

# Carrom Board Game as Pedagogical Model to Know Rutherford Atomic Model

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**Abstract:** The use of popular game as pedagogical model helps in understanding the Rutherford atomic model well. Rutherford's atomic model can be studied by using carrom board as pedagogical model. The concept of rebound, striking of the discs in carrom board game encourages in understanding concepts of Rutherford atomic model.

**Keywords:** Rutherford atomic model, Carrom board, Rebound, Reflection, Game, Pedagogical model

## REFERENCES

- [1]. Vlachopoulos, D., Makri, (2017) A. The effect of games and simulations on higher education: a systematic literature review. *Int J Educ Technol High Educ* 14, 22 <https://doi.org/10.1186/s41239-017-0062-1>
- [2]. Dilani S. P. G., Arezou Z (2021) Video Pedagogy Theory And Practice ISBN: 978-981-33-4008-4 <https://doi.org/10.1007/978-981-33-4009-1> Springer Singapore
- [3]. Tamara G. (2020) A Review of Drama-Based Pedagogy: Activating Learning Across the Curriculum by Kathryn Dawson and Bridget Kiger Lee, *Youth Theatre Journal*, 34, 1, 107-109, <https://doi.org/10.1080/08929092.2020.1745344>
- [4]. Gail D. C, David F. T. (2009) Why Models are Advantageous to Learning Science, *Educación Química*, 20, 1, pp12-17, [https://doi.org/10.1016/S0187-893X\(18\)30003-X](https://doi.org/10.1016/S0187-893X(18)30003-X).
- [5]. Ashinoff B.K. (2014) The potential of video games as a pedagogical tool. *Frontiers in Psychology*. 5 <https://www.frontiersin.org/articles/10.3389/fpsyg.2014.01109>
- [6]. Bizami N.A., Tasir, Z., Kew, S.N. (2023) Innovative pedagogical principles and technological tools capabilities for immersive blended learning: a systematic literature review. *Educ Inf Technol* 28, 1373–1425 <https://doi.org/10.1007/s10639-022-11243-w>
- [7]. Åsa H, Claes N, Henrik R, Eva F and Daniel S (2022) Reviews of teaching methods – which fundamental issues are identified?, *Education Inquiry*, 13:1, 1-20, DOI: 10.1080/20004508.2020.1839232
- [8]. Herodotou C, Sharples M, Gaved M., Kukulska-Hulme A, Rienties B, Scanlon E, Whitelock D. (2019) Innovative Pedagogies of the Future: An Evidence-Based Selection *Frontiers in Education*, 4 <https://www.frontiersin.org/articles/10.3389/educ.2019.00113>
- [9]. Abdulrahman M D., Faruk, N, Oloyede, A.A., Surajudeen-B, Olawoyin L. A., Mejabi O.V., Imam-Fulani Y.O., Fahm, A.O. Azeez A.L. (2020) Multimedia tools in the teaching and learning processes: A systematic review, *Heliyon*, 6, 11, e05312, <https://doi.org/10.1016/j.heliyon.2020.e05312>.
- [10]. Gnanamani Simiyon, Mary Vergheese, Nancy Sagunthal J, and Nivetha B. Christmas Tree Model of Periodic Table of Chemical Elements. *Resonance , Classroom Volume* 28 Issue 3 March 2023 pp 475-478 <https://www.ias.ac.in/article/fulltext/reso/028/03/0475-0478>

- [11]. History of Physical Education, p.209, SR Tiwari, APH Publishing <https://en.wikipedia.org/wiki/Carrom>
- [12]. "The queen". *Punjabi State Carrom Association*. Retrieved 4 June 2009.
- [13]. <https://web.archive.org/web/20150216084117/http://indiancarrom.com/how-to-play.htm>
- [14]. <https://en.wikipedia.org/wiki/Carrom#/media/File:Carrom.jpg>
- [15]. Professor E. Rutherford F.R.S. (1911) LXXIX. The scattering of  $\alpha$  and  $\beta$  particles by matter and the structure of the atom, *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, 21:125, 669-688, DOI: 10.1080/14786440508637080 [https://www.tandfonline.com/doi/pdf/10.1080/14786440508637080?casa\\_token=\\_wvkSvt6q-0AAAAA:W4TcngV293pv0uG1cMS9DXsJrU5bdrAOIs9jznBj-\\_8\\_y2vL2HRGql\\_Uth8CvnbLC-yFxGagEbX1vi8y](https://www.tandfonline.com/doi/pdf/10.1080/14786440508637080?casa_token=_wvkSvt6q-0AAAAA:W4TcngV293pv0uG1cMS9DXsJrU5bdrAOIs9jznBj-_8_y2vL2HRGql_Uth8CvnbLC-yFxGagEbX1vi8y)
- [16]. [https://commons.wikimedia.org/wiki/File:Modelo\\_At%C3%B3mico\\_Ernest\\_Rutherford.svg](https://commons.wikimedia.org/wiki/File:Modelo_At%C3%B3mico_Ernest_Rutherford.svg)