The Impact of Screen Time on Children Physical Development.

Consideration of the effects of screen use on physical development and the exposure to digital devices. The influence technology on children's learning capabilities is a topic of growing concern. While digital gadgets offer numerous benefits, they also come with drawbacks, such as reduced physical activity and potential harm to social, emotional, and cognitive growth.

Early intervention and safety measures can be used to navigate this complex interaction effectively. The research will utilise a hybrid methodology which will combine qualitative and quantitative feedback. Data from children aged three to four will be gathered through longitudinal studies, observations, and parent/carer questionnaires. This integrated method aims to provide a thorough understanding of obtaining consent and promoting responsible digital gadget use among young children. Ensuring voluntary engagement from children and informed consent from parents/guardians is fundamental. Confidentiality, anonymity, and ethical issues are carefully considered, with a focus on minimizing harm and ensuring participant welfare. Adhering to legal and regulatory frameworks to safeguard personal information and uphold the integrity of the research process.

Screen Time

According to Hodge, Panourgia and Ventouris (2021) technology is progressing at a remarkable rate where digital devices have become a fundamental part of education and has proven to benefit everyday living. Furthermore, technology has had an influence on many areas of development and children’s ability to learn (Werling, 2020). The Piaget theory considers sensorimotor stages such as touching, noticing, hearing, the exposure to digital media may substitute screens for physical activities for children’s neurological enhancement (Gastaud *et al.,* 2023).

Twenty years ago, children would play outside by participating in self-lead activities where they were experts at making up games which become central elements of children’s lives due to the upbringing of the digital world (Alanazi and Zahra, 2019). Moreover, it is common to hear concerns about children using technology excessively in their daily lives and the link with limited exercise. Experts contend that children are not getting the opportunity to play and learn freely, while others have highlighted the advantages of technology and the opportunities it creates for learning

(Spanswick, 2016). Furthermore, technology has the power to alter human behaviour and habits in people of all ages (Agil and Nurdiantami, 2020).

The use of technology has demonstrated educational increased success rates while also providing opportunities for children to become more absorbed as well as improved information gathering. Additionally, technology creates experiential learning opportunities that can be incorporated into all academic subjects by allowing learners to work together with their peers (Costley, 2014), Additionally, health benefits such as, enhanced cognitive creativity and physical well-being has been associated with the use of digital technology (Mena, Zeng and Ye, 2023). Furthermore, Hurwitz and Schmitt (2020) suggest that early digital skill development can lay the groundwork for young children to continue developing their digital abilities throughout childhood, to provide students with the confidence to use technology effectively.

According to George *et al.* (2023) there is has been enquires about how the use of digital devices may influence children's mental and physical growth. Such as, mental capacity, sleeping habits, reading, attention span and communication skills, as well as anxiety that children experience when restrictions are enforced for the use of digital devices. Decreased concentration levels and learning abilities as well as increased rates of depression and obesity have been associated with screentime usage (Ricci *et al.,* 2022). Furthermore, Mustafaoglu *et al.* (2018) claims that digital media has an impact on psychological, emotional and social development of the children which enhances day by day.

Muppalla *et al.* (2023) claims screen use may enhance education, However, overexposure has been linked with reduced performance in school as the screen time limits the exposure to connections with children and their parents. Furthermore, evidence has indicated that young children who use screens more often have higher odds of obesity and perform worse on exams measuring cognitive, physical, and psychosocial development. These results highlight the significance of early intervention. (McNeill, 2019 cited in Veldman *et al.*, 2023).

World Health Organization (2019) have introduced guidelines for children under five to reduce screen time by creating opportunities for more active forms of play by ensuring physical play is used more. Childhood is a phase of fast development and adaptation of family living patterns. Furthermore, Children from the age of two to four

should only be exposed to one-hour of screen usage per day based on recommendations (World Health Organization, 2019). Additionally, research has suggested that three-to-four-year-olds spend an average of more than nine hours a week which exceeds the recommended usage. Also, children's initial experiences have an influence on brain functionality (Hwb, 2019).

Panjeti-Madan and Ranganathan (2023) explains children's screen time has increased due to schools moving to remote learning for a period due to the coronavirus. However, before the crisis, screen usage was lower, concerns over the potential harm that excessive screen time may do to children has appeared because of the dramatic growth (Wiederhold, 2020).

Practitioners are exposed to the complicated nature of digital usage when examining the consequences of screen usage on young children, considering both the positive and negative effects, including the long-term implications of the pandemic. Future studies should keep looking into ways to give children more opportunities to play unstructured to limit screen time and improve their development and health. Practitioners should also make sure that screen time is used wisely and in accordance with policy requirements. Welsh Government (2020) claims there are concerns about internet safety being related to the behaviour of children. Therefore, it is necessary that policies and procedures for online are created with the intention of changing user behaviour.

Methodological consideration

Research method.

This research will involve conducting observations, questionnaires, and longitudinal studies to offer a mixed approach while focussing on qualitive and quantitative feedback. Quantitative and qualitative research addresses a variety of questions while capturing various forms of data to produce more opportunities to understand the chosen subject through research (Wasti *et al.,* 2022).

Kandel (2020) defines qualitative research as subjective and employs a variety of information-gathering techniques such as, focus groups and one-on-one, in-depth interviews where quantitative research technique is a methodical approach to investigating occurrences and their relationships that work with numbers and

anything quantitative. Moreover, this research approach is either experimental or descriptive, the analysis forms relationships between variables as well as an experiment (Abuhamda, Ismail and Bsharat, 2021).

Sample

Hossan and Alhasnawi (2023) claims that the number of observations utilised to estimate a specific group of people is equivalent to the sample size. Moreover, Sharma (2023) suggests that sampling forms a part of empirical research, and a sampling design is a method that is used for the selection process for a group of individuals. Researcher's must carefully choose a small number of components. Furthermore, Bhardwaj (2019) suggests that sampling is one of the primary factors that influences the accuracy of the study, when sampling is conducted by qualified and experienced researchers, the results are more accurate. When samples are small, they require less room and equipment to study where resources are limited, sampling is the most effective method to gain the correct research. Additionally, Andrade (2020) claims when a sample size is proposed, it should be estimated. Both an excessively large and unnecessary sample as well as an excessively small sample are unethical and unscientific.

According to Summers, 1991 and Sweeney (2013, cited in Ahren and Zaščerinska, 2014) the use of probability sampling is the most effective method for choosing such a sample in educational research, as non-probability sampling cannot guarantee the creation of a population's statistic. Furthermore, the key difference between the two domains is that, whilst the non-probability sampling findings studies can only be applied to the organisation where the sample was investigated, those of probability sampling studies can be applied to the target population. The main characteristic of a probability sample is that each participant within the study has an opportunity to be included in the sample. Furthermore, a probability sample can provide a fair chance for inclusion for all. One way to achieve random sampling is to construct a sampling formula in advance and to choose a sample from it using a computer code that produces a random selection (Zikmund, 2002 cited in Taherdoost, 2018).

The appropriate sample sizes promote more effective research, producing trustworthy data while using less resources and abiding by moral standards. The computation of sample size has a direct impact on research outcomes. Studies with

exceedingly small sample sizes have problems with both internal and external validity. Inaccurate conclusions could be drawn by researchers due to the possibility that large sample numbers could transform small variations into statistically significant ones (Faber and Fonseca, 2014).

Participants

Two groups of ten children with a mixed ability between the ages three to four from a rural town in South Wales, with group A consisting of a classroom full of technology and group B will be in the outdoors with access physical activity-based equipment. The caregivers and parents will be directly involved with the open-ended questionnaires to gather information. The project is dependent on successfully recruiting and retaining participants. Locating volunteers and providing the information they need to determine whether to participate in a proposed study (Manohar *et al.,* 2018).

Observations

Observations can provide an informative data source and can be especially effective, for both inexperienced and experienced investigators, observations can provide a direct means of obtaining a deeper comprehension of real-world events (Rozsahegyi, 2019), Children will be observed to understand screen time habits in natural settings, such as schools.

Observations will assist the research to access social interactions and generate organised documentation of many formats and situations (Simpson and Tuson, 2003 cited in Cohan 2017). Furthermore, the benefit of observation as a research approach is that it offers first-hand knowledge of a condition, or event in the natural environment while also addressing the correct behaviour instead of the behaviour that has been reported (Wellington, 2020).

Participant observation can be a great technique to watch real behaviours and collect qualitative data if the observer does not alter the participant's behaviour from expectations. Oswald, Sherratt and Smith (2014) claims that the Hawthorne effect is a type of behaviour modification, which occurs when people alter their behaviour when they are aware that they are being observed or examined. The successful use of participant observation may produce innovative and thorough study results for the

researcher. When an individual's usual behaviour changes, it is known as the Hawthorne effect and can be attributed to their awareness that their actions are being observed or examined (Oswald, Sherratt and Smith ,2014).

Social psychology has thoroughly investigated the impact of a single trait's perception on an individual's overall assessment. The events, which is commonly referred to as the Halo effect, has been studied for more than a century. Over that time, discoveries have been regarded by how a person's judgement of aesthetic relates to other aspects of a person's personality such competence and reliability, which is important in social relationships (Gabrieli *et al.,* 2021).

Limitations

Kumar (2022) claims that there are constraints on observations due to the stability of the environment, which may function as a hindrance, as working in unstable environments can be challenging. The procedure is slow, expensive, and time-consuming. The observer's skill, dependability, expertise, and familiarity all affect the information gathered. It may not be feasible to see or examine everything at once and the study's scope might be restricted. Furthermore, one of the problems with observation is the observer bias, which occurs when different conclusions are drawn from actions and behaviours that are observed. Challenges emerge because the subject may be aware that they are being watched and adjust their behaviour to match what they believe the watcher wants to see. Another drawback is that there are a lot of uncontrollable factors at play, making it challenging to pinpoint the precise cause of behaviour (Lombardo, 2015, cited in Bradley, 2019).

Although utilising combined methods has many advantages, there are also some disadvantages. Lack of time, energy, and resources are the main causes of the inadequate use of mixed approach research designs. There are challenges of the research technique types and the theoretical foundation in addition to the practical problems (Hafsa, 2019).

The parents and caregivers will be involved as part of the questionnaire element of the research to understand screen time habits, the types of content the children engage with and any observed effects on behaviour and development. However, Holmes (2023) suggests that questionnaires pose difficulties with research, which are mostly related to the respondent’s completion of it. A thorough design procedure

may be able to stop the majority issues to reduce the impact if they are foreseen and designed-out during the design phase.

Longitudinal studies

In longitudinal studies, researchers use continuous or recurrent measures to follow subjects over long stretches of time often years or decades. Usually, collecting information on any combination of exposures and results both quantitative and qualitative without the use of outside influences. A more comprehensive method of research that makes it possible to comprehend the direct of change based on extended timelines (Caruana *et al.,* 2015).

Interviews

Rutledge and Hogg (2020) claims that in-depth interviews could introduce challenges even with a small sample, conducting in-depth interviews and performing the research could be costly and time-constraining due to the need for transcribing or filming services. Training is often required because the success of an interview depends on the interviewers' interpersonal and interpersonal skills. Therefore, in this research it will not be necessary to complete interviews.

Triangulation

Bell and Waters (2018) and Newby (2014) claims that triangulation is a method that gathers information from two or more sources to verify its authenticity while the researcher compares the results of one approach with those of another to verify or dispute the findings of the former by looking at the same subject from different angles. Furthermore, Roberts-Holmes (2018) has identified triangulation as a qualitative and quantitative data set which uses a special strength of mixed methods research for instance, if both sets of data agree, there is a good degree of agreement between two distinct however, complementary sources of information. This enhances the validity of findings and builds confidence in the accuracy of the research.

Researchers can employ numerous sources of evidence to corroborate or clarify their conclusions by gathering and analysing both quantitative and qualitative data. This process is known as triangulating data. Data in triangulation is widely acknowledged as a validating tool for individual method outcomes (Bergman, 2008

cited in Sharma *et al.,* 2023). Therefore, triangulation will be utilised during this research project to allow a more accurate way to produce reliable results based on the use of testing theories to obtain answers that are most accurately matched to reality (Bans-Akutey and Tiimub, 2021).

Ethical Considerations

Consent

Consent plays a role in ensuring that parents or guardians informed about the possible effects on their children during participation. The parents should be provided adequate information about the advantages and disadvantages of the research to understand the reasons for conducting the project, and to make an informed decision on whether to allow their children to participate. By obtaining voluntary consent from parents or guardians, promoting responsible and mindful use of digital devices in early childhood development (Manandhar and Joshi, 2020).

In this study, informed consent could be obtained verbally from children or informally from parents who can choose to opt out of the research and in writing from the head teacher. Throughout the course of the research, teachers could speak to the entire class to make them aware of the potential research to provide opportunities to accept or decline. Researchers should make sure the children are happy to continue by asking them to verbally confirm their well-being, using the card system and observing their body language (Department for Education, no datea).

Participants are allowed to decline at any moment, and participation is completely voluntary. Furthermore, the researcher should also remind all participants at all stages of the research if they are not sure if they have their ongoing permission. If a participant decides to withdraw consent during a research session, the researchers dispose of any recorded data that has been already collected (Government UK, 2018a).

Considering the ethical considerations related to sharing scientific data, especially concerning digital screen time, it is important to engage parents, caregivers, educators, and children in conversations about screen time and its effects on early development. This ensures that policies are shaped by the input of those directly impacted. This inclusive approach fosters a comprehensive understanding of digital

technology's benefits and risks in early childhood, facilitating more effective decision-making (Resnik, 2023).

Research integrity encompasses honesty in reporting, adherence to discipline norms, transparency in disclosing conflicts of interest and data gathering techniques, respect for all study subject and accountability for fostering a research environment that empowers staff and students (University of Wales Trinity Saint David, 2022).

A technique for confirming the accuracy of outcomes is considered as participant or responder confirmation. The validity of the results is the cornerstone of top-notch qualitative research. After receiving data or findings, participants can confirm that they are accurate and consistent with their experiences. Member checking is one method that is commonly mentioned in lists of validation techniques (Birt *et al.*, 2016).

Information sheet

The information sheet will give potential participants study details, including contact info, ethical approval, an invitation to join, voluntary participation, withdrawal procedures, study summary, risks, benefits, and data handling. Informed consent involves researchers providing participants with adequate and clear information about the study so they may decide for themselves to participate (Alderson & Morrow, 2011 cited in Arnott *et al.,* 2020).

Obtaining informed consent is useful for building trust with study participants. Consideration of participants' specific needs, such as helping with complex language. Adhering to ethical principles, being honest and prioritizing participants' well-being are areas of importance. By working at their pace, being open and respectful and fostering trust, everyone can feel comfortable participating (Walker and Solvason, 2014).

Both adults and children are subject to the consent principles. In the context and society, those who are not of legal consenting age are known as assent. However, the educated decisions children make can vary based on their capacity. British Educational Research Association supports (BERA) the United Nations Convention on the Rights of the Child it emphasises the best interests of children be prioritised

and that children who are of sufficient age establish self-interests should be able to express them (British Educational Research Association (BERA), 2024).

It is normal practice to provide cash incentives to study subjects in exchange for their involvement. This helps with recruiting however, it also raises ethical questions about excessive motivation, exploitation and biassed enrolment (Resnik, 2016). Therefore, there will not be any rewards associated within this research endeavour.

Confidentiality and Anonymity

Each participant has a right to privacy, which places an emphasis on protecting their personal information while it is being used or stored. Confidentiality should come first, even in situations when anonymous data collection is not possible. All survey data files are protected, and consent forms that have been signed are safely stored. Research participants are increasingly considered to have a right to privacy and the capacity to withhold some data, which is protected by a few laws and occurs both inside and outside of educational institutions (Bos, 2020).

Inadequate confidentiality and anonymity practices performed by the researcher not only causes participants to suffer extraordinary and unseen damage, may possibly influence how the research's overall conclusions are critically assessed. The ethical principles of confidentiality and anonymity in research ensure that participants' personal information is protected, which helps researchers get their informed consent. Research groups and organisations state that for a research process to be deemed credible, it must satisfy certain requirements (Kang and Hwang, 2023).

In most forms of qualitative research, anonymity is never fully maintained because the researcher is aware of all research participants. The participants' only assurance that their identities would be kept private in front of their colleagues and the public is confidentiality. To protect participant confidentiality, qualitative researchers may employ a variety of techniques, including codes or anonymous identities throughout data analysis (Petrova, Dewing and Camilleri, 2014).

To protect confidentiality and anonymity in research, key requirements include clear policies for handling sensitive information, secure data storage and transmission,

consent before sharing personal details, limited access to confidential records, staff education on confidentiality, regular privacy practice reviews, open communication, and prioritizing data security. These measures establish a secure environment where confidentiality and anonymity are upheld. The protocols of anonymity and confidentiality are used when collecting, analysing, and reporting participant data for a study to protect the privacy of human participants. Accuracy and integrity must be upheld when collecting data for research (Hoft, 2021).

Safeguarding forms the protection of a person's health, welfare, and right to live in safety, free from abuse and neglect. The researchers must disclose to participants any situations in which they are aware of a danger of harm to a minor or other vulnerable person, a major and urgent risk to their own safety, or a serious and immediate risk to the safety of others (Department for Education, no dateb).

Risks and Mitigations

The participants run the risk of suffering from physical injury, psychological discomfort, or embarrassment. Any disadvantages and hazards must be outlined in detail on the informed consent form. Moreover, researchers should try to minimise suffering, Children must give up time from their regular activities to participate in research. Involvement is a selfless deed that takes up their time regardless of any potential rewards, it is critical to portray involvement as a free decision. Respecting their time, talking about preferred times, planning effective activities, and expressing gratitude (Brady and Graham, 2019).

Ethical Research Involving Children (2023) discusses the strategies that can be used to decrease the discomfort experienced by children taking part in the study, making sure that any necessary child support has been accounted for both before and after the study process is necessary, while taking steps to guarantee that the distribution of the research findings does not hurt families, communities, or children. Competent research methodology, including the use of proper techniques for data collection and analysis is paramount. If incorrect improper or non-scientific methods are employed during the research process's phase of data collecting and analysis, harm may be caused because of this (Ethical Research Involving Children, 2023).

Researchers should think about the hazards to themselves and to anyone else who might be impacted by or participated in the research. Researchers should take the right actions to reduce these hazards (Queen Mary University of London, no date). In addition, social, legal, financial, reputational, and safeguarding issues are included in research ethics, concerns are among the dangers associated with research ethics. Early risk assessments conducted during the planning stage aid in determining whether project modifications are required and whether the resources currently available are adequate for risk management. These evaluations help to determine the funding proposal's expenses as well. After project approval, research-specific risk evaluations must be conducted, and ethical approval might be necessary for studies posing serious hazards to participants, investigators, or the institution (University of Essex, 2024).

The University is committed to upholding the strictest ethical norms and thoroughness in the research project. With an emphasis on fostering a research environment based on honesty, sound governance and the professional growth of the researcher and that research is carried out in accordance with professional, legal, and ethical frameworks to improve research integrity, seeking collaboration with other universities, to manage complaints of research misconduct through transparent, timely, and fair processes. Regular and transparent reviews of progress should be conducted to guarantee continuous enhancement and compliance with these standards (University of Wales Trinity Saint David ,2022).

Adhering to standards consistent with the policies, processes, and values of the university, applicable law and regulation and funding body requirements is useful when conducting collaborative research. Understanding the legal and regulatory frameworks in which the research partners operate, as well as their standard operating procedures for research management, to reduce the probability that such circumstances will arise and to be prepared to manage them when they do (University of Dundee, 2021).

The research should comply with the General Data Protection Regulation (GDPR) the research should obtain explicit consent from participants, clearly explain how

their data will be used, stored, and processed to ensure that data is kept secure and confidential. Additionally, researchers should only collect the necessary data for the research purpose and adhere to GDPR guidelines on data retention and deletion. By following GDPR regulations, researchers can conduct ethical and lawful research while safeguarding the privacy and rights of participants (Government, 2018b).

DPA and the GDPR personal data is subject to the law throughout the research project. Data protection and privacy must be incorporated into the research planning process to conduct research in a way that meets with ethical and legal criteria. Planning the results of the study is a necessity for ensuring that it is conducted in a way that complies with regulations for record keeping, data protection, and freedom of information (The University of Edinburgh, 2023).

Reference List

Abuhamda, E., Ismail, I. and Bsharat, T. (2021) 'Understanding quantitative and qualitative research methods: A theoretical perspective for young researchers', *International Journal of Research,* 8(2), pp. 71-87. DOI:10.2501/ijmr-201-5-070

Agil, H. and Nurdiantami, Y. (2020) 'The Use of Technology in Early Childhood Education: A Systematic Review', *Advances in Health Science Research*, 30. Doi:10.2991/ahsr.k.201125.045

Ahren, A. and Zaščerinska, J. (2014) 'Factors that Influence Sample Size in Educational Research', *Education in a Changing Society.* DOI: 10.15181/atee.v1i0.659

Alanazi, A. and Zahra, N. (2019) 'Digital Childhood: the Impact of Using Digital Technology on Children's Health', *International Journal of Pharmaceutical Research & Allied Sciences*, 8(3), pp. 144-154.

Andrade, C. (2020) 'Sample Size and its Importance in Research', *Indian J Psychol Med,* 42(1) doi.org/10.4103/IJPSYM.IJPSYM_504_19

Arnott, L., Martinez-Lejarreta, L., Wall, K., Blasidell, C. and Palaiologou, I. (2020) ''Reflecting on three creative approaches to informed consent with children under six', *British Educational Research Journal* ', 46(4), pp.786-810. doi.org/10.1002/berj.3619

Bans-Akutey, A. and Tiimub, B. (2021) 'Triangulation in Research', *Academic Letters*, 3392. DOI:10.20935/AL33922

Bell, J. and Waters, S. (2018) *Doing your research project : a guide for first-time researchers*. 7th edn. London:Open University Press.

Bhardwaj, P. (2019) 'Types of sampling in research', *Journal of the Practice of Cardiovascular Sciences* 5, 5, pp.157-163.

Birt, L. Scott, S. Cavers, D. Campbell, C. and Walter, F. (2016) 'Member Checking: A Tool to Enhance Trustworthiness or Merely a Nod to Validation?', *Qualitative health research*, 26(13), pp. 1802-1811. doi:10.1177/1049732316654870

Bos, J. (2020) *Research ethics for students in the social sciences*. 1st ed.,Cham: Springer Nature.

Bradley, R. (2019) 'Naturalistic Child Observation', *Gettysburg Social Sciences Review*, 5(1).

Brady, L.M. and Graham, B. (2019). *Social Research with Children and Young People: A Practical Guide* (1st ed.). Bristol University Press. https://doi.org/10.2307/j.ctv16rdcfc

British Educational Research Association (BERA). (2024). Ethical Guidelines for Educational Research (5th edn.). www.bera.ac.uk/publication/ethical guidelines-for-educational-research-2024

Caruana, E., Roman, M., Hernández-Sánchez, J. and Solli, P. (2015) 'Longitudinal studies', *Journal Thoracic Disease,* 7(11). Doi: 10.3978/j.issn.2072-1439.2015.10.63

Cohen, L., Manion, L. and Morrison, K. (2018) *Research methods in education*. 8th edn. London: Routledge.

Costley, K. (2014) *The Positive Effects of Technology on Teaching and Student Learning.* Available at: https://files.eric.ed.gov/fulltext/ED554557.pdf (Accessed: 20 April 2024).

Department for Education. (no datea) *Gaining informed consent* Available at: https://user-research.education.gov.uk/guidance/ethics-and-safeguarding/gaining-informed-consent (Accessed: 8 May 2024).

Department for Education. (no dateb) *Participant safeguarding.* Available at: https://user-research.education.gov.uk/guidance/ethics-and-safeguarding/gaining-informed-consent (Accessed: 8 May 2024).

Ethical Research Involving Children, (2023) *Ethic Guidance: Harms and Benefits.* Available at: https://childethics.com/wp-content/uploads/2013/10/ERIC-compendium-Ethical-Guidance-Harm-and-benefits-section-only.pdf (Accessed: 10 May 2024).

Faber, J and Fonseca, L-M. (2014) 'How sample size influences research outcomes' *Dental press journal of orthodontics* vol. 19,(4) 27-9. doi:10.1590/2176-9451.19.4.027-029.ebo

Gabrieli, G., Lee, A., Setoh, P. and Esposito, G. (2021) An Analysis of the Generalizability and Stability of the Halo Effect During the COVID-19 Pandemic Outbreak. *Front. Psychol.* 12:631871. doi: 10.3389/fpsyg.2021.631871

Gastaud, L., Trettium, J., Scholl, C., Rubin, B., Coelho, F., Krause, G., Ferreira, N., Matos, M., Pinheiro, R. and Quevedo, L. (2023) 'Screen time: Implications for early childhood cognitive development', *International Journal of Educational Research*, 2(2), pp.100081. doi.org/10.1016/j.earlhumdev.2023.105792

George, S., George, H., Baskar, T. and Shahul, A. (2023) 'Screens Steal Time: How Excessive Screen Use Impacts the Lives of Young People', *Partners Universal Innovative Research Publication,* 01 (02) DOI:10.5281/zenodo.10250536

Government UK, (2018a) *Getting informed consent for user research* Available at: https://www.gov.uk/service-manual/user-research/getting-users-consent-for-research#withdrawing-consent (Accessed: 8 May 2024).

Government UK, (2018b) *Managing user research data and participant privacy.* Available at: https://www.gov.uk/service-manual/user-research/managing-user-research-data-participant-privacy (Accessed: 10 May 2024).

Hafsa, N. (2019) 'Mixed Methods Research: An Overview for Beginner Researchers', *Journal of Literature, Languages and Linguistics* 58. DOI: 10.7176/JLLL

Hodge, S., Panourgia, C. and Ventouris, C. (2021) 'Teachers' perceptions of the impact of technology on children and young people's emotions and behaviours', *Department of Psychology*, DOI:10.1016/j.ijedro.2021.100081

Hoft, J. (2021) 'Anonymity and Confidentiality' in Barnes, C, and Forde D-R. (ed.) *The Encyclopedia of Research Methods in Criminology and Criminal Justice.* Oxford: John Wiley & Sons, Inc.

Holmes, A. (2023) 'The Design and Use of Questionnaires in Educational Research: a New (Student) Researcher Guide', 11(3), pp.1-5. doi.org/10.22159/ijoe.2023v11i3.47599

Hossan, D. and Alhasnawi, M. (2023) *sample size and sampling methods*. Available at: (PDF) sample size and sampling methods (researchgate.net) (Accessed: 20 April 2024).

Hurwitz, L. and Schmitt, K. (2020) 'Can children benefit from early internet exposure? Short- and long-term links between internet use, digital skill, and academic performance', *Computers & Education,*146. doi.org/10.1016/j.compedu.2019.103750

Hwb. (2019) *Screen time, technology, mental health and well-being (Education practitioners)* Available at: https://hwb.gov.wales/repository/resource/f3b8f9a0-109f-4141-b1b9-940c3ca29635/overview (Accessed: 20 Aprill 2024).

Kandel, B. (2020) 'Qualitative Versus Quantitative Research', *Marsyangdi Journal*, 1.

Kang, E. and Hwang, H-C (2023) 'The Importance of Anonymity and Confidentiality for Conducting Survey Research' *Journal of Research and Publication Ethics.* 4 (1-7) https://doi.org/10.15722/jrpe.4.1.202303.1

Kumar, A. (2022) 'Observation Method', *International Journal of Scientific Research,* 13(6), pp.1-14.

Manandhar, N. and Joshi, S-K. (2020) 'Importance of consent in the research', *International Journal of Occupational Safety and Health* 10(2):89-91 DOI:10.3126/ijosh.v10i2.33284

Manohar, N., MacMillan, F., Steiner, G. and Arora, A. (2018) 'Recruitment of Research Participants', in Liamputtong, P. (ed.) *Handbook of Research Methods in Health Social Sciences.* Singapore: Springer, pp. 1-28.

Mena, N., Zeng, N. and Ye, S. (2023) 'Editorial: The use of digital technologies in the promotion of children's health', *Children and Health*, 11. doi.org/10.3389/fped.2023.1304068

Muppalla, S., Vuppalapati, S., Pulliaghgaru, A. and Sreenivasulu, H. (2023) 'Effects of Excessive Screen Time on Child Development: An Updated Review and Strategies for Management', *Cureus,*15(6), pp. e40608. doi:10.7759/cureus.40608

Mustafaoglu, R., Zirek, E., Yasaci, Z. and Ozdincler, A. (2018) 'The Negative Effects of Digital Technology Usage on Children's Development and Health', *Addicta: The Turkish Journal on Addictions*, 5(2), pp. 13-21. Doi:10.15805/addicta.2018.5.2.0051

Newby, P. (2014) *Research methods for education*. 2nd edn. Abingdon: Routledge.

Oswald, D, Sherratt, F & Smith, S 2014. 'Handling the Hawthorne effect: The challenges surrounding a participant observer', *Review of Social Studies,* 1, (1), pp. 53-73.

Panjeti-Madan, V. and Ranganathan, P. (2023) 'Impact of Screen Time on Children's Development: Cognitive, Language, Physical, and Social and Emotional Domains', *Multimodal Technologies and Interaction,* 7(5), pp.52. doi.org/10.3390/mti7050052

Petrova, E. Dewing, J. and Camilleri, M. (2014) 'Confidentiality in participatory' *Nursing Ethics* 23(4) DOI:10.1177/0969733014564909

Queen Mary University of London. (No date) *Risk considerations.* Available at: https://www.jrmo.org.uk/performing-research/conducting-research-with-human-participants-outside-the-nhs/risk-considerations/ (Accessed: 11 May 2024).

Resnik, D. (2023) Openness in Scientific Research: A Historical and Philosophical Perspective. *Journal of open access to law*, 11(1), 132.

Resnik, D-B. (2016) 'Bioethical Issues in Providing Financial Incentives to Research Participants', *Medicolegal and bioethics*, 5, pp. 35–41. doi.org/10.2147/MB.S70416

Ricci, R., Paulo, A., Freitas, A., Ribeiro, I., Pires, I., Facina, M., Cabral, M., Parduci, N., Spegiorin, R., Bogado, S., Junior, S., Carachesti, T. and Larroque, M. (2022) 'Impacts of technology on children's health: a systematic review', *Rev Paul Pediatr,* 41, pp. e2020504. doi: 10.1590/1984-0462/2023/41/2020504

Roberts-Holmes, G. (2018) *Doing your early years research project: a step-by-step guide.* London: Sage.

Rozsahegyi, T. (2019) 'Observation' in Lambert, M. (ed). *Practical research methods in education: an early researcher's critical guide'* Abingdon: Routledge.

Rutledge, P.B. and Hogg, J.L.C. (2020) 'In-Depth Interviews', *Author Draft for International Encyclopedia of Media Psychology.* doi.org/10.1002/9781119011071.iemp0019

Sharma, L (2023) 'Choosing Appropriate Probability Sampling Designs in Research' *PriMera Scientific Medicine and Public Health,* 2(2), pp.4-21.

Sharma, L., Bidari, S., Bidari, D., Neupane, S. and Sapkota, R. (2023) 'Exploring the Mixed Methods Research Design: Types, Purposes, Strengths, Challenges, and Criticisms', *Global Academic Journal of Linguistics and Literature,* 5(1), pp.3-12. DOI: 10.36348/gajll.2023.v05i01.002

Spanswick, E. (2016) *Technology in the early years: A help or a hindrance?* Available at: https://www.daynurseries.co.uk/news/article.cfm/id/1573510/technology-a-help-or-hindrance-in-early-years#:~:text=Often%20concerns%20are%20raised%20about,learning%20opportunities%20it%20can%20provide. (Accessed: 20 April 2024).

Taherdoost, H. (2018) 'Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research', *International Journal of Academic Research in Management*, 5(2). doi.org/10.2139/SSRN.3205035

The University of Edinburgh. (2023) *Research and data protection.* Available at: https://data-protection.ed.ac.uk/guidance/specialised-guidance/research (Accessed: 10 May 2024).

University of Dundee. (2021) *Research partner due diligence policy.* Available at: https://www.dundee.ac.uk/corporate-information/research-partner-due-diligence-policy (Accessed: 11 May 2024).

University of Essex. (2024) *Research risk assessment.* Available at: https://www.essex.ac.uk/student/postgraduate-research/research-risk-assessment (Accessed: 11 May 2024).

University of Wales Trinity Saint David. (2022) *Research ethics & integrity code of practice.* Available at: https://www.uwtsd.ac.uk/research/research-integrity-and-ethics (Accessed: 11 May 2024).

Veldman, S., Altenburg, T., Chinapaw, M. and Gubbels, J. (2023) 'Correlates of screen time in the early years (0–5 years): A systematic review', *Preventive Medicine Reports,* 33. doi.org/10.1016/j.pmedr.2023.102214

Walker, R. and Solvason, C. (2014) *Success with Your Early Years Research Project*. London: SAGE Publications Ltd.

Wasti, S., Simkhada, P., Teijlingen, E. Sathian, B. and Banerjee, I. (2022) 'The Growing Importance of Mixed-Methods Research in Health', *Nepal Journal of Epidemiology*, 12(1),pp. 1175–1178. doi.org/10.3126/nje.v12i1.43633

Wellington, J.J. (2020) *Educational research: contemporary issues and practical approaches.* 2nd edn. London: Bloomsbury Academic.

Welsh Government. (2020) *Online safety toolkit for early years practitioners: Guidance.* Available at: https://hwb.gov.wales/api/storage/133eb503-0939-4418-ac43-c04877527803 (Accessed: 24 April 2024).

Werling, K. (2020) *The Effects of Technology in Early Childhood*, Master's Theses. Northwestern College, Iowa. Available at: https://nwcommons.nwciowa.edu/cgi/viewcontent.cgi?article=1248&context=education_masters (Accessed: 20 April 2024).

Wiederhold, B. (2020) 'Children's Screen Time During the COVID-19 Pandemic: Boundaries and Etiquette', *Cyberpsychology, Behavior, and Social Networking,* 23(6). doi.org/10.1089/cyber.2020.29185.bkw

World Health Organization. (2019) *To grow up healthy, children need to sit less and play more.* Available at: https://www.who.int/news/item/24-04-2019-to-grow-up-healthy-children-need-to-sit-less-and-play-more (Accessed: 20 Aprill 2024).