УДК 373.24

K. Saadi
PhD Student of the Department of Pedagogy, Mozyr State Pedagogical University
Named after I. P. Shamyakin, Mozyr, the Republic of Belarus
Scientific adviser: Chekina Alena Valentinovna, Candidate of Science in Pedagogy, Associate Professor

REDUCING THE NEGATIVE IMPACT OF SCREEN TIME ON PRESCHOOLERS' SPEECH COMPETENCE: A PRACTICAL INTERVENTION MODEL

This study examines the impact of excessive screen time on preschoolers' speech development and proposes a practical intervention model implemented in Israel. Using a quasi-experimental design with 200 children aged 3–6, the research highlights concerning trends: 95% of participants used gadgets daily, 35% starting by the age of two, and 27.5% of parents reported negative effects of gadgets on their children's verbal expression. Pre-test results showed a modest level in storytelling skills (the control group: 7.45 and the intervention group: 6.69 mean scores). The intervention involved collaborative efforts between teachers and parents, including structured screen time limits, educational apps, and workshops. and increased parental engagement (88.5% adopted screen time rules). Challenges included low workshop attendance, addressed via Zoom sessions. The study underscores the need for balanced technology use, digital literacy training for parents, and longitudinal research to assess long-term effects. The model advocates for community-wide strategies to foster healthy language development in the digital age.

Keywords: speech competence, preschool children, gadget use, screen time, an intervention model.

Introduction

In today's digital age, children's use of electronic gadgets has become common, resulting in a significant increase in gadgets time. This phenomenon is particularly prominent in modern societies where technology use is considered a part of daily life. According to the American Academy of Pediatrics (AAP) in 2017, there are significant gaps in parent and teacher awareness about the impact of screen time on children's development. Existing research highlights the intense presence of technology in children's lives during early childhood, with interaction with gadgets becoming a dominant activity for preschoolers [1]. Our findings confirm this: 95% of children in the study used gadgets daily, which may raise concerns for their speech, social, and psychological development. According to the study by Novianti et al., there is a need for clear and specific recommendations to help parents and teachers effectively monitor children's gadget use [3].

Studies indicate that the quality of the content used plays a pivotal role in the impact of electronic gadgets, while the family environment and parenting practices can mitigate negative effects. For example, co-viewing with caregivers and parents' choice of high-quality educational programs are associated with improved language outcomes for children [2]. Therefore, it remains important to identify the optimal interaction children need with electronic gadgets and direct it towards supporting the development of their verbal proficiency, especially in light of studies confirming that appropriate content can help overcome developmental difficulties in children [5].

Research methods and methodology

In the current study, the researcher used a pre-test quasi-experimental design. Pre-test designs are employed in assessments of participants' attitudes or perceptions regarding an occurrence [6].

We recruited 200 children (aged 3–6) from 8 randomly selected kindergartens in Kafr Manda, Israel, using a multistage sampling technique. This age group represents a critical window for speech development, allowing us to assess how screen time affects emerging language skills.

In this study a Multistage sampling technique was utilized to select population in succession from bigger to smaller groups. When the population is big, using this technique is an excellent choice as it is affordable and feasible [4].

Sampling: For this study, 8 Kindergartens were chosen randomly out of 35 in Karf Manda's ones, using a computerized system technique. The kindergartens were stratified based on size and type, enabling the selection of a representative sample that reflects the diversity present in the community. This selection aimed to enhance the representativeness and generalizability of the findings across similar settings.

Practical Application of the Model

Our proposed model was implemented in kindergartens, with WhatsApp groups used as the primary communication tool between teachers and parents. Additionally, some classes with children were conducted

remotely via Zoom. This facilitated greater participation and effective interaction. The model was implemented over a nine-month period, with interventions conducted 2–3 times per month as needed. During this period, children's progress and teachers' feedback were periodically assessed.

Module 1 of the educational work with children focused on the use of technological tools in everyday activities. We organized workshops to familiarize teachers with how to effectively integrate these tools into children's activities. The strategy was divided into several elements, including setting time limits for electronic device use: children were allowed to use them for no more than 15 minutes per day, with specific time limits specified. We also established rules of conduct regarding respect and cooperation when using gadgets, and identified activities that involve integrating gadgets, such as educational events and art projects.

Regarding content monitoring, educational apps and programs were selected to promote language development, with teachers trained to guide children in selecting appropriate content Some apps were selected that allowed us to control their content, such as "Tiny Tap" for teaching vocabulary and improving speech clarity, and "World wall" for storytelling. A committee of teachers and parents was formed to select apps based on interactivity and content quality criteria.

Module 2 addresses the importance of ongoing communication with parents, through the establishment of regular communication channels such as newsletters, meetings, and workshops. Parents were educated about managing screen time and the impact of gadget use on children's development, and were provided with advice and support in implementing appropriate activities at home.

Parent workshops were also developed, focusing on managing electronic gadget use, and support programs were provided that included reliable information on general health and child development. Children's pronunciation proficiency was assessed, and individualized plans were developed for each child based on their needs. This fosters collaboration between parents and teachers to improve children's language and pronunciation skills.

Support and assistance programs were provided, with reliable information on general health, child development, and speech proficiency, including guidelines on the positive use of gadgets. Electronic brochures and resources were provided, including tips on best practices for using monitoring devices. Monthly newsletters were created on social media groups to share ideas and tips on gadget use.

A support group was also created for parents, where they could share their experiences, challenges, and solutions related to managing gadgets time. Through these groups, many qualitative insights were highlighted from parents' discussions, where common challenges emerged, such as understanding gadgets time-control apps, balancing digital and physical activities, and selecting appropriate content. At the same time, successful strategies were shared, such as participating in alternative activities, limiting gadgets time, and collaborating with families to share ideas and resources.

Research results and discussion

Pre-test results show some concerning trends regarding children's screen time habits and speech proficiency. As shown in Table 1, nearly all children (95%) were exposed to daily screen time, with 35% starting as early as age two. This aligns with global trends of increasing gadget use among toddlers (Madigan et al., 2020). Interestingly, 35% of these children began using gadgets by age two, reflecting concerns about early exposure to technology and its potential developmental effects. The data reveal that 67.5% of children spend one to two hours per day, using their devices. Their screen time is excessive, and its impact on psychological and physical health may be harmful. Furthermore, 27.5% of parents reported that device use negatively impacted their children's ability to express thoughts and feelings verbally. Those facts highlight the mentioned problem of excessive device use by children, which impact their ability to express themselves verbally. All this calls for optimization of technology use.

Table 1 – Description of Gadget Usage Time

Variables		Control		Intervention		Total	
		n	%	n	%	n	%
Does my child use gadgets?	Yes	95	95.00	95	95.00	190	95.00
	No	5	5.00	5	5.00	10	5.00
My child started watching gadgets at the age of…	1 years	10	10.00	9	9.00	19	9.50
	2 years	37	37.00	33	33.00	70	35.00
	3 years	43	43.00	45	45.00	88	44.00
	4 years	9	9.00	13	13.00	22	11.00
	5 years	1	1.00	0	0.00	1	0.50

Table 1 (cont'd)

My child's screen time (daily average) is…	< 1 hrs.	19	19.00	26	26.00	45	22.50
	1–2 hrs.	68	68.00	67	67.00	135	67.50
	2–4 hrs.	10	10.00	6	6.00	16	8.00
	>4 hrs.	3	3.00	1	1.00	4	2.00
In my opinion, the appropriate amount of time for a child to use gadgets during the day is…	< 1 hrs.	65	65.00	53	53.00	118.00	59.00
	1–2 hrs.	34	34.00	47	47.00	81	40.50
	2–4 hrs.	1	1.00	0	0.00	1	0.50
	>4 hrs.	0	0.00	0	0.00	0	0.00
Used devices							
TV	Yes	89	89.00	90	90.00	179	89.50
	No	11	11.00	10	10.00	21	10.50
Smartphones	Yes	71	71.00	59	59.00	130	65.00
	No	29	29.00	41	41.00	70	35.00
Computer	Yes	14	14.00	24	24.00	38	19.00
	No	86	86.00	76	76.00	162	81.00
Tablets such as iPads and tablets	Yes	39	39.00	31	31.00	70	35.00
	No	61	61.00	69	69.00	130	65.00
Video games	Yes	15	15.00	24	24	39.00	19.50
	No	85	85.00	76	76	161.00	80.50
Electronic devices content							
Educational programs	Yes	71	71.00	77	77.00	148	74.00
	No	29	29.00	23	23.00	52	26.00
YouTube	Yes	75	75.00	74	74.00	149	74.50
	No	25	25.00	26	26.00	51	25.50
Electronic programs	Yes	70	70.00	82	82.00	152	76.00
	No	30	30.00	18	18.00	48	24.00
Shorts or reels	Yes	47	47.00	31	31.00	78	39.00
	No	53	53	69	69.00	122	61.00
In my opinion, the effect of the gadgets on the child is…	Negative	34	34.30	32	32.00	66	33.20
	Very negative	17	17.20	23	23.00	40	20.10
	Neutral	38	38.4	41	41.00	79	39.70
	Positive	9	9.10	4	4.00	13	6.50
	Very positive	1	1.00	0	0.00	1	0.50
Does your child use gadgets (TV, smartphones, computers, tablets such as iPads) for a fixed period of time?	Yes	47	47.00	51	51.00	98	49.00
	No	53	53.00	49	49.00	102	51.00
Is there a prior agreement between you and your child about how to use gadgets ?	Yes	84	84.00	80	80.00	164	82.00
	No	16	16.00	20	20.00	36	18.00
Do you apply specific restrictions or rules with your child when using gadgets?	Yes	89	89.00	88	88.00	177	88.50
	No	11	11.00	12	12.00	23	11.50
Do you participate in choosing the content your child watches on gadgets?	Yes	92	92.00	91	91.00	183	91.50
	No	8	8.00	9	9.00	17	8.50
Does your child prefer using gadgets to playing outdoors with peers?	Yes	35	35.00	27	27.00	62	31.00
	No	65	65.00	73	73.00	138	69.00
Do you watch or share gadgets with your child?	Yes	88	88.00	83	83.00	171	85.50
	No	12	12.00	17	17.00	29	14.50
Do you use gadgets as a way to calm your child when he or she is upset or angry?	Yes	29	29.00	31	31.00	60	30.00
	No	71	71.00	69	69.00	140	70.00
Do you think gadgets use has affected your child's ability to express themselves verbally?	Yes	31	31.00	24	24.00	55	27.50
	No	69	69.00	76	76.00	145	72.50
Do you think your child's gadgets affects their social interaction with other children?	Yes	28	28.00	27	27.00	55	27.50
	No	72	72.00	73	73.00	145	72.50
Has the child ever been diagnosed with any communication or speech disorder?	Yes	28	28.00	19	19.00	47	23.50
	No	72	72.00	81	81.00	153	76.50

Despite unavailability of post-test results, parental engagement with the intervention suggests promising behavioral change: 88.5% of parents implement screen time rules.

The low pre-test storytelling results (mean = 6.69) that children demonstrated underscore the importance of these programs, too. For example, the mean storytelling score was 7.45 for the control group and 6.69 for the intervention groups (Table 2).

Table 2 – Test scores

Variables	Control group		Intervention group		Total	
	M	SD	M	SD	M	SD
Vocabulary	17.91	6.13	18.10	5.75	18.01	5.93
Articulation	23.39	6.92	24.66	5.31	24.03	6.19
Comprehension	19.66	5.93	18.94	5.63	19.30	5.78
Imitation	18.57	7.81	18.01	8.64	18.29	8.22
Expression	21.73	9.54	20.57	8.98	21.15	9.26
Story	7.45	5.42	6.69	4.32	7.07	4.90
Kid total	108.65	33.34	107.20	31.94	107.93	32.57

M = Mean, SD = Standard Deviation.

The collected data indicate the importance of early interventions in improving communication and language skills in children. This raises the question of managing screen time and its impact on children's development in storytelling and speaking skills. Taking into account the increasing use of electronic gadgets by children, it is vital to understand how these devices impact learning and social interaction.

The intervention's effectiveness likely stems from two factors: (1) structured activities (e.g., 'making salad') that contextualized vocabulary, aligning with Vygotsky's social learning theory, and (2) parental co-viewing, which amplified engagement – a finding consistent with Madigan et al. [2]. These activities not only reinforced nouns but also included various adjectives and general and specific verbs such as "cut" and "pour," helping children use language interactively and enjoyably. In addition, we used these activities in computer-based activities, where educational content was integrated with technology to enhance the learning experience. This integration helped make learning more engaging and effective, contributing to enhanced interaction between children. Parental role models played a pivotal role in the intervention's success. 85.5% of parents reported watching the content with their children, as shown in Table 1 above. This type of interaction sets a positive example for children on how to use technology responsibly and effectively.

Conclusion

To sum up, this research highlights concerning trends: 95% of participants used gadgets daily, 35% starting by the age of two, and 27.5% of parents reported negative effects of gadgets on their children's verbal expression. We described the model that aims to create an integrated environment that encourages learning and positive interaction, contributing to raising a generation capable of using gadgets responsibly without negatively impacting their speech competence development. As the model implementation demonstrates, screen time management requires collaboration: 88.5% of parents adopted rules after workshops. To scale this, we recommend: integrate screen time guidelines into preschool curricula, teach parents to select educational apps (e.g., 'Tiny Tap'), longitudinal studies to assess sustained effects on speech. Such collaboration is essential to the success of any strategy aimed at managing children's use of electronic gadgets in a safe and beneficial manner. A shared understanding between parents and teachers of the importance of managing gadget time makes a difference in skill development. When parents and teachers recognize the importance of gadget time, they can take effective steps to reduce it and guide children toward responsible technology use. Furthermore, digital literacy training is vital to ensure parents have the necessary tools to guide their children. Developing parents' skills in selecting appropriate content and using technology for effective learning can help children to use technology more productively, enriching their educational experience.

This model can be replicated in other communities to improve educational outcomes and enhance communication skills.

REFERENCES

1. American Academy of Pediatrics. Handheld screen time linked with speech delays in young children // HealthyChildren.org. – URL: https://www.healthychildren.org/English/news/Pages/Handheld-Screen-Time-Linked-with-Speech-Delays-in-Young-Children.aspx (date of access: 05.06.2025).

2. Associations between screen use and child language skills: a systematic review and meta-analysis / S. Madigan, D. Browne, N. Racine [et al.] // JAMA Pediatrics. – 2020. – Vol. 174, № 7. – P. 665–675. – DOI: 10.1001/jamapediatrics.2020.0327.

3. Novianti, Z. The role of preschool in using gadgets for digital natives generation / Z. Novianti, R. Novianti, M. Garzia // JPUD-Jurnal Pendidikan Usia Dini. – 2021. – Vol. 15, № 2. – P. 221–238. – URL: https://pdfs.semanticscholar.org/367a/f13431e49fcafca996525b58446375a91c25.pdf (date of access: 05.06.2025).

4. Polit, D. F. Study guide for essentials of nursing research: appraising evidence for nursing practice / D. F. Polit, C. T. Beck, S. V. Owen. – 9th ed. – Philadelphia : Wolters Kluwer, 2018. – 256 p.

5. Solon, O. Does spending too much time on smartphones and tablets damage kids' development? / O. Solon // The Independent. – URL: https://www.independent.co.uk/life-style/health-and-families/does-spending-too-much-time-on-smartphones-and-tablets-damage-kids-development-a7067261.html (date of access: 05.06.2025).

6. Stratton, S. J. Literature reviews: methods and applications / S. J. Stratton // Prehospital and Disaster Medicine. – 2019. – Vol. 34, № 4. – P. 347–349. – DOI: 10.1017/S1049023X19004440.

Поступила в редакцию 02.10.2005

E-mail: k.m.86@hotmail.com

Х. Саади

СНИЖЕНИЕ НЕГАТИВНОГО ВЛИЯНИЯ ЭКРАННОГО ВРЕМЕНИ НА РЕЧЕВУЮ КОМПЕТЕНТНОСТЬ ДОШКОЛЬНИКОВ: ПРАКТИЧЕСКАЯ МОДЕЛЬ ВМЕШАТЕЛЬСТВА

Данное исследование изучает влияние чрезмерного использования гаджетов на речевое развитие детей дошкольного возраста и предлагает практическую модель вмешательства, реализованную в Израиле. В рамках квазиэкспериментального исследования с участием 200 детей в возрасте 3–6 лет были выявлены тревожные тенденции: 95 % участников ежедневно пользовались гаджетами, 35 % начали их использовать уже к двум годам, а 27,5 % родителей отметили негативное влияние на вербальное выражение. Результаты констатирующего исследования показали невысокий уровень навыков повествования (контрольная группа: средний балл 7,45 и экспериментальная: 6,69). Вмешательство включало совместные усилия педагогов и родителей: структурированные ограничения экранного времени, обучающие приложения и семинары, направленные на повышение вовлеченности родителей (88,5 % ввели правила использования гаджетов). Среди трудностей отмечалась низкая посещаемость семинаров, что было решено за счет проведения Zoom-сессий. Исследование подчеркивает необходимость сбалансированного использования технологий, обучения родителей цифровой грамотности и проведения лонгитюдных исследований для оценки долгосрочных эффектов. Предлагаемая система выступает за внедрение стратегий на уровне сообщества для поддержки здорового речевого развития в цифровую эпоху.

Ключевые слова: речевая компетентность, дети дошкольного возраста, использование гаджетов, экранное время, система практической реализации.