

Does Multisensory Play Impact Early-Childhood Language Development?

Abstract

Multisensory play is an important component in the modern early-years educational system. Encouraging children to engage activities utilising multiple senses at once facilitates greater memory retention and overall holistic growth. This study attempts to better understand the potential influence of multisensory learning on early childhood language development.

To maintain ethical fairness to the participating children, two different settings (A/B) comprised of twelve 4-year-old children (n=24) will be selected to take part in the study. Group A will be subjected to two separate multisensory-heightened activities over the course of 4 weeks. Conversely, Group B will continue their learning according to their current curriculum over the course of 4 weeks. In utilisation of the data triangulation method, the children will be assessed twice, once at the start of the study and once at the end. This will be conducted via two quantitative phonic assessments, qualitative observations, and structured guardian/teacher interviews. These data will be statistically examined, permitting analysis between the children of a respective setting, in addition to, the comparison between settings, allowing the impact of multisensory play to be directly investigated.

Throughout the entire process of study design, from conceptualisation to analysis, ethical considerations will be at the forefront of priorities, providing high-quality safety management to all participants. Prior to the study, each participant's consent will be verified via consent form. All personal information and data collected for this study will be safely stored under standard confidentiality protocol.

Key Words: Multisensory, Language Development, Early Years Education, Phonics.

Literature Review

Multisensory Play

The aim of this study is to provide an in-depth view of the impacts of childhood multisensory play on early language development.

As suggested by Crawford *et al.*, (2023) multisensory play is a form of playful activity that stimulates two or more of a child's five senses: visual, tactile, auditory, olfactory, and gustatory. Crawford *et al.*, (2023) discuss this further by suggesting that multisensory play can be considered as an improved way to engage with children, allowing them to connect their senses to what they are learning, whilst also providing them with the freedom to explore and experiment within their environment. As supported by Gascoyne (2017), multisensory play can be freely accessed through the outdoors, this minimises the 'mess' and 'noise' some practitioners may worry about. Alongside this, Gascoyne (2018) suggests that adults play a significant role in the implementation of enriching learning experiences, such as introducing children to multisensory environments, considered to be activities that provide stimulating hands-on materials, such as sand, water, and musical instruments. The concept of multisensory play was scaffolded by theorists; Montessori (2013), Fröbel, and Pestalozzi, all of which place an emphasis on the importance of first-hand sensory experiences, enabling children to learn and explore at their own pace. Arnold (2015) recommends the implementation of hands-on multisensory learning experiences within day-to-day practice as this promotes cognitive development in young minds. In addition to this, Gardner (2011) and Manja *et al.*, (2022) support the idea that greater memory retention is a key advantage to multisensory learning experiences, indicating that teachers may recommend the implementation of multisensory activities to the benefit of the children's memory retention. Alongside this, Stephen (2012) agrees, stating that neuroscience research has indicated that conceptualising is reliant on the discovery of an idea via multiple methods of learning; multisensory learning encapsulates this. As suggested by Pagliano (2012), studies conducted to investigate the advantages of multisensory play are often focused on adults and children with additional learning needs, however, the impacts it has on a child's language development is not widely researched. This is where this research project could give

a beneficial insight into the significance of multisensory play on a child's early language acquisition.

Language Development

As supported by Gervain (2018), it has been researched that even during foetal development, babies are always listening to the language spoken around them. As acknowledged by Helm *et al.*, (2023) early childhood is a period of rapid development and is an ideal time for acquiring new knowledge and skills. Chomsky (1957) discusses the concept of children possessing an innate ability to comprehend the rules of language. Vygotsky (1962) highlights the impact that language development plays on cognitive growth. He also shares that hands-on, social interactions assist children in advancing their capability to use language. Linked to this, Piaget's theory of language development (1936) supports the idea that language acquisition can facilitate children to make sense of the world around them. Alongside this, Bruner's theory (1974) suggests that playful learning facilitates linguistic growth and intellectual capacity within the early years. In addition, Yang *et al.*, (2021) suggest that acquiring language, literacy, and communication skills is significant because if this knowledge is not obtained, this can lead to future academic and everyday life difficulties. According to Al-Harbi (2020), during the early stages of life, children adopt sound patterns that they hear frequently within their communities and use these patterns to convey concepts that can be seen as new.

Barriers to Language Learning

As Gleason and Ratner (2022) suggest there are a plethora of barriers when it comes to developing language skills in the early years. For example, Georgiou and Spanoudis (2021) support the idea that children who have been diagnosed with learning difficulties, such as children with Down's Syndrome may demonstrate characteristic patterns of language development at a slower pace than typically developing children. Gleason and Ratner (2022) further explain that children with hearing impairments may also develop language skills at a slower pace than those without any impairments and may sometimes not develop any language skills at all. This is where multisensory activities may be useful; if a child is unable to use one sense, they are still able to experience enriching learning activities through their other senses.

Methodological Considerations

Research

Snyder (2019) describes the function of research as a way to acquire novel knowledge on existing topics. They further support the idea that research can be described as an academic inquiry in seeking factual, empirically tested information. Pandey and Pandey (2019) support the concept that research can be used to provide insight into previous mistakes made, allowing individuals to remove errors and instead add new information to already discovered knowledge.

Meta-Methodology

As supported by Gupta and Gupta (2022) methodology can be defined as a technique of selecting, reflecting upon, investigating, evaluating, and justifying the methods an individual uses to conduct their research. Further suggested by Erro-Garcés and Alfaro-Tanco (2020) research can be conducted in a multitude of various methodologies. It is advised by Dick and Greenwood (2015) that researchers should consider multiple approaches in answering their questions. Furthermore, as supported by Kalu and Bwalya (2017) when conducting a research project, the researcher is advised to consider the most appropriate methodologies when seeking answers to the research question. Additionally supported by Mohajan (2020) choosing suitable methodologies can build the structure for fruitful research. According to Divecha (2019) the consideration and analysis of these methodological processes can be regarded as meta-theory.

Paradigms - Qualitative and Quantitative Research

As supported by Pandey and Pandey (2021) when looking at types of research, the nature of the information can be split into two separate types. Type a) Qualitative research, and type b) Quantitative research. Both quantitative and qualitative research can be considered paradigms of methodology.

As described by Kivunja and Kuyini (2017), from an academic research standpoint, the term paradigm can be described as the researchers' view of the world. This viewpoint can be made up of a multitude of beliefs, thoughts, or perspectives, affecting the interpretation of research data. Further suggested by Rehman and Alharthi (2016),

research paradigms can be thought of as methods, patterns, or designs for carrying out research. Kivunja and Kuyini (2017) also state that paradigms are seen as useful within research as they provide researchers with ideas, and can influence what should be studied, and how that study should be carried out, along with how the concluding data collected should be understood.

Kalu and Bwalya (2017) describe qualitative research as an in-depth way to explore hypotheses when numeric measurements are difficult to obtain. Allan (2020) supports the idea that both qualitative and quantitative research methods complement each other, this is because qualitative research methods can be carried out when seeking answers to better understand the results of quantitative data collection, by providing deeper subjective reasoning from individual responses. Hennick, *et al.* (2020) share the idea that qualitative research can often be used to form theories that can be tested using further quantitative research. As suggested by Aspers and Corte (2019) qualitative methodologies can be used as tools to improve research models whilst also facilitating communication between quantitative and qualitative researchers. According to Abdalla, *et al.* (2018) one of the most popular ways of validifying qualitative research is through the strategy of triangulation. They further explain that the strategy of triangulation can be described as the use of more than one method throughout research. Triangulation can be applied to a situation where an individual wants to justify a theory, or outcome by involving two or more separate methods or sources.

Conversely to qualitative research, quantitative research involves direct numeric collection. As supported by Bloomfield and Fisher (2019), quantitative research enables the researcher to perform more objective statistical analysis, permitting greater conclusions to be drawn. This study strategy can be used to test and quantify observable hypotheses during empirical investigations. As supported by Walliman (2021), this can be done by using a range of quantifying methods, such as multi-choice questionnaires. However, Walliman (2021), further explains that quantitative research does have limitations, such as when the methodology does not provide the reasoning behind individuals' responses.

For this research project, the researcher has opted for a mixed-method approach. Both forms of paradigms have been chosen as they will provide the researcher with an in-depth, statistical insight to the research question, with additional supporting context.

When designing this research project, the researcher considered various different types of data collection methodologies. After choosing a select few that would be ideal for seeking answers to the research question, the researcher decided against sending out questionnaires to parents and teachers. This is because Theofanidis and Fountouki (2018) suggests, although quantitative research is a more reliable source of data collection, this research method has limitations. For example, Oancea and Punch (2014) implies that quantitative research does not answer the question of why something seems to be a certain way. When used ineffectively, quantitative methods can produce meaningless data outside of the defined context. In such circumstances, O'Dwyer and Bernauer (2016) suggests that qualitative methods can be used to assist effective quantitative data collection by providing a greater supportive background through subjective reasoning. Therefore, supporting qualitative data collection in this situation would be better conducted as an interview rather than a questionnaire, this allows more intricate personal views to be collected.

Methodology - Multisensory Activities

The researcher will be implementing multisensory activities within group A; however, nothing will be changed to group B's curriculum, they will be learning phonetics and the alphabet by repetition.

Over the duration of four weeks, two sets of multisensory activities will be introduced to the children in group A. These activities will take place twice a week, for two weeks per set. Before these activities take place, the researcher will note down any allergies and health conditions that the children may have, to ensure that all children are kept safe from potential risks.

The first set of activities will include edible flavoured jelly alphabet shapes. For example, the jelly letter B will be the colour yellow and will also have banana flavouring. This could strengthen the learning of the letter B with multiple sensory associations. Tuff trays filled with Crayola® silly scents sand and dough will form the second set of

activities. Alongside the sand, there will be alphabet moulds provided, allowing the children to create the letters themselves whilst activating their olfactory senses.

Throughout these activities, the researcher will ask what phonic a certain letter produces and if the children can think of an object or animal that also starts with that sound. This could stimulate letter association with correct phonic sounds; potentially building positive neuronal connections, improving language development.

Methodology - Data Collection

Sample Size

For this research project two groups comprising of twelve, four-year-old children, will be selected from two separate nursery settings in South Wales. The researcher has chosen this specific age group as this is around the time children start to understand the concept of phonetics.

Phonic Assessment

As preparation for this study, the researcher will begin by assigning each letter of the alphabet a corresponding number from one to twenty-six, for example, a = 1, z = 26. Using a random number generator, the researcher will receive ten different letters. This process will then be repeated twelve times, receiving twelve sets of ten letters. Each set of letters will be distributed at random to each individual child.

To begin the study, both groups of children will be required to undertake a one-on-one phonics assessment. This is where the researcher will have a phonics assessment sheet, to mark accordingly as the assessment goes on. An example phonics assessment sheet is presented in **Figure 1**. Each individual child will be shown ordinary cards with a letter on each individual card. The children will then be required to attempt to recite the associated phonic to the letter they are being shown. This will be marked, correct or incorrect, by the researcher with a tick or cross. The children will be individually tested twice on their specific set of letters, once at the start of the study and once at the end. This will give individual progression, allowing comparison between children in one setting. The mean average progression can then be calculated allowing comparison between both settings.

<u>Phonics Assessment Sheet</u>										
Name:					Date:.....					
Phonics	I	H	B	P	F	J	A	S	N	E
Assessment A										
06/11/2023	✓	✗	✓	✗	✗	✓	✓	✗	✓	✓
Assessment B										
04/12/2023	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓
Signed by Assessor:										

[Figure 1] – Proposed Early Years Phonics Assessment Sheet

Observation

As supported by Welsh Government (2008) there are a multitude of ways in which an individual can observe children. These can include time trackers, interaction trackers and running records.

For this specific study, after the initial phonics assessment, the researcher will conduct a running observation of both groups of children to analyse how they talk and interact with their peers. The researcher will document the observations by taking written descriptive notes and time stamps, specifically focused on the children's language interactions. When doing so, the researcher must ensure that only naturally occurring behaviour is written down. This is to reduce the risk of in-the-moment artificial bias. In turn, these observations will theoretically provide the researcher with an understanding of how well the children articulate their words, as well as demonstrate their vocabulary capacity.

Teacher and Guardian Interviews

Prior to the designing process of the interviews, the researcher wrote and sent out letters to all parents of both groups A and B, giving them the option to attend an interview. When considering where the interviews will take place, the research decided on a private, quiet room within the nursery setting.

When it came to planning the interviews, the researcher prepared a structured interview sheet with a set of questions ready to ask teachers, parents, or guardians. These questions are designed to offer the researcher insight into what stage the children's language development is at before and after the study. Questions such as, have you noticed if your child struggles with phonetics, if so, how have you noticed this and why?

The aim of the interview questions is for the researcher to gain greater supporting data directly from the children's teachers, parents, or guardians. This will provide greater insight into the children's individual responses to the study's process.

Ethical Considerations

Ethics

As supported by Hasan *et al.*, (2021), ethics can be seen as moral principles that influence an individual's behaviour or the performance of an activity. This can otherwise be known as moral principles, the identification of right and wrong. Further explained by Hasan *et al.*, (2021), ethical principles are significant when conducting research projects as they can protect the dignity and rights of any research participants. British Educational Research Association (2018) (BERA) recommends that at all stages of a research project, from planning to data analysis, academic researchers must identify and address all potential ethical issues. Therefore, the routine of ethical decision-making becomes an ongoing process throughout the study.

According to Coyne and Carter (2018) when researching for or with children, ethics are considered valuable due to children being especially vulnerable compared to adults, therefore, there are often ethical concerns around potential power dynamics. BERA (2018) shares the idea that when running studies with children, researchers hold the responsibility to uphold respectful and ethical practice for participants. As supported by UNCRC (1992) Article 3, all individuals should prioritize the best interests of the child. Additionally, when constructing a research project, Alderson and Morrow (2020) suggest that researchers are accountable for ensuring no harm comes to those participating in any research studies. BERA (2018) also supports the idea that it is the researcher's obligation to ensure that participating individuals understand, to the best of their ability, what the study consists of. Bodén (2021) suggests that it is a

requirement when conducting any research project that participants are informed of why their participation is required, what they are needed to do, what will occur to the information they provide, how the information will be utilised, and how and to whom it will be disclosed to. According to BERA (2018) researchers should be mindful when providing incentives for individuals to participate as this can be considered bribery.

As suggested by Montreuil *et al.* (2021) often within research children are ignored or suppressed for various reasons, such as adults seeing children as immature and of being lower priority in decision making. However, as stated by UNCRC (1992) Article 12, all children obtain the right to have and express their own opinions whilst being entitled to be heard. Therefore, it is the researchers' duty to listen to and understand all children's opinions and perspectives, no matter the situation.

In taking these points into consideration, when deciding on sample and group sizes, the researcher wanted to ensure that this study would be ethically sound. A barrier the researcher noticed when planning this research project was if multisensory activities were only available to half of a class within one setting. This could lead to upset in the children who were not chosen to participate, feeling left out. This is the reason the researcher has chosen to study two groups of children from two separate settings. This way the researcher can introduce multisensory activities to one entire class (group A), and the other class (group B) will experience zero changes to their day-to-day learning.

Consent

As suggested by Schnüriger (2018), consent can be identified as written or verbal permission to participate in research practice. BERA (2018) suggests that voluntary consent should be obtained at the beginning of a study and that researchers are to remain open to the possibility that for any or no reason, at any time, participants may desire to retract their consent.

For this research project, the researcher decided the most appropriate way to obtain consent from the participating children's guardians and teachers is by signed consent form. This consent form will detail what will be tested, for how long, and in what capacity the data shall be used in.

Confidentiality

As supported by Surmiak (2020), anonymity for those participating in research projects is standard ethical practice. Bos (2020) describes confidentiality as a way of protecting individuals' personal information. According to BERA (2018), it is the responsibility of the researcher to acknowledge the rights of both institutions and participants to privacy. However, BERA (2018) further explains that in some situations participants or their guardians may voluntarily relinquish their right to confidentiality. In addition to this, Bell and Waters (2018) share that anonymity may not always be possible. For example, if a study takes place within a small, shared community, it may become difficult to prevent some members of said community from becoming informed. This could be from possible observation or word of mouth from participants. Although confidentiality is a core factor in ethical research, BERA (2018) reminds researchers that if any illegal or harmful behaviour is witnessed, it may be necessary to break anonymity and inform or contact authorities.

Risk

When executing a research project, BERA (2018) suggests that researchers hold the responsibility to evaluate their duty of care with the aim of identifying any potential risks, and the ability to manage and lessen any concern or discomfort. If such situations occur, the researcher may have to reconsider the route in which the research process is taking, diminishing the possibility of harm (BERA, 2018). Further supported by BERA (2018) the more vulnerable the participant is, the more precaution and safety procedures should be in place. Before any study takes place, Smit Sibinga (2018), suggests that a discussion between the researcher and any participants or guardians is to be held to ensure everyone is aware of the potential risks that may occur throughout the research process. Moreover, Miller (2012) suggests that if any harmful situations occur during the process of the study, the participants and or guardians should be immediately informed.

When deciding on the duration of this study, the researcher has considered the risks of it being too long or too short. For instance, if the study is too long, the researcher may run the risk of the research becoming unethical. For example, the children participating in the multisensory activities may want to play with something else within the session or may get bored of doing the same thing every day for a long period of

time. The possibility of variable contamination on results can mean that the longer the study is run, the greater the risk of external factors impacting the controlled environment, reducing the reliability of the study's results. However, if the study duration is too short, this can negatively impact the amount of data the researcher will be able to collect, resulting in inconclusive data.

Data Storage

As suggested by BERA (2018), data storage can be described as a way to keep any novel knowledge or personal information discovered by researchers secure. The Data Protection Act (2018) is legislation that was implemented to protect personal information. Additionally, the legislation provides individuals peace of mind by ensuring organisations or businesses use this information fairly and that it is only used when relevant and necessary. Moreover, the legislation supports an individual's right to discover what and how much information the government and organisations store about them. Bos (2020) suggests that when implementing the rules of confidentiality, the researcher agrees to ensure the security and privacy of any personal information they have acquired during their research. Therefore, Macnish (2020) explains establishing a protected storage situation for any collected data is of utmost importance. An example of a suitable place to store data would be if an individual is using pen and paper to take note of information, the researcher is obligated to place this in a safe, cabinet, or filing situation, all of which should require a key or passcode to access.

Conclusion

In conclusion, this research proposal has argued that although multisensory play is fundamental to children's holistic growth, there is a gap within the literature on its impact on children's language development. Whilst upholding sublime ethical procedure, this research project will be carried out utilising the triangulation methodologies, ensuring that both the quantitative and qualitative data that is collected, are deemed valid. This study will grant further insight into the effect of multisensory learning on children's language development. Depending on the outcomes of this study, future research may be conducted to further investigate multisensory learning and its increased potential implementation into early years educational curricula.

Reference List:

- Al-Harbi, S.S. (2020) 'Language development and acquisition in early childhood'. *Journal of education and learning (Edulearn)*, 14(1), pp.69-73. Available at: <https://doi.org/10.11591/edulearn.v14i1.14209>.
- Alderson, P. and Morrow, V. (2020) *The ethics of research with children and young people: A practical handbook*. London: Sage.
- Allan, G. (2020) *Qualitative research*. In *Handbook for research students in the social sciences*. London: Routledge.
- Allan, G. and Skinner, C. (2020) *Handbook for research students in the social sciences*. London: Routledge.
- Arnold, T. (2015) 'Messy Play', *A Fine FACTA*, 15(1), p. 48–.
- Aspers, P. and Corte, U. (2019) 'What is qualitative in qualitative research'. *Qualitative sociology*, 42, pp.139-160. Available at: <https://doi.org/10.1007/s11133-019-9413-7>.
- Bell, J. and Waters, S. (2018) *Doing your research project : a guide for first-time researchers*. 7th edn. London: Open University Press, McGraw-Hill Education.
- Bloomfield, J. and Fisher, M.J. (2019) 'Quantitative research design'. *Journal of the Australasian Rehabilitation Nurses Association*, 22(2), pp.27-30.
- Bodén, L. (2021) 'On, to, with, for, by: ethics and children in research'. *Children's Geographies*, pp.1-16. Available at: <https://doi.org/10.1080/14733285.2021.1891405>.
- Bos, J. (2020) 'Confidentiality'. *Research ethics for students in the social sciences*, pp.149-173.
- British Educational Research Association. (2018) *Ethical Guidelines For Educational Research*. Available at: file:///C:/Users/ndown/Downloads/BERA-Ethical-Guidelines-for-Educational-Research_4thEdn_2018.pdf. (Accessed: 20th October 2023).
- Bruner, J.S. (1974) From communication to language—A psychological perspective. *Cognition*, 3(3), pp.255-287. Available at: [https://doi.org/10.1016/0010-0277\(74\)90012-2](https://doi.org/10.1016/0010-0277(74)90012-2).

Chomsky, N. (1957) *Syntactic Structures*. The Hague: Mouton & Co.

Chomsky, N. (2002) *On nature and language*. Cambridge University Press.

Coyne, I. and Carter, B. eds. (2018) *Being participatory: Researching with children and young people: Co-constructing knowledge using creative techniques*. Springer.

Crawford, B., Low, J.Y.Q. and Newman, L. (2023) 'Understanding barriers of eating unfamiliar fruits and vegetables in children using "Sensory Play": a narrative review', *International journal of food science & technology*, 58(8), pp. 4075–4087. Available at: <https://doi.org/10.1111/ijfs.16521>.

Dick, B. and Greenwood, D.J. (2015) 'Theory and method: Why action research does not separate them'. *Action Research*, 13(2), pp.194-197. Available at: <https://doi.org/10.1177/1476750315573594>.

Divecha, S. (2019) 'Integral meta-impact: Integral theory and applying it with meta-theory methodology for validation, dynamic insight, and effectiveness'. In *Integral theory and transdisciplinary action research in education* (pp. 19-44). IGI Global.

Erro-Garcés, A. and Alfaro-Tanco, J.A. (2020) 'Action research as a meta-methodology in the management field'. *International Journal of Qualitative Methods*, 19. Available at: <https://doi.org/10.1177/1609406920917489>.

Gardner, H.E. (2011) *Frames of mind: The theory of multiple intelligences*. Basic books.

Gascoyne, S. (2017) 'Patterns and attributes in vulnerable children's messy play', *European early childhood education research journal*, 25(2), pp. 272–291. Available at: <https://doi.org/10.1080/1350293X.2017.1288019>.

Gascoyne, S. (2018) *Messy play in the early years : supporting learning through material engagements*. First edition. Boca Raton, FL: Routledge.

Georgiou, N. and Spanoudis, G. (2021) 'Developmental language disorder and autism: commonalities and differences on language'. *Brain sciences*, 11(5), p.589. Available at: <https://doi.org/10.3390/brainsci11050589>.

Gervain, J. (2018) 'The role of prenatal experience in language development'. *Current Opinion in Behavioral Sciences*, 21, pp.62-67.

Gleason, J.B. and Ratner, N.B. (2022) *The development of language*. San Diego: Plural Publishing.

Gupta, A. and Gupta, N. (2022) *Research methodology*. SBPD Publications.

Hasan, N., Rana, R.U., Chowdhury, S., Dola, A.J. and Rony, M.K.K. (2021) 'Ethical considerations in research'. *Journal of Nursing Research, Patient Safety and Practise (JNRPSP)* 2799-1210, 1(01), pp.1-4.

Helm, J.H., Katz, L.G. and Wilson, R. (2023) *Young investigators: The project approach in the early years*. New York: Teachers College Press.

Hennink, M., Hutter, I. and Bailey, A. (2020). *Qualitative research methods*. London: Sage.

Kalu, F.A. and Bwalya, J.C. (2017) 'What makes qualitative research good research? An exploratory analysis of critical elements'. *International Journal of Social Science Research*, 5(2), pp.43-56. Available at: <https://doi.org/10.5296/ijssr.v5i2.10711>.

Kivunja, C. and Kuyini, A.B. (2017) 'Understanding and applying research paradigms in educational contexts'. *International Journal of higher education*, 6(5), pp.26-41.

Macnish, K. (2020) 'Privacy in research ethics'. In Iphofen, R. (ed). *Handbook of research ethics and scientific integrity*, pp.233-249. Cham: Springer.

Manja, S.A., Masnan, A.H., Che Mustafa, M. and Abdullah, N. (2022) 'Multi-Sensory Activity in Early Childhood Education: Teachers' Perception on The Importance of Activity Implementation'. *Jurnal Penyelidikan Sains Sosial (JOSSR)*, 5(16), pp.9-17.

Miller, T. (2012) *Ethics in qualitative research*. 2nd ed. London: SAGE.

Mohajan, H.K. (2020) 'Quantitative research: A successful investigation in natural and social sciences'. *Journal of Economic Development, Environment and People*, 9(4), pp.50-79.

Montessori, M. (2013) *The Montessori Method*. Transaction publishers.

Montreuil, M., Bogossian, A., Laberge-Perrault, E. and Racine, E. (2021) 'A review of approaches, strategies and ethical considerations in participatory research with children'. *International Journal of Qualitative Methods*, 20. Available at: <https://doi.org/10.1177/1609406920987962>.

- Oancea, A.E. and Punch, K.F. (2014) 'Introduction to research methods in education'. *Introduction to Research Methods in Education*, pp.1-448.
- O'Dwyer, L.M. and Bernauer, J.A. (2016) *Quantitative research for the qualitative researcher*. Thousand Oaks, California: SAGE.
- Pagliano, P. (2012) *The Multisensory Handbook: A guide for children and adults with sensory learning disabilities*. Oxon: Routledge.
- Pandey, P. and Pandey, M.M. (2021) *Research methodology tools and techniques*. Romania: Bridge Center.
- Piaget, J. (1936) *Origins of Intelligence in the Child*. London: Routledge & Kegan Paul.
- Rehman, A.A. and Alharthi, K. (2016) 'An introduction to research paradigms'. *International Journal of Educational Investigations*, 3(8), pp.51-59.
- Schnüriger, H. (2018) 'What is consent?', in Müller, A. and Schaber, P. (eds) *The Routledge handbook of the ethics of consent*. Routledge. pp. 21-31.
- Smit Sibinga, C.T. (2018) *Ensuring research integrity and the ethical management of data*. Hershey, Pennsylvania: IGI Global.
- Snyder, H. (2019) 'Literature review as a research methodology: An overview and guidelines'. *Journal of business research*, 104, pp.333-339. Available at: <https://doi.org/10.1016/j.jbusres.2019.07.039>.
- Song, D.-W. (2021) 'What is research?', *WMU journal of maritime affairs*, 20(4), pp. 407–411. Available at: <https://doi.org/10.1007/s13437-021-00256-w>.
- Stephen, C. (2012) 'Learning in early childhood.', In Jarvis, P. and Watts, M. *The Routledge international handbook of learning*. Oxon: Routledge. pp. 123-131.
- Surmiak, A. (2020) 'Should we maintain or break confidentiality? The choices made by social researchers in the context of law violation and harm'. *Journal of Academic Ethics*, 18(3), pp.229-247. Available at: <https://doi.org/10.1007/s10805-019-09336-2>.
- Theofanidis, D. and Fountouki, A. (2018) 'Limitations and delimitations in the research process'. *Perioperative Nursing-Quarterly scientific, online official journal of GORNA*, 7, pp.155-163. Available at: 10.5281/zenodo.2552022.

Vygotsky, L. (1962). *Thought and language*. Cambridge, MA: Mlt Press.

Walliman, N. (2021). *Research methods: The basics*. Routledge.

Welsh Government (2008) *Foundation Phase: Observing children*. Cardiff: Welsh Government. Available at: <https://hwb.gov.wales/storage/74f7c7cc-d337-4fd0-9604-27b3d1a5746d/observing-children.pdf>. (Accessed 20th October 2023).

Yang, N. et al. (2021) 'Language Development in Early Childhood: Quality of Teacher-Child Interaction and Children's Receptive Vocabulary Competency', *Frontiers in psychology*, 12. Available at: <https://doi.org/1>.