk, 2019) and Ernest et al. (2014) for international summaries. Primary attention is given here to benefits and challenges that would most reflect parenting interests (Auxier et al., 2020; Livingstone & Blum-Ross, 2020) and parenting influence (CommonsenseMedia, 2016; Coyne et al., 2017; Livingstone & Blum-Ross, 2020; Wartella et al., 2013). And although much of this section will address children up to the age of 18 years, the age defined by the UN Convention of Rights of the Child (UNICEF, nd), it will also consider emerging adulthood (19-25 years). Not only does this contribute a unique period of development in the trajectory of childhood to the discussion (Arnett, 2007), it also represents continuity in the parenting experience for many families. At no time since the Great Depression have young adults lived at home in the US in such high numbers (Fry et al., 2020). And data from other countries historically support continued or return co-residence for young adults in the family home (e.g., Arundel & Ronald, 2015).

⁶ Born between 1981 and 1996

⁷ Given the rapid change in technology availability, capability and popularity, readers are encouraged to seek out reports with data from the last five years for a view of contemporary trends.

Providing a useful summary to introduce this section, in 2017 UNICEF offered the following list of impacts on children from living in digital worlds (pp. 4-5):

1. Digital technology has already changed the world – and as more and more children go online around the world, it is increasingly changing childhood
2. Connectivity can be a game changer for some of the world’s most marginalized children, helping them fulfill their potential and break intergenerational cycles of poverty.
3. But digital access is becoming the new dividing line, as millions of children who could most benefit from digital technology are missing out.
4. Digital technology can also make children more susceptible to harm both online and off. Already vulnerable children may be at greater risk of harm, including loss of privacy.
5. The potential impact of ICTs on children’s mental health and happiness is a matter for growing public concern – and an area that is ripe for further research and data.
6. The private sector – especially in the technology and telecommunication industries – has a special responsibility and a unique ability to shape the impact of digital technology on children.

These observations reflect technology’s potential impacts on all domains of child development: physical growth, cognition and learning, social and emotional development. They align with the ages and stages of development: early childhood (birth to age 5), middle childhood (5-12), adolescence (13-18) and emerging adulthood (19-25) supporting a lifecourse perspective on parenting (Casimiro & Nico, 2018; Lim, 2016). They reflect differentiated effects depending on the child (e.g., susceptibility, personality, health status), context of use, type of device or application, degree of exposure, quality of interaction, and possible displacement (i.e., what the child is not doing while using technology). And they commit the technology industry to action that promotes children’s development in the design, dissemination and data gathering from widespread use. They also reflect the state of research in the area, which is prolific, yet incomplete (Gottschalk, 2019). Information about use and concerns specific to age group will now be discussed, followed by two topics of universal influence on children: privacy and equity.

Young Children

Distinct interest in young children’s exposure to screens rests with the vulnerable time period for brain development, pre-birth through age 5. Children’s neural connections develop paths for future learning during a critical time period of plasticity (Gottschalk, 2019). Screen exposure can affect young children’s sleep quality (e.g., exposure to blue light affecting melatonin release), and a focus on screens can negatively affect babies’ need for reciprocal interaction for learning language, sense of self and executive functioning (Ernest et al., 2014; Gottschalk, 2019). Country government agencies recommend no screen exposure for children under 2 (Table 1). For preschool age children (2 ½ to 5 years), there is some demonstrated benefit to alphabet recognition and learning sounds, and greater emotion recognition, empathy and self-efficacy from well-constructed media, particularly when interacting with an adult. Guidelines for very young children center more on limiting exposure rather than recommending use, up to 60 minutes for children 3-4 years, providing that there is adult interaction during use. (Gottschalk, 2019; WHO, 2019).

Table 1
Screen time recommendations (from Gottshalk, 2019)

Country/institution	Infants/toddlers	Early childhood	School-age - adolescence	Other recommendations
AAP (United States) (AAP, 2016)	None, except video chatting (under 18 months); Only high-quality programming (18-24 months)	1 hour of high-quality programming, co-view	Consistent limits on time and type	Turn off screens when not in use; ensure screen time doesn't displace other behaviors essential for health
Canada Canadian Society for Exercise Physiology (CSEP, 2017) Canadian Pediatric Society (Canadian Pediatric Society, 2017)	None	<1 hour	<2 hours (CSEP only)	Limited sitting for extended periods (CSEP); Adults model healthy screen use (CPS)
Australian Government Department of Health (Australian Government Department of Health, 2017)	None (under 12 months);	<1 hour	<2 hours (entertainment)	
New Zealand Ministry of Health (Ministry of Health, 2017)	None	<1 hour	<2 hours (recreational)	Adapted from CSEP guidelines
German Federal Ministry of Health (Rütten and Pfeifer, 2016)	None	30 minutes	1 hour (primary school) – 2 hours (adolescents)	Avoid as much as possible; avoid screen time completely for children under 2 including background television watching several times a day.

Despite guidelines, young children's time with screens is reported to be just under one hour for children to age 2 (.47), and 2 hours 39 minutes for children 3-5 years, with the majority of time on TV (Commonsense Media, 2017). Young children's exposure to digital technologies may begin quite early - months after birth (WHO, 2019). Auxier et al. (2020) report that nearly half (48%) of children under 5 have used a tablet and 55% have used a smartphone. YouTube is also popular with very young children, with up to 80% having watched it and 25% watching several times a day. Black or Hispanic parents report higher percentages for young children.

US parents also report that approximately 5% of children under 5 use social media (especially TikTok and Snapchat), and 29% say their young child interacts with a voice-assistant, primarily to play music (reported by 79%).

Middle Childhood

Interest in activities, stronger peer relationships and time spent in school/on school subjects encourage children 6 to 12 years old to use a variety of devices and explore a range of applications. Parental acceptance of screens also changes during this age - 67% are tolerant with children under 12 having a tablet, though the majority of parents (73%) believe that 12 or older is the age at which it is acceptable children have their own phone (Auxier et al., 2020). School age children are prevalent media users with 80% using a tablet and 63% using a smartphone (Auxier et al., 2020). Social media is popular with older children, age 9 to 11, with parents reporting 30% on TikTok.

The primary developmental concern at this age is an overreliance on screens that leaves children exposed to threats they may not have the cognitive abilities to reason through or social maturity to handle (Gottschalk, 2019). Concerns for obesity, sleep and posture and the rise in use of videogames, school-related technology use, and overall screen time, have lead physicians and parents to be alarmed over children's stress and anxiety. Gaming is believed to have some positive benefits to executive functioning, yet these platforms also expose children to cyberbullying (McInroy & Mishra, 2017) and to violence which can influence the acceptance of oppression and lack of empathy (Ernest et al., 2014). Signs of internet gaming addiction⁸ may begin surface in those children vulnerable in particular to the gamification and competitions embedded in the software.

To the positive, the area of 'connected learning' promotes the value of interactive, mobile, creative technologies and children's learning (Ito et al., 2020) and encourages the pursuit of interests across the 'learning ecology' (Barron, 2006) through opportunities and relationships. The boom in learning technologies used in the classroom – and teacher competencies to ensure pedagogical value⁹ speak to the promise of digital engagement throughout the school years. For school age children with disabilities, technologies aid reading for children with vision challenges, and vocabulary and problem-solving skills for children with developmental delays (Livingstone & Blum-Ross, 2020). Adding Wii games for children on the Autism spectrum benefits physical development, learning social cues and developing social skills (Ernest et al., 2014).

Adolescence and later

⁸ <https://www.psychiatry.org/patients-families/internet-gaming>

⁹ <https://www.iste.org/standards/for-educators>

Phones and computers are nearly ubiquitous in the lives of teens (Commonsense Media, 2018) as they use them extensively for connections to friends and family, for schoolwork and jobs, and daily life tasks. Teens' use varies, however. Light users are on screens approximately 2.5 hours/day; heavy users are on 13.3 hours/day (Commonsense Media, 2018). Similar to children in middle childhood, concerns for teens rest with psychological effects due to social comparison, anxiety, low self-esteem and being the subject of bullying (UNICEF, 2017). These affects also are more prevalent for teens who are vulnerable. Research by Commonsense Media (2018) revealed that adolescents 13-17 years who scored lowest on the socioemotional wellbeing scale (SEWs) reported the importance of social media in their lives higher than other teens; they were also more likely to report being bullied, feeling bad and left out. Problematic behavior with technology (e.g., feeling addicted to one's phone) can have negative consequences with relationships. Male and female college students with problematic mobile phones use show weaker relationships with their parents and their peers (Lepp et al., 2016). And Coyne et al. (2019) observed that excessive time and addictive consumption of smart phones in adolescence may continue through young adulthood.

While these concerns are valid, the ubiquity of the internet, smart phones and use of technology in school and life in general is a reality and the majority of teens do not report negative outcomes (Commonsense Media, 2018). Interaction through dating apps, texting and social media are commonplace and now expected environments for intimate relationships – a healthy part of teens' socialization. Technology that is used to intersect interests across their lives contributes significantly to adolescents' identity formation, sense of agency and autonomy, and academic achievement. For adolescents and young adults worldwide, proficiency with technology also means preparation for jobs of the future that will rely on automation (Anderson et al., 2021; Blum-Ross et al., 2018).

Safety and equity

Privacy and online safety are major issues facing everyone who uses the internet. Use of online technologies enable telecommunication companies' access personal data; data that can be sold to market products to individuals and create a digital footprint that individuals children have no control over. These issues are particularly critical for children, whose level of development and ability to reason through online threats can leave them vulnerable. Commonsense Media reports that online safety is not only relevant to the personal devices and apps used by children, but cybersecurity breaches also occur in schools and from school-issued devices (2019). The market for children's digital advertising was \$1.2 billion in 2019. The majority (60%) of connected devices don't provide necessary information about how they collect or use personal information. And nearly the same percentage of early teens 12 to 15 believe it's easy to delete their information online.

Recently developed, the 5 Rights Foundation advances protections for child well-being, particularly as article 25 of the UN's Convention on the Rights of the Child extends childrens rights to online environments as well as their lives offline¹⁰. The Children's Online Privacy Protection Act [COPPA, US] and the General Data Protection Regulation [EU] dictate that social networking sites be accessed only by children 13 and older (Blum-Ross et al., 2018). In January of 2020 the California Children's Privacy Act went into effect. This provides more stringent protections than COPPA related to notice and consent, children's rights, enforcement and other

¹⁰ See <https://5rightsfoundation.com/our-work/childrens-rights/uncrc-general-comment.html>

items, making it closer to the protections offered by the GDPR. Privacy principles for children recommend that they not be tracked or profiled online, nor subject to ads based on their online activity; that children be able to easily modify the personal information they choose to share; that families educate themselves on privacy options and agree not to share children's information without their consent (Commonsense Media, 2017).¹¹

Issues of children's access and the digital (or knowledge) gap are of worldwide concern. Inequities in device and internet access challenge children's learning and achievement worldwide (Katz, 2017; Katz et al., 2018; Perez, 2021; Resta, 2020, Resta, et al., 2018; Zhang & Livingstone, 2019). Differences in access affects children in myriad ways, including participation in learning and at school, making valuable social connections, and forging a unique identity. Lack of access also adds a disadvantage to children with special needs, who already struggle to find technologies with necessary accommodations. Beyond a 'device divide' that is addressed by distributing technology to homes, schools seek remedies when millions of children who didn't log in during the school year (Perez, 2021). Through COVID-19 conditions and before, schools may distribute devices, routers and WIFI hubs, provide additional technology coaching, and train teachers to be sensitive to equity and access needs when integrating technology in coursework. And a new bill (Emergency Broadband Benefit) from the US Congress offers short term assistance to pay for internet access for families and students (US FCC, 2021). On the public awareness side, children's media scholars Livingstone and Blum-Ross (2020) advocate that a step toward equity is to move our collective concern away from screen time quantity and more strongly embrace quality dimensions of technology use for active learning, socialization and development. This can shift attention to the need for all children to have access to beneficial technology. Attending to gaps across economic and other marginalized groups will then become more salient for public policy.

Family impacts of technology use: Parenting

Children's access to technology, their primary exposure to its content and interactivity with devices, and the quality and safety of those interactions is significantly influenced by their parents. Lim (2016) calls the practice of 'transcendent parenting' which goes beyond traditional, physical concepts of parenting, to incorporate virtual and online parenting and how these all intersect. Although many frameworks of parenting exist, ones that incorporates individual differences of parents and myriad context factors as influential on parenting and parent-child relationship that are functional to children's development and well-being are useful to apply cross-culturally and when viewing parenting in the novel area of technology¹². Figure 3 conveys a competency model proposed by Johnson et al. (2014). As parenting is discussed in this section, children's technology use and individual differences of the child can be seen as context factors, as can influences from school and peers and wider institutions on that use. These intersect with foundational elements of the parent's own psychological and cognitive abilities and attitudes to

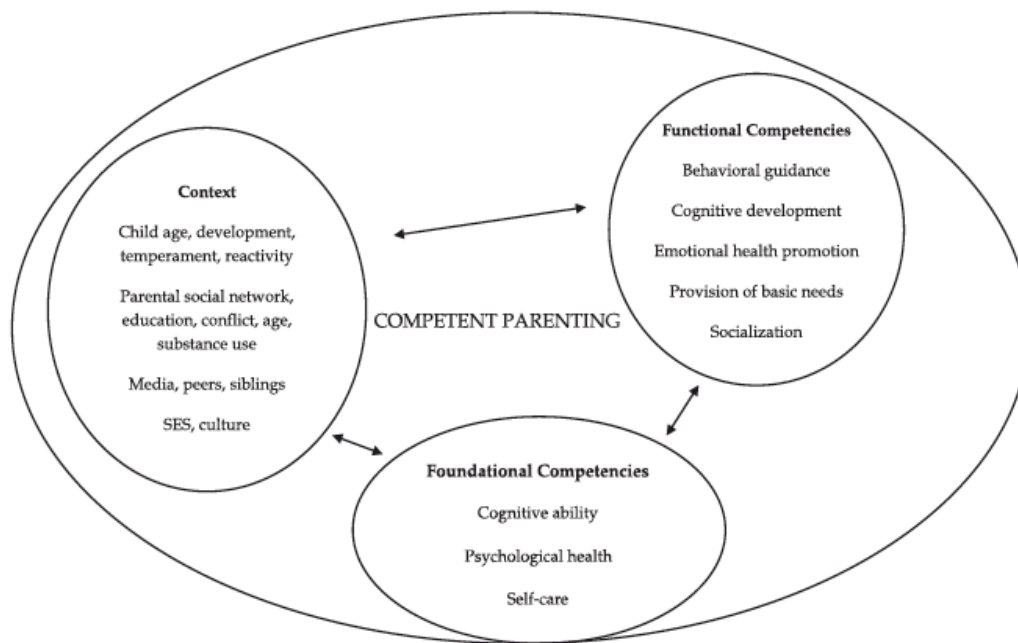
¹¹ For an example of how countries are aiding digital literacy for families, see Child safety online: A practical guide for providers of social media and interactive services –(UK). <https://www.gov.uk/government/publications/child-safety-online-a-practical-guide-for-providers-of-social-media-and-interactive-services/child-safety-online-a-practical-guide-for-providers-of-social-media-and-interactive-services>

¹² Classic ecological models of parenting influence include Belsky's multi-determinants framework (1984) and Super and Harkness developmental niche perspective (1986).

influence apparent parenting behaviors related to technology use (their own, the child's and by the family). This model also reveals child use or parenting response not as a linear action but interactive and recursive in response to other elements. Parenting behavioral guidance will change with the child's age; a parents' mental health may improve with feelings of self-efficacy as a result of interactions with their child around technology use.

Figure 3

A conceptualization of competent parenting. From Johnson, B., Bergdahl, L., Horne, M., Richter, E., and Walters, M. (2014). A parenting competency model. Parenting: Science and Practice, 14: 92-120.



Parenting *about* technology has been the centerpiece of research and action for childrearing supports for the last decade, at least (Auxier et al., 2020; Blum-Ross et al., 2018; Coyne et al., 2017; Livingstone & Blum-Ross, 2020; Livingstone et al., 2018; Wartella et al., 2013). Parental monitoring, asserting controls and mediating screen time are foci of ICT-related caregiving responsibilities. This section will explore parents' experiences and influence that create differences. Technology is also a vehicle *through which parents' parent*. They communicate, support, nurture and guide their children through texting, video and voice communication (Dworkin et al., 2019). Time interacting together with technology, such as through gaming, co-viewing movies or engaging in a 'maker space' (a facility for creating with materials and developing critical thinking skills¹³), can strengthen parent-child cohesion (Coyne

¹³ www.makerspaces.com

et al., 2017; CSM, 2016, Ito et al., 2020). Yet parents using technology to parent can produce conflict in the parent-child relationship as children feel their agency threatened through unagreed upon monitoring (Blackwell et al., 2016; Coyne et al., 2017; Commonsense Media, 2016; Livingstone et al., 2018). Personal use can also create a distraction and diminish attention to caregiving that affects relationships quality (Beamish et al., 2019). A third way that parents use technology is as a support for their parenting. Informal exchanges with peers through social media, seeking out information on childrearing on a website, pursuing creative ways to express oneself by blogging or interest board (e.g., Pinterest) all contribute to parent mental health, sense of identity and feelings of connectedness (Walker & Rudi, 2014).

Parenting about Technology (parent mediation behaviors)

Fully 98% of parents in a recent US study believe it is the parent's responsibility to protect children from online content (Auxier et al., 2020), compared to 65% expecting the government or technology (78%) companies to bear responsibility. While most parents (71%) are aware and concerned about the amount of time children 11 and younger are spending with screens (Auxier et al., 2020), more (84%) report feeling confident that they know how much screen time is too much. Most (71%) believe that widespread use of smartphones might be harmful to their children's socioemotional learning. There is also concern by most about exposure to online predators (63%), sexually explicit content (60%), and violent content (59%). While bullying is a general concern of many parents, the majority (96% of parents of children 5 to 11) report that their child has not been bullied online (Auxier et al., 2020).

Parental restrictions on children's technology use largely curve with the child's age – with stronger monitoring occurring through middle childhood, then tapering off through adolescence. Parents are likely to move from monitoring use with young children to monitoring with co-use during middle childhood, then co-viewing or co-using technology in adolescence. Restrictions may be technical (limiting use of hardware or software, including taking away technology as a punishment), monitoring (tracking use, messages and the child's location), and active mediation (talking to children about their technology use) (Auxier et al., 2020; Blum-Ross et al., 2018; Livingstone et al., 2015). Parents' mediation strategies appear to relate to their attitudes toward technology, observed by Brito and colleagues' research in 14 EU countries (Brito et al., 2017). Mediation strategies reflect child behavior (for example, parents are more likely to use media to soothe babies who are fussy and demonstrate poor self-regulation. Coyne et al (2017) observe that research has yet to determine the interplay between parents' mediation strategies and more specific child characteristics. Parents' education, income, gender and technology skills also influence mediation. Mothers are more likely to demonstrate mediation than fathers, and parents who are higher in income and educational attainment and who demonstrate more comfort with technology exercise more mediational practices.

Restrictive mediation means setting rules regarding the time spent or content viewed. It can also mean 'e-rewards,' in which parents withhold or grant technology use in recognition of good behavior. Parents' active mediation occurs through direct parent-to child interaction and conversation about media's effects. Co-viewing or co-participation (such as playing games) enables parents to actively mediate and monitor children's exposure and scaffold healthy use. Across the approaches, restrictive and active mediation can reduce negative media effects, and co-viewing can enhance or facilitate media's positive effects (Coyne et al., 2017). Livingstone et al (2015) determined socioeconomic differences in mediation strategies and attitudes in a sample

of parents of primarily 4- to 7-year-old children in seven countries, including England, Finland and Russia. Parents with less education and income were more restrictive, yet also more ambivalent about media effects. Parents with more education and income used a diversity of mediation strategies and encourage non-school media use for learning. Cross national variation in parent mediation strategies has been found among the Finnish (actively engaged), Czech (passive), and EU and UK countries and Russia (restrictive) (Hesper et al., 2013).

To some extent parenting style (Darling & Steinberg, 1993) has been examined with mediation strategies. Those who are more permissive (higher in warmth over control) are less likely to restrict children's screen time; those more authoritarian more likely to do so. And parents' own use is predictive of control (Wartella et al., 2013). Those in mediacentric households (reporting approximately 11 hours or more per day) are more permissive than those who are media moderate or 'media light.' Children in mediacentric homes are also more likely to have televisions in their bedrooms. Research also supports socioeconomic correlation: families with less income, formal education, who are non-White, and whose parents measure higher on depression are more likely to report higher rates of media consumption. When surveyed many parents note that media provides a safe, inexpensive and available form of entertainment for their children (Livingstone et al., 2018).

Parenting with Technology and Parent-child Relationships

The primary reason that parents secure phones for their children, even before age 12 is to communicate with them (Auxier et al., 2020). Through texting, voice and video calls parents can convey information to children that supports their development, it enables coordination, and promotes closeness. The efficiency of using ICT for communication also makes co-parenting relationships easier, such in the case of divorced parents (Ganong et al., 2012), and maintains parent-child connections during separations, including military deployment (Carter & Renshaw, 2016) and immigration (Casmiro & Nico, 2016; Karraker, 2015). Parents report that during COVID, connections with their adult children through videoconferencing, and with resident children through gaming and time spent together deepened personal relationships (Joyce et al., 2021). And yet, use of technology to maintain the parent-child relationship may lead to what Parrenas and Boris (2010, as cited by Karraker, 2015 p. 13) refer to as the 'antithesis of intimacy.' Expectations for maintaining communication through the ease the digital media afford can impinge on children's or parents' independence.

Parents' own technology use may present a challenge when monitoring children's safety and well-being. Research with parent-teen pairs indicates that when teens see parents' time on their phones similar to their own, they question parental advice and role modeling (Commonsense Media, 2016; Livingstone et al., 2018). Teens don't turn to parents for safety issues about technology (Blum-Ross et al., 2018; Commonsense Media, 2018). There may be tension in the parent-child relationships with a power dynamic shift, particularly in lower income and immigrant homes, as children gain more comfort and skill with technology than their parents (Livingstone et al., 2018), or when children need to doubly assist parents who need language translation and technology assistance. Blum-Ross et al. (2018) relate a story of a mother from Bulgaria who is competitive with her child on the soccer field, but when play turns virtual, she felt that she couldn't keep up.

Receiving Support for Parenting through Technology

Gathering information about child development and health is a major way that parents use technology to support their parenting competence and comfort (Baker et al., 2016; Livingstone et al., 2018; Myers-Walls & Dworkin, 2015; Zero to Three, 2016). Recent data suggests that 40% of US parents with children up to age 17 and 65% of Australian parents of children 2-12 years old get information from the web (Auxier et al., 2020; Baker et al., 2016). Parents who are of higher socioeconomic status and those with children with special needs are more likely to use online help (Zhang & Livingstone, 2019). Online sources are used in complement with parents' other, more personal and proximal sources including friends and family, teachers, the pediatrician and other professionals (Myers-Walls & Dworkin, 2015; Zero to Three, 2016). Meaningful support for the parenting role comes through parents' use of social media and other social technologies to interact with other parents, family, and friends. In the US, 29% of parents report getting information from social media, and 19% from message boards. Participation in discussion forums and social media offer parents' emotional validation, normalization of their concerns, and tailored information for problem solving and decision-making (Drentea & Moren-Cross, 2005; Walker & Rudi, 2014). Younger parents and mothers are especially likely to use social media to share information about their children, compared with fathers and older parents (Auxier et al., 2020; Steinmetz, 2017). Blum-Ross and Livingstone (2017) write about 'sharenting' that helps manage the juggling of identities as parent, problem solver and information seeker. Social media and blogging as a form of expression and support has also been identified as valuable for more marginalized groups of parents, including LGBTQ (Blackwell et al., 2016) and parents of children with special needs/health challenges (Nagelhout et al., 2018).

There is particular value in virtual exchanges strengthening parents' social capital and its personal and parenting benefits (McLean et al., 2017). Definitions of social capital vary by structural (e.g., network ties that forge and define relationships) or content impacts (e.g., quality of interaction and exchanges across ties that maintain a sense of cohesion). Person to person repeated exchange within groups can produce familiarity and feelings of trust strengthening bonding social capital. Parents' interactions through social networking can also form bridging social capital, or connections to new networks which offers new, more novel connections, and the opportunity to learn new information about parenting. Cochran's perspective on parents' personal social networks (Cochran & Walker, 2005), supported by research, indicates that heterogeneous connections are positive for parents through the diversity of perspectives and acquisition of novel information. That said, some parents proceed with caution. Online interactions for parents can be challenging for some. Fear of judgment, self-comparison and diminished confidence in childrearing can result (Steinmetz, 2017). And while research suggests that a minority of parents participate in parenting education online (at least, pre-COVID, Walker & Rudi, 2014; Zero to Three, 2016), delivery of parenting education programs wholesale or as a complement to face to face efforts is increasingly available (McLean et al., 2017; Walker, 2020). Demographic variation reveals that parents in lower socioeconomic groups, particularly those with less formal education and who live in higher stress environments are more favorable to getting information from websites than participating in seminars or individually tailored programs (e.g., evidence-based programs adapted for online delivery). This suggests that outreach methods need to appeal to a wide range of parents to reduce equity gaps in participation. Given the conversion to online-only parenting education programming during COVID-19, it will be interesting to see if attitudes change with a return to face to face opportunities.

Policy Considerations for Families in the Digital Age

After the last three decades of innovation, ICT in the home has become ‘like wallpaper:’ (Blum-Ross et al., 2018, p. ii) expected, unseen, and depended on by all family members. Yet its effects on the family are mixed (IFFP, 2021), promoting the positive through interpersonal connections and relationships, through exposure to new information and new ideas, fostering creativity and self-expression, a more mobile lifestyle that permits flexibility and efficiencies in health, money management, entertainment and lifestyle management. These interactions are positive through feelings of cohesion and connectivity, particularly for those who have limited contact due to time or space, (e.g., military deployment, immigration), can have positive impacts on development, and foster supportive connections that validate and deepen confidence in the parenting experience. Yet it also suggests the potential for conflict within the family, threats to children in social and personal development and to their privacy and safety, widened divides for families with less income or education and those who live in more rural or urbanized areas. Stepping back to consider changing technologies and online influences, learning new applications, yet staying on top of safety and privacy practices, it’s little wonder that parents perceive the job harder now than 20 years ago.

In 2017 the UN Report, *Children in a Digital World* (p.11), offered six priority actions:

1. Provide all children with affordable access to high-quality online resources.
2. Protect children from harm online – including abuse, exploitation, trafficking, cyberbullying and exposure to unsuitable materials.
3. Safeguard children’s privacy and identities online.
4. Teach digital literacy to keep children informed, engaged and safe online.
5. Leverage the power of the private sector to advance ethical standards and practice that protect and benefit children online.
6. Put children at the center of digital policy.

Each of these has clear implications for parent and family involvement. Reflecting on the research with parents in the UK, the US and around the world, Livingstone and Blum-Ross (2020) offer further recommendations for support to parents in the digital future (pp. 191-194)

1. Provide support for parents that encompasses the digital environment
2. Offer parents a realistic vision in public and media discourses
3. Recognize the contribution of parents in educational settings
4. Pay attention to the design and governance of the digital environment
5. Make room for parents’ voices in policymaking
6. Make sure the policy, and the design of technology, is based on evidence.

These recommendations imply the need for a systemic response to ensure children’s and families’ equity, safety and health. Wider attention to family digital skills can also close age and socioeconomic gaps to put families on the same footing (Katz et al., 2018). Equity and access for families are key considerations for SDG 3 and 4 targets to access health care and education (particularly targets 3.3, 3.8, 4.1, 4.5, and 4.6; Appendix A). Fostering families’ access to technology is particularly needed to close gaps in developing countries, including those in Africa with the least internet coverage (Schumaker & Kent, 2020). This would help address SDG targets 9a and c promoting inclusive and sustainable industrialization. Similarly ensuring wider and more equitable access for global families will target the need for information for sustainable living (SDG target 12.8). Enriching children and family’s technology access and digital skills

will take a concerted effort through public-private, international-national-regional cooperation (Katz et al., 2013; UNICEF, 2018). The sections that follow explore two areas around which practice and policy can advance the well-being families in the digital age: work-family balance and parenting education.

Families and Technology Use: Impacts on Work-Family Balance

Work-Family Balance

The concept of work-family balance relates to the satisfaction that results when an individual (as member of a family) competently straddles role demands from the spheres of the household and the workplace. O'Brien's review for the UN in 2012 cited heightened interest at the time in work-family balance in light of changes in parents' work patterns, particularly the increased participation by women in paid work, the number of working hours, and non-standard 'atypical working hours' (time spent working outside of the workplace). Boundary theory is traditionally used to explain the dynamics of work-family balance and to identify antecedents and consequences (Berkowsky, 2013; Olson-Buchanan et al., 2016; Nam, 2014; Rice, 2017). Boundaries of time and space, in particular, are seen as either fixed or permeable in reinforcing or allowing fluidity in the execution of role demands. Physical spaces and the persons in those spaces (e.g., employers, family members) help to reinforce boundaries by laying explicit and tacit expectations on the individual for role fulfillment.

Degrees of permeability in boundaries and flexibility in the execution of work/family roles can characterize differences in the balance experience (Nam, 2014). Permeability indicates if "elements from one domain are readily available in the other; the ability to be physically in one setting yet perform a role psychologically from another" (p. 1020). For example, a mother who calls to check on her children who are home after school. In this case, the boundary of the family is permeable and enters the workplace due to the mother's ability through her work conditions and psychological separation from work to make the phone call. Flexible boundaries occur when "a person could relax the boundary to meet the demands of the other domain"; spatial and temporal markers of a boundary can be moved (Nam, 2014; p.1020). An example of this is when a parent completes a work project at home. In this case, the work boundary is flexible. High permeability and high flexibility mean integration (boundary crossing); high flexibility and low permeability offer autonomy (the choice for role completion in one domain or another); low flexibility and high permeability result in interference (higher probability of roles enacted in one domain to the exclusion of the other), and low flexibility and permeability mean segmentation (or boundary keeping). Nam observes that those with the potential for interference are more likely to suffer consequences of heavy workload, more stress, diminished satisfaction).

Transfer, or spillover occurs when the individual's mood resulting from handling of demands in one sphere affect the other. Spillover can be negative (e.g, work stress taken out on others at home) and positive, also known as enrichment (e.g., confidence in childrearing that assists, or positively affects confidence in work performance). This is also considered cross-domain compensation (Berkowsky, 2013). Competencies gained in multiple roles can also help the individual deal with the negative stresses associated with role in one domain. Recovery periods return the sense of balance and individual well-being after experiencing and then resolving work-family conflict (Demerouti et al., 2014)

Consequences or outcomes of work-family balance are measured at the individual, family, workplace and societal level (for reviews see O'Brien, 2010; Olson-Buchanan et al., 2016; and Rice, 2017; Shockley et al., 2018 provide a cross-cultural perspective). Authors consistently observe challenges with research in the area due to limited focus on white collar jobs, or inconsistency in the quality (e.g., Shockey et al., 2018 note that many studies don't include levels of statistical significance). And given the multiple demands across boundaries considered, outcomes reflect comprehensive and systemic impacts. For example, more work hours may mean greater work productivity, yet also mean role strain and personal stress on the individual, and family dissatisfaction. Notable outcomes areas on the individual include physical and mental health, use of prescription medications, stress, on family: satisfaction with close personal relationships, family satisfaction/conflict and on work: work productivity, work satisfaction. Wider indicators of balance include the percentage of women in the workforce. Secondary outcomes include children's mental health and well-being, or academic achievement. Based on a review of the international literature, Wheeler, Lee and Svoboda (2018) assert that most often parents' stress from conflict or imbalance influences children through their own psychological functioning and relationships. They cite cross family differences in cultural orientation, including gender equalitarianism, and intrafamily (between parent) differences in occupational profiles that may reveal differences in child impact.

The ability to balance roles may be viewed as a skill possessed by the individual, when in fact a complexity of influences affects the execution in ways in which balance is achieved (Shockley et al., 2018). Gender equality and family support play a role in demonstrations of balance. It is harder for employed mothers to achieve balance without additional child care supports as they take more responsibility for domestic housework and child caring. Higher rates of family vs work conflict are seen in countries that have a wide gender gap (Shockley et al., 2018). Speaking of the research by Stanczyk et al. (2016), Kossek and Lee (2017) observed that

many women with an hourly retail job tend to have multiple jobs to compensate for the low wage and it may create additional conflict between work and family because of the scheduling complexity. Given the fact that many hourly workers may not have access to organizational family-supportive benefits such as paid leave and a dependent care assistant, we need to understand more about the work-family conflict processes to find ways to decrease work-family conflict. (p.14)

Shockley and colleagues observe that across cultures the value of the family in the lives of employees is consistent; variability occurs in employment conditions that enable the individual to address family interests. Working parents in countries with high rates of inequality, and low rates of economic growth and inflation value the opportunity for longer working hours, so their perception of stress from work hours will be different. The perception of conflict also appears to be influenced by culture (Shockley et al., 2018; Xu et al., 2018). Countries with more collectivistic cultures view family to work conflict as an issue; work is perceived as a means to provide support for and honor the family. Additional work and longer work hours are seen less as a conflict and more as helping the family. The imposition of more work hours as a conflict on the family is more likely perceived by those from countries with a more individualistic worldview. Galovan et al. (2010) compared workers in Singapore and the United States and identified depression aligned with family-to-work conflict for those from the Asian country, indicating mental health consequences of feeling demands from the family while meeting

workplace responsibilities. On the other hand, job dissatisfaction was linked with work-to-family conflict in those from the more individualistic US. The authors observe that workers in the US anticipate a degree of flexibility and may view work time as an imposition on personal choice. Still, researchers call for investigations of other cultural frameworks that might shape perspectives on work and balance with family.

Work-family Balance Policies: Then and Now

O'Brien's 2012 report to the United Nations offered policy recommendations to aid work-family balance:

1. A Family-focused Work-Life Vision
2. Global compliance with a basic legal framework for work-family balance (endorse and work towards implementing the ILO Maternity Protection Convention, 2000 (no 183) and the ILO Workers with Family Responsibilities Convention (no. 156)
3. Family Leave – recommending a phased approach to promote paternal leave: 1) expand eligibility, 2) introduce dedicated, non-transferable periods of leave for mothers/fathers 3) extend periods of paid parental leave for mothers/fathers and introduce a general carer's leave; employer publicity campaigns
4. Flexible work arrangements and work-time innovation: all employees have the right to request flexibility, negotiated, target campaigns at sectors w little flexibility; support high quality part-time jobs and short hour working days.
5. Early child care and education and youth care – higher quality standards, flexible and affordable child care and education spaces in the community to support different working patterns for parents and businesses
6. Mixed partnerships and a multi-stakeholder approach – wide ranging consultation and partnerships between employers, trade unions and employees

Since O'Brien's review nearly a decade ago continued research has further reinforced the value of these policies. National policies on dependent care arrangements and flexible work hours and locations. while inconsistent (particularly in the US compared with other countries with advanced economies), indicate success through continued rise in female employment participation, women's continued employment and the number of hours women work. Yet analysis of work-family policy execution in OECD countries (den Dulk & Peper, 2016; den Dulk et al., 2013) suggests that full expectations on the results have not been confirmed. In part this is due to cultural differences that drive national policy and organization uptake. Organizations in countries with a stronger work value as central were less likely to provide these policies for their employees.

Perrigno et al. (2018) observe the backlash of work-family policies characterized by four mechanisms 1) *inequity* - negative attitudinal responses of individuals—primarily characterized by perceptions of unfairness. Shockley et al. (2018) for example, find that there are higher rates of work-family conflict in countries that have higher gender inequality or are more collectivistic. den Dulk and Peper (2016) observe that extensive national policies increase women's labor market participation without an equal increase in men's time spent on care and household work in the home, lead to greater tensions between work and family life among working women. In response to COVID-19 workplaces have extended leave and benefits for child care, yet the New

York Times reports that flexible or reduced hours, paid/unpaid time off and home for child care or tutoring benefits favor those who have higher levels of education (Miller, 2020). For example, 29% of those with post-graduate degrees report paid time off while only 9% of those with less than a college education report the same benefit. And these benefits appear to be temporary. Miller writes that it's not certain whether benefits will continue after the pandemic ends; 2) *stigma* -punitive behaviors experienced at work as a result of work-family balance policy. den Dulk and Peper (2106) report that European fathers felt they were punished for taking up parental leave); 3) *spillover* - the unintended, negative consequences of work life balance policies outside of the work domain, primarily within the family. For example, while “flexwork” and the increased affective commitment or citizenship behavior has been associated with increased self-perceived performance and decreased turnover (Rice, 2017), straddling domains can also contribute to feelings of isolation, role ambiguity, diminished control over the allocation of resources and planning in the organization, less feedback and less support. From a family perspective, it can also contribute to role interference, or conflict with fulfilling the responsibilities of one's work or family role. And 4) *strategy* – organizational actions characterized by an intentional resistance to shift away from family-friendly policies and practices.

Ironically these observed challenges were anticipated by O'Brien's work-family analysis in 2012. She recommended that managers be trained to avoid engaging in actions that contradicted organization policy, and model the use of work-family benefits, and for organizations to avoid the stigma of using work-family benefits. Shockley et al. (2018) also report that macro level policies translate to minimal and distal impacts on work-family satisfaction, citing the need for further investigation into implementation of policies and the processes that influence satisfaction and balance beyond structural changes in flexibility or in provision of supports.

Technology Integration and Work-Family Balance

Information and communications technology use lends a further layer of complexity to our understanding of work-family balance as a global issue. While ICT have long played a role in workplace operations, and in cross-boundary role maintenance (e.g., the mother who uses a phone to check on her children after school), mobile technologies and virtual environments for physical space-less interaction can corrode time and place boundaries in how and when work gets done. In fact, the fluidity and use of technology across boundaries in the last 20 years leads Hughes and Silver (2020) to assert that rather than seeing work and home in balance, mobility in how work gets done should be seen as the new standard. Experts visioning our lives in 2025 similarly assert that adjustments to families' lives be understood as the flexible workplace arrangements become permanent (Anderson et al., 2021).

Technological innovation for the workplace may have tapped into a longstanding need. Rice (2017) observed that many workers do not find workplace hours accommodate a sense of balance with family responsibilities. In a 2010 study, 60% of Australian workers indicated a preference for telework. And 2017 data indicates that workers would take an 8% pay reduction if it allowed them to work from home (*What a way to make a living*, 2020). Nevertheless, prior to COVID-19 fewer than 5% of the labor force in the US, and 2-9% in Europe reported exclusively working from home, or 'telework.' (Eurostat, 2018).

For those whose jobs can adopt to these ‘new ways of working’ (Demerouti et al., 2014) new challenges are present. Studies of teleworking offer insight into the conditions which may contribute to a sense of balance or imbalance and the potential influence of technology. For example, Solis (2016) examining teleworkers in Costa Rica identified that having more work time at home, shared or inadequate space, and inflexible work schedules related to perceptions of work-family interference. Similarly, Olson-Buchanan et al. (2016) report that although early meta-analysis of the research on technology integration indicate positives for worker productivity, and worker perception of autonomy, later research suggests minimal benefit for working from home (p. 21). In particular, women do not demonstrate higher job satisfaction even if they perceive more control and flexibility. In part the presence of the mother at home, though working, may over time enhance children’s expectations of her availability (Solis, 2016). Employer attitude appears to also contribute to teleworking success: the actions of managers who are reluctant to trust employees to be productive can diminish employee feelings of autonomy and recognition.

And technological innovation may present further divides in the way families are characterized by work arrangements. On one hand, many jobs do not offer flexibility in either time or work context or present the autonomy for determining work (or family) interruptions (Olson-Buchanan et al., 2016). The ability to telework greatly depends on the type of work, with less flexibility seen in professions requiring skilled labor. Pimintel (2020) observes that Latin American countries like Ecuador, Guatemala and Bolivia, more greatly dependent on manufacturing or agriculture, have less potential for telework. This is also evident in the types of essential workers during COVID-19 for whom presence at work and the need for child care support continued uninterrupted.

Looking to the future, experts foresee shifts in work that are less placed-based, more flexible, more automated, and reliant on on-demand consumer expectations (Anderson et al., 2021; NAS, 2017). Ens et al. (2018) identified a digital work typology considered by how work is reconfigured through the availability of digital technologies (Figure 4). Their typology reflects job mobility (degree of flexibility in the location of work) and precarity (degree of instability due to flexible employment). This was crafted to construct a notion of ‘decent digital work’, or digital work that enables autonomy, competence and belonging (p.2) They label worker types according to this balance: the Gig worker (high precarity, low mobility), the digital nomad (high precarity, high mobility), the 9 to 5er (low mobility and precarity,) and the travelling elite (high mobility, low precarity). Gig workers take ad hoc, temporary jobs, such as Uber drivers. Digital nomads also experience jobs with high precarity but are not fixed to particular locations. A web developer who is mobile, and works from different countries is one such job type. These new digital-work realities can affect individual well-being. The transition to more flexibility in location can challenge feelings of competence in managing tasks and time, and a sense of belonging. Consequences heighten with greater mobility (traveling elite) and precarity (digital nomad) threatening the sense of connection. According to the authors, “Autonomy suffers from a need to maintain a steady supply of work and meeting clients’ needs” (p. 6). There exists the potential that spillover from these digital work arrangements can affect the workers’ emotional release at home and time needed for recovery.

Figure 4

Digital Work Typology. From Ens, N., Stein, M. K., and Blegind Jensen, T. (2018). Decent digital work: Technology affordances and constraints. Paper presented at the Thirty ninth International Conference on Information Systems, San Francisco CA, USA

High Precarity	Gig Worker	Digital Nomad
Low Precarity	Nine to Fiver	Travelling Elite
	Low Mobility	High Mobility

Technology Influence on Work-Family Balance: Contributions from Research

The internet, mobile and digital technologies (or what Nam, 2014 refers to as ‘work-extending technologies’) offer the promise of managing work with more autonomy and success, amidst a more fluid landscape of a modern workplace culture that thrives on employee availability (Demerouti et al., 2014). Yet the question remains as to the effect these technologies have on the individual’s sense of balance and impact on work productivity and family life. Research foundations on technology’s influence on work-family balance before COVID-19 inform our deeper understanding of the dynamics involved in the adjustments needed as we look to a future that is “tele-everything” (Anderson et al., 2021). Apparently, the results are mixed. Nam (2014) reported the results of a study with a Canadian sample that indicated that although the use of technology increased workload and perceived stress, it did not change the ability to balance work and family. For others, telework reduced feelings of stress, yet it contributed to feelings of being overworked. And effects observed may reflect more than the direct impact on the individual; using technology to continue work from home can have compounded effects on the employee through influence on the family. Ferguson, Carlson, Boswell, Whitten, Butts and Kacsmar (2016) examined cell phone use at home for work by employees (so called ‘mWork’). The employee’s decision to quit the job after heightened demands from the workplace related to strain; personal strain that appeared to correlate with strain on family members.

Using data from Pew (n=850 internet users), Nam (2014) examined influence from use of the internet and mobile phones on workers’ perceived flexibility and permeability and on job outcomes (job satisfaction, job stress and workload). Theoretically, perceiving work conditions as more flexible relates to higher job satisfaction. Including the use of mobile technologies might modify that relationship if the worker feels in less control due to communication demands (for example, if an employee enjoys the freedom of working in a variety of locations, including home, yet feels overly stressed when work calls invade time with one’s children). Nam found direct (positive) relationships between the use of technologies and perceptions of work and family flexibility and of work-family permeability. And these variables related to each other: permeability of work to family life is positively related to flexibility in work to family life. In other words, those who use technology to accomplish work tasks at home were likely to facilitate home related needs at work. One influence on job outcomes was the location in which the

internet was used. When used at home stress was reduced; when used at work, stress load increased. Workers’ sense of stress went down with use of mobile phones for work. He also looked at types of work-family balance. Frequent use of the internet at work or at home for example indicated that the individual was a boundary crosser and could complete tasks regardless of context. Nam concluded that organizations continue to monitor employee satisfaction with the use of technology. The changing use of technology by employees at work and for work, and for work at home means that work-life balance policies consider the growing interplay between technology that means flexibility and worker satisfaction with those changes.

Antecedents, Outcomes and Moderators of the Process in Technology and Work-Family Balance

Reviews by Rice (2017) and Ollier-Malaterre et al. (2019) reveal further complexity in work-family arrangements and technology; research considers a wide range of variables to assess relationships between the use of technology, reasons for use, individual differences and outcomes. Olson-Buchanan et al. (2016)’s review of the research characterizes the many process variables as antecedents, or predictors of technology use, outcomes from use to manage the balance, and factors that moderate the process. Variables identified in these reviews and presented in Table 2 are discussed below. A variable may be conveyed differently – for example, job demands may be a predictor in one study, influencing whether the use of technology for boundary permeability is necessary, and appear in another as a moderator, affecting the degree to which using technology influences the balance. About the clearest conclusion from this review of research analyses is that the picture of technology’s influence on work-family balance and its outcomes is complex.

Table 2

Variables identified in technology and work-family balance research¹⁴

Variable Type	Variable
Antecedents	<ul style="list-style-type: none"> • work: <ul style="list-style-type: none"> ○ higher job status, ○ work demands, ○ work norms/expectations • family: <ul style="list-style-type: none"> ○ expectations from family and friends, • individual <ul style="list-style-type: none"> ○ individual differences (e.g., ability to multitask, age, education), ○ perceived usefulness of the technology,

¹⁴ Includes variables identified in research reviews by Ollier-Malaterre, Jacobs & Rothbart (2019); Olson-Buchanan, Boswell & Morgan (2016) and Rice (2017)

	<ul style="list-style-type: none"> ○ perceived ease of use,
Outcomes	<ul style="list-style-type: none"> ● work <ul style="list-style-type: none"> ○ productivity, hours worked, work-nonwork conflict, ● individual <ul style="list-style-type: none"> ○ perceived flexibility or control (autonomy), ○ psychological strain, ○ job attitudes, ○ worker individual health (blood pressure, heart condition, frequency of illness), mental health (depression, stress, role strain), ● family outcomes <ul style="list-style-type: none"> ○ family connectedness and satisfaction.
Moderators	<ul style="list-style-type: none"> ● individual: <ul style="list-style-type: none"> ○ negative affect, ○ time management skills, ○ preference for segmentation, ○ gendered or personal demands, ● external: <ul style="list-style-type: none"> ○ social stressors, ○ technology support (or lack thereof), ● job-related factors

Antecedents. Olson-Buchanan et al. (2016) review identified use of ICTs to perform work during nonwork time predicted by *perceived usefulness of the technology*, along with *job conditions* (higher job status, work demands, work norms/expectations), *expectations from family and friends*, and *the ability to multitask*. This same research found a negative relationship for use with a preference for segmentation (*individual difference for boundary maintenance*). With regard to perceived usefulness of technology, Rice (2017, p. 176) similarly determined that use and comfort with technology predicted individual differences in work-family arrangements, which also influenced work and individual outcomes from flex arrangements. These findings relate to Davis' technology acceptance model (TAM, 1989) which stems from theory of reasoned action (Ajzen, 1985). The TAM characterizes use of technology predicated on positive attitudes that are influenced by the perceived ease of use, and perceived usefulness of technology. A recent study of family educators found that many did not use texting with program participants because they weren't comfortable with using the application for this purpose, and the perceived challenge to separating time at work from home (e.g., receiving texts from parents after hours) (Walker, 2019). That they used their personal devices for work further added to the ambiguity.

As noted above, job conditions (demands) can influence the type of work for which technology is useful for management, and expectations from the workplace can establish *norms* about using technology across boundaries, when and how (e.g., the employer who continues to send emails over the weekend with the expectation of response). Olson-Buchanan et al. also identified research that supports the use of technology across boundaries influenced by expectations by managers, device provision by the employer, and family influence (weak/strong demands for boundaries, as in the case of the Ferguson et al., 2016 research described earlier),

Individual differences can influence the uptake of technology use for work-family balance. Age and comfort with technology can influence technology use for work-family balance (Nam, 2014). Workers who are older are more likely to take work home yet are less flexible in managing personal affairs at work, and less comfortable using technology (in this study, the internet and mobile phones). Millennials are more tech-savvy, are less flexible with work outside of work, even though technologies make that possible. Nam observes that this indicates attitudinal factors of work, and degree and comfort with technology use. On the other hand, marital status (and its correlation with childrearing responsibilities) predicts the likelihood of use, and the demand for role responsibilities at home create the need to use communication devices for coordination. Gender configured with technology use related to work roles. Men with more education held jobs that enabled more autonomy. Work position influenced the degree to which individuals held boundary permeable/flexible positions that conditioned their use of technology as factors in balance.

Outcomes. *Work* outcome variables include perceived flexibility or control (autonomy), work productivity, hours worked, work-nonwork conflict, psychological strain and job attitudes. Technology integration research also studies dimensions of *worker individual* health (blood pressure, heart condition, frequency of illness), mental health (depression, stress, role strain), and *family outcomes* of family connectedness and satisfaction. These are similar outcome variables studied in traditional work-family research (interest in the worker, work impact, family impact). As an example of the interplay of factors that influence work-family outcomes, Olson-Buchanan et al. (2016) report that teleworkers' perception of ability to complete tasks predicted higher productivity and autonomy; role stress was negatively related to these factors.

Longer work hours and the negative spillover felt by family contributed to higher work-nonwork conflict, *higher perceived stress and burnout*. The ability to work and meet family needs 'any time, any place' can result in tremendous strain on the individual. Managing email and workplace expectations for presence and performance can be overwhelming. The need for recovery from stressful events (at home, and especially from work) does not diminish with more flexible times and locations for role demands (Demerouti et al., 2014). Recovery periods from stress are still necessary and can cut into work or family time and the need to find personal time to compensate. Rice (2017) also reports that the high-pressure environment of always 'being on,' navigating irregular hours, and a potentially unpleasant physical environment can have physical and physiological costs. The review indicates that about half of a US sample agreed that using ICTs increased their *stress and work family boundary blurring and conflict* (p. 186). Variation may occur by job demands and by worker role identification. For example, professional workers report greater job satisfaction and more positive telework outcomes. This stands to reason given greater autonomy and movement in professional work over more labor-focused jobs (Bloom et al., 2013, as cited in Rice, 2017).

Rice (2017) relates that expectations to respond quickly through ICT from the workplace introduce unanticipated tasks to the workers, expectations to interrupt and switch tasks, and unplanned extensions to the workday. These can blur boundaries and affect personal health through fatigue and problems with sleep. Writing about tele-work, Leineweber & Falkenberg (2018) report that the Nordic countries have the highest rates of workers from home compared with European countries. For these workers, the constant availability offered by new technologies and telework leads to *feelings of constant involvement*, including during free time. As Olson-Buchanan et al. (2016) observe, "the flexibility of time and space and role demand,

aided by the use of boundary cross technologies, fosters *role conflict* by allowing for interruptions and distractions and hindering one's ability to meet the demands of the salient role" (p.18) While working from home can mean the availability of a parent to care for a child or be present when the child is sick, consistent space and time flexibility can risk *compromised productivity*. Exploitation of the flexibility by the employees to multitask can diminish chances for promotion and opportunities for achievement due. This is particularly likely for women, the elderly and those with children with disabilities who have competing role expectations on their time. As a result, despite the availability of technologies that offer flexibility, the ability to do both home and work roles well contributes to *conflict* and possibly weaker *work performance*.

Finally, *social isolation* is a potential result from telework or flexwork with technology. Studies have observed that increased online communication has reduced casual conversation between colleagues (e.g., talk around the water cooler). Ollier-Malaterre et al. (2019) identified that use of social media to replace workplace conversation may encourage familiarity but has also dislike and envy.

Moderators. Moderators of the technology for work-family balance process include factors related to the *individual*: negative affect, time management skills, preference for segmentation and gender or personal demands, and to the *external context*: social stressors, technology support (or lack thereof) and job-related factors. And higher *job status* or work or *family demands* who have accepting (positive) *attitudes* about technology's usefulness report higher work satisfaction.

Dimensions of the parent or the family appear not to have a predictable moderating effect. Ollier-Malaterre et al. (2019) note that,

although we would expect family demands and responsibilities as well as personal resources to influence an individual's use of ICT as well as its effects on work-family conflict and related employee attitudes and experiences, the research in this area generally reveals no consistent pattern of gender or family effects. (p.20).

Those whose *time management skills* are challenged may use technology across boundaries yet not feel or be productive. Number of children and the context of home demand may predict work-family conflict despite the availability of the internet and technology devices. Yet more recent advances in education that integrate technology in how children learn, in homework expectations and particularly during social distancing requirements, demand that children spend time online to complete assignments and engage in classroom activity that stresses the family in ways that may exceed even those with reasonable time management skills. A recent study by McKinsey and Lean in (2020) observed that, for many women this can influence the decision to leave their jobs. Justifications include: lack of flexibility at work, feeling like they need to be available to work at all hours, i.e., "always on"; housework and caregiving burdens due to COVID-19 ; worry that their performance is being negatively judged because of caregiving responsibilities during the pandemic; discomfort sharing the challenges they are facing with teammates or managers; feeling blindsided by decisions that affect their day-to-day work; and feeling unable to bring their whole self to work. For some, particularly Black women and other women of color, these constraints are experienced to a greater degree.

Nam's (2014) research indicates that *gender* and *education* may moderate the influence of technology use on work-family balance, primarily through work arrangements. Nam further identified gender differences in technology use: men were more likely to integrate and experience work and family boundaries as permeable; women less permeable in role fulfillment but asserted autonomy through using the internet to accomplish role demands regardless of location. Educational achievement also predicts flexibility and an openness to using technology across boundaries. Nam (2014) asserts that individuals with more education tend to be more flexible with resources and energy to work in their home life domain. Yet they are also reluctant to let work interrupt their family life. So, while they are willing to work from home (demonstrating flexibility) their action is not passive and shows agency in determining boundary permeability. Differences in motivation to use technology across boundaries or to flex work and home also include possessing a stronger work role identification, a low desire for segmentation, and comfort with polychronicity, or multitasking.

External factors that can moderate the technology/work-family process include social stress (the existence of social stress (e.g., marital stress, living in a violent neighborhood strengthens the likelihood of work-family conflict regardless of technology use), and the availability of technology support. *Technological support* boosts perceptions of flexibility and indirect benefit to work satisfaction is seen. Technological support appears to work beyond aiding the individual's knowledge and confidence in using technology; it provides an indirect boost to perceived flexibility and to work satisfaction. The study of parent and family educators in the US determined a strong relationship between workplace infrastructure (including technical support) and workplace encouragement (including shared values for technology) and perceived usefulness and ease of use (Walker & Hong, 2017). Taken to its natural conclusion, technological support's value to individual technology comfort could positively influence competence in use for work family balance in ways that may result in reduced work strain and burnout. And *job conditions* can make a difference. Jobs with low task dependence and high job discretion strengthen the effects of teleworking on job satisfaction. Yet jobs with schedule flexibility but low autonomy can result in negative effects of teleworking on work-family conflict (such as that seen in Solis' 2016 study of Costa Rican public services workers reporting on their telework experiences).

Work-Family Balance Policy Recommendations Reflecting New Digital Realities

In keeping with O'Brien's (2012) first policy recommendation for global work-family balance, *a family-focused work-life vision* is more relevant now than ever, as the shift to telework and the removal of boundaries of space and time has become a reality with COVID-19 and appears to predict future realities. Working families need structural policy benefits to be sure. And policy recommendations to promote work-family balance in the digital world supplement the prevailing actions to create more flexible hours, leave policies and supports for child care and education. As these policies promote quality early childhood education and child care, they help address SDG target 4.2 that seeks sufficient access for all young children. And advances in digital technology may aid parents in identifying quality care situations, budgeting for care, and interacting with providers and children to promote development (e.g., Willis et al., 2018). Rather than recommending additional structural change through policy (as post-policy analyses suggest, more work on this front is needed anyway), policy action recommended here reflects the still evolving, highly individualized picture of work-family balance in the digital age.

Recommendations for policy reflecting technology and work-family balance must proceed cautiously due to incomplete research and unverified theories, and ongoing change in technology affordances that influence use for home, work or both. The extant research picture is at best, complex. And our collective experiences with COVID-19 are still fresh, requiring that some distance is warranted before launching into action. A persuasive observation from the research reviewed is that *employee perception* of balance and *preference* factor strongly in technology use, adaptation and outcomes. Individuals vary in their perception of stress, imbalance, job security/insecurity and overload. And this is influenced in part by their preference for working in more autonomous or integrated or segmented ways. This reflects individual styles, yet it also may reflect considerations for accomplishing responsibilities across work, home and other spheres. Adapting from Demerouti et al.'s observations about, 'new ways of working,' (2014) workplace recommendations may allow employees to set their schedules [and work locations] to meet needs in both spheres yet provide employees with guidance and follow through on organizational policy about setting boundaries to lower personal stress and enrich family satisfaction and well-being.

Ollier-Malaterre, Jacobs and Rothbart (2019) assert:

It is the permeability of these boundaries between work and family that makes *boundary management such a key skill*, enabling people to balance work and family life. (p. 426)

Technology has been said to present a paradox through its problematization of work-nonwork boundary permeability. They make it possible for permeability, yet by doing so create challenges requiring individual attention and responsibility to provide equitable balance in role performance.

... This porousness [or permeability of boundary] in turn makes the management of connectivity, online self-presentation, and privacy more challenging and calls for more elaborate technology management. (p. 426).

These authors forward the term 'digital cultural capital' to represent the awareness, motivation and skill to perform technology management. With the ever-changing landscape of technology availability and the boundary-less nature of work, perhaps the clearest direction is through support to employees to develop digital cultural capital. Therefore, the first policy recommendation is to

1. Support employees' development of digital cultural capital. A new employee benefit may be *tailored educational supports* on how to manage ICT to support work and family goals.

Employers can help foster more personal responsibility to avoid negative spillover in setting boundaries for communication, how to use the smartphone properly, deploy privacy management tools, practice good digital citizenship and online self-presentation (Olson-Buchanan et al., 2016; Blum-Ross et al., 2018). As Ollier-Malaterre and colleagues (2019) stress, the development of 'digital cultural capital' should be learned through the social class divides that enable some groups to develop skills over others.

Enhanced supports for professionals to create a new mindset and skills, offer available devices and resources for success, regardless of location, and a

workplace culture that empowers the individual and is family-friendly in its policies.” (p. 435)

Particularly with the role demands placed on working parents during COVID-19, employers can regard individual differences that might divide workers’ abilities to work from home while also promoting their children’s learning (McKinsey & LeanIn, 2020; *What a way to make a living*, 2020). They can continue existing supports or introduce additional helps during extraordinary circumstances challenging the family’s use of space, time and technology sharing. “Boundary management” may be a new skill employees need to acquire. Providing the support may reduce psychological stress and enhance parent/worker confidence that would speak to SDG targets 3.4 (promoting mental health and well-being), and potentially make parents more available to assist with their children’s learning from home (SDG 4.1, 4.3, 4.4 4.5 and 4.6). Strengthening digital skills of adults would address SDG target 9b (providing a conducive environment for technology development in developing countries) (Appendix A).

Additional recommendations to develop or strengthen policy include the following:

2. Create a global, dynamic and collaborative archive of strategies to address the technology-integrated lives of working families. Research on workplace boundary permeability, telework (particularly in the age of the COVID-19 pandemic), job productivity and worker health and satisfaction are evolving. As workplaces create new practices and policies that aid work-family balance and as research continues, it is critical that tested models are shared and when feasible coordinated.
3. Offer employees flexibility yet be wary of permeability effects. Research suggests that workplace permeability benefits employers more than does flexible arrangements, and job dissatisfaction, job-related stress, and role overload when individuals lack the capacity to manage demands across work and family spheres. Policies need to recognize that workers have a preference between strong and weak boundaries and define boundaries proactively rather than reactively; yet recognize that preferences are not static. Policies should not assume that the integration of technology yields better outcomes than does segmentation. Policies for employees need to be consistent and clarify expectations for daily work and performance reviews (Blum-Ross et al., 2018).
4. Regard individual differences in employee preference and proactively avoid inequity and division pitfalls. Older workers for instance, hold different views on autonomy and permeability than younger workers. This may be due to preference from years of workplace experience or to insecurities around technology use. Training and support programs that help technology skills of older workers can lessen the gap in worker performance. This too may address SDG targets 4.6 and 9b in ensuring literacy and numeracy for all adults and youth.
5. The intersection of work-family balance and technology integration research needs expansion. This includes a greater representation of workers, work contexts, family experiences and a global presence in work. And how cultural assumptions with regard to technology integration shape work-family policy. For example, the French government encourages companies to minimize technology disruptions after work hours. This helps to control technological effects at multiple levels (Ollier-Malaterre et al., 2019).

6. Attention to individual and family outcomes from technology-integrated work-life balance must be elevated on par with those directed at workplace well-being. A systemic view must regard the reciprocal and transactional costs and benefits to the family. Included in this broadened view are work-family balance effects on children, an area that to date has been given limited attention in the work-family balance/conflict literature. As Wheeler et al. (2018) assert, “Understanding work–family linkages from the most proximal level (e.g., parents’ work experiences) to the broadest level (e.g., societal changes in light of globalization and economic conditions) is an important step in informing programs and policy related to enhancing the lives of children.” (p. 681).

7. Children’s well-being as influenced by parents’ work status and work conditions deserves closer study. Work-family conflict, practical or psychological balance appears to primarily affect children through their adjustment. Impact on the parent-child relationship (and inherent to this, parents’ attention, communication and responsivity, their time interacting on homework and child-centered activities to stimulate interest and convey expectations and confidence and mediating and monitoring children’s safety) appears to be an indirect route through which work-family balance can influence externalizing or internalizing behaviors. Bringing parents and children more into the work-family picture would be another route to addressing targets in SDG 3 and 4. With technology integration a variable in research on the lives of children, including child well-being as a focus in work-family research will only provide a richer picture of the myriad influences and direct more collective action for their development.

8. The privacy and security of a more permeable, flexible work and family life online should be an industry responsibility. As Ollier-Malaterre and colleagues (2019) note:

....technology amplifies the blurringalso because the very definitions of what is public and what is private are under scrutiny: Information shared on social media, for instance, is sometimes deemed by scholars and lawyers as private and sometimes public...In an era in which putting gup curtains on windows and planting high trees around houses no longer suffices to safeguard privacy, many new questions for individuals arise about privacy, visibility and surveillance that societies or collective actions may at some point strive to regulate.” (p. 435).

9. Explore how the reach of the organization expands as technology changes. Technological innovation, adoption and change is rapid. As technological evolutions reflect workplace innovation, consider in turn what this means for the individual worker, and how this furthers blurring or makes easier the negotiation of boundaries and roles.

10. There is a need for proactive work-family policy to anticipate *continued* telework and tele-education needs that families may face. At this writing, COVID-19 has meant at least a year of disruption to traditional family-work life and the other side of the pandemic is not yet in sight, so the question of continued effects is salient. Questions arise as to the longer-term exposure to forced teleworking, and limits on employer provided relief, and what this might mean to physiological indicators of stress. Employers can consider financial subsidies that cover costs for home internet, ergonomic workspaces, and peripherals that make home-based work less taxing on personal resources. Other proactive planning will be for a *transition* to the return to new work configurations after

COVID-19. As employees have flexed and reoriented their boundaries to satisfy work and family needs, a return to previous or adjusted arrangements will bring about the need for recovery (Dermouti et al., 2014) and support. (McKinsey & LeanIn, 2020)

As work-family policies adjust in the new digital era and research on antecedents, impacts and consequences continues, maintaining scrutiny on execution over rhetoric is warranted. Disparities in work-family policy exist worldwide, and in the equitable execution of these policies. US policies for family leave, and child care support lag behind those of other countries that are economically competitive and have low employment rates. Might there be similar resistance to comprehensive policies that address the complexity of technology preferences, work demands and all families' needs? Until there is more clarity on necessary steps, it will be easy for constructive change to be ignored. By the United Nations' attention to work-family balance as a critical area of support to family life and global economic sustainability, there is hope for a more coordinated effort around policy, research and practice that addresses changing needs and establishes equitable actions.

Technological Transformations and Parenting Education

The Promise of Parenting Education

To value the role of parents in society is to understand the value of parenting education as an investment in their success. Significant voices speak to parenting education's power. José Vázquez Alarcón, United Nations Representative to the International Federation for Family Development (IFFD) observes that recognition for parenting education has grown from grassroots movements to a focus of global policy, and that the way forward in a civil society is to invest in parenting education (2020, p.1). Nobel Prize Winning economist, James Heckman identified parenting education as a way to effectively close the 'achievement gap.' He observes that large scale efforts to improve school success through school-based initiatives only have largely failed because the role played by parents, parenting and the family context on early learning and development has been ignored (2011). This echoes observations by UNICEF when writing about the progress on SDG 4: families are a 'given in global goals for education' (2018, p. 22). Heckman asserts that investments should start early with a greater emphasis on parenting resources that provide direct assistance and education to parents on parenting skills and involvement in children's learning and development, and indirect aids to mothers' education, family incomes and employment that enable engaged, responsible parenting. *Quality parenting*, Heckman states, *is the true measure of affluence* (author emphasis added).

Vázquez Alarcón identifies parenting education as 'useful and cost-effective tools to improve parent-child relationships, reduce child-problem behaviors and prevent maltreatment.' (2020, p. 1). In a recent examination of this issue for the UN, Ben Freer cites parenting education as effective for influencing caregivers' attitudes about corporal punishment (2020). Attitudes shaped by cultural traditions that dually value family yet promote the expression of parental power in regions such as Latin America have thwarted policy action to sanction corporal punishment (Esteinou, 2020). Neurologist Daniel Siegel observes that with guidance, parents reflect on their own histories and mine implicit memories to reset longstanding patterns of thinking and behavior that contribute to impulsive and reactive parenting (Siegal & Hartzell, 2003). Offering further promise, decades of progress in the implementation of parenting

education have resulted in high quality, well-tested programs with positive results (Ponzetti, 2015). With regard to caregiver and child health and mental health, UNICEF (2018) identifies parent education as a means to reduce risk behaviors for heart disease, diabetes, depression and suicide (p.18). There is strong sentiment in favor of using parenting education as a strategy to meet targets in SDG 3 (enhancing health) and SDG 4 (enhancing education).

Yet in 2021, parenting education as a global strategy remains prevalent yet inconsistent, variable in quality on the whole and in need of coordination (Vázquez Alarcón, 2020; Long, 2015; Zapeda et al., 2004). A mere representation of the range of parenting education efforts in countries and regions of the world outside the US is provided in Appendix B. Some programs are provided by government agencies, others by NGOs who have provided supports to families around parenting (Vázquez Alarcón, 2020). For additional information about the wealth of programs available in the US and worldwide, suggested reading includes Ponzetti, 2015 (for an international perspective); National Academy of Science, 2016 (for programs for parents of children 0-8 years); the California Evidence Based Clearinghouse for Child Welfare¹⁵ and the National Parenting Education Network (NPEN) directory of programs by state.¹⁶

Yet the targeted nature of many parenting education programs makes them insufficient to meet the range of needs that families in our diverse societies represent. Reflecting on programs in England and Jamaica alone, Daly et al. (2015) observe:

compiling and keeping a register is a difficult exercise to undertake, given the complexity of the field (the very varied nature of the interventions, what they aim to achieve, the level(s) at which they operate, the range of actors involved and the fact that they come under different policy areas or portfolios in different countries.” (p. 33).

As discussed later in this section, research revealing ‘evidence-based practice’ in parenting education offers promise, yet is in need of expansion for full representation of the modalities that align with parent learning and support needs. And the preparation and qualifications of those who conduct parenting education, varies widely. NPEN’s framework of professional recognition and preparation reveals a profession in the US without centralized and accepted standards for practice¹⁷ Still, while in need of coordination and resources that enable it to be consistent in quality and implementation, there is an obvious commitment to the practice of parenting education worldwide on which to build.

Policy-level supports to families generally have taken the form of infrastructure assistance in employment, education, housing and health (UNICEF, 2018). Parenting education can and should be regarded as a component of wider family support initiatives. The Family Strengthening Policy Center of the National Human Services Assembly (FSPC, 2007) has articulated three areas of public investment to impact child outcomes:

- strengthening community environments for families,
- supporting and enhancing parenting, and

¹⁵ <https://www.cebc4cw.org/registry/search/>

¹⁶ <https://npen.org/for-parenting-educators/parenting-education-networks-organizations-and-programs-by-state/>

¹⁷ <https://npen.org/parenting-educator-professional-preparation-and-recognition/>

- building child and family assets.

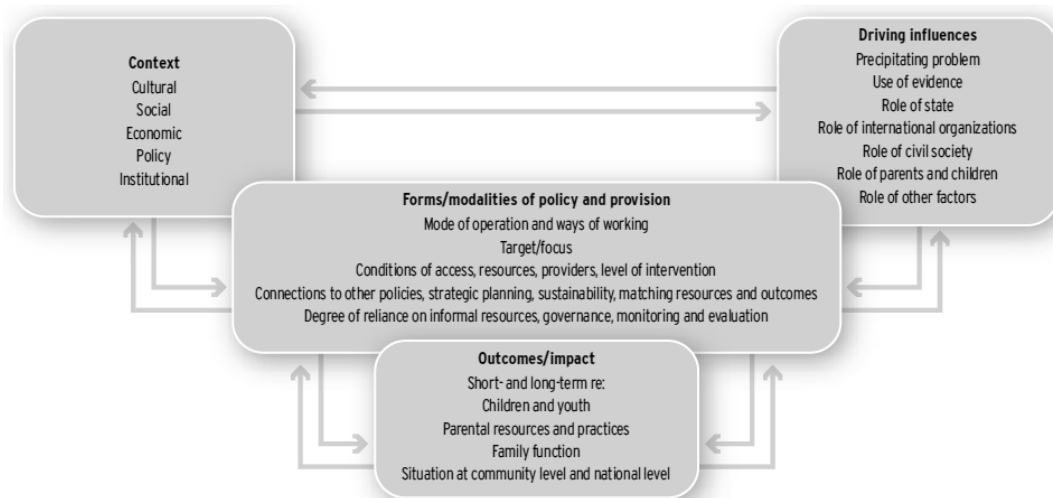
Infrastructure benefits to parents’ employment and formal education reduce strains that contribute to child abuse and work in concert with education programs that can strengthen parents’ knowledge and relationship skills (FSPC, 2007; Vázquez Alarcón, 2020).

And this ‘investment portfolio’ is reflected within a systemic framework of influence and action. UNICEF (2018) conveys the system that influences child, parent and family outcomes, including modalities of policy and provision (of which parenting education and family support can be viewed), as shaped by the wider context and influences (Figure 5). Such a framework is useful as parenting education is understood as a resource, and its execution for quality and effectiveness influenced by policy and context. The framework considers:

- context (cultural, social and economic factors, policy background),
- driving influences and key actors (e.g., role played by parents, by the state, available evidence of the ‘problem’),
- forms and modalities of policy and provision (e.g., mode of operation, resources provided, target or focus, sources of funding, degree of intervention),
- strategic factors (connections to policies through monitoring and evaluation, resource sustainability), and
- outcomes or impact (direct/indirect outcomes on the child, parent, parent-child relationship, family and community).

Figure 5

Parenting education situated as a provision of support to affect outcomes on children, parental resources and practices and family functioning. From Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec’nik, and M. Samms-Vaughan (2015). Family and Parenting Support: Policy and Provision in a Global Context. Innocenti Insight, UNICEF Office of Research, Florence.



This section will first articulate the foundations of parenting education practice. This will provide the necessary basis for two avenues for family-technology applications: as a content area, and technology integrated in educational practice. To do both is to commit to quality in practitioner training and oversight. At its conclusion the section will offer policy recommendations and transition to parenting education reflecting interests in technology integration.

Describing Parenting Education

Although definitions of parenting (or ‘parent’ or ‘caregiver’) education vary, for the purposes of this report the following will be used. It provides an inclusive focus on the intentions, content, methodology and practitioners involved:

Parenting education efforts can focus on specific child-rearing skills to enhance parent-child interaction, such as appropriate and recommended discipline practices, or on more general subjects, such as understanding child growth and development at a particular stage of a child’s development or how to promote a child’s physical and emotional health. The goals and objectives of parenting education programs may encompass a variety of parent and child outcomes. Parenting education is also delivered in a variety of places and by a range of professionals and paraprofessionals with differing levels of preparation. (Zapeda et al., 2004, p. 10).

While it may operate with other services to families, and/or therapy or counseling, parenting education is a *learning* activity and its tenets and theories of change lie in educational and parenting science. Vázquez Alarcón (2020) indicates that across models, “they all include a set of tools and activities oriented to improving how parents approach and execute their role by increasing child-rearing resources including information, knowledge, skills, social support and competencies.” (p1). “Improvement” is generically indicative of change; here it is offered as an objective of strengths-based efforts that recognize parents’ assets and work alongside them to nurture growth. Parenting education also varies from yet can operate as part of the social ecology of parent and family support. As such it can parallel values such as relationship-based and strengths-based practice (Cochran & Walker, 2005; Herrera-Pastor et al., 2019). Support approaches enhance the relationships in the parents’ social network, expand the size and diversity of network membership and encourage a range of practical, emotional and informational resources that buffer isolation and reduce stress.

Family life education – of which parenting education is a specialization - has a preventive emphasis, builds on strengths of the individual (rather than viewing the parent as deficient and in need of correction), emphasizes cultural differences, and developmental nature (change over time), and views the family as an open system that is influenced by ecological forces (Darling et al., 2020). It can also serve to intervene, such as reducing child maltreatment in parents identified as ‘high risk’ and unprepared for the challenges of childrearing.

Appendix C lays out the short- and long-term outcome areas of parenting education proposed by UNICEF (Daly et al., 2015 p. 20). These include child, parent, parent-child relationship, family and community outcomes. The parent-child relationship is particularly

beneficial to highlight as an outcome area, as this relationship dynamic has long term benefits to child outcomes (Hintsanen et al., 2019). The content and delivery applications with regard to technology reflected in these outcome areas will be discussed later in this section.

The practice of parenting education is further framed by

- the practitioners or professionals who deliver parenting education, as preparation, qualifications and degree of focus of the work as a parenting educator varies.
- application of an evidence-based model (EBP) or use of a ‘local’ effort
- delivery alone (as a single prevention or intervention effort) or in concert with other family support services, and most recently
- integration of technology in practice

Models vary in using specific learning theory as a foundation for the selection of instructional methods, yet all appear to remain sensitive to adult learner constructs of independence, experience and motivations for learning that differentiates andragogy from pedagogy (Knowles, 1984). Parenting theories form the basis of several models including democratic parenting principles, (e.g., Darling & Steinberg, 1993), attachment theory emphasizing parent-child bonding (e.g., Erickson & Egeland, 2004), and humanistic perspectives that value emotional maturity, responsibility, and empathy (e.g., Ginott, 1965). Depending on country or global region, programs may emphasize cultural tradition (Rodrigo et al., 2015).

The National Extension Parent Education model of critical practices (Smith et al., 1994) articulates context goals for programs.

1. Parents are the primary socializers of their children;
2. Parenting attitudes, knowledge, skills and behaviors can be positively influenced by parenting education efforts;
3. Parenting is a learned skill that can be strengthened through study and experience;
4. Parenting education is more effective when parents are active participants in and contributors to their parenting education programs;
5. The parent-child relationship is nested in and influenced by multiple social and cultural systems;
6. Individual parenting education programs are only as strong as the social context in which they are embedded. The community context and norms around parenting practices need to be addressed through community involvement and engagement of key stakeholders;
7. Programs need to be responsive to diversity among parents;
8. Promoting positive parenting practices is best accomplished with a variety of methods;
9. Parenting education programs should meet the needs of the parents and the child;
10. Parenting education programs should build on the strengths of the parents and promote parental empowerment and self-confidence.

These echo those set the National Parent Education Network (2018), and by other countries, including the United Kingdom’s National Occupational Standards for Professionals Working with Parents¹⁸.

The delivery of parenting education may be deployed in high intensity, short term programs aimed at specific skill outcomes for targeted populations discussed in the next section (e.g., communication strategies for co-parenting during divorce, parenting after returning from deployment [ADAPT]¹⁹). It may be offered in community-based, longer term, ‘low dose’ models that feature facilitated group learning, and/or 1 to 1 through home visiting²⁰. Still other models deliver content through one-to-many messaging such as videos, websites or newsletters on parenting, or self-directed online classes. The text messaging initiative Text4Baby²¹, started in 2010, sends messages to new parents three times a week and has demonstrated impact on parenting knowledge, health service access, and child immunization rates. And media campaigns with consistent messaging (i.e., ‘population approaches’) can be surprisingly effective at changing perceptions and behavior (Zapeda et al., 2004). The reach of information sharing through parents’ social networks help to explain the potential of topic messaging.

Program Model Effectiveness and the Need for a Systemic Strategy

Perhaps the strongest scientific support for parenting education’s effectiveness is from programs identified as evidence-based practice (EBP). The Institute of Medicine (IOM, 2001)²² defines evidence-based practice as a combination of best research evidence and clinical experience that is consistent with patient (i.e., parent) values. These models have been repeatedly implemented and tested to demonstrate consistent short-term effects, for specific populations, and/or when deploying specific adaptations. There is evidence to suggest that these parenting education efforts contribute to wider attitude shifts as program completers talk about the benefits and model change in their behavior (*The Rugar Race*, 2020). The California Evidence Based Clearinghouse for Child Welfare ranks parenting programs by their degree of research support (‘well-supported’ to ‘concerning’)²³. Many funders require use of EBPs as delivery mechanisms (e.g., SAMHSA’s National Registry for Evidence-based Programs and Practices²⁴; Blueprints for Violence Prevention²⁵) when considering the delivery of parenting education (FCSP, 2007; National Academy of Science, 2016). And clearinghouses assist in identifying EBP (e.g., Child Trends²⁶). Reflecting global parenting education, four EBP models stand out from their international adoption. Long (2015) and Ponzetti (2015) review evidence from EBPs including Generation Parent Management Training (GMPTO, Forehand et al., 2014), TripleP Parenting (Sanders et al., 2014), the Incredible Years (Menting et al., 2013), and Nurse-family partnerships

¹⁸ <https://www.excellencegateway.org.uk/content/eg6232>

¹⁹ <https://www.adaptparenting.org/>

²⁰ Minnesota’s Early Childhood Family Education (ECFE) program is one such model <https://education.mn.gov/MDE/fam/elsprog/ECFE/>

²¹ <https://www.text4baby.org>

²² Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC: National Academy Press.

²³ For a detailed explanation of tested models, their effectiveness and ratings see <https://www.cebc4cw.org/registry/understanding-ebps/>; also <https://www.cebc4cw.org/registry/search/>

²⁴ <http://nrepp.samhsa.gov/>

²⁵ <http://www.colorado.edu/cspv/blueprints/>

²⁶ <http://www.childtrends.org/Links/>

(i.e., home visiting, Olds, Henderson, Chamberlin & Tatelbaum, 1986). These models have been highlighted in previous reports to the UN (e.g., Robila, 2020). The integration of technology as recent applications of these programs will be discussed later in the chapter.

GMPTO is aimed at increasing positive parenting practices while reducing externalizing behaviors in youth. Based in social interaction learning, its focus is on interactive learning between parents and children. It focuses on problem solving, monitoring and supervision with parents (who are seen as agents of change), and has been adapted with family audiences at higher risk for family stress (e.g., a military parent returning from the Iraq war; immigrant families living in violent neighborhoods). This program's body of research promotes parents' behaviors as mechanisms of change for children's behavior. It has been translated into at least five languages beyond English, and implemented in Iceland, Uganda, and Norway, among others.

Triple P-Positive Parenting offers five levels of intervention tailored to create a supportive climate for families' needs (the principle of minimal sufficiency) to promote parenting confidence, skills, and knowledge. A central skill promoted is a parent's capacity for self-regulation. The model uses a guided participation model of sharing case formulation. In addition to its extensive random-control trial testing and implementation worldwide, it has been the subject of novel adaptations integrating technology (see for example, Love et al., 2016).

Incredible Years was designed to aid parenting children 4-8 years and promote emotional and social competence and reduce behavior and emotional problems in young children. Aiding children's learning and interpersonal skills in handling stress, anger and depression are at the heart of the program. The program has undergone at least 50 randomized control trials and demonstrated effectiveness with a diversity of parents. The program utilizes video-based education to enhance skill-based learning. Its adoption by a range of countries and materials have been translated to at least ten languages beyond English.

The Nurse Family Partnership offers services by a registered nurse to low income mothers through 60-90 minute visits throughout the perinatal period. Extensive research has documented a reduction in child abuse and neglect, and improved health behavior by mothers (e.g., attendance of well-baby visits, immunizations, Olds et al., 1986; Olds et al., 1997). The model has been adopted for parents of older children (e.g., Parents as Teachers), applied to specific theoretical frameworks (e.g, attachment; Circle of Security) and specific populations of parents (e.g., Adolescent Parenting Program).

Gardner and colleagues (2016; Gardner, 2017) refer to adapted EBPs as 'transplant EBPs', and suggest that, by virtue of the repeated testing and demonstrated effects regardless of country, language or culture, that the program itself is more effective than locally developed parenting education method efforts. This notion needs further testing, given wide cultural variation and context implementation differences. Criticism has been lodged at EBP program sampling and selection bias, particularly that favors higher income countries, the short-term nature of these programs and their administration that stands alone from other necessary child and family needs (Daly et al., 2015).

There are families who present needs not satisfied by Evidence-based Programs (Zapeda et al., 2004, p.15). In Canada, for instance, the Vanier Institute of the Family (Spinks et al., 2020) offers a wide array of programs by age group of child and parent need that are coupled with a range of family supports (including "Nobody's Perfect," a well-tested program for parents of children 0-5 who are single, or socially isolated and have limited income and education and

Aboriginal Head Start, supporting the indigenous community). Parenting education programs that target cultural groups, such as Isibindi in South Africa, a home visiting program for new mothers including those vulnerable to AIDS, require cultural sensitivity and adaptations in language, pedagogy, or content (Kumpfer et al., 2015; Taylor & Robila, 2018). To address dominant local or regional concerns, they may be embedded as a strategy for health-related interests – nutrition, substance abuse, disability, and sexually transmitted diseases (e.g., Burlaka et al., 2018). Without available resources for design, testing and replication, programs may offer creative solutions on limited budgets yet they would not be considered “Evidence Based.” (Lewis, 2011). By adopting EBP principles, these local programs can show their quality as ‘evidence informed programs’ (Small et al., 2009).

Implementation research determines what is needed for sustained action of promising programs, particularly in areas where cultural adaptation is needed (Berkel et al., 2011; Lewis, 2011; Shapiro et al., 2015). Daly et al. (2015), Lewis (2011) and Zapeda et al. (2004) identify gaps in our understanding of program implementation – from the material resources used, to providers’ training, to the degree of involvement of parents, child and/or teens. Essential to the success of ‘transplant EBPs’ is implementation with fidelity with consideration beyond initial launch. While programs strive for rigor in execution, issues occur. For example, Shapiro et al.’s (2015) qualitative study of 69 providers of the Triple P parenting program identified high satisfaction with the program yet over time inconsistencies in delivery, as most did not receive ongoing supervision beyond the initial training period. The authors observed the need for flexible implementation to tailor to audience needs, yet ongoing consultation to maintain fidelity. Lewis (2011) identified policies in the UK that presented challenges to implementation of evidence-based programs with the fidelity their originators desired. Follow up with parents may reveal issues as well. Home visiting has long been a strategy for reducing child maltreatment and corporal punishment in the UK (Long, et al., 2001; Robila, 2020), yet parent perceptions of service delivery as highly inconsistent call attention to actual impacts and require higher level policy to standardize quality (Institute of Health Visiting, 2020).

Zapeda et al. (2004) cite the value of multiple strategies to ensure parenting education’s effectiveness:

Parenting practices can be profoundly impacted with intensive exposure to parenting education interventions that endure over time and are provided utilizing multiple strategies. For example, a parenting practice, such as reading to a young child every day, can be reinforced using social marketing strategies, by engaging different sectors in the community to promote parent reading -- such as restaurants, churches, public transportation, media -- by weaving this message into every medical home visit, by promoting this message in early care and education settings, etc. With repeated exposure to the same message and information provided everywhere in the community and in the state, the norm is created for parents that daily reading is important and should be integrated into daily family routines.” (p. 18)

And models of parent learning focused primarily on a change in knowledge, attitude or behavior may ignore wider social context variables influential in learning and lasting change (Small, 2009). Consistent interactions with other parents offer informal support and opportunities for building relationships, yet this element has received little attention (Daly et al., 2015; Herrera-Pastor et al., 2019). The longstanding playgroup model in Australia and the UK that

brings parents of young children together informally is not aimed at changing behavior but at stimulating the personal development and social capital between caregivers (McLean et al., 2017). Research on playgroups finds that the model promotes confidence and motivates mothers to return to work and further their education, thus benefiting the national economy (McShane et al., 2016). Relational support and scaffolding to parents in Head Start encourages career development in the early childhood field (Burstein, 2019). The Early Childhood Family Education (ECFE) program by Minnesota school districts in the US offers two-hour weekly classes for parents and their children. This model incorporates a Community of Practice paradigm (Wenger, 2011) by fostering identification with others who share the same practice through sustained, interactive dialogue. This can lead to deeper learning, perspective shift, and application to personal behavior (Walker, 2020). Evaluations reveal that it can also strengthen parents' knowledge of childrearing and children's early development and build stronger resource networks and alliances with school districts (Walker, 2020).

Limits on understanding long term effects and program sustainability present a challenge when national policy allocates budgets for implementation over a period of years. McGroder and Hyer (2009) and Long (2015) also identify the need for cost data to determine whether programs are wise investments. They observe that few studies link outcomes to monetize longer term societal effects. And research is needed to link parenting educator training and program outcome. While degreed professionals appear more effective than paraprofessionals (McClintic & Durrant, 2016; Zapeda et al., 2004) training variation of parenting educators is an implementation factor in need of further investigation (Long, 2015; Ponzetti, 2015). The Head Start Parent Family and Community Engagement framework (Office of Head Start, 2011) is a systemic model that situates the program impact (e.g., teacher quality) and program foundations (e.g., professional development, professional leadership) as critical to parent engagement and to child outcomes. This model has been applied to identify valuable supports to educators as part of the systemic picture of parenting education delivery (Walker, 2016).

A general criticism of many parenting education programs is their stand-alone nature; recommendations to serve family needs promote the mobilization of *integrated* and *comprehensive* strategies. Recommendations for systemic efforts to support families – inclusive of parenting education – have been offered by the National Assembly (FSPC, 2007; p. 18) and include:

- Identifying families in the community that have significant risks
- Understanding the challenges that most affect parent/caregivers in these higher risk families
- Developing goals and benchmarks to measure progress in strengthening higher risk families
- Focus on areas where strategic investments can have the most impact. Investing in policies, programs, and services that directly address the challenges facing parent/caregivers in higher risk families and that correspond with the areas mostly likely to produce a positive impact
- Developing specific strategies for identifying and connecting with higher risk families that, because of frequent moves, language barriers, or other, fall through the cracks.
- Advocate for state and federal policy changes that will enable communities to effectively coordinate parenting-success investments

Preparation of Practitioners

The National Parent Education Network (NPEN, US) lists the range of standards of preparation and certification that vary across 50 states²⁷, and offer a list of competencies across 5 domain areas²⁸ (NPEN, 2018). Unlike preK-12 teaching standards that are somewhat aligned from state to state and have centralized attention through national professional and governmental agencies, oversight of parenting educators in the US is determined by individual organizations or professional programs. Minnesota is the only state in the US to offer a state-accredited teaching license in the content area of parent and family education and is a ‘gold standard’ for other programs (Zapeda et al., 2004). As with other teachers, the license requires educator competency in pedagogical practice and in the content area.

In the UK, professionals and paraprofessionals follow the National Occupational Standards for Work with Parents²⁹ (Table 3). The standards document is clear that the execution of practice is differentiated by context and not aligned with formal training or degree programs. Each standard has performance criteria and a set of knowledge and understanding areas and is linked with a variety of job titles.

Table 3

National Occupational Standards for Work with Parents³⁰

1. Engage with parents to build and maintain effective supportive and empowering relationships.
2. Agree with parents and agencies the aims and purposes of work with parents.
3. Make assessments of parents and their families to develop and coordinate the delivery of a shared support plan.
4. Work with parents to enable them to meet the needs of their family.
5. Enable parents’ referral to specialist and other services, in accordance with required protocols.
6. Use persistent and proactive interventions when working with parents with high levels of need to enable positive changes in their lives.
7. Deliver parenting programmes and other structured support for parenting to groups of parents.
8. Enable parents to improve the effectiveness of the parent-child relationship.
9. Operate within policy, legal, ethical and professional boundaries when working with families.
10. Influence and contribute to policies and development opportunities for parenting services.
11. Develop and improve parenting services.
12. Establish and maintain supervision, training and continuous professional development for parenting practitioners.
13. Develop and maintain professional competence as a parenting practitioner.

²⁷ <https://npen.org/profdev/forum/standards/matrix.pdf>

²⁸ <https://npen.org/parenting-educator-competencies/>

²⁹ <https://www.excellencegateway.org.uk/content/eg6232>

³⁰ 2011, United Kingdom, <https://www.excellencegateway.org.uk/content/eg6232>

NPEN advocates that centralized, quality improvement in the field includes a) the articulation and agreement on competency standards, b) professional preparation to practice and recognition systems, and c) coordination and support of parent education as a professional practice. Their “*Framework for Understanding Parent Educator Professional Preparation and Recognition (2011)*”³¹ specifies five levels of increasing rigor and standards of practice. The levels range from Voluntary Registry, agency or organization professional development and training, credentialing or the verification of PE competencies, College completion, and state teacher licensing as the highest level of professional recognition. In the US 130 institutions offer an undergraduate degree along with coursework that is eligible for Certified Family Life Educator (CFLE, NCFR). A more limited number of institutions offer specific credentialing as parenting educators.³² Degree programs in family studies, social work (with an emphasis on family service), psychology (with an emphasis on child/human development) are available worldwide. An increasing number of university programs are offering coursework in Family Life Education³³. The University of Iceland is one of the few to offer a graduate degree in Parenting Education.³⁴

As EBPs become more widely adopted, standardizing the quality of the educators for program fidelity may lead to certification requirements, however without funding and recognition and the will to give parenting education a role in family strategy investments, this is likely not to occur (Long, 2015). As it is many paraprofessionals and peer educators who work in parenting education lack preservice training (McClintic & Durrant, 2016), and degreed professionals who deliver EBPs may be minimally supervised after initial training (Shapiro et al., 2015). National policy challenges to the formation of centralized standards of delivery, content or professional development can come only from accumulated evidence of parenting education’s value (Lewis, 2011). As it is, the lack of standardization and centralized support means continued variation in quality, or as Cooke (2006, p.787) observes ‘well-intentioned but poorly prepared individuals.’

Parenting education as a supportive strategy for family life with new technologies

Given the potential and practice of parenting education that exists, this report proposes that its application to technology as twofold: 1) as a vehicle through which to assist parents and families with learning *how to effectively use and choose technology for their children* (technology as a content area for parenting education) and, 2) as ICT offers tools and the Internet a virtual environment *for the delivery of parent education*. Given parents’ use of technology for acquiring parenting information, sharing content, and supporting their parenting goals, the diversity of ways that adults learn, yet recognizing that lack of outreach to major parent groups is

³¹ <https://npen.org/profdev/forum/standards/framework.pdf>

³² <https://npen.org/professional-development/degrees-certifications/>

³³ For example, Dawn Cassidy with the National Council on Family Relations discusses activity in Japan, South Korea and Taiwan: <https://www.ncfr.org/cfle-network/winter-2019-home-visiting/international-perspectives-family-life-education>

³⁴ University of Iceland Parent Education (M.A.)

https://ugla.hi.is/kennsluskra/index.php?tab=nam&chapter=namsleid&id=820154_20206&kennsluar=2020

a significant barrier to parenting education program attendance and uptake (Zapeda et al., 2004), ICT offers an obvious avenue to reach wider audiences (Breitenstein et al, 2014) and new methods for effective delivery.

As noted, UNICEF suggest five domains to address short and long-term outcomes in parenting (Appendix C, Daly et al., 2015) These domains parallel those provided in parenting education curriculum planning tools (MNAFEE, 2011). Walker and Rudi (2014) analyzed responses of parents in a national sample (n= 1422) on the functions served by their use of technology for parenting. Those functions were qualitatively coded to align with the 5 parent education domains. The results indicate the breadth of topics and functions that technology use serves for parents, and the types of technologies that parents use to meet parent learning needs. As such this information can be used to guide parenting educators in the selection of content and technological methods to aid learning (Appendix C).

Technology Content Implications for Parenting Education

Technology's impact on children's development is the key topic of parent concern and for content in parenting education. In their review of parent mediation, Coyne et al. (2017), recommend that "Parents should also be encouraged by providers and educators to help frame a child's relationship to digital media, discussing online etiquette, empathy, ethics, internet safety, personal boundaries, and how to regulate their own media habits. (S115)." And they observe that parents can be reinforced in using media in a healthy way with their children, particularly for learning and creativity, and understand areas of potential conflict parents and children can resolve together. Guides for parents, such as those from the Council of Europe and Singapore's Media Literacy Council³⁵ encourage reflection on parenting style and offer guidance through clever challenges that encourage constructive technology use and safeguards for cyberbullying, misinformation, and online privacy.

Ongoing shifts in technology device availability and applications used in the child's formal education, informal learning and social worlds (e.g., TikTok, Schoology) means that parents need to stay current to engage along with their children, anticipate challenges, identify probable hacks, and provide guidance. While parents may express an interest in innovative devices (such as 'smart speakers' or 'the Internet of Things'), they also need knowledge to feel confident in integrating them into family life (Blum-Ross et al., 2018). Parenting education can acquaint caregivers with relevant information on children's developmental domains and age stages to help parents understand what children are capable of and responsible for as they navigate their presence online, face potential threats and reap creative and collaborative rewards³⁶.

Educators can also assist parents with vetting the quality of material when choosing what to read. Myers-Walls & Dworkin (2015) provide 25 criteria for assessing the quality of parenting education materials (pp. 132-133). Outside the US, Suárez-Perdomo and colleagues (2018) provide a framework for examining the ethical and content quality of international websites for Spanish-speaking parents. Parents are curious how to know when children are ready for smart

³⁵ Easy steps to help your child become a Digital Citizen, <https://www.coe.int/dce>; "Click Clique" <https://www.betterinternet.sg>

³⁶ See for example <https://www.commonssensemedia.org/app-lists>

phones, how much screen time is healthy, threats to privacy and safety, and preventing cyberbullying. And parents vary in their ability to discern differences in online information, often related to level of education and literacy (Rothbaum, et al., 2008). Media education organizations online such as Commonsense Media.org provide useful guidance, with content written at reading levels and languages that make them accessible to many.

As parents use technology in their roles as parents – texting and video calls to communicate with children, maintain and build relationships, reassure and coach their children through challenges, learning alongside with children with education technologies, and sharing the joy of entertainment in gaming - parenting education can help promote the value and how to use these new media and possibly coach new rules for parent-child communication. Although most parents don't view themselves in serious conflict with their children around technology use (Webb, 2015; Commonsense Media, 2018), research on parent-child relationships and technology conflict indicate the need for this as a topic focus (Blackwell et al., 2016; Livingstone & Blum-Ross, 2020). And parents may need help accepting the power shift when they become dependent on children for technology help.

Though parents' use of technology can benefit their development and knowledge, they may need help navigating these spaces. They too can be subject to social comparison, bullying, and overuse (Steinmetz, 2017). For example, a newer generation of parents comfortable with online exposure may cross a line of sharing images and content about their children that may violate children's privacy (Livingstone & Blum-Ross, 2020). Guided discussions in parenting education settings can help parents transition to new roles (from adult to caregiver) and use a virtual space as a place for support and growth and safety, rather than criticism or overexposure. As parents become more aware of technology's impacts and hold realistic attitudes, and as they are more comfortable with using technology in a range of ways, they are more likely to show interest in mediating use in their children's lives (Brito et al., 2017).

Technology as a content area for parenting education can help parents acquire 'digital cultural capital' necessary when new technologies affect work-family balance (see previous section).

Digital capital is much more a form of incorporated cultural capital than of objectified or institutionalized capital in that. Like social scripts of artistic ease, it is learned early on within one's family and internalized as the primary habitus as well as acquired through secondary socialization at school and other social experiences. Parents may transfer their digital cultural capital to their children and teens ...such as discussing social media and cyberbullying with them... there are social inequalities in the extent to which social classes teach and pass on digital cultural capital to the next generation and therefore, dominant groups end up developing a specific digital habitus that advantages them over other groups. (Ollier-Malaterre et al., 2019; p. 436, 437)

And as they incorporate technology use as a content area in practice, parenting educators can also help caregivers create effective boundary management strategies that respect work, home and self-sphere. Parenting educators prepared to teach digital well-being can provide guidance needed by caregivers to address contemporary challenges– including how to balance a highly mobile, flexible “integrated” existence in which boundaries for space and time are blurred, placing excessive stress on the individual and affecting the family (Godfrey, 2016).

Parenting education curricula frameworks (Appendix C; MNAFEE, 2011) have long promoted an awareness of personal, family and work boundaries and effectively managing stress, role strain, ambiguity and spillover. Yet new opportunities presented in ‘new ways of working’ as discussed in parenting education, can find resolution amidst an atmosphere of empathy and community.

Technology Integration in Parenting Education Practice Delivery

Parenting education scholars validate the importance of aiding educators with technology integration skills (Long, 2015; Darling et al., 2020; Robila, 2020). In nonformal or community-based education, of which parenting education is a part, technology has been integrated for outreach, evaluation and assessment of learning, to foster discussion for sharing information and perspectives, in the delivery of content, and to facilitate social connections beyond face to face meetings (Breitenstein et al., 2014; Darling et al., 2020; Taylor & Robila, 2018; Walker, 2020. See also Appendix B). The use of new media can reduce the cost of delivering programs to large numbers of people without sacrificing effectiveness or participant satisfaction (Jones et al., 2014; Kumpfer et al., 2018). In formal education, technology has long been promoted to help instruction and learning inside the classroom and out (Haythornthwaite & Andrews, 2012; UNICEF, 2017).

However, research in community or adult education technology integration pales compared to that of education to children in traditional school systems (e.g., formal, state-funded, etc.). In part this is due to funding that prioritizes resources for children’s learning and academic achievement over adult needs. Yet formal education technology theory, research and practice, inclusive of teacher preparation, has much to offer parenting education as a basis for how to understand, integrate and study technology integration and educator support. The TPaCK framework identifies the intersection of using specific technologies (T) to enhance pedagogical practice(P), and enrich content knowledge (CK) delivery (Mishra and Kohler, 2007). Other models promote technology selection to align with learner activity levels (passive to active) and desired instructional outcomes Replace, Augment, Transform (e.g., PICRAT, Kimmons, 2012), or they translate particular technology use aligned with traditional learning theories or frameworks, such as Bloom’s taxonomy (Churches, 2010).

Podcasts, websites, blogs, apps, social media, videos and mobile applications have been utilized worldwide in the last 20 years (Hall & Bierman, 2015; Myers-Walls & Dworkin, 2015; Suárez-Perdomo et al., 2018). Technology design addresses the wide-ranging and complex needs of contemporary families (e.g., Alford et al., 2019 discuss smartphone use in foster care). Parents use these technologies to meet their parenting needs collectively (e.g., using one platform to meet a variety of needs), and may use a variety of platforms to reinforce a single need. For example, in Walker and Rudi’s analysis of parents’ reports on the technologies used and functions they served (2014), discussion forums were determined to offer parents information, emotional support and validation, prove useful to support parent development (parent domain), child development knowledge (child domain) and to strengthen community connections (community domain). They also reported gathering information on parenting from discussion forums, social media, email, web pages and browser searches.

Evidence-based parenting programs and other face to face, short term programs have been adapted to electronic delivery, including electronic text, audio, video or interactive components delivered via the Internet, DVD, or CD-ROM. Early evidence indicated promise for

time efficiency (cutting down on travel cost, implementation), participant completion, maximizing intervention fidelity, and sustainability (Breitenstein et al., 2014). Nieuwbower and colleagues' (2013) meta-analysis of 12 studies of internet-based parenting education applications found short term benefits to knowledge and attitudes. Their study included programs of 2 to 15 sessions, with professional and in some cases peer support, deploying novel applications, including instruction by animated characters, remote coaching, progress monitoring and video vignettes. Spencer and colleagues (2020) meta-analysis of 28 published studies, Corralego and Rodriguez (2018) and Hall and Bierman's (2015) analysis of technology-adapted parenting education programs also observed the inconsistency in results and scope of the evaluations, from those indicating feasibility and a high degree of satisfaction with parents and/or staff, to those with more rigorous evaluations that demonstrated impacts on short term outcomes in parenting, parent confidence, or child behavior. The majority of the studies appear to focus on interventions for parents of young children – for example, Spencer et al.'s analysis only identified 3 of 28 programs for parents of children 12 or older. And Corralegjo and Rodriguez (2018) observed the need for more research and applications offered in non-English languages. Since attrition in online only applications Analyses also observe the need to attend to participation as rates of attrition seem high with online-only applications.

The availability of online delivery of parenting education programs is so prolific that clearinghouses help parents find programs that align with their interests or needs³⁷. In some states and countries, parenting education is mandated for divorcing parents or as a first level response for parents who have been reported to have abused or neglected their children. And online delivery makes completing these requirements convenient. Research on adaptations to existing face to face programs have demonstrated positive, albeit short term, results. Variations of this research include examining a) wholesale adaptations of Evidence Based parenting education program to online delivery (Hall & Beirman, 2015; Long, 2015; Nieuwbower et al., 2013; Spencer et al., 2020), b) hybridizing online delivery with person to person contact (Day & Sanders, 2018) and c) an online component to complement face to face delivery (Love et al., 2016; Walker, 2017). Some of this research will be discussed below.

TripleP parenting has adopted its EBP intervention program to technological interfaces with a television series, an online version (Turner & Sanders, 2011), and recorded podcasts (Morawska et al., 2014) all demonstrating short term effects greater than those in control samples. Day and Sanders (2018) examined clinical outcomes, program engagement and satisfaction in a random control trial of the online Triple P parenting program, the online program with telephone consultation by a trained practitioner, and no treatment. The supplemented online component revealed greater benefits in reducing overall negative parenting and frequency of child behavior problems. Participants reported greater satisfaction with the program and showed higher rates of module completion than did either the online only group.

Similar evidence was determined when the self-administered technology-adapted Incredible Years program incorporated professional coaching and access to an interactive forum (Taylor et al., 2008). Nieuwbower et al. (2013) also asserted that while self-directed online programs have value to knowledge acquisition, influencing parenting attitudes and translation to practice are best accomplished with a social, guided component. This suggests that while online parenting education can be designed to be user friendly, and integrate learning design principles

³⁷ e.g., <https://www.onlineparentingprograms.com/>

(Hughes et al., 2012) including social interaction and direct connection to the practitioner may provide social capital and learning benefits that exceed the value of self-directed learning alone. Deploying mixed methodologies that include a social component may be key to reaching diverse audiences.

Social components can be added to online applications that serve as complements to face to face parenting education. When the Triple P Parenting program incorporated social media and gaming features in outreach with a highly vulnerable population (e.g., badges as incentives to participation), outcomes for reducing child behavioral problems, permissive or overreactive parenting, and parental stress were improved (Love et al., 2016). Respondents appreciated the flexibility, anonymity and shared aspect of the online community. And a web platform for ECFE parents and staff to connect between classes (or act as a supplement when parents couldn't attend face to face) proved effective at strengthening social connections and a sense of identity in program affiliation (Walker, 2020). A key was in participatory design of the technology to align with program community orientations, values for parent inclusivity in language and access, and repeated usability testing to make the platform user-friendly (Walker, 2017).

Parenting education technology researchers observe several areas for growth: program implementation evaluation to include more socioeconomically and culturally diverse populations; attention to modern devices (e.g., mobile); building program delivery on learning theory (reviewed programs were absent in theory), and comparisons of tech-only, and technology plus applications. Four of the evaluations in Breitenstein et al. (2014) review were for evidence-based programs delivered exclusively online (including the Incredible Years and TripleP parenting). The authors suggested a controlled comparison of application online and in person with the same intended program outcomes (parenting skills, parent-child interactions and children's outcomes) and doing a cost-benefit comparison was warranted for full assessment. After research of in person programs with investigations of their online adapted counterparts, Nieuwbower et al. (2013)'s observed that the results of online adaptations cannot be assumed from in-person outcomes. Online delivery is different and includes many variables to consider in effective deployment.

And while research on the design of technology-enriched, or online delivery of parenting education is still in its infancy, lying in wait is research on implementation of these systems for effective and sustained delivery. Forgatch, Patterson and Gewirtz (2013) observe the implementation process of the PMTO with community service systems and seeking fidelity in program implementation. They identify a two system (adopting community and program developer) and four stage (preparation, early adoption, implementation, sustainability) model that characterizes the many considerations. The PMTO scholars also note the benefits of using technology in program implementation and fidelity. A centralized database incorporating video intervention sessions permitted reliability checks of raters, and a centralized website enabled program leaders to fine tune implementation and oversight of facilitators' competence. As the PMTO model has been replicated in multiple states and countries (including Iceland, Norway, and Mexico) data management online enables efficient implementation on a global scale. Even so, the authors raise a number of questions about policy and practice that reveal the added complexity of using ICT in program implementation.

Preparation of Parenting Educators to Teach and Use Technology

Effective integration of technology as a content area and as means for program delivery and instruction and outreach means attending to practitioner training in this specific competency (Walker, 2015). As previously noted, a range of learning technologies, content delivery and social interaction platforms are available for parenting education delivery. They can be used for synchronous (simultaneous) or asynchronous instruction. They support use with parents one to one, delivery of content to large groups (one to many) and fostering whole group interaction. To use these easily and integrate them into instructional plans means familiarity and comfort in use of the range of technologies. Platform knowledge also means understanding learner access and use. As other educators, parenting educators conscientiously select effective and user-friendly tools that reach the widest number and reflect learner equity. Sensitivity to differences in parents' technology skill can mean knowing how to adapt when and how instruction occurs for greatest attention and engagement. During COVID-19, for example, parenting educators in Minnesota moved group-based discussion and the early childhood learning component to video conferencing (Walker et al., 2020). Yet in weeks they learned that families were overwhelmed with screens by the end of the day. The educators lowered expectations for attendance and found other creative ways to engage online (e.g., asynchronous video posts, collaborative tools³⁸) and safe face to face methods for families to engage in smaller numbers. They also addressed equity through the use of take-home learning packets provided by the district (no cost to the parent), loaned tablets and WIFI hotspots and worked with districts to redistribute budgets to accommodate parents with limited technology access.

The question of competency standards in technology integration and content and preparing parenting educators to meet these competencies is a natural progression in logic. Unfortunately, such standards do not exist (beyond the licensing requirements in one US state and for one group of practitioners, noted below). In a US study of 722 parent and family educators, the majority (74%) indicated 'learning on my own' to a moderate or major extent as the training that prepared them to use technology (Walker, 2019). Reports of training by professional development (50.6%) or in college (42.6%) were lower. Only one third reported needing technology training to maintain a professional credential (and nearly all of these were licensed teachers), leaving to question the voluntary interest in seeking education. In Minnesota, educators must demonstrate standards of practice that include 14 technology competencies to be licensed³⁹. These mirror standards laid out by international education groups such as ISTE⁴⁰ and in the EU (Ala-Mutka et al., 2008) and in most cases, not all (for instance in the area of learner assessment), the parenting education license adapts its practice to these standards. Yet when included in a national sample of family educators, licensed parenting educators in Minnesota reported similar challenges as other professionals with skill, confidence, and having adequate resources to teach with technology (Walker, 2019).

And parenting educators are irregularly held to technology standards in the workplace. While some mention the receipt of devices or training by their employers (also highly variable; far less likely for those who are self-employed or with non-profits), few note that use of technology is a performance standard for review or for hiring. (Walker, 2019). This lack of attention at the workplace influences parenting educators' technology attitudes (Walker & Hong, 2017). This is evident in parenting and state-specific samples (Walker & Hong, 2017), and in

³⁸ For example <https://info.flipgrid.com/> and <https://padlet.com>

³⁹ <https://www.revisor.mn.gov/rules/8710.2000/>

⁴⁰ <https://www.iste.org/standards/for-educators>

larger, national and diverse samples representing those who are family education professionals (Walker et al., in press). Those perceiving higher workplace supports in the infrastructure (e.g., encouragement) and resources (e.g., access to devices, training) demonstrated more accepting attitudes toward technology and were more likely to use a range of technologies.

Practitioner guidelines. In 2015, Nicholas Long offered these predictions for practitioners of parenting education:

1. There will be an increase in studies that examine how provider knowledge, training, and skills impact the effectiveness of different parenting education services.
2. There will be an increased focus on identifying core competencies as well as ethical guidelines for parenting educators.
3. There will be a growing interest in certifying those who provide parenting education services (beyond program-specific certification).
4. There will be a greater focus on how to most effectively train and supervise providers of parenting education services.

Each of these predictions can embody technology integration in practice. Yet for action to be taken, global family policy needs to recognize digital realities as a critical topic and way of life in families' lives and to arm professionals working with families to help use technology in healthy ways.

The need for practice and content knowledge, for competency standards, and for preparation and workplace encouragement represent a systemic picture indicating policy action (Walker, 2016, Figure 6).

Figure 6

Systemic framework for addressing technology needs by families through practice and policy. Adapted from Walker, S. (2016). Creating the future we want: A Framework for Integrated Engagement in Technology Use in Family and Consumer Sciences. Journal of Family and Consumer Sciences. 11, 7-17.

FIELD FOUNDATIONS RELATED TO TECHNOLOGY INTEGRATION	PROFESSIONAL IMPACT AREAS AND DELIVERY STRATEGIES RELATED TO TECHNOLOGY	ASPECTS OF INDIVIDUAL AND FAMILY TECHNOLOGY USE	PROCESSES AND OUTCOMES (FACILITATED BY TECHNOLOGY INVOLVEMENT)
Training - preparation of professionals on the use of technology – in preservice – inservice Standards – for technology use in practice Maintain and promote quality research through methodology, summaries, directions Theoretical and conceptual models to frame research, practice and policy	Individual and family impact areas – as a knowledge area (to promote balanced, effective use) – as a skills area (to promote effective use) Impact strategies – technology employed as effective practice (e.g., instruction, program design, counseling)	User – demographics – tech attitude, comfort, skill Technology – type – context – characteristics Functions and purposes for technology use (e.g., communication, entertainment)	Individual family member development well-being Family well-being, satisfaction Individual and family processes (e.g. learning, communication, social capital, connectedness) Outcomes external to the individual or family (e.g., technology developed, community well-being)

Policy Recommendations for Technology Integration in Parenting Education

The following are recommendations to move parenting education forward as a response to families’ needs, and reflect their technology use:

1. First and foremost, parenting education must be seen as a viable and valuable preventive strategy in family support and child development.

It must also be respected in ways that reflect its coordination and progress (Vázquez Alarcón, 2020; Daly et al., 2015; FCSP, 2007; National Academies of Science, 2016). Optimally it will be offered, not as a stand-alone effort, but as part of a set of strategies that enhance the infrastructure of families’ lives, reflective of the degree and scope of need, and that bolster child and family assets (FSPC, 2007; UNICEF, 2018).

Writing for the presence of parenting education globally, Daly et al., 2105 observe

One could argue that poor parenting results from too little income and too much stress, and so should be addressed by measures that act to change this situation rather than those focused mainly on how one responds to one’s environment. More structural interventions include protection from human rights violations, stigma and discrimination, and economic relief. The development and popularity of family support and parenting support need to be set in this kind of broader political and economic context.

Seen and funded within a set of supports for families that start before the first child is born and that continue across the family life course, parenting education can become a resource to be relied on, much as families use public libraries and parks for

enrichment. Viewed in this way, parenting education can be a strategy to address targets in SDG 3 and 4 and align with meeting targets in other development goal areas as appropriate.

Parenting can also be an area for training those in the human services and in direct delivery of service to parents, children and families. Walker's 2019 study of family education professionals included 23% (of 697) who indicated working in other professions yet included education to families as part of their work. Parenting influences how well children eat, comply with health care, participate in education and schools and other life facets. Yet professionals who work as teachers, doctors, nutritionists and other services have little to no training in parenting. Promoting parenting in the education of human service fields is another step toward valuing childrearing supports.

Specific to technology, parenting educators, professionals who include parenting in their services and teaching, and parenting education programs are naturally situated to aid children and families with the growing responsibilities and challenges for decision-making and wise use of new media and interactions in a virtual world. This means seeing technology as both a content area for teaching as well as a means for educational program delivery.

To date those advocating for technology in parenting education have primarily focused on it for its pedagogical value (e.g., Darling et al., 2020, p. 436). As parenting educators may currently specialize by child age group, topic (e.g., discipline), population (e.g., fathers, homeless families), or theoretical orientation (e.g., attachment), technology can be a focus of parenting education practice, or it be included in the range of competencies for general practitioners.

2. For parenting educators to feel comfortable and competent as digital educators and integrators, they need professional standards that guide preparation and practice. Standards developed for teachers can inform those recommended for parenting educators.

As with other adaptations from formal to nonformal education, from child-centered teaching, to working with adults, to embrace the range of practice contexts in parenting education, these standards will need to be tailored to adapt to nonformal settings and adult learner audiences. This includes considerations for language, age, ability, and access. The wealth of existing programs and committed professionals globally offer a strong foundation for this work. The National Association of Social Workers (2017) offer painstaking detail in integrating technology in practice. Professional organizations aimed at education⁴¹ (e.g., the American Education Research Association special interest groups; the International Society for Learning Sciences; the International Society for Technology in Education) suggest standards that embrace technology in delivering education as well as a content area. And those aimed at parents, families and children⁴² (e.g., Zero to Three, the National Council on Family Relations, the European Early Childhood Education Research Association, the

⁴¹ www.area.net; isls.org; iste.org

⁴² zerotothree.org; ncfr.org; eecera.org; <https://teccenter.erikson.edu/>

Erikson Institute Technology in Early Childhood Center) offer networks for parenting educators worldwide to find inspiration, scholarship and professional development.

3. Research on technology integration in parenting education is in its early stages. Adapting and testing new ways to communicate, convey information to, assess, and encourage community with parents has yielded valuable information about the costs and benefits from instructor and learner perspectives.

Trials that compare technological adaptations to traditional methods help us understand differences, efficiencies and for whom which methods work best, and under what set of conditions. Yet compared with formal education counterparts our understanding of the value and best practice in parenting education with technology is minimal. In any form that parenting education is moved forward as a practice, the integration of technology must be included in it (in content and delivery), and the research agenda include the application of technology in practice. As technology becomes a focus of research, it must also be a focus in how research is done. Digital safety, equity, privacy are issues that must be considered in research design and execution.

4. Industry can build on the expertise of parenting educators and caregivers in the design of apps and online platforms.

Parenting apps may build on algorithms to tailor advice to parents yet miss the richer context of childrearing decisions and influences (Hogsdon & Ramaekers, 2020). They may also be developed to meet well-intentioned content aims for caregivers, yet miss out on the necessary specificity of the range of children and families lives, including those who are homeless, in foster care or who have highly specific medical needs (Alford et al., 2019). Parenting educators can offer guidance on the content and on design and usability features based on their extensive experience with diverse adult learners and changes in parenting interests (Walker, 2017). And as educators use technology like K-12 and higher education teachers, parenting educators can inform industry leaders about the realities of their teaching experiences to indicate reasons why or why not software and applications may or may not be used (Coleman, 2018). Any design for technology must be ‘user-centered’, which means inclusion of parents, caregivers and when possible, children in tailoring content and application feature to learning and problem-solving needs.

Conclusion

It is evident the role that technology plays in families lives – in helping with day to day functioning, acquisition and participation in work, in making social connections and maintaining relationships, and accessing a wide range of resources, including health, financial information, transportation and social services. A key challenge facing a significant portion of families globally, is access to the internet, to higher speed internet and to devices through which to communicate, manage information and perform tasks with efficiency. As noted in Appendix A, technology access equality addresses multiple SDGs and targets within these goals for employment, gender equity, health care, job quality, innovation, and education. Working transnationally to help developing countries in their technology access and innovation will mean

tremendous change for families, for women's equity, and for children's learning and educational attainment.

In addition to access, digital literacy, safety practices and privacy are needs for families worldwide, regardless of the availability of devices and the internet in their lives. Families lives and children's learning and well-being are increasingly complex with the role that the internet and digital media play. It cannot be assumed that the knowledge to use devices comes easily or is equitable. In fact, comfort in using technologies varies with education, income, age and experience. SDGs for employment, health and education (especially) can be addressed by attending to digital literacy needs of families.

Our increasingly mobile society means that work is not necessarily time and place bound. In fact, the availability of cloud services, mobile devices and the internet means that work can be any time any place, and new types of work have arisen; new work that affect family life. Yet the wide variations in work worldwide, along with cultural differences in the intersection of work and family, and differences in technology innovations driving employment presents a picture that slants toward the more Western perspective of work. For example, the impact of COVID-19 quarantine has meant many white-collar jobs have continued in the home, along with children's schooling, placing possible strain on families to share space and other resources. Jointly these new conditions for work and family can affect the perception of balance; yet these perceptions vary greatly by individual, by family and by employment conditions. Our research understanding of the impact that technology-driven work and home lives has on well-being is in its infancy. There are simply too many variables to make easy predictions about how best to accommodate work and family balance needs.

Yet we can return to the policies that encourage a more family-oriented vision of employment, whatever that might mean by country and culture. And as technology innovations continue to shape families' lives, education and support from the workplace can offer guidance, resources, and a culture for technology use. Included in these supports is learning ways to achieve balance. SDGs addressing work-family balance connects to policy recommendations that reflect technology innovations.

Finally, parenting education has long been a community support for families around the world. Yet to date is has not been identified or significantly deployed as a strategy in global family support investments. Evidence of its value and research on implementation quality, including in the preparation of parenting educators, indicate that parenting education is ready to be adopted more widely in policy actions that address family needs, particularly in the areas of children's well-being, learning and education, health and mental health, and gender equity (SDGs 3, 4 and 7).

And with the complexities that technology use means to children's development and learning, parenting education must now include technology as an area for parent learning and growth. Parenting education and parenting educators, given the appropriate training, support and oversight, are positioned to help parents navigate the everchanging waters of children's technology use, exposure, learning, socialization, privacy and safety. As children develop, their ability changes in self-managing what technology offers (for good or bad). So too does parents'

mediation of children's use. Policy recommendations offered here include the necessary inclusion of technology when teaching and supporting parenting.

Yet technology is used in many ways by parents, in parenting, and for their own wellbeing, and ICT has made teaching and learning more efficient, effective, creative and collaborative. With a younger generation who grew up on technology, now facing childrearing, their comfort and expectations for using technology in their learning as parents is high. Thus, the final set of policy recommendations points to integrating technology in the practice of parenting education. To do so effectively, means to attend to the technology competency and comfort of the practitioners of parenting education.

Because our use of technology as a society continues to grow and change with advances and innovations in the internet, devices and applications, naturally research must continue. Supporting research on technology's impacts on families is a blanket recommendation across all aspects of this paper. We call on research though, that not only keeps up with changes in technology and in the uses of technology by families and by workplaces, but that addresses divides in use by socioeconomic status and ability and geography and culture and strives to identify positive change to those gaps. Our research on family technology use must also directly focus on practice, just as practice relies heavily on current research. It is only through this synergy, and by addressing family life within the full ecology of influences that we can be successful and sustained in making a difference in the next decade.

While for some resilience and flexibility are characteristic qualities of the family, for many they are significantly influenced by resources, contexts, people and policies. For the United Nations to achieve its Sustainable Development Goals the family *is* at the center. Parents fulfill a range of responsibilities for the well-being of their children, extended family, to their communities and to themselves. They do this as workers and balance responsibilities in work and home spheres, however bounded or flexible they may be. They monitor and protect their children, as they guide their development. This becomes particularly challenging when the focus is a topic as unfamiliar as the internet and new devices and applications. Addressing both of these dimensions of concern for parents is of utmost importance. And both can be addressed at the program, and policy levels. Both can be addressed through education; parenting education to be specific. Parenting education can address technology for families as a content area, inclusive of ways to develop digital cultural capital. And it can integrate the internet and technologies in ways that respect the growing interest and behavior of adults. Yet for this to be a reliable and global strategy, there is much to be done to short up the practice, practitioners, implementation and fidelity of programs.

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Appendix A

Technology and Sustainable Development Goals

Technology and families (general)

SDG	Outcomes	Evidence from report	Policy action
1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, <u>appropriate new technology</u> and financial services, including microfinance	Limited access to internet, cell phones and social media for families in less developed countries means diminished access to resources for daily living impedes women and men from basic services and economic resources.	Ensure access to the internet, to higher speed internet, and to devices for communication and access to the internet.
2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure	Limited access to internet, cell phones and social media for families in less developed countries means diminished access to resources for daily living impedes women and men from basic services and economic resources. ITC as a basic service helps women and	Ensure access to the internet, to higher speed internet, and to devices for communication and internet access.

	and equal access to land, other <u>productive resources and inputs, knowledge, financial services, markets and opportunities</u> for value addition and non-farm employment	men who farm, produce food, and have land access to connect with valuable information needed for transactions.	
2c	Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and <u>facilitate timely access to market information</u> , including on food reserves, in order to help limit extreme food price volatility	Limited access to the internet, cell phones and social media for families in agriculture means diminished access to information resources valuable to ensure market transactions	Ensure access to the internet, to higher speed internet, and to devices for communication and access to the internet.
3.8	Achieve universal health coverage, including financial risk protection, <u>access to quality essential health-care services</u> and access to safe, effective, quality and affordable essential medicines and vaccines for all	Families use technology to manage health care, share health information, contact health care providers on behalf of individuals and whole family members.	Ensure access to the internet, to higher speed internet, and to devices for communication and access to the internet. Help family members gain digital literacy skills to comfortably and safely use the internet for health information
3c		Increasingly families and	Ensure the preparation of

	Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States	individuals in families use telehealth for accessing health and mental health professionals, including family therapists. Family mental health professionals are better and more ethically able to provide health care to families when they have been trained and are supported in using technology.	family mental health professionals (e.g., family therapists) to use the internet and digital media for the delivery of services to family members.
4.3	By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	Skills in using technology are basic to virtually all learning for adults and in higher education. Providing quality education through technology can be a means to promote greater digital literacy and preparation for future work.	Encourage competency in the delivery of education in vocational and university education through technology and internet access. Focus on the development of digital literacy skills and competence.
4.5	By 2030, eliminate gender disparities in education and ensure	Children’s learning depends on technology for internet access and use of digital devices.	Attend to the quality of education delivery using technology to meet wide

	equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations	These must attend to the range of learning needs in children, particularly those with disabilities, and must attend to disparities that are reflected in access to education, and access to technology.	ranging learner needs, particularly focusing on those who have disabilities.
4a.	Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all	Children and adults in learning settings that integrate technology need materials that are inclusive, accommodate learning needs, and are up to date.	Attention to all learning facilities with an eye to being disability, gender sensitive and inclusive must include the role that technology plays.
4c	By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States	Children increasing use technology in the classroom, out of school for learning, and for learning at home. Teachers need adequate training on technology to keep up with changing needs and adequately deploy the internet and technology in teaching and learning.	Attend to technology skills and knowledge as a competence area for all teachers and provide international support for teacher training to improve the quality of technology skills in teachers globally.
5.2	Eliminate all forms of violence against all women and girls in the	Children are vulnerable to sex traffickers on the internet, particularly children and girls	Improving digital security and privatization of information online can help protect

	public and private spheres, including trafficking and sexual and other types of exploitation	who are homeless.	vulnerable girls and youth.
5b	<u>Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women</u>	Digital access is a basic right, and digital literacy means equal access to information available and to have a voice online.	Empower women with equal access to technology, internet and digital devices. Embolden their use through promoting digital literacy.
8.2	Achieve higher levels of economic productivity through diversification, <u>technological upgrading and innovation</u> , including through a focus on high-value added and labour-intensive sectors	Families access to the internet, higher speed internet and digital devices is unequal around the world.	Higher levels of economic productivity can be achieved through empowering women with equal access to technology, internet and digital devices. Increase all members of developing countries access. Embolden use through promoting digital literacy.
8.10	Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all	Families use technology to access financial information, financial records, and for communication on financial matters. This is inequitable when access varies.	Ensure access to the internet, to higher speed internet, and to devices for communication and access to the internet. Help family members gain digital literacy skills to comfortably and safely use the internet for financial

			information
9a	Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States	Limited access to internet, cell phones and social media for families in less developed countries means diminished access to resources for daily living, particularly when families are mobile.	Ensure access to the internet, to higher speed internet, and to devices for communication and access to the internet.
9b	Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities		
9c	Significantly increase access to information and communications technology and strive to provide universal and		

	affordable access to the Internet in least developed countries by 2020		
10	Reduce inequality within and among countries	Technology access as a basic need, and comfort and skills with using technology are areas of inequality across countries. This is demonstrated by household access and differences in technology comfort and skills across families.	Improve access to the internet and to high speed internet, to devices and in training and support for technology use.

Work-family balance

SDG	Outcomes	Evidence from report	Policy action
3.4	(3) ensure healthy lives and promote well-being for all ages 3.4 promoting mental health and well-being	Psychological health and worker confidence affected at inability to balance work and family roles	Employers to address extraordinary and individualized circumstances facing employees with families during COVID-19 quarantine, managing family health including contact with extended family members
4; 4.2	(4) ensure inclusive and quality education and promote lifelong	Parental ability to focus on children's learning while also	Training and support programs that help the technology and

	<p>learning for all</p> <p>4.2: By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education</p>	<p>managing work responsibilities is challenged when technology, workplace policies and comfort in setting boundaries are insufficient.</p> <p>Child care availability is a workplace benefit that can help, especially working mothers, balance demands of work and family.</p>	<p>boundary setting skills of workers with families.</p> <p>Provide sufficient supports to quality early childhood education, and aid working parents' access to care.</p>
4.6	Enhance literacy and numeracy	Regarding individual differences in technology skills among employees can close a digital skills gap.	Policies regard individual differences in employee preference and proactively avoid inequity and division pitfalls.
5.4	Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	Workplace policies can regard gender inequality in domestic responsibilities for childrearing. Demands on women for balance of work and family life are greater than they are for men.	<p>Continue to provide tangible child care and flexible work hour and leave supports for women.</p> <p>Encourage more of men's participation in household labor and childrearing responsibilities.</p>
9a, b, c.	Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and	Improvements in developing countries' internet access and technology integration in the workplace can mean jobs and thriving for families. Modern	Strengthening technology innovation, quality and responsivity to workplaces.

	<p>technical support to African countries, least developed countries, landlocked developing countries and small island developing States</p> <p>9b. Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities</p> <p>9c. Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020</p>	<p>technologies may also encourage efficiencies to doubly care for family needs.</p>	
<p>General addressing of SDG 3 and 4</p>	<p>Health, education</p>	<p>Early research integrating technology as a focus in work-family must expand to include family outcomes, and child impacts (vs. primary focus on work). Doing so will better address health and education of family members, viewing the role that work and tech integration for work esp. in the</p>	<p>Broader integration of family outcomes in work-family research, and integration of child impacts in work-family-technology research.</p>

		time of COVID-19, occurs.	
			There is an industry responsibility to examine the privacy and security of a more permeable, flexible work and family life online.
9.5	Enhance scientific research, upgrade <u>the technological capabilities of industrial sectors in all countries</u> , in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Technological capabilities can influence the daily efficiencies of workers in ways that may contribute to balancing time and responsibilities with families.	Improvising the responsivity and effectiveness of technology in workplace efficiency.
12.	ensure sustainable consumption and production patterns		

Parenting education: Parenting education focus on technology as a content area and integration of technology in delivery

SDG	Outcomes	Evidence from report	Policy action
3.4	<p>(3) ensure healthy lives and promote well-being for all ages</p> <p>3.4 promoting mental health and well-being</p>	<p>Psychological health of parents due to stress, parenting alone, with little confidence, influences ability to parent. Parenting education is a means to provide parents with knowledge, skill and confidence supports.</p> <p>Parents gain emotional support from using technology through social interaction platforms.</p> <p>Parents' knowledgeable of technology are better able to help their children navigate healthy technology use (e.g., for sleep, obesity prevention, learning) and to avoid interactions that negatively influence mental health.</p>	<p>Include parenting education as a strategy among a wider array of family supports.</p> <p>Specific outreach to parents through technology can mean wider reach by numbers and parent types.</p> <p>Integrating social technology in parenting education is a way to promote parents' mental health.</p> <p>Technology as a content area in parenting education to extend support to caregivers in this area. Can help prepare parents to guide, mentor, mediate children's health, safe and private internet and digital media use across all ages.</p>
4.3	<p>By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university</p> <p>4.4 By 2030, substantially</p>	<p>Skills in using technology are basic to virtually all learning for adults and in higher education. Providing quality education through technology can be a means to promote greater digital literacy and preparation for future work.</p>	<p>Encourage competency in the delivery of education in vocational and university education through technology and internet access. Focus on the development of digital literacy skills and competence.</p>

	increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship		
4.5	By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations	<p>The delivery of parenting education using technology must incorporate a range of means to be accessible and inclusive, including meeting the needs of those with disabilities.</p> <p>Children’s learning depends on technology for internet access and use of digital devices. These must attend to the range of learning needs in children, particularly those with disabilities, and must attend to disparities that are reflected in access to education, and access to technology. Aiding parents in their understanding and use of technology through parenting education can support children’s learning.</p>	Ensure that technology used in parenting education considers the needs of all learners, including those with disabilities. And ensure that training to parents considers the range of children’s needs, including those with disabilities.
4a.	Build and upgrade education facilities that are child, disability and gender sensitive	Children and adults in learning settings that integrate technology need materials that	Attention to all learning facilities with an eye to being disability, gender sensitive and

	and provide safe, non-violent, inclusive and effective learning environments for all	are inclusive, accommodate learning needs, and are up to date.	inclusive must include the role that technology plays. Technology improvements must be part of
4c	By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States	<p>Parenting educators must be given adequate training and support to offer quality programs that meet parent child and parent-child outcomes.</p> <p>Technology competence is part of this training.</p> <p>Preparation of parenting educators and inclusion of technology competence in their training is needed worldwide.</p>	Enhance the competency of parenting educators to integrate technology in practice.

Appendix B

A Representation of Parenting Education Programs in Non-US Countries¹

Region	Country	Issues observed	Program	Format	Agency/Sponsor	Technology Integration (if available)	Reference
Asia Pacific	China	Severe structural social inequalities of access of children and families to basic services with the rural–urban divide Increased mobility of workers from rural area to cities led parent–child separation	Purposeful Parenting for Working Parents	Aims to reach migrant workers who left their children behind in hometowns. Three key modules: ‘Parents’ Well-being’, Understanding Your Child’ and ‘Remote Parenting’. Conducted at the workplace including follow up activities, workplace messaging and a parent training handbook	Centre for Child’s Rights and Corporate Social Responsibility		Daly et al. (2015) ²
			Loving Mom Service Station	To support ‘left behind’ children and their caregivers in the rural areas for example grandmothers ‘volunteer mothers’ among the local community support them	All China Women’s Federation		

¹ For information on parenting education in the US, see <https://npen.org/professional-development/parenting-education-networks-organizations-and-programs-by-state/>

² Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec’nik, and M. Samms-Vaughan (2015). *Family and Parenting Support: Policy and Provision in a Global Context*. Innocenti Insight, UNICEF Office of Research, Florence.

			Integrated Management of Childhood Illness (IMCI)	Every mother with children up to age 2 in the intervention group was given a counselling card (the Mothers' Card). One-to-one counselling was provided twice to the mother.	International NGOs in cooperation with the Chinese authorities.		
The Philippines	Geographical and structural inequality (especially urban vs rural): the challenges of child labor, commercial sexual exploitation, physical and sexual abuse	Parent Effectiveness Service	A neighborhood parent effectiveness assembly conducted by community workers with groups of parents Day-care service groups for caregivers, home-visiting sessions, radio broadcasts of lectures targeted at parents and caregivers.	Family Development Service of the Pantawid Pamilyang Programme	Radio broadcasts of lectures	Daly et al. (2015) ¹	
		Empowerment and Reaffirmation of Paternal Abilities	Includes community-based sessions for fathers, and training father leaders and volunteers who further facilitate dissemination of knowledge				
		Plan International Philippines	Address issues associated with corporal punishment in Filipino families delivered by trained social workers and teachers	Support from the European Union and a number of government agencies			

¹ Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec'nik, and M. Samms-Vaughan (2015). *Family and Parenting Support: Policy and Provision in a Global Context*. Innocenti Insight, UNICEF Office of Research, Florence.

	S. Korea	Extremely lower fertility, increased life expectancy, later first marriage, and an increase in the number of divorces, transnational marriages, and dual-income families. Social concerns about child abuse	Parenting education programs	For expectant and new parents, for fathers, for parents with infants and toddlers, for parents with children in school Provided in childcare facilities, local Support Centers for Childcare, department stores or supermarkets, HFSCs (Healthy Family Support Centers), schools, local Parent, Support Centers, and other local and central government agencies.	The Ministry of Gender Equality and Family	Lee & Son (2018) ¹	
			Online Parent Education Center	Multi-sessions and online parenting education programs at no cost			
			The Korean Parent School	Distributed leaflets related to parenting education and videos via mass media to promote parenting education to the general public Information about parenting including activity suggestions for fathers and parenting-related resources for parents.			
			Divorcing Parents	Divorcing parents with minor children have to attend a parenting education session	Family Courts		

¹ Lee, J., & Son, S. (2018). Family life education in South Korea. In *Global perspectives on family life education* (pp. 17-31). Springer, Cham.

				offered in the courts			
			Adoptive Parents	Parents who adopt a child through adoption agencies are mandated to attend a multi-session, 8-h parenting education program	developed by the Ministry of Health and Welfare has worked with family professionals		
	Taiwan	Cultural tradition and values (Confucianism and patriarchalism) may be held strongly by the general public as well as the law enforcers when dealing with family issues		(Only FLE is discussed and PE is not particularly discussed)			Hwang (2018) ¹
	Singapore	During the postpartum period, short hospital stays limit the availability of support and	Supportive educational parenting program (SEPP)	The SEPP adopted a 3-step approach, including (1) a 30-min telephone-based antenatal educational session, (2) a 60-min telephone-based immediate postnatal educational session, and (3) a mobile health		Telephone-based educational sessions and a mobile health app	Shorey (2019) ²

¹ Hwang, S. H. (2018). Family life education in Taiwan. In *Global perspectives on family life education* (pp. 49-62). Springer, Cham.

² Shorey, S., Ng, Y. P. M., Ng, E. D., Siew, A. L., Morelius, E., Yoong, J., & Gandhi, M. (2019). Effectiveness of a technology-based supportive educational parenting program on parental outcomes (part 1): randomized controlled trial. *Journal of medical Internet research*, 21(2), e10816.

		time to be well equipped with parenting and infant care skills.		(mHealth) app follow-up educational session made available for 4 weeks postpartum. Individual usernames, masking the parents' identities, and passwords were issued to the parents for access to the mHealth app		follow-up session.	
	Thailand	rural to urban migration lead missing of informal passing of knowledge and practice within families, decline in relevance of Buddhism, Increase in Divorce, Early Marriage, Teen Births, Intimate violence, same-sex marriage, and consumerism.	Thai Family Matters	Evidence-based parenting education program for prevention of substance abuse and was translated, culturally adapted in Bangkok. Low-cost, school-based program for 13- to 14- year-olds that involves five parenting booklets being mailed out with follow-up calls by health educators.			Solheim & Wachwithan (2018) ¹ Kumpfer et al. (2015) ²
			Siriraj Parent Management Training (PMT)	A 7-week, 3-hour clinical program which was modified from Dr. James Windell's (1995) parent training book 8 Weeks to a Well-Behaved Child: Putting Discipline Skills to Work. The sessions include case examples, small group role			

¹ Solheim, C. A., & Wachwithan, P. (2018). Opportunities for family life education in Thailand. In *Global perspectives on family life education* (pp. 63-73). Springer, Cham.

² Kumpfer, K. L., Pinyuchon, M., Baharudin, R. B., Kannikar, N & Xie, J. (2015). Parenting Education in the Asian Pacific Region. In Ponzetti, J. (Ed.) *Evidence-based Parenting Education* (pp. 131-148). Routledge.

				plays, and homework assignments.			
	India	India is among the poorest countries in the world with 30% of its population living below the international poverty line. High fertility rates which are closely related to education levels and socioeconomic development		(Only FLE is discussed and PE is not particularly discussed)			Bhangaokar & Pandya (2018) ¹
	Australia	Immigration and family dysfunction due to the different cultural values. Between 1986 and	The Early Years Centres (EYC)	One-stop-shops or service hubs supporting the health, development, wellbeing and safety of families who have young children aged up to eight years.	Funded by the Queensland Government and run by the Benevolent Society, Australia's first and oldest charity.		Kumpfer et al. (2015) ² The Benevolent

¹ Bhangaokar, R., & Pandya, N. (2018). Family life education in India: Policies and prospects. In *Global perspectives on family life education* (pp. 75-89). Springer, Cham.

² Kumpfer, K. L., Pinyuchon, M., Baharudin, R. B., Kannikar, N & Xie, J. (2015). Parenting Education in the Asian Pacific Region. In Ponzetti, J. (Ed.) *Evidence-based Parenting Education* (pp. 131-148). Routledge.

		2001, 778 percent of increase in Chinese and Hong Kong immigrants, so that 74 percent of Chinese in Australia are foreign-born.		Each EYC is located in a socio-economically disadvantaged area Besides informal, relatively unstructured groups focused on social connection and attachment, it provides a mix of programs and services such as consultation, home visiting and counseling			Society (2015) ¹ Pourliakas et al. (2016) ²
			Supported playgroups	A way to provide low intensity support to families. Also provide health and wellbeing services to parents and carers of infants and young children. typically run by a trained facilitator or coordinator and are generally delivered in a group setting on a weekly basis, with both the parent/carer and child present. Implemented in community-based services such as schools,	Australian Government		

¹ The Benevolent Society (2015). *Evaluation of Queensland Early Years Centres*. Prepared for The Benevolent Society. Victoria: Parenting Research Centre.

² Pourliakas, A., Sartore, G-M., Macvean, M. & Devine, B. (2016). *Supported playgroups for children from birth to five years*. Prepared for The Benevolent Society. Victoria: Parenting Research Centre.

				kindergartens and child health services			
	New Zealand		Incredible Years (IY)	Evidence-based programmes such as Incredible Years have been widely delivered. The IY programs had been delivered to 12,000 parents and 5,000 teachers by 2014.	Ministry of Education as part of the NZ Positive Behavior for Learning Action Plan.		Kumpfer et al. (2015) ¹
Eastern Europe	Belarus	1.4% of children social orphans - left without paternal care due to economic hardship and alcohol dependency of parents (2012)	Father School	Men whose wives are at least 4 months pregnant and fathers with a child of 0–6 months Small group format specially trained male volunteers who are fathers	Minsk Centre of Social Services to Families and Children. Belarussian, Swedish and Russian non-governmental organizations (NGOs) partnership		Daly et al. (2015) ²
			Successful Parenting	Individual consultations, parental clubs and studios in schools and other educational facilities Formed by three basic courses: ‘From Pram to School’ (for parents of children aged 0–6);	implemented under the auspices of ChildFund International and with the support of the US Agency		

¹ Kumpfer, K. L., Pinyuchon, M., Baharudin, R. B., Kannikar, N & Xie, J. (2015). In Ponzetti, J. (Ed.) Parenting Education in the Asian Pacific Region. *Evidence-based Parenting Education* (pp. 131-148). Routledge.

² Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec’nik, and M. Samms-Vaughan (2015). *Family and Parenting Support: Policy and Provision in a Global Context*. Innocenti Insight, UNICEF Office of Research, Florence.

				‘Skills of Parenting’ (for parents of children aged 5–15); and ‘Survival Strategies for Parents of Teenagers’	for International Development		
			The Better Parenting Package	A set of 89 brochures produced in printed and electronic format and distributed nationwide (have reached 500,000 parents and specialists around the country)	Implemented in Belarus with UNICEF support since 2005 and developed by national experts	Brochures in electronic format	
	Croatia	Poverty due to economic recession Limited access to quality child care due to affordability and poor modalities Large numbers of children living in childcare without adequate parental care due to poverty,	Growing Up Together	The project offers a comprehensive set of 11 workshops for a group of up to 12 parents of children aged between 1 and 4 which take place in kindergartens or other community facilities.			Daly et al. (2015) ¹
			The visit of a nurse after childbirth	Nurses visit and offer answers to parents’ questions concerning the physical care of a newborn child. One of the most widely used services for parents, and these visits are made to almost all families in Croatia			

¹ Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec’nik, and M. Samms-Vaughan (2015). *Family and Parenting Support: Policy and Provision in a Global Context*. Innocenti Insight, UNICEF Office of Research, Florence.

		family breakdown and child disability					
	Ukraine	High divorce and male death rates, single motherhood becomes a norm, and every fifth child in Ukraine is born to a woman who is not married.	The Program to Promote Competent Parenting of Children with Multisystem Developmental Disorders	Experts meet with parents once a month; make daily, 15-min calls to parents; discuss child development aspects with parents using WhatsApp cellphone application; and write journal entries 2–3 times per week. As a rule, parent education is done in small groups of parents (8–10 parents in each group). Parents work around cases that deal with interaction with the child, interaction with environment, and parental self-care	Implemented in Rehabilitation Centers The program is supported by public funds and, in some cases, by charity organizations.	Discuss child development aspects with parents using WhatsApp	Burlaka et al. (2018) ¹
Western Europe	England	The media made much of anti-social behaviour which it traces back to		Evidence-based programmes used in America and Europe (including Incredible Years, the Nurse Family Partnership and Triple P)			Daly et al. (2015) ² Roblia (2020) ³

¹ Burlaka, V., Serdiuk, O., Nickelsen, T., Tkach, B., & Khvorova, H. (2018). Family life education in Ukraine. In *Global perspectives on family life education* (pp. 329-343). Springer, Cham.

² Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec'nik, and M. Samms-Vaughan (2015). *Family and Parenting Support: Policy and Provision in a Global Context*. Innocenti Insight, UNICEF Office of Research, Florence.

³ Robila, M. (2020). *Parenting education in Europe*. Paper presented at the UNITED NATIONS Department of Economic and Social Affairs (UNDESA)

		parenting and family life. Child and family poverty are also stubbornly high and social exclusion relatively widespread.					
	Sweden	Scores for child health behaviour (healthy diet, levels of physical activity and weight) are relatively low. Proportions of children living in single-parent or stepfamilies are among the highest in Europe.	Föräldrupper	Parental education during pregnancy to first-time parents offered through parenting support groups which reach 98 per cent of the population Parenting support programmes once the child is born, often in the form of group sessions in which parents are gathered to discuss children's development and needs, and to facilitate parent networking	Provided mainly by local government (municipalities)		Daly et al. (2015) ¹

¹ Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec'nik, and M. Samms-Vaughan (2015). *Family and Parenting Support: Policy and Provision in a Global Context*. Innocenti Insight, UNICEF Office of Research, Florence.

	Norway	Fastest population growth in Europe with immigrants In 2015 alone, a total of 5480 and in 2016, 1221 children (under 18) entered the country alone.	Parent Management Training Oregon (PMTO)	A treatment program for families with children aged 3–12 who show serious behavioral challenges. A PMTO therapist meets with them weekly for about 6–9 months focusing on developing shared goals.			Baran & Jones (2018) ¹
			The Incredible Years (DUÅ)	There are sets of treatments, which take place in groups: child groups, school and day care programs, and parental programs. These programs are offered for free.			
			The International Child Development Programme (ICDP)	Offered to parents with children up to 18 years of age and often offered in multiple languages. The groups are led by instructors trained in the ICDP program			

¹ Baran, M. L., & Jones, J. E. (2018). Family and child welfare in Norway: An analysis of the welfare state's programs and services. In *Global perspectives on family life education* (pp. 297-310). Springer, Cham.

	Finland	Children with disruptive behavior show significant functional impairment at home, daycare, and in community settings.	Strongest Families Smart Website (SFSW) intervention	11-week internet-assisted parent training program, with additional weekly telephone coaching		Internet-assisted parent training program, with additional weekly telephone coaching	Sourander et al. (2018) ¹
	Ireland	Substance Abuse-there are up to 1.35 million harmful drinkers, and one in four adults have tried an illegal drug at least once in their lifetime Domestic Violence Housing is the most important issue facing Ireland:7941		Community mothers Home Start Triple P Incredible Years Strengthening families Expressive play and parenting support Preparing for life Growing child Parenting UR teen Programs vary age of child			O'Doherty (2018) ²

¹ Sourander, A., McGrath, P. J., Ristkari, T., Cunningham, C., Huttunen, J., Hinkka-Yli-Salomäki, S., ... & Lingley-Pottie, P. (2018). Two-year follow-up of internet and telephone assisted parent training for disruptive behavior at age 4. *Journal of the American Academy of Child & Adolescent Psychiatry*, 57(9), 658-668.

² O'Doherty, C. (2018). Irish family life in changing times. In *Global perspectives on family life education* (pp. 311-327). Springer, Cham.

		homeless people – 5046 adults and 2895 children					
South America	Chile	Violence, poverty and discrimination in education as key problems faced by Chilean children in the last decade.	Tiempo de Crecer(Ti me for Growing)	Two manuals for families are distributed to families. Delivered visit caregivers at home by family counsellors.	UNICEF and the Chilean Government		Daly et al. (2015) ¹
			Chile Crece Contigo	Parenting support intervention which is delivered through an informal group format Two-hour weekly sessions are conducted in a group of up to 10 parents through a course of 6-8 thematically structured meetings led by professional facilitators. A typical session combines mediation between the child and a caretaker in a free exploration environment, a guided activity to develop certain skills, and a 20–30 minute discussion with the caretaker on parenting issues	Chilean Government		

¹ Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec'nik, and M. Samms-Vaughan (2015). *Family and Parenting Support: Policy and Provision in a Global Context*. Innocenti Insight, UNICEF Office of Research, Florence.

	Brazil	Poverty and marginalization and social and regional inequalities	The Brazilian school for parents (Escola de Pais do Brasil, EPB)	part of educational activities held by Catholic schools and parishes.- Group discussion format with a coordinator. Each group participates in “Circles of Parents,” over the course of 10 weeks, with a weekly 90-min meeting.	Created by Catholic educators and described as a civil nonprofit company, with legal status, nationwide.		Bastos et al. (2018) ¹
	Colombia	Poverty, forced displacement, family violence, and early pregnancy,	Good grade parents	Implemented in each school to enhance parental involvement in children’s academic and socio emotional development	Ministry of Education, nongovernmental organizations (e.g., Network of Mothers and Fathers)		Ripoll-Núñez & Carrillo (2018) ²
			Building Protective Environments Together	Parenting education programs in public and private schools throughout the country school	Colombian Institute for Family Well-Being (CIFW)		
Africa	Jamaica	Growth in the number of female-headed households with poverty	Parent support classes	Normally set up in existing infrastructure, such as schools, health centres and libraries and offer access to information, parent	Early Childhood Commission based on the National		Daly et al. (2015) ³

¹ Bastos, A. C., Reis, W., de Carvalho, R. C., & Moreira, L. (2018). Family life education: Brazilian realities and dreams. In *Global perspectives on family life education* (pp. 249-262). Springer, Cham.

² Ripoll-Núñez, K., & Carrillo, S. (2018). Family life education in Colombia: Fostering families’ Well-being. In *Global perspectives on family life education* (pp. 279-293). Springer, Cham.

³ Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec’nik, and M. Samms-Vaughan (2015). *Family and Parenting Support: Policy and Provision in a Global Context*. Innocenti Insight, UNICEF Office of Research, Florence.

		The breakdown in family structures and relations lead sexual/physical abuse of children		support classes with a trained facilitator as well as referral services	Parenting Support Policy		
South Africa		Children make up nearly 40 per cent of South Africa's population, almost two-thirds of whom live in poverty	Home visiting to promote early childhood development-	Community members are trained and supervised in the task of visiting expectant and new mothers regularly over a period of one year, to offer support through listening, guidance and giving information on a range of topics.	Established by voluntary organizations		Daly et al. (2015) ¹
		Poor mental health among adults and their coping strategies result in domestic violence, residential insecurity, alcohol and drug abuse, and weak family and community	Group-based parent training courses	Run as independent services by NGOs and businesses, tend to be concentrated in urban areas, and are scattered unevenly across the country	Independent services by NGOs and businesses		
			Intensive parenting programs to reduce child risk (e.g., Philani Project, Sinovuyo	Currently operational as trials in three locations only, based on evidence-based programmes used in America and Europe (including Incredible Years, the Nurse Family Partnership and Triple P), and adapted for the South African social, economic and cultural context	The South African Government, scholars, and influential international organizations, such as WHO and UNICEF		

¹ Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec'nik, and M. Samms-Vaughan (2015). *Family and Parenting Support: Policy and Provision in a Global Context*. Innocenti Insight, UNICEF Office of Research, Florence.

		support networks.	Caring Families Programme, Sinovuyo Teens Programme)			
Algeria	After the 1990s, a phase of serious political and security instability, commonly known in Algeria as ‘the black decade’, children’s right to equality, healthcare, an education, as well as protection from all types of violence have been gradually reinforced in the body of the Algerian		Childrearing and Family Education is done in Islam (e.g, how the religion says how to live and how to raise children)			Tiliouine & Achoui (2018) ¹

¹ Tiliouine, H., & Achoui, M. (2018). Family characteristics and family life education in Algeria. In *Global perspectives on family life education* (pp. 117-133). Springer, Cham.

		existing legislation.					
	Tanzania	The vulnerability of families has been on the rise due to high death rates especially with the increase in HIV/AIDS 18% of children under age 18 years old do not live with either biological parent or orphans		(not particularly discussed)			Eustace et al. (2018) ¹
	Kenya	The biggest barriers is opposition from religious bodies especially against sex education.		(not particularly discussed)			Kabaria-Muriithi et al. (2018) ²

¹ Eustace, R. W., Nyamhanga, T. M., Ghuhiya, A. I., & Mushy, S. E. (2018). Family life education development, implementation, and evaluation in Tanzania. In *Global perspectives on family life education* (pp. 135-151). Springer, Cham.

² Kabaria-Muriithi, J., Kathuri-Ogola, L., & Njue, J. R. (2018). Family life education in Kenya. In *Global perspectives on family life education* (pp. 153-163). Springer, Cham.

	Ghana	Not seeking help for domestic violence, considering seeking maternal health care as an unnatural thing based on their traditional and cultural beliefs and values.		(not particularly discussed)			Asiedu & Donkor (2018) ¹
Middle East	Israel	High rates of poverty, single-parent families and divorce Children and Violence -16% of the children in Israel at risk (for physical and emotional abuse, sexual abuse, neglect, risk behaviors)	Mother to Mother in the Community	A voluntary project utilizing experienced mothers volunteering to support and empower new mothers who are coping with physical and emotional difficulties during their transition into motherhood. Volunteers are sent to the home of new mothers once a week for 2 h modeling caring for the infant.			Ritblatt & Rosental (2018) ²
			Camps for Mothers	For mothers in families coping with multiple stressors, burdens of life, and distress, for which	Operated by the social services departments		

¹ Asiedu, G. B., & Donkor, E. (2018). Family Life Education: A Ghanaian Perspective. In *Global perspectives on family life education* (pp. 165-177). Springer, Cham.

² Ritblatt, S. N., & Rosental, E. (2018). Socioeconomic, historical, and cultural context of Israel and impact on the families. In *Global perspectives on family life education* (pp. 363-379). Springer, Cham.

				<p>the camps are an opportunity for enrichment and respite.</p> <p>offered in two models: day camps (4 days) or camps with accommodation (3 days) operated by the social services departments.</p>			
	Soudi Arabia	<p>High divorce rate:(1) over 80% of Saudi divorces happened in the first 3 years of marriage, (2) around 70% of the court cases were related to family issues, (3) 80% of children in the social welfare institutes had parents who were divorced, and (4) approximately 40% of the individuals who</p>		(not particularly discussed)			Almalki & Ganong (2018) ¹

¹ Almalki, S., & Ganong, L. (2018). Family life education in Saudi Arabia. In *Global perspectives on family life education* (pp. 381-396). Springer, Cham.

		received social security were divorced women					
		Mothers of children with autism spectrum disorder (ASD) report high levels of stress and lower levels of well-being	Unnamed	One face-to-face session (60 min) and four virtual sessions (30 min each) delivered using WhatsApp.		Four virtual sessions (30 min each) delivered using WhatsApp.	Hemdi, & Daley (2017) ¹
	Turkey	The rapid social change with modernization process: increase in divorce rates; the increase in single-parent families; a violation of rights regarding women and children; the	Mother-Child Education Program.	Applied in public education centers and community centers	Developed by experts from the Mother Child Education Foundation (AÇEV) The collaboration of AÇEV-Ministry of National Education General Directorate of		Copur & Taylor (2018) ²

¹ Hemdi, A., & Daley, D. (2017). The Effectiveness of a Psychoeducation Intervention delivered via WhatsApp for mothers of children with Autism Spectrum Disorder (ASD) in the Kingdom of Saudi Arabia: A randomized controlled trial. *Child: care, health and development*, 43(6), 933-941.

² Copur, Z., & Taylor, K. D. (2018). Family life education in Turkey. In *Global perspectives on family life education* (pp. 345-359). Springer, Cham.

		increased entry of women into the workforce; and the prevalence of social violence			Apprenticeship and Non-Formal Education – Turkish Prime Ministry of Social Services and Children Protection Agency (SHÇEK).		
			Father Support Program (FSP)	<p>Aims to give support to fathers who are as important as mothers in a child’s education, yet who do not assume different responsibilities due to cultural and traditional values.</p> <p>2–2.5 hours of education one day a week for 10–12 weeks and informs mothers on how they can support fathers</p>	Collaboration with the Ministry of Family and Social Policies		
			Family Education Course Programs	Subprograms depending on the age groups (0-3, 3-6, 7-11, and 12-18)	<p>Developed with academic support from 12 partnering establishments and 6 universities.</p> <p>Applied nationwide by the Ministry of</p>		

					National Education and other ministries, official institutions/establishments, municipalities, and NGOs in collaboration with the ministry		
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Appendix C

Domains and Outcomes of Parenting Education Adapted to Technology Content and Integration in Practice

Target (Domain)	Short Term ¹	Long Term ¹	Technology-related Content area for Parenting Education ²	Technology-related Delivery for Parenting Education ³
Child-focused	<p>Emotional and behavioural development</p> <p>Involvement in education and health monitoring</p> <p>Reduced risk of maltreatment; increased safety</p> <p>Greater participation in decisions that affect child</p>	<p>Reduced rates of child poverty</p> <p>Reduced rates of mortality, stunting and wasting</p> <p>Higher immunization rates, breastfeeding, child safety</p> <p>Reduced risk of anti-social behaviour among children and adolescents</p>	<p>Safety from online Privacy, Privacy protections (e.g., COPPA, GDPR)</p> <p>Protection/action for cyberbullying</p> <p>Learning applications tailored to curriculum areas</p> <p>School communications w/ teachers</p> <p>Identifying safe & effective digital media</p>	<p>Searchable databases of vetted publications on child development topics</p> <p>Social media groups</p> <p>Content delivery: blogs, websites, social media</p>

¹Daly, M., R. Bray, Z. Bruckauf, J. Byrne, A. Margaria, N. Pec'nik, and M. Samms-Vaughan (2015). Family and Parenting Support: Policy and Provision in a Global Context, Innocenti Insight, UNICEF Office of Research, Florence.

² Developed by the author

³ Adapted from Walker, S and Rudi, J. (2014). Parenting Across the Social Ecology Facilitated by Information and Communications Technology: Implications for Research and Educational Design. *Journal of Human Sciences and Extension*. 2 (2). Available at: <http://www.jhseonline.com/#!current-issue/co3j>

			Identifying online parenting education	
Parent-focused	<p>Improved skill levels</p> <p>Improved attitudes and feelings, coping and confidence</p> <p>Improved knowledge and understanding of child development</p> <p>Improved knowledge of resources and support services available</p> <p>Engagement in social networks and community</p>	<p>Improved emotional and mental health (stress, well-being)</p> <p>Increased involvement of fathers</p> <p>Continuous involvement in the child's life (when in the child's best interest)</p>	<p>Individual technology use for well-being,</p> <p>Using social media safely</p> <p>Digital citizenship</p> <p>Monitoring the quality and quantity of screen time for self</p>	<p>Group discussions (facilitated, moderated, informal)</p> <p>Social media page</p> <p>Online parenting education or online spaces that extend interaction from face to face programs</p>
Parent-child focused	<p>Parent—child relationship</p> <p>Attachment, bonding</p> <p>Communication</p>	<p>Increase in the use of positive discipline</p> <p>Reduced rates of children's exposure to violence in the home</p> <p>Family relations</p>	<p>Conflict resolution in technology differences</p> <p>Communication strategies on safety, monitoring, mediation, based on age</p> <p>Asserting parenting styles that foster parent and child growth and relationship</p>	<p>Groups (threaded discussion)</p> <p>Social media (personal networks, group pages)</p> <p>Communication apps and SMS messaging</p> <p>Email</p>

				<p>Website information (e.g., CommonsenseMedia for Advocates)</p> <p>Online parenting education classes</p>
<p>Family condition and family functioning</p>	<p>Strengthened relationships</p> <p>Less social isolation</p> <p>Increased care role and support by other family members</p>	<p>Reduced poverty</p> <p>Reduced rates of family conflict</p> <p>Reduced rates of family breakdown</p> <p>Reduced rates of child placement in alternative care</p>	<p>Games, co-viewing, learning engagement benefits</p> <p>Family device rules (e.g., AAP Family Media Plan)</p> <p>Setting boundaries on workplace, school technology use</p> <p>Negotiating shared use of technology in spaces, by device</p> <p>“Digital cultural capital”</p> <p>Identifying safe and effective sites/apps for health care, financial management</p> <p>“smart” technologies and family well-being</p>	<p>Recommended media for family viewing, searchable databases</p> <p>Texting groups</p> <p>Videochat, texting/texting groups,</p> <p>Resources for strengthening household Internet, device access</p>
<p>Community Focused</p>	<p>Development and operation of policy, program or intervention adjusted to national conditions</p>	<p>Building up a portfolio of policies or interventions</p> <p>Building up a trained sectoral workforce or resource pool (including volunteers)</p>	<p>Advocacy for digital equity, digital privacy, net neutrality</p> <p>Industry action for safe technology</p>	<p>Groups (threaded discussion)</p> <p>Social media (personal networks, group pages)</p>

	<p>Use of volunteers</p> <p>Making available materials</p> <p>Training and capacity building of staff and volunteers</p>	<p>Change in local or national values and practices</p> <p>Reduced rates of children's exposure to violence in the community and/or locality</p>		<p>Communication apps and SMS messaging</p> <p>Email</p> <p>Website information (e.g, CommonsenseMedia for Advocates)</p>
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