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## Is There an Instructional Framework for 21st Century Learning?

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### ABSTRACT

The current schooling system is great in leveling up students' literacy but it does not develop flexible understandings of concepts. We recognize that traditional instructional science model at best develop students' attitudes, skills, and knowledge (A-S-K). We propose an instructional framework for developing dispositions, attitudes, skills, and knowledge (D-A-S-K) that embraces five zones of learning: 1) zone of instruction, 2) zone of practice, 3) zone of interaction, 4) zone of tinkering, and 5) zone of meta-cognition. The proposed framework stresses that flexible learning is about the interplay between tacit and explicit knowledge. 21<sup>st</sup> century learning is about dialectical interactions between theory and practice, individuals and communities, formal and informal learning, learners and meta-cognitive brokers. The paper focuses on conceptually constructing an instructional framework for 21<sup>st</sup> century learning. We are not suggesting that our proposed framework is the only possible instructional model for the 21<sup>st</sup> century. Rather, we hope that our proposed framework invokes further discussions to examine other models for 21<sup>st</sup> century teaching and learning. Future work is needed to implement and examine the proposed framework for practical implications.

### KEYWORDS

Instructional-Learning Framework; Disposition Development; Tacit-Explicit Knowledge Interactions; Formal- Informal Learning; Meta-Cognitive Brokering

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### References

- [1] Ainsworth, H. L., & Eaton, S. E. (2010). Formal, non-formal and informal learning in the sciences. Calgary: Onate Press.
- [2] Barab, S., Thomas, M., Dodge, T., Carteaux, R., & Tuzun, H. (2005). Making learning fun: Quest Atlantis, a game without guns. *Educational Technology Research & Development*, 53, 86-107. doi:10.1007/BF02504859
- [3] Barron, B. (2006). Interest and self-sustained learning as catalysts of development: A learning ecology perspective. *Human Development*, 49, 193-224. doi:10.1159/000094368
- [4] Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). How people learn: Brain, mind, experience, and school: Expanded edition. Washington: National Academy Press.
- [5] Brown, J. S. (2002). Learning in the digital age. In M. Devlin, R. Larson, & J. Meyerson (Eds.), *The Internet and the university: 2001 forum* (pp. 65-91). Boulder, CO: EDUCAUSE Publications.
- [6] Brown, J. S. (2005). New learning environments for the 21st century. URL (last checked 3 August 2012). <http://www.johnseelybrown.com/newlearning.pdf/>
- [7] Brown, J. S., & Alder, R. P. (2008). Minds on fire: Open education, the long tail, and learning 2.0. *EDUCAUSE Review*, 17-32.
- [8] Brown, J. S., & Duguid, P. (1996). Stolen knowledge. In H. McLellan (Ed.), *Educational technology*

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publications (pp. 47-56). Bergen, NJ: Englewood Cliffs.

- [9] Chan, C. K. K. (2008). Pedagogical transformation and knowledge-building for the Chinese learner. *Evaluation & Research in Education*, 21, 235-251. doi:10.1080/09500790802485245
- [10] Chee, Y. S. (2001). Networked virtual environments for collaborative learning. *Proceedings of ICCE/School Net 2001—9th International Conference on Computers in Education*, Seoul, November 2011, 3-11.
- [11] Chee, Y. S. (2010). Game-based learning as performance: The case of legends of Alkhimia. In B. Meyer (Ed.), *Proceedings of the 4th European Conference on Games Based Learning* (pp. 47-54). Reading: Academic Publishing.
- [12] Claxton, G., & Carr, M. (2004). A framework for teaching learning: The dynamics of disposition. *Early Years*, 24, 87-97. doi:10.1080/09575140320001790898
- [13] Collins, A. (2006). Cognitive apprenticeship. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (pp. 47-60). Cambridge: Cambridge University Press.
- [14] Cope, N. (2005). Apprenticeship reinvented: Cognition, discourse and implications for academic literacy. *Prospect*, 20, 42-62.
- [15] Corte, E. D. (2007). Learning from instruction: The case of mathematics. *Learning Inquiry*, 1, 19-30. doi:10.1007/s11519-007-0002-4
- [16] Dede, C. (2010). Comparing frameworks for 21st century skills. In J. Bellance, & R. Brandt (Eds.), *21st century skills: Rethinking how students learn* (pp. 51-76). Bloomington, IN: Solution Tree Press.
- [17] Gardener, H. (2010). Five minds for the future. In J. Bellance, & R. Brandt (Eds.), *21st century skills: Rethinking how students learn* (pp. 9-31). Bloomington, IN: Solution Tree Press.
- [18] Gwee, S., Chee, Y. S., & Tan, E. M. (2010). Assessment of student outcomes of mobile game-based learning. In S. L. Wong, et al. (Eds.), *Proceedings of the 18th International Conference on Computers in Education* (pp. 412-416). Putrajaya: Asia-Pacific Society for Computers in Education.
- [19] Hall, R. (2009). Towards a fusion of formal and informal learning environments: The impact of the Read/Write Web. *Electronic Journal of E-Learning*, 7, 29-40.
- [20] Harris, P. (2002). How the US military is reinventing learning. *Learning circuits: American society for training and development*. URL (last checked 3 August 2012). [http://www.astd.org/LC/2002/1102\\_harris.htm](http://www.astd.org/LC/2002/1102_harris.htm)
- [21] Hatano, G., & Inagaki, K. (1986). Two courses of expertise. In H. Stevenson, H. Azuma, & K. Hakuta (Eds.), *Children development and education in Japan* (pp. 262-272). New York: Freeman.
- [22] Hatano, G., & Oura, Y. (2003). Commentary: Reconceptualizing school learning using insight from expertise. *Educational Researcher*, 32, 26-29. doi:10.3102/0013189X032008026
- [23] Hung, D., Lee, S. S., & Lim, K. Y. T. (2012). Teachers as brokers: Bridging formal and informal learning in the 21st century. *KEDI Journal of Educational Policy*, 9, 69-87.
- [24] Jan, M., Chee, Y. S., & Tan, E. M. (2010). Changing science classroom discourse toward doing science: The design of a game-based learning curriculum. In S. L. Wong, et al. (Eds.), *Proceedings of the 18th International Conference on Computers in Education* (pp. 543-547). Putrajaya: Asia-Pacific Society for Computers in Education.
- [25] Jonassen, D. H., & Rohrer-Murphy, L. (1999). Activity theory as a framework for designing constructivist learning environment. *Educational Technology, Research and Development*, 47, 61-79. doi:10.1007/BF02299477
- [26] Karagiorgi, Y., & Symeou, L. (2005). Translating constructivism into instructional design: Potential and limitations. *Educational Technology & Society*, 8, 17-27.
- [27] Kennedy, P. (2002). Learning cultures and learning styles: Myth-understandings about adult (Hong Kong) Chinese learners. *International Journal of Lifelong education*, 21, 430-445. doi:10.1080/02601370210156745
- [28] Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.

- [29] Korzybski, A. (1994). *Science and sanity: An introduction to non-Aristotelian systems and general semantics* (5th ed.). New York: Institute of General Semantics.
- [30] Lee, S. S., Hung, D., Lim, K. Y. T., & Shaari, I. (in press). Learning adaptivity across contexts. In D. Hung, K. Y. T., Lim, & S. S., Lee (Eds.), *Adaptivity as a transformative disposition for learning in the 21st century*. Dordrecht: Springer.
- [31] Lee, W. O. (2009). Conceptualizing citizenship and citizenship education: A trajectory of exploring Asian perspectives. URL (last checked 3 August 2012). [http://www.ied.edu.uk/cplectures/resource/prof\\_lee\\_wing\\_on\\_090623\\_1\\_.pdf](http://www.ied.edu.uk/cplectures/resource/prof_lee_wing_on_090623_1_.pdf)
- [32] Madhavan, R., & Grover, R. (1998). From embedded knowledge to embodied knowledge: New product development as knowledge management. *Journal of Marketing*, 62, 1-12. doi:10.2307/1252283
- [33] Nasir, N. S., & Hand, V. (2008). From the court to the classroom: Opportunities for engagement, learning, and identity in basketball and classroom mathematics. *Journal of the Learning Sciences*, 17, 143-179. doi:10.1080/10508400801986108
- [34] Nonaka, I., & Nonno, N. (1998). The concept of "ba" : Building a foundation for knowledge creation. *California Management Review*, 40, 40-54.
- [35] Nonaka, I., & Toyama, R. (2003). The knowledge-creating theory revisited: Knowledge creation as a synthesizing process. *Knowledge Management Research & Practice*, 1, 2-10. doi:10.1057/palgrave.kmrp.8500001
- [36] NUS High School of Math and Science (2011). NUS High School. URL (last checked 3 August 2012). <http://www.highsch.nus.edu.sg/>
- [37] Polanyi, M. (1962). *Personal knowledge: Towards a post-critical philosophy*. Chicago, IL: University of Chicago.
- [38] Polanyi, M. (1966). *The tacit dimension*. New York: Doubleday & Company, Inc.
- [39] Prensky, M. (2001). *Digital game-based learning*. New York: McGraw-Hill.
- [40] Prensky, M. (2003). Digital game-based learning. *ACM Computers in Entertainment*, 1, 1-4. doi:10.1145/950566.950596
- [41] Resnick, L. (1987). Learning in school and out. *Educational Researcher*, 16, 3-21. doi:10.2307/1175725
- [42] Rorty, R. (1999). *Philosophy and social hope*. London: Penguin Books.
- [43] Sadler, D. R. (1989). Formative assessment and the design of instructional systems. *Instructional Science*, 18, 119-144. doi:10.1007/BF00117714
- [44] Savery, J. R., & Duffy, T. M. (2001). *Problem based learning: An instructional model and its constructivist framework*. Technical Report, Bloomington, IN: Indiana University.
- [45] Schank, R. C. (1995). *What we learn when we learn by doing*. Technical Report, Chicago, IL: Northwestern University.
- [46] School of the Arts Singapore (2011). School of the Arts Singapore. URL (last checked). <http://www.sota.edu.sg/>
- [47] Schwartz, D., Bransford, J., & Sears, D. (2005). Efficiency and innovation in transfer. In J. Mestre (Ed.), *Transfer of learning from a modern multidisciplinary perspective* (pp. 1-51). Greenwich, CT: Information Age Publishing.
- [48] Singapore Sports School (2011). Singapore sports school. URL (last checked). <http://www.sportsschool.edu.sg/index.aspx>
- [49] Straka, G. A. (2009). Informal and implicit learning: Concepts, communalities and differences. *European Journal of Vocational Training*, 48, 132-145.
- [50] Streibel, M. J. (1989). Instructional plans and situated learning: The challenge of Suchman' s theory of situated action for instructional designers and instructional systems. *Journal of Visual Literacy*, 9, 8-34.
- [51] Thomas, D., & Brown, J. B. (2009). Why virtual worlds can matter. *International Journal of Learning*

- [52] Vrasidas, C. (2000). Constructivism versus objectivism: Implications for interaction, course design, and evaluation in distance education. *International Journal of Educational Telecommunications*, 4, 339- 362.
- [53] Warne, L. (1999). Understanding organizational learning in military headquarters: Findings from a pilot study. *Proceedings of the 10th Australasian Conference on Information Systems*, Wellington, 1-3 November 1999, 1144-1158.
- [54] Warne, L., Ali, I., Pascoe, C., & Agostino, K. (2001). A holistic approach to knowledge management and social learning: Lessons learnt from military headquarters. *Australasian Journal of Information Systems*, 9, 127-142.
- [55] Wenger, E., McDermott, R., & Snyder, W. M. (2002). *A guide to managing knowledge: Cultivating communities of practice*. Boston, MA: Harvard Business School Press.
- [56] Wilkins, J. L. M. (2000). Preparing for the 21st century: The status of quantitative literacy in the United States. *School of Science and Mathematics*, 100, 405-418. doi:10.1111/j.1949-8594.2000.tb17329.x
- [57] Wilson, B. (1996). Dynamic learning communities: An alternative to designed instruction. In M. Simonson (Ed.), *Proceedings of Selected Research and Development Presentations* (pp. 800-809). Washington DC: Association for Educational Communications and Technology.
- [58] Whitehead, A. N. (1929). *The aims of education*. New York: MacMillan.
- [59] Yang, B., Zheng, W., & Li, M. (2006). Confucian view of learning and implications for developing human resources. *Advances in Developing Human Resources*, 8, 346-354. doi: 10.1177/1523422306288427
- [60] Yusuf, M. (2010). Memorization as a learning style: A balance of approach to academic excellence. *OIDA International Journal of Sustainable Development*, 1, 49-58.