SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 7 | July 2024 - Peer Reviewed Journal

REVOLUTIONIZING MATH EDUCATION: THE IMPACT OF MULTIMODAL TEACHING APPROACHES

Mariefe Ambat Escalaw
Department of Education, Philippines
[2] University of Cabuyao
Orcid ID: https://orcid.org/0000-0002-3196-4764

ABSTRACT
Multimodal experiences are critical for learning in the twenty-first century, particularly those that focus on improving a learner's capacity to generate and analyze visual texts. This study used a quasi-experimental design to investigate the efficacy of a multimodal teaching technique in enhancing Grade 4 pupils' Math performance. The null hypothesis that there is no significant difference between the posttest mean score of the experimental and comparison groups is rejected, implying that the experimental comparability to the comparison group improves significantly after the posttest. Furthermore, the null hypothesis that there is no significant difference between the pretest and posttest results of the comparison group is rejected, implying that the comparison group's scores improve from pretest to posttest, as does the experimental group's. However, there is a significant improvement in the experimental group, indicating that the intervention is more effective than traditional teaching methods. The study's recommendations are as follows: teachers should continue to use multi-modal teaching approaches in their classrooms; education officials and school administrators should encourage teachers to support teachers by providing materials and professional development training in multimodal teaching approaches; and future researchers should develop and evaluate other potential characteristics or variables related to multimodal teaching approaches.
KEYWORDS: *Multimodal Teaching Approach, Grade 4 Mathematics, Quasi-Experimental Research Design, Pedagogy*

I. INTRODUCTION

Teaching is the term used to describe the act of imparting information or skills to another person (Rajagopalan, 2019: Escalaw, 2022). Giving can relate to imparting knowledge or sharing personal experiences, such in a lecture. Both art and science are viewed as important in teaching. It highlights the teacher's creativity and originality in setting up an engaging environment for students to study in the classroom. It is a science that sheds light on the rational, mechanical, or procedural steps that must be followed to guarantee successful goal attainment. Different teachers have different viewpoints on the teaching idea. Moreover, according to Paynor (2024) and Escalaw (2021) teaching is the purposeful exchange of information and experience, often structured within a field, and, more broadly, it is the act of promoting the psychological and intellectual growth of another person or a piece of artifice.

Multimodal teaching strategies use a variety of approaches and instruments to give education while accommodating diverse learning styles and preferences (Paynor, 2024). Multimodal teaching uses visual, auditory, kinesthetic, and textual elements to enhance understanding and retention, creating an inclusive, effective educational experience that accommodates diverse student needs (Paynor, 2024). Additionally, lessons are organized from fundamental to complex competencies, it is essential to ensure learners have a firm grasp of fundamental skills before moving on to more advanced competencies (Escalaw, 2021; Torres, 2021; Escalaw, 2022;. If this isn't done, tht4eacere might be learning gaps that prevent pupils from picking up new knowledge and abilities in later classes (Torres, 2021). Differentiated instruction is nevertheless beneficial for raising student achievement in math and other disciplines, despite these obstacles.

To address this issue, educators and schools employ strategies including tailored education, extra help for kids who need it, and the use of technology to enable remote learning. Notwithstanding the difficulties, it is critical to give closing the mathematics learning gap top priority in order to provide students with the skills they will need for both their academic and professional lives. According to Paynor (2024) multimodal learning theory states that we understand and retain information better when use a variety of senses, including visual, auditory, and kinesthetic.

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 7 | July 2024 - Peer Reviewed Journal

Combining these modes allows learners to experience learning in a number of ways, resulting in a diversified learning style. Djamdjuri et al. (2021) define multimodal learning as an embodied learning environment including various sensory systems and learner action systems.

Based on numerous studies made by several researchers, Several studied had been made on multimodal teaching approach in mathematics such as meaning-making with mathematics textbook (Norberg, 2022); multimodal teaching and learning with the use of technology (Papageorgiou & Lamera, 2017); multimodal approaches to math and physical education within cooperative learning to enhance social attitudes (Bassachs et al., 2022); multimodal teaching for primary students in primary school classrooms (Lian, 2020). Therefore, with multimodal teaching approach benefits and its significance to teaching and learning process, the researcher proposes to conduct this study to revisit it positive outcome to Mathematics Grade 4 learners. This study aim to determine the effectiveness of multimodal teaching approach to enhance academic performance of Grade 4 Mathematics learners.

II. METHODOLOGY

In this section, research design, participants of the study, research instruments, data gathering, data analysis and research were briefly discussed below.

Research Design

This research used qualitative research design that employs quasi-experimental designs, such as non-equivalent control group designs, play a vital role in educational research, particularly when random assignment of participants to experimental conditions is not feasible or ethical. In these designs, participants are not randomly assigned to groups, leading to potential differences between the experimental and control groups before the intervention (Creswell, 2014). Non-equivalent control group designs involve comparing an experimental group that receives the intervention with a control group that does not, but the groups are not equivalent at the outset.

Participants of the Study

The study's participants were third-grade students at one of Laguna's schools. This study utilized two sections. During enrollment, the pupils were divided into parts based on their diversity. Those who were not partnered became blind participants. They were involved in the teaching and learning process; however, data collected from blind participants was not included in the study.

Research Instrument

The study assessed how improving Grade 4 mathematics performance may be achieved by a multimodal teaching method. Based on the Most Essential Learning Competencies of the Grade 4 Mathematics Curriculum, a K–12 lesson model was developed. A Table of Specifications was produced, along with a 30-item pretest and posttest. The test's validity was confirmed by master teachers, and reliability was assessed using Cronbach's alpha. A Cronbach's alpha coefficient of 0.85 was discovered during the investigation, which is suitable for scientific purposes.

Data Gathering

The study was approved by the school administrator and parents, and participants were informed about the study's purpose and value. Interviews were recorded, and participants signed a form. If face-to-face interviews were not possible, an online platform was used. The researcher explained the study's nature and purpose, and participants were informed of the alternative.

Data Analysis

The study aimed to evaluate the impact of a multimodal teaching approach on enhancing Grade 4 mathematics performance. A K-12 teaching methodology lesson model was created, based on the Most Essential Learning Competencies of the Grade 4 Mathematics Curriculum's assigned themes for the third quarter. A 30-item pretest and posttest were conducted on Grade 4 Mathematics topics from weeks one through eight. A Table of Specifications was created and validated, including the third quarter's competencies, meeting duration, topic, number of items to be tested for each competency, item distribution, and total number of items. Participants were given formative tests after comprehensive presentations. Cronbach's alpha, a statistic measuring internal consistency reliability, was used to measure the reliability of the pretest and posttest with a result of 4.89 with is highly acceptable.

Research Ethics

The rights and welfare of study participants are protected by the strictest ethical guidelines, which must be followed in all research activities. Privacy, confidentiality, and informed consent have to be upheld during the entire investigation. Data collection, storage, and analysis must be done responsibly, and any possible conflicts of interest must be declared. It is the responsibility of researchers to publish

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 7 | July 2024 - Peer Reviewed Journal

their findings honestly and to abstain from any wrongdoing, including plagiarism, fabrication, and falsification. The study cannot begin until ethical review bodies have given their approval.

III RESULTS AND DISCUSSIONS

After the data were gathered, analysed, and evaluated, the following research findings are presented:
The pretest mean score of comparison group and experimental group is low (Mean =12.42; SD=3.29), while formative test mean score of comparison group (Mean=13.69; SD=3.77) is lower than the experimental group (Mean=22.16; SD=3.78); however in terms of posttest mean score the comparison (Mean=12.68; SD=3.78) group is a little lower than the experimental group (Mean=17.88; SD=5.21).

The t-test revealed that there is slightly significant difference between the formative test scores of comparison group to experimental group [t(58)=4.62, Mean-Diff=8.47, p-value=.0001]. Numerous academics agree with the study's findings. The significance of formative assessment in the teaching and learning process has been highlighted by educational scholars in recent times as a way to improve student learning outcomes. Formative assessment is a critical component of the teaching process that greatly enhances student learning outcomes, according to Kültür and Kutlu (2021) and Bassachs et al. (2022). In their view, formative assessment is an essential component of the teaching process rather than just an evaluation tool. It gives teachers insightful knowledge about their students' comprehension and development, which allows them to implement targeted interventions to close learning gaps and improve students' overall learning experiences.

The t-test revealed that there is slightly significant between comparison and experimental group in terms of posttest [t(58)=3.683, Mean-Diff=5.20, p-value=.043]. Additionally, the t-test on the significant difference in the pretest and posttest score of the Comparison group revealed that it is statistically significant [t(58)=3.838, Mean-Diff=2.28, p-value=.001].

The t-test on the significant difference in the pretest and posttest score of the experimental group revealed that it is statistically significant [t(58)=10.739, Mean-Diff=5.46, p-value=.000] ,which means that there is a significant effect in the posttest score of the leaners after teacher employs multi-modal teaching approach in Grade 4 Mathematics.

Summarizing the students' performance from the pretest and posttest, both groups showed improvement; however, the experimental group's notable increase and the control group's noticeable improvement highlight how crucial it is to consider the numerous factors influencing these results. Finding out if the groups receiving strategic intervention materials and the ones not receiving them have significantly different performance gains is vital. Test results are more likely to rise after the teaching and learning process, even if it is true that kids may have lower test results before the procedure. This increase can range in intensity from a slight one to a very large one.

The data shows an evenly distributed score distribution between two groups, indicating a suitable starting point. Students are divided based on pretest results. Enhancing teaching and learning can be achieved through peer collaboration and considering instructional strategies and resources (Escalaw, 2022). Real experimental study is needed to determine the impact of specific educational resources, but this study uses quasi-experimental research, which positively impacts students' teaching and learning process. This approach aligns with current educational trends and psychological research.

Multiple academics (Bernarte & Digo, 2024; N. R. D. Paynor, 2024; Guo, 2023; Philippe et al., 2020; Han et al., 2023; Dahlström 2021; Dressman, 2019; Huang, 2020; Ross et al., 2020; Ouyang et al., 2022; Escalaw et al., 2023) corroborated this result by stating that a multimodal approach to teaching integrates various sensory channels, such as visual, auditory, and kinesthetic, to improve learning experiences (Paynor, 2024; Escalaw, 2021; (N. R. D. Paynor, 2024). Educators may accommodate a variety of learning styles and foster a deeper knowledge of their pupils by including them in many modes at once. Dynamic learning environments are produced by smoothly integrating interactive activities, visual aids, and technological resources. This method encourages involvement, increases student interest, and makes it easier for students to remember the material. In the end, the multimodal method gives students the power to create their own knowledge through interactive and experience learning, producing more significant and successful learning outcomes.

CONCLUSION

The study's findings reject the null hypothesis that there is no significant difference in formative mean score between the experimental and comparison groups. The experimental group performed significantly better on the formative test than the comparison group. The posttest mean score difference was also significant. The comparison group showed an improvement from pretest to posttest results, while the experimental group showed a significant improvement from pretest to posttest results. The study suggests that teachers should

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 7 | July 2024 - Peer Reviewed Journal

adopt a multi-modal teaching approach, education officials and administrators should offer materials and professional development training, and future researchers should explore additional characteristics or variables related to this approach.

REFERENCES

1. *Ambat-Escalaw, M. (2024). THE EMERGENCE OF TECHNOLOGICAL LEADERSHIP AMID THE PANDEMIC: REALIZING POTENTIALS AND PRACTICES. EPRA International Journal of Multidisciplinary Research (IJMR), 10(5), 177-184.*
2. *Ambat-Escalaw, M. (2024). THE EMERGENCE OF TECHNOLOGICAL LEADERSHIP AMID THE PANDEMIC: REALIZING POTENTIALS AND PRACTICES. EPRA International Journal of Multidisciplinary Research (IJMR), 10(5), 177-184. https://eprajournals.com/IJMR/article/12985*
3. *Ambat-Escalaw, M. (2024). THE EMERGENCE OF TECHNOLOGICAL LEADERSHIP AMID THE PANDEMIC: REALIZING POTENTIALS AND PRACTICES. EPRA International Journal of Multidisciplinary Research (IJMR), 10(5), 177-184. https://www.eprajournal.com/index.php/IJMR/article/view/137*
4. *Anis, M., & Khan, R. (2023). Integrating Multimodal Approaches in English Language Teaching for Inclusive Education: A Pedagogical Exploration. Universal Journal of Educational Research, 2(3), 241-257.*
5. *Baraceros, E. L. (2016). Practical research 1. Manila, Philippines: Rex Book store.*
6. *Bassachs, M., Serra, T., Bubnys, R., Ortíz, D. C., & Colomer, J. (2022). Multimodal Approaches to Math and Physical Education within Cooperative Learning to Enhance Social Attitudes. Sustainability, 14(24), 16961. https://doi.org/10.3390/su142416961*
7. *Bassachs, M.; Serra, T.; Bubnys, R.; Cañabate, D.; Colomer, J. (2022). Multimodal Approaches to Math and Physical Education within Cooperative Learning to Enhance Social Attitudes. Sustainability 2022, 14, 16961. https://doi.org/10.3390/ su142416961*
8. *Bernarte, M & Digo,G.(2024). Multimodal Reading Model for a Rural Elementary School. International Journal of Social Science and Education Research Studies*
9. *Björklund, C., & Runesson Kempe, U. (2019). Framework for analysing children's ways of experiencing numbers. In Eleventh Congress of the European Society for Research in Mathematics Education (CERME11), Utrecht University, Feb 2019, Utrecht, Netherlands.*
10. *Bjørnebye, M. (2019). Pre-schoolers' ability to synchronise multiple representations of numerosity in embodiment of a countingon-strategy. In Eleventh Congress of the European Society for Research in Mathematics Education (CERME11), Utrecht University, Feb 2019, Utrecht, Netherlands*
11. *Bouchey, B., Castek, J., & Thygeson, J. (2021). Multimodal learning. In SpringerBriefs in statistics (pp. 35–54). https://doi.org/10.1007/978-3-030-58948-6_3*
12. *Burić, I., Sorić, I., Penezić, Z., Bilić-Zulle, L., & Petrovečki, M. (2016). Multimodal teaching and learning in a multicultural environment: A pilot study of students' and professors' reflections. Teaching and Teacher Education, 57, 224-236.*
13. *Creswell, J. W. (2014). Research Design: Qualitative, Quantitative and Mixed Methods Approaches (4th ed.). Thousand Oaks, CA: Sage. English Language Teaching, 12(5), 40. https://doi.org/10.5539/elt.v12n5p40*
14. *Creswell, J. W., & Creswell, C. N. (2018). Qualitative Inquiry and research design : choosing among five approaches.*
15. *Dewaele, J.-M., Chen, X., Padilla, A. M., Lake, J., & Nakano, S. (2019). The emotional and cultural integration of Chinese university students in three Anglophone countries: A mixed-methods study. Language, Culture and Curriculum, 32(2), 135-152. https://doi.org/10.1080/07908318.2019.1601133*
16. *Djamdjuri, D. S., Suseno, M., Tajuddin, S., Lustyantie, N., & Chaeruman, U. A. (2021). Multimodal approach in online EFL class Using Islamic Learning Materials: Students' perspective. IJoLE (International Journal of Language Education), 5(4), 337. https://doi.org/10.26858/ijole.v5i4.22495*
17. *Dressman, M. (2019). Multimodality and Language Learning. Mark Dressman, Randall William Sadler, 39–55. https://doi.org/10.1002/9781119472384.ch3*
18. *Eden, N. C. A., Chisom, N. O. N., & Adeniyi, N. I. S. (2024). CULTURAL COMPETENCE IN EDUCATION: STRATEGIES FOR FOSTERING INCLUSIVITY AND DIVERSITY AWARENESS. https://doi.org/10.51594/ijarss.v6i3.895*
19. *Escalaw, M.A. (2023). Teacher's Guide: How to Conduct Classroom Action Research. ISBN 978-621-06-1150-2. 15.*
20. *Escalaw, et al., (2022). The Effects of an Integrated STEM Education Approach for Online Learners in Grade 10 Mathematics: A Research Study SouthEast Asian Ministers of Education Organization Science, Technology Engineering, and Mathematics Education (SEAMEO-STEM ED) Journal*
21. *Escalaw, M. A. (2024, May 12). THE EMERGENCE OF TECHNOLOGICAL LEADERSHIP AMID THE PANDEMIC: REALIZING POTENTIALS AND PRACTICES. EPRA Journals. https://eprajournals.com/IJMR/article/12985*
22. *Escalaw, M. A. (2024, May 12). THE EMERGENCE OF TECHNOLOGICAL LEADERSHIP AMID THE PANDEMIC: REALIZING POTENTIALS AND PRACTICES. EPRA Journals. https://www.researchgate.net/publication/380517060*
23. *Escalaw, M.A. (2021). Collaborative Reflective Activity Using Collaborative Apps For New Normal Education. DepEd KITE JOURNAL. 2021*
24. *M. A., Ambat, E. J. C. T., Ambat, M. C. E. T., & Ambat, R. T. Collaborative Reflective Activity for Online Learners: Technological Pedagogical Innovation in the New Normal Education.*

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 7 | July 2024 - Peer Reviewed Journal

25. *Escalaw, M. A., Ambat, E. J. C. T., De Leon, M. M., & Orlinga, E. B. (2023). The Effects of an Integrated STEM Education Approach for Online Learners in Grade 10 Mathematics: A Research Study. Asian Journal of STEM Education*
26. *Escalaw, M.A. (2021). Crafting and Utilization of E-Learning Hub. (Abstract). Philippine Association of Institutional Research.*
27. *Escalaw, M.A., Gallego, E.I., De Guzman, G.B., & (2023). A Transformative Chronicle of Digitalization of Learning Resource in the New Normal: A Multiphase Research Design. 7th SDO Calamba Research Conference.*
28. *Escalaw, Mariefe A. (2022). Online Teacher Computer Selfefficacy and Competency.*
29. *Escalaw, Mariefe A. (2022). Technology, Pedagogy, Research and Innovation in Education (ISBN-13 979-8849675107)*
30. *Garcia, M., & Li, H. (2020). Resource limitations in multicultural education. International Journal of Teaching and Learning, 13(2), 78-92.*
31. *Handley, M. A., Lyles, C. R., McCulloch, C. E., & Cattamanchi, A. (2018). Selecting and improving Quasi-Experimental Designs in Effectiveness and Implementation research. Annual Review of Public Health, 39(1), 5–25. https://doi.org/10.1146/annurev-publhealth-040617-014128*
32. *Harris, D., & Nguyen, P. (2022). Challenges in classroom management with multimodal strategies. Education Today, 15(1), 33-47.*
33. *Lian, R. (2020).The Effects of Multimodal Teaching for Primary Students in L2 Primary School Classrooms*
34. *Magwenya, R. H., Ross, A. J., & Ngatiane, L. S. (2022). Continuing professional development in the last decade – A scoping review. Journal of Adult and Continuing Education, 29(2), 408–437. https://doi.org/10.1177/14779714221147297*
35. *Mariano, M. S., Escalaw, M., & Gallego, E. (2023). Teachers' Innovation on Reflective and Integrative (RAI) Video Lessons in Enhancing the Academic Performance of Grade 2 Learners in Araling Panlipunan. JPAIR Institutional Research, 20(1), 108-124.*
36. *Martinez-Maldonado, R., Kay, J., Buckingham Shum, S., & Yacef, K. (2019). Collocated collaboration analytics: Principles and dilemmas for mining multimodal interaction data. Human–Computer Interaction, 34(1), 1-50. https://doi.org/10.1080/07370024.2017.1338956*
37. *Mu, S., Cui, M., & Huang, X. (2020). Multimodal data fusion in learning analytics: A*
38. *Norberg, M. (2022). Young students' meaning-making when working with mathematics textbooks – A multimodal study focusing on the designed and the discovered. Research in Mathematics Education, 25(2), 194–218. https://doi.org/10.1080/14794802.2022.2045624*
39. *Norberg, M. (2022). Young students' meaning-making when working with mathematics textbooks – A multimodal study focusing on the designed and the discovered. Research in Mathematics Education, 25(2), 194–218. https://doi.org/10.1080/14794802.2022.2045624*
40. *Noroozi, O., Alikhani, I., Järvelä, S., Kirschner, P. A., Juuso, I., & Seppänen, T. (2019). Multimodal data to design visual learning analytics for understanding regulation of learning. Computers in Human Behavior, 100, 298-304. https://doi.org/10.1016/j.chb.2018.12.019*
41. *Ouyang, F., Dai, X., & Chen, S. (2022). Applying multimodal learning analytics to examine the immediate and delayed effects of instructor scaffoldings on small groups' collaborative programming. International Journal of STEM Education, 9(1). https://doi.org/10.1186/s40594-022-00361-z*
42. *Ozcan, M. (2021). Factors Affecting Students' Academic Achievement according to the Teachers' Opinion. Education Reform Journal, 6(1), 1–18. https://doi.org/10.22596/erj2021.06.01.1.18*
43. *Papageorgiou, V & Lamera, P. (2017.)MULTIMODAL TEACHING AND LEARNING WITH THE USE OF TECHNOLOGY: MEANINGS, PRACTICES AND DISCOURSES. 4th International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2017)*
44. *Papageorgiou, V & Lamera, P. (2017.)MULTIMODAL TEACHING AND LEARNING WITH THE USE OF TECHNOLOGY: MEANINGS, PRACTICES AND DISCOURSES. 4th International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2017)*
45. *Passolunghi, M. C., & Costa, H. M. (2016). Working memory and early numeracy training in preschool children. Child Neuropsychology, 22(1), 81–98.*
46. *Paynor, R. D. (2024, July 3). EXPLORING MULTIMODAL TEACHING STRATEGIES AND CULTURAL INTEGRATION LEADING THE WAY TO ENHANCE ACADEMIC ACHIEVEMENT IN ENGLISH LANGUAGE ARTS. EPRA Journals.https://eprajournals.com/IJMR/article/13515. DOI: https://doi.org/10.36713/epra17586*
47. *Paynor, N. R. D. (2024). EXPLORING MULTIMODAL TEACHING STRATEGIES AND CULTURAL INTEGRATION LEADING THE WAY TO ENHANCE ACADEMIC ACHIEVEMENT IN ENGLISH LANGUAGE ARTS. EPRA International Journal of Multidisciplinary Research, 586–590. https://doi.org/10.36713/epra17586*
48. *Philippe, S., Souchet, A. D., Lameras, P., Petridis, P., Caporal, J., Coldeboeuf, G., & Duzan, H. (2020). Multimodal teaching, learning and training in virtual reality: a review and case study. Virtual Reality & Intelligent Hardware, 2(5), 421–442. https://doi.org/10.1016/j.vrih.2020.07.008*
49. *Philippe, S., Souchet, A. D., Lameras, P., Petridis, P., Caporal, J., Coldeboeuf, G., & Duzan, H. (2020). Multimodal teaching, learning and training in virtual reality: a review and case study. Virtual Reality & Intelligent Hardware/Xuni Xianshi Yu Zhineng Yingjian, 2(5), 421–442. https://doi.org/10.1016/j.vrih.2020.07.008*
50. *Qushem, U. B., Christopoulos, A., Oyelere, S. S., Ogata, H., & Laakso, M. (2021). Multimodal technologies in precision education: providing new opportunities or adding more challenges? Education Sciences, 11(7), 338. https://doi.org/10.3390/educsci11070338*
51. *Si, Q., Hodges, T. S., & Coleman, J. M. (2022). Multimodal literacies classroom instruction for K-12 students: a review of research. Literacy Research and Instruction, 61(3), 276–297. https://doi.org/10.1080/19388071.2021.2008555*
52. *Smith, L., & Brown, R. (2021). Professional development in multimodal and culturally integrated teaching. Journal of Educational Research, 114(3), 245-260.*

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 7 | July 2024 - Peer Reviewed Journal

53. *systematic review. Sensors, 20(23), 6856*
54. *Tadese, M., Yeshaneh, A., & Mulu, G. B. (2022). Determinants of good academic performance among university students in Ethiopia: a cross-sectional study. BMC Medical Education, 22(1). https://doi.org/10.1186/s12909-022-03461-0*
55. *Torres, R. (2021). Factors Affecting the Reading Comprehension of Intermediate Level Learners: Basis for An Intervention Program*