

## The Effectiveness of a Training Program Based on Technological Innovations for Developing Spelling Skills Among Primary Stage Students

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©2026 جامعة العلوم والتكنولوجيا، المركز الرئيس عدن، اليمن. يمكن إعادة استخدام المادة المنشورة حسب رخصة مؤسسة المشاع الإبداعي شريطة الاستشهاد بالمؤلف والمجلة.

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### Abstract:

The study aimed to measure the The Effectiveness of a Training Program Based on Technological Innovations for Developing spelling writing skills Among Primary Stage Students. The study adopted a quasi-experimental approach with a one-group pretest-posttest design. The study sample consisted of (60) male and female students (30 from second grade and 30 from fourth grade), selected purposively. To achieve the study objectives, a training program based on diverse educational technologies and teaching aids (visual, audio, electronic, interactive) was developed and implemented over (8) weeks with (5) sessions per week. A spelling test was also developed to measure students' levels before and after implementing the program, and its validity and reliability were verified. The results showed statistically significant differences ( $\alpha \leq 0.05$ ) between students' mean scores in the pre and post-tests in favor of the post-test across all targeted spelling patterns. In second grade, the mean score improved from (12.8) in the pretest to (18.5) in the posttest, with an improvement rate of (44.5%). In fourth grade, the mean improved from (14.2) to (19.8), with an improvement rate of (39.4%). The results also showed that the most improved spelling patterns were: ta marbuta and ta maftuha (52% improvement), hamzas (48%), and alif lina (45%). In light of these findings, the study recommended activating the use of modern educational technologies and teaching aids in spelling instruction, training teachers to employ them effectively, providing technical infrastructure in schools, and developing interactive digital content for spelling education.

**Keywords:** Technological Innovations, Spelling writing skills, Primary education, Multisensory learning, Multimedia, Interactive learning, Learning disabilities.

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## References

- أحمد، أميمت (2024)، الصعوبات في تعلم الإملاء المسموع لدى طالبات الصف الثاني في معهد دار الأمين تربية المعلمين الإسلامية بكاندجان كاليمنتان الجنوبية، رسالت ماجستير غير منشورة، جامعة أنتاساري الإسلامية الحكومية، إندونيسيا.
- الحيلت، محمد محمود (2007)، تقنيات التعليم بين النظرية والتطبيق، عمان: دار المسيرة للنشر والتوزيع.
- الموسى، عبد الله (2008)، استخدام الحاسوب في التعليم، الرياض: مكتبة تربية الغد.
- زلفى، أحمد (2016) ترقية قدرة الكتابة باستخدام طريقة الإملاء لطلبة الصف الخامس "ج" في مدرسة الأخوة الابتدائية الإسلامية المتكاملة، ببنجرماسين، إندونيسيا.
- عاشور، راقب، والحوامة، محمد (2009)، أساليب تدريس اللغة العربية بين النظرية والتطبيق، عمان: دار المسيرة للنشر والتوزيع.
- لطيفة، لطيفة (2022)، تطبيق طريقة التعاونية جيكساو (Jigsaw) في تعليم الإملاء في الفصل العاشر في مدرسة العاليت شريفة العلوم كاتريان ويدواين عاوى السنة الدراسية 2021/2020، رسالت بكالوريوس غير منشورة، المعهد الإسلامي الحكومي فونوروغو، إندونيسيا.
- مدكور، علي أحمد (2006)، تدريس فنون اللغة العربية، القاهرة: دار الفكر العربي.
- وزارة التربية والتعليم العمانيّة (دون تاريخ)، اتجاهات تعليم الإملاء، جرى الاسترجاع من موقع أرابيسي (24 نوفمبر، 2024)، مقدمة شاملة عن الإملاء في اللغة العربية: القواعد والأهمية والتحديات، جرى الاسترجاع من
- مدونة المجلة العربية للعلوم ونشر الأبحاث. (2024، 2 نوفمبر)، أنواع الإملاء وتطبيقاته في التعليم،
- Alfifi, A.A. & Alghtani, P.O.A. (2024). Employing e-learning applications in learning difficulties programs from teachers and educational supervisors' perspective. The International Journal for Talent Development. 14 (2), 1–32.
- Al-Hidabi, Y. A., & Saleh, E. M. A. (2020). Extent of practicing creative thinking skills among students of educational technology at the University of Ibb, Yemen, when applying innovative educational technologies. The International Journal for Talent Development, 11(1), 75–94.
- Al-Kassab, A. (2024). The reality of using artificial intelligence applications in developing the teaching skills of basic stage teachers in the capital, Amman. The International Journal for Talent Development, 15(1), 1–32.
- Al Matari, A. S., et al. (2024). The effectiveness of the academic support tool (ChatGPT) on stimulating learning for A'Sharqiyah University students in the Sultanate of Oman from their point of view. The International Journal for Talent Development, 14(2), 119–141.
- Alzyodi, M. M. (2012). The role of telecommunication and information technology for the education development program towards knowledge economy in developing life skills among the students of public schools in Jordan. The International Journal for Talent Development, 3(2).
- Chandler, B. (2025, September 23). New study finds spelling instruction boosts both reading and writing for students with learning disabilities. GSU News.

- Clark, R. C., & Mayer, R. E. (2016). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning* (4th ed.). Hoboken, NJ: John Wiley & Sons.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*(4th ed.). Thousand Oaks, CA: Sage Publications.
- EdWeek. (2025, February 25). Spellcheck won't cut it. Here's why kids need spelling instruction.
- Graham, S., & Harris, K. R. (2005). Improving the writing performance of young struggling writers: Theoretical and programmatic research from the Center on Accelerating Student Learning. *The Journal of Special Education*, 39(1), 19-33.
- Graham, S., Morphy, P., Harris, K. R., Fink-Chorzempa, B., Saddler, B., Moran, S., & Mason, L. (2008). Teaching spelling in the primary grades: A national survey of instructional practices and adaptations. *American Educational Research Journal*, 45(3), 796-825.
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112.
- Heinich, R., Molenda, M., Russell, J. D., & Smaldino, S. E. (2002). *Instructional media and technologies for learning* (7th ed.). Upper Saddle River, NJ: Merrill Prentice Hall.
- Knoop-van Campen, C. A. N., Segers, E., & Verhoeven, L. (2018). The modality and redundancy effects in multimedia learning in children with dyslexia. *Dyslexia*, 24(2), 140-155.
- Learning Stewards. (n.d.). Interactive orthography. Retrieved from
- Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). New York: Cambridge University Press.
- Paivio, A. (1986). *Mental representations: A dual coding approach*. Oxford, England: Oxford University Press.
- Piaget, J. (1952). *The origins of intelligence in children*. New York: International Universities Press.
- Reading Rockets. (n.d.). How spelling supports reading.
- Reading Rockets. (n.d.). Using multimedia to support reading instruction.
- Rello, L., Bayarri, C., Ota, Y., & Pielot, M. (2015). A computer-based method to improve the spelling of children with dyslexia. arXiv.
- Saad, Y. A. Y. (2022). Effectiveness of a proposed program for using smartphones in developing the skills of functional expression among first-year secondary students in Sana'a City. *The International Journal for Talent Development*, 13(1), 79–105.
- Saleh, E. M. A., et al. (2023). The extent of awareness of the importance of using mobile learning systems among students specializing in educational technology at Taiz University in Yemen. *The International Journal for Talent Development*, 13(2), 58–78.
- Schrodt, K., FitzPatrick, E., Lee, S., McKeown, D., McColloch, A., & Evert, K. (2024). The Effects of Invented Spelling Instruction on Literacy Achievement and Writing Motivation. *Education Sciences*, 14(9), 10-20
- Seels, B. B., & Richey, R. C. (1994). *Instructional technology: The definition and domains of the field*. Washington, DC: Association for Educational Communications and Technology.

Shams, L., & Seitz, A. R. (2008). Benefits of multisensory learning. *Trends in Cognitive Sciences*, 12(11), 411-417.

Smarter Intervention. (2025, August 23). How to teach spelling using a research-based approach. Spellzone. (2024, October 30). How technology is changing the way we learn to spell.

Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Torgerson, C. J., & Elbourne, D. (2002). A systematic review and meta-analysis of the effectiveness of information and communication technology (ICT) on the teaching of spelling. *Journal of Research in Reading*, 25(2), 129-143.

Vásquez, A., Nussbaum, M., Sciarresi, E., Ochoa, X., & Plass, J. (2017). The impact of the technology used in formative assessment: The case of spelling. *Journal of Educational Computing Research*, 56(4), 483-504.