References

Aksela, M. (2005). *Supporting Meaning Chemistry Learning and Higher Order Thinking Through Computer Assisted Inquiry: A Design Research Approach.* Retrieved from htto://citeseerx.ist.psu.edu/viewdoc/pdf

Alexander, R. (1992). *Policy and practice in primary education.* London: Routledge.

Anderson, L. W., & Krathwohl, D. R. (Eds.) (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* New York, NY: Longman.

Anderson, J., & Weert, T. (2002). *ICT in education. A curriculum for schools and programme of teacher development.* Paris: UNESCO. Retrieved from unesco.unesco.org/pdf

Arshadi, N. (2004). Impact the use of computer in chemistry teaching. *Educational Technology Journal*, *1*, 8-10.

Aspy, D. N., Aspy, C. B., & Quimby, P. M. (1993). What doctors can teach teachers about problem-based learning. *Educational Leadership*, *50*(7), 22-24.

Assessment Report. (2001). *Chemistry instruction in 11 classroom level-Urban Tehran 2000-2001.* Chemistry (MP30/1124). Unpublished working paper. Tehran: Research & Curriculum Planning Organization Library, Ministry of Education.

Ausubel, D. P., Novak, J. D., & Hanesian, H. (1978). *Educational psychology: A cognitive view* (2nd ed.). New York, NY: Holt.

Azimi, F. (2002). *The study use students of Roshd Network in the high school.* Unpublished doctoral dissertation, University Azad of Iran.

Barton, R. (1997). Computer-aided graphing: A comparative study. *Journal of Information Technology for Teacher Education*, *6*(1), 59-72. Retrieved from http:www.pdfserve.inform world.com/pdf

Bennett, F. (2002). The future of computer technology in K-12 education. *Phi Delta Kappan.* Retrieved from http://www. cris.com/ ~faben1/phidel~1.s.html

Biggs, J. B. (1999). *Teaching for quality learning at university.* Buckingham, U.K: Open University Press.

Birley, G., & Moreland, N. (1998). *A practical guide to academic research.* London: Kogan Page.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: Handbook I: Cognitive domain*. New York: McKay.

Boden, M. (2001). Creativity and knowledge. In A. Craft, B. Jeffrey & M. Leibling (Eds.), *Creativity in education: A guide for teachers and educators.* London, UK: Continuum Press.

Bransford, J., Brown, A., & Cocking, R. (2000). *How people learn: Brain, mind, experience, and school.* Washington, DC: National Academy Press.

Brewer, J., & Hunter, A. (1989). *Multimethod research: A synthesis of style*. Newbury Park, CA: Sage.

British Educational Communications and Technology Agency. (2004). *A review of the research literature on barriers to the uptake of ICT by teachers.* UK: Becta. Retrieved from http://www.becta.org.uk/pdf

Brown, A. L., Bransford, J. D., Ferrara, R. A., & Campione, J. C (1983). Learning Remembering and understanding. In J. H. Flavell & E. M. Markman (Eds.),H*andbook of child psychology: Cognitive development 3* (4th ed.). New York, NY: Wile

Bruner, J. (1960). *The process of education*. Cambridge, MA: Harvard University Press.

Bryman, A. (1984). The debate about quantitative and qualitative research: A question of method or epistemology? *British Journal of Sociology*, *35*(1), 75-92. Retrieved from http://www.dis.fatih.edu/pdf

Cartwright, C., & Cartwright, P. (1984). *Developing observation skills*. New York: McGraw-Hill.

Chang, C. Y., & Barufaldi, J. P. (1999). The use of a problem-solving based instructional model in initiating change in students' achievement and alternative frameworks. *International Journal of Science Education*, *21*, 373-388.

Chia-Chien Hsu, & Sandford, B. A. (2007). The Delphi Technique: Making sense of consensus. *Practical Assessment, Research & Evaluation*, *12*(10). Retrieved from http://pareonline.net/pdf

Clark, D. J., Weinberger, A., Jucks, R., Spitulnik, M., & Wallace, R. (2003). Designing effective science inquiry in text-based computer-supported collaborative learning environments. *International Journal of Educational Policy, Research, & Practice, 4*(1). Retrieved from http://www.psy.uni-muenster.de/inst3/pdf

Collis, B. (1993). *The impact of computing in education in Europe*. Retrieved from http://etd.Isu.edu/docs/pdf

Cornu, B. (1995). *New technologies: Integration into education.* In D. Watson & D. Tinsley (Eds.), *Integrating Information Technology into education*. London: Chapman.

Cox, M., Cox, K., & Preston, C. (1999, September). *What factors support or prevent teachers from using ICT in their classroom*? Paper presented in BERA Annual conference. Retrieved from http:// www.ac. uk/educol

Cox, M., Webb, M., Abbott, C., Blakeley, B., Beauchamp, T., & Rhodes, V. (2004). *ICT and pedagogy*. Retrieved from http://www.becta.org.uk/ pdf

Cruickshank, D. R., Bainer, D. L., & Metcalf, K. K. (1999). *The act of teaching* (2nd ed.). Boston, MA: McGraw-Hill.

Cuban, L. (1986). *Teachers and machines: The classroom use of technology since 1920*. New York: Teachers College Press.

Curriculum Council. (1998). *Curriculum framework*. Tehran: Curriculum Development Department, Ministry of Education. (NSB 25-32).

Dalkey, N. C. (1972). *The Delphi method: An experimental application of group opinion*. In N. C. Dalkey, D. L. Rourke, R. Lewis, & D. Snyder (Eds.). *Studies in the quality of life*. Lexington, MA: Lexington Books.

Dawes, L. (2001). *What stops teachers using new technology*? In M. Leask (Ed.), *Issues in teaching using ICT*, pp. 1-76. London: Routledge.

De Corte, E., Verschaffel, L., & De Ven, A. V. (2001). Improving text comprehension strategies in upper primary school children: A design experiment. *British Journal of Educational Psychology*, *71*, 531-559.

Dejong, O. (2005). Research and teaching practice in Chemical Education: Living apart or together? *Chemical Education International*, *6*(1).

Delbecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1975). *Group techniques for program planning: A guide to nominal group and Delphi processes*. Glenview, IL: Scott, Foresman.

Denby, D. (2002). *ICT in support of science education: A practical user's guide*. Retrieved from http://www.salters.co.uk/ pdf

Descombe, M. (2001). *The good research guide for small-scale social research projects*. Buckingham, UK: Open University Press.

Donahoe, T. (1993). Finding the way: Structure, time and culture in school important. *Phi Delta Kappan*, *75*(4), 298-306. Retrieved from http://www. highbeam.com/doc/1G1-147234 97.html

Donovan, W. J. (2001). Investigation of students' use of web-based tutorial materials and understanding of chemistry concepts. *Journal of Chemical Education, 78*(7), 975-980.

Dori, Y., & Barak, M. (2000). *Computerized molecular modeling: Enhancing meaningful chemistry learning.* In B. Fishman & S. O'Connor-Divelbiss (Eds.), *Proceedings of the Fourth International Conference of the Learning Sciences* (pp. 185-192). Mahwah, NJ: Erlbaum.

Dreyfus, T., & Halevi, T. (1991). QuadFun: A case study of pupil computer interaction. *Journal of Computers in Mathematics and Science Teaching*, *10* (2), 43-48.

Driscoll, M. P. (1994). *Psychology of learning for instruction.* Boston, MA: Allyn and Bacon.

Driver, R. (1989a). *The construction of scientific knowledge in school classrooms.* In R. Miller (Ed.), *Doing science: Images of science in science education.* New York, NY: Falmer Press.

Driver, R. (1989b). *Changing conceptions.* In P. Adley (Ed.), *Adolescent development and school science* (pp. 79-99). London: Falmer Press.

Duch, B. J., Groh, S. E., & Allen, D. E. (2001). *The power of problem-based learning.* Sterling, VA: Stylus.

Edelson, D., Gordon, D., & Pea, R. (1999). Addressing the challenges of inquiry-based learning through technology and curriculum design. *Journal of Learning Sciences, 8*(3&4), 391-450. Retrieved from http://www.worldwatcher.northwestern.edu/pdf

Edelson, D. C. (1998). Realizing authentic science learning through the adaptation of scientific practice. In B. J. Fraser & K. G. Tobin (Eds.), *International handbook of science education* (pp. 317- 331). Dordrecht: Kluwer.

Erduran, S., & Scerri, E. (2002). *The nature of chemical knowledge and chemical education.* In J. Gilbert, R. Justi, D. Treagust, O. De Jong, & J. van Driel, (Eds.), *Chemical education: Towards research-based practice* (pp. 7-27). Dordrecht: Kluwer.

Ertmer, P. (2005). *Teacher pedagogical beliefs and classroom technology use: A critical link*. Retrieved from http://www.edci.purdue. edu/ertmer/docs/pdf

Ertmer, P., & Newby, T. J. (1993). Behaviorism, cognitivism, and constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, *6*(4), 50-71.

Finch, C. R., & Crunkilton, J. R. (1989). *Curriculum development in vocational and technical education*. Rockleigh, NH: Allyn and Bacon.

Flick, L. B., & Bell, R. (2000). Preparing tomorrow's science teachers to use technology: Guidelines for science educators. *Contemporary Issues in Technology and Teacher Education, 1*(1). Retrieved from http://www.cite Journal.org/htm

Flowers, J. S., & Ritz, J. M. (1994). *Cooperative learning in technology education*. Retrieved from http://teches.vt.edu/vctte/Monographs 13.html

Fullan, M. (1993). *Change forces: Probing the depths of educational reform*. London: Falmer Press.

Fullan, M. (1998). Leadership for the 21st century: Breaking the bonds of dependency. *Educational Leadership*, *55*(7), 6-10. Retrieved from http://www.michaelfullan.ca/pdf

Gabel, D. L. (1998). *The complexity of chemistry and implications for teaching*. In B. J. Fraser & K. G. Tobin (Eds.), *International handbook of science education* (pp. 233-248). Dordrecht: Kluwer.

Germann, P. J. (1989). Directed-inquiry approach to learning science process skills: Treatment effects and attitude-treatment interactions. *Journal of Research in Science Teaching*, *26*(3), 237-50.

Germann, P. J. (1991). Developing science process skills through directed inquiry. *American Biology Teacher*, *53*(4), 243-47.

Gilbert, J. K., Justi, R., Van Driel, J., De Jong, O., & Treagust, D. F. (2004). Securing a future for chemical education. *Chemical Education Research and Practice, 5*(1)*, 5-14. Retrieved from http://www.*uoi.gr/cerp/pdf

Gomes, C. (2005). Integration of ICT in science teaching. *Journal of Environmental Studies, 35, 51-62. Retrieved from http://www.* formatex.org/pdf

Goodison, T. A. (2002). Learning with ICT at primary level: Pupils perceptions. *Journal of Computer Assisted Learning*, *18*(3).

Green, H. C., Hunter, C., & Moore, B. (1990). Assessing the environmental impact of tourism development: The use of the Delphi technique. *International Journal of Environmental Studies*, *35*, 51-62.

Guba, E. G., & Lincoln, Y. S. (1983). *Epistemological and methodological bases of naturalistic inquiry*. In G. F. Madaus, M. S. Scriven, & D. L. Stufflebeam (Eds.), *Evaluation models: Viewpoints on educational and human services evaluation* (pp. 311-334). Boston: Kluwer-Nijhoff.

Guba, E. G., & Lincoln, Y. S. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.

Handly, C., & Aitken, R. (1986). *Understanding school as organization*. London: Pelican Books.

Hanson, D., & Wolfskill, T. (2000). Process workshops- A new model for instruction. *J Chem Educ*, *77*, 120-130.

Harris, S. (2002). Innovative pedagogical practices using ICT in schools in England. *Journal of Computer Assisted Learning*, *18*(4), 449-458.

Hawkridge, D. (1990). Who needs computers in schools, and why? *Computers and Education*, *15*, 1-3.

Heck, A., Kedzierska, E., Rogers, L., & Chmurska, M. (2006). *Acid-base titration curves in an integrated computer learning environment*. Retrieved from http://staff.scie- nce.uva.nl/~heck/pdf

Hegarty-Hazel, E. (1990). *The student laboratory and the science curriculum*. London: Routledge.

Helmer, O. (1983). *Looking forward: A guide to futures research*. Beverly Hills, CA: Sage.

Hennessy, S., & Deaney, R. (2004). *Sustainability and evolution of ICT supported classroom practice.* Retrieved from http://www.bsrlm.org

Henriques, L. (2002). Preparing tomorrow's science teachers to use technology: An example from the field. *Contemporary Issues in Technology and Teacher Education*, *2*(1), 3-18. Retrieved from http://www. citejournal.org/pdf

Hogarth, S., Bennett, J., Campbell, B., Lubben, F., & Robinson, A. (2006). *ICT in science teaching: The effect of ICT teaching activities in science lessons on students' understanding of science ideas*. Retrieved from http://eppi.ioe.ac. uk/cms/LinkClick.aspx

Holbrook, J. (2005). Making chemistry teaching relevant. *Chemical Education International, 6*(1). *Retrieved from http://old.iupac.org/Publications/cei/pdf*

Hollingworth, R. W. (2002). What role for ICT in teaching and learning chemistry? *Chemical Education Journal*, *6*(2), 6-12. Retrieved from http://chem.sci.utsunomiyauu.ac.jp/v6n2/hollingworth/html

Hopkins, D. (2002). *A teacher's guide to classroom research*. Buckingham, UK: Open University Press.

Igelsrud, D., & Leonard, W. H. (1988). Labs: What research says about biology laboratory instruction. *American Biology Teacher*, *50*(5), 303-06.

Impact 2. (2001). *Emerging Findings from the Evaluation of the Impact of Information and Communications Technologies on Pupil Attainment*. Retrieved from http://www.dcsf. gov.uk/pdf

Jahangard, N. (2004). *Takfa Iran's road to knowledge-based development*. Retrieved from http:// www. Irandoc.com

Johnson, D. W., Johnson, R. T., & Holubec, E. J. (1993). *Cooperation in the classroom* (6th ed.). Edina, MN: Interaction Book Company.

Johnson, D. W., & Johnson, R. T. (1994). *Learning together*. In S. Sharan (Ed.), *Handbook of cooperative learning methods* (pp. 51-65). Westport, CT: Greenwood Press.

Johnson, L., & Lamb, L. (2007). *Critical and creative thinking: Bloom's taxonomy*. Retrieved from http://eduscapes. com/tap/topicic69.html

Jonassen, D. H. (1992). *What are cognitive tools*? In P. A. M. Kommers, D. H. Jonassen, & J. T. Mayes (Eds.), *Cognitive tools for learning* (pp. 1-6). Berlin: Springer-Verlag.

Jonassen, D. H. (1996). *Computers as mindtools for schools: Engaging critical thinking*. Columbus, OH: Prentice Hall.

Jonassen, D. H. (2000). *Computers as Mindtools for Schools*. (2nd ed.). Upper Saddle River, NJ: Merrill.

Jonassen, D. H., Carr, C., & Yuch, H. (1998). Computers as mindtools for engaging learning in critical thinking. *Tech Trends*, *43*(2), 24-32.

Jonassen, D. H., Peck, K. L., & Wilson, B. G. (1999). *Learning with technology*. Upper Saddle River, NJ: Merrill.

Jones, A. (2004). *A review of the research literature on barriers to the uptake of ICT by teachers*. UK: Becta. Retrieved from http://www.becta.org.uk.pdf

Kafai, Y., & Resnick, M. (1996). *Constructionist in practice: Designing thinking, and learning in a digital world*. Mahwah, NJ: Erlbaum Associates.

Kennewell, S., Parkinson, J., & Tanner, H. (2003). *Learning to teach ICT in the secondary school*. London: Routledge.

Kennedy, D., & Finn, S. (2000). *The use of data logging in teaching physics and chemistry in second-level schools in Ireland*. Retrieved from http://scholar.google.com

Kozma, R. (1991). Learning with media. *Review of Educational Research*, *61*(2), 179-211. Retrieved from http://www.c31. unioldenburg.de/cde/pdf

Kozma, R. (1999). *Prospect us: Qualitative studies of innovative pedagogical practices using technology research design for the second information technology in education study module 2 (SITES M2)*. Retrieved from http://sitesm2.org/SITES-Research project. pdf

Kozma, R. B. (2003). Technology and classroom practices: An international study. *Journal of Research on Technology in Education*, *36*(1), 1-14.

Kvale, S. (1996). *Interviews: An introduction to qualitative research interviewing*. Thousand Oaks, CA: Sage.

Lagowski, J. J. (1998). Chemical education: Past, present, and future. *Journal of Chemical Education*, *75*(4), 425-436.

Laurillard, D., Stratfold, M., Luckin, R., Plowman, L., & Taylor, J. (2000). Affordances for learning in a non-linear narrative medium. *Journal of Interactive Media in Education*, *2*. Retrieved from http://www-jime.open. ac.uk/pdf

Leithwood, K. (1994.) Leadership for school restructuring. *Educational Administration Quarterly*, *30*(4), 498-518.

Lemke, J. (1990). *Talking science: Language, learning, and values*. Norwood, NJ: Ablex.

Lewis, S. (2003). Enhancing teaching and learning of science through use of ICT: Methods and materials. *School Science Review*, *84*(309). Retrieved from http://www.ase.org.uk/html

Linn, M. C. (1995). Designing computer learning environments for engineering and computer science: The scaffold knowledge integration framework. *Journal of Science Education and Technology*, *4*(2), 103-126.

Linn, M. C. (1996). *From separation to partnership in science education: Students, laboratories, and the curriculum.* In R. F. Tinker (Ed.), *Microcomputer-based Labs: Educational research and standards* (pp. 13-45). Berlin: Springer.

Linn, M. C. (1998). *The impact of technology on science instruction: Historical trends and current opportunities.* In B. J. Fraser & K. Tobin (Eds.), International handbook of science education (pp. 265-295). Dordrecht, Netherlands: Kluwer.

Linn, M. C., & Bell, P. (2000). Scientific arguments as learning artifacts: Designing for learning from the web with KIE. *International Journal Science Education, 22*(8), 797-81. Retrieved from http://www.design based Research.org/pubs/pdf

Linstone, H., & Turoff, M. (1975). *The Delphi method: Techniques and applications.* Reading, MA: Addison-Wesley.

Litchfield, B. C., & Mattson, S. A. (1989). The interactive media science project: An inquiry-based multimedia science curriculum. *Journal of Computers in Mathematics and Science Teaching*, *9*(1), 37-43.

Loveless, A. (2000). *Creativity, visual literacy and information and communications technology.* In D. M. Watson & T. Downes (Eds.), *Communications and networking in education: Learning in a networked society.* Norwell, MA: Kluwer.

Law, N., Yuen, H. K., Ki, W. W., Li, S. C., Lee, Y., & Chow, Y. (2000). *Studying ICT Supported Pedagogical Practice.* Retrieved from dohttp://www.cite. huk.hk

Lower, S. K. (1997). *Computer-assisted instruction in chemistry.* In T. Zielinski & M. L. Swift (Eds.), *Using computers in chemistry and chemical education* (pp. 355-376). American Chemical Society.

Marsh, D. D. (2001). *Educational leadership for the twenty-first century: Integrating three essential perspectives.* In *Jossey-Bass Reader on educational leadership.* San Francisco, CA: Jossey-Bass.

Martin, D. J. (2003). *Elementary science methods: A constructivist approach* (3rd ed.). Belmont, CA: Thomson-Wadsworth.

Mathison, S. (1988). Why triangulate? *Educational Researcher*, *17*(2), 13-17.

Mbajiorgu, N., & Reid, N. (2006). *Factors influencing curriculum development in chemistry: Report of a Literature Review.* Retrieved from http://www. heacade-m.ac.uk/pdf

McLoughlin, C., & Oliver, R. (1999). *Pedagogic roles and dynamics in telematics environments*. In M. Selinger & J. Pearson (Eds.), *Telematics in education: Trends and issues* (pp. 32-50). Oxford: Elsevier Science.

Means, B., & Olson, K. (1997). *Technology and education reform*: Washington, DC: U.S. Department of Education.

Meier, D. (1995). *The power of their ideas*. Boston, MA: Beacon Press.

Miller, C. S., Lehman, J. F., & Koedinger, K. R. (1999). *Cognitive Science*, *23*(3), 305-336. Retrieved from http:// www. nationalacademies.org/pdf

Moseley, D., Higgins, S., Bramald, R., Hardman, F., Miller, J…Stout, J. (1999). *Ways forward with ICT: Effective pedagogy using ICT for literacy and numeracy in primary schools*. Newcastle: Newcastle University.

Movahedian, T. (2002). *Challenge and obstacle in chemistry instruction* (pp. 10-15). (MP12/1122). Tehran: Iran Research and Curriculum Planning Organization.

Nakhleh, M. B., Polles, J., & Malina, E. (2002). *Learning chemistry in a laboratory environment*. In J. K. Gilbert, O. De Jong, R. Justi, D. F. Treagust & J. H. Van Driel (Eds.), *Chemical education: Towards research-based practice* (pp. 69- 94). Dordrecht: Kluwer.

Narode, R. (1987). *Teaching thinking skills: Science*. Washington, DC: National Education Association.

National Research Council. 1996). *National science education standards*. Washington, DC: National Academy Press.

Newman, D., Griffin, P., & Cole, M. (1989). *The construction zone: Working for cognitive change in school*. New York, NY: Cambridge University Press.

Newton, L. (1997). Graph talk: some observations and reflections on students' data-logging. *School Science Review*, *79*(287), 49-53.

Novak, A. (1964). Scientific inquiry. *Bioscience*, *14*, 25-28.

Novak, J. D., & Gowin, D. D. (1984). *Learning how to learn*. New York, NY: Cambridge University Press.

Office for Standards in Education. (2002). *ICT in school: Effect of government initiative*. London: OFSTED.

Ormrod, J. E. (1990). *Human learning: Theories, principles and educational applications*. Columbus, OH: Merrill.

Osborne, J. (2003). *Literature Review in Science Education and the Role of TCT: Promise, Problems and Future Directions. Retrieved from http://hal*. archives-ouvertes.fr/docs/pdf

Osborne, M., & Freyberg, P. (1985). *Learning in science: Implications of children's knowledge*. Auckland, New Zealand: Heinemann.

Papert, S. (1987). Computer criticism, techno centric thinking. *Educational Researcher Journal, 16*(1), 22-30. Retrieved from http://www.http.//links. jstor .org

Paul, C. (2002). *Literature review: The impact of ICT on learning and teaching*. Retrieved from http://www.det.wa.edu. au/pdf

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Thousand Oaks, CA: Sage.

Patton, M. Q. (2002). *Qualitative evaluation and research methods* (3rd ed.). Thousand Oaks, CA: Sage.

Pelgrum, W. J., & Anderson, R. E. (1999). *ICT and the emerging paradigm for lifelong learning*. An IEA educational assessment of infrastructure, goals, and practices in twenty-six countries (2nd ed.). Amsterdam: IEA. Retrieved from http:// www.iea.nl/Home/IEA/Publications/SITES-book/pdf

Piaget, J. (1973). *To understand is to invent*. New York, NY: Grossman.

Report of the Science Teacher Association. (2005). *Chemistry teaching classroom Level 11-Urban Tehran 2005*. Chemistry (MP35/124). Unpublished working paper. Tehran: Research & Curriculum Planning Organization Library, Ministry of Education.

Robitaille, D. F. (1996). *TIMSS Monograph No. 2: Research questions and study design*. Vancouver, Canada: Pacific Educational Press. (1996).

Roschelle, J. (1996). *What Should Collaborative Technology Be? A Perspective from Dewey and Situated Learning*, *21*. Retrieved from http://www-cs195.indiana.edu/index.html

Roschelle, J., Pea, R., Hoadley, C., Gordin, D., & Means, B. (2001). Changing how and what children learn in school with computer-based technologies. *The Future of Children*, *10*(2). Retrieved from http://hal.archives-ouvertes.fr/docs/ pdf

Rosenholtz, S. J. (1989). *Teacher's workplace: The social organization of schools*. White Plains, NY: Longman.

Roshd Network. (2004). Iran National Network. *Information and Communication Technology Bulletin*, *1*, 2-25.

Rothwell, W. J., & Kazanzs, H. C. (1992). *Mastering the instructional design process: A systematic approach*. San Francisco, CA: Jossey-Bass.

Russell, J. W., Kozma, R. B., Jones, T., Wykoff, J., Marx, N., & Davis, J. (1997). Use of simultaneous-synchronized macroscopic, and symbolic representations to enhance the teaching and learning of che mical concepts. *Journal of Chemical Education*, *74*(3), 330.

Russell, T. (2001). T*eaching and using ICT in secondary schools* (pp. 39-40). London: Fulton.

Rutherford, F. J., & Ahlgren, A. (1990). *Science for all Americans*. New York, NY: Oxford University Press.

Sarason, S. (1993). *The case for change: Rethinking the preparation of educators*. San Francisco, CA: Jossey-Bass.

Satari, Z. (2005). T*he impact of Roshd Network from the high school students and teachers view point in Urban Tehran*. Unpublished doctoral dissertation, University of Azad, Iran.

Savery, J. R., & Duffy, T. M. (1995). Problem based learning: An instructional model and its constructivist framework. *Educational Technology*, *35*(5), 31-38.

Selliger, M. (2001). The role of the teacher: Teacherless classrooms. In M. Leask (Ed.), *Issues in teaching using ICT* (pp. 83-95). London: Routledge.

Schank, O., & Kozma, R. (2005). Learning chemistry through the use of is presentation-based knowledge building environment. *Journal of Computers in Mathematics and Science Teaching*, *21*(3), 253-279. Retrieved from http://robertkozma.com/pdf

Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, *57*, 1-22.

Silverman, D. (1993). *Interpreting qualitative data*. London: Sage.

Smith, A. (1999). *Interactive whiteboard evaluation*. Retrieved from www.mirandanet.ac.uk

Smith, H. J., Higgins, S., Wall, K., & Miller, J. (2005). Interactive whiteboards: Boon or bandwagon? A critical review of the literature. *Journal of Computer Assisted Learning*, *21*, 91-101. Retrieved from http://www.faculty.ksu.edu.sa/-pdf

Snowman, J., & Biehler, R. (2000). *Psychology applied to teaching* (9th ed.) Boston, MA: Houghton Mifflin.

Solomon, C. (1986). *Computer environments for children: A reflection on theories of learning and education.* Cambridge, MA: MIT Press.

Songer, N. B. (1998). *Can technology bring students closer to science*? In K. Tobin & B. Fraser (Eds.), *The international handbook of science education* (pp. 333-348). Dordrecht: Kluwer.

Squires, D., & McDougall, A. (1994). *Choosing and using educational software: A teachers' guide*. London: Falmer.

Statistical Book. (2006). Tehran: Human Resource Development Organization, Minstry of Education.

Stamovlasis, D., & Tsaparlis, G. (2000). Non-linear analysis of the effect of working-memory capacity on organic-synthesis problem solving. *Research and Practice in Europe*, *1*(3), 375-380. Retrieved from http://www.uoi.gr/conf-sem/cerapie

Symonds, W. C. (2000). High school will never be the same. *Business Week*. Retrieved from http://www. businessweek. com/html

Tabak, I., & Reiser, B. J. (1999). C*omplementary roles of software-based scaffolding and teacher-student interactions in inquiry learning*. Presented at conference on computer support for collaborative learning, December 10-14, 1997, Toronto, Canada.

Taber, K. S. (2001). Constructing chemical concepts in the classroom? Using research to inform practice. *Research and Practice in Europe*, *2*(1), 43-51. Retrieved from http://www.uoi.gr/conf-sem/ Cerapie

Tapper, J. (1999). Topics and manner of talk in undergraduate practical laboratories. *International Journal of Science Education*, *21*(4), 447-464.

Tashakkori, A., & C. Teddlie, C. (Eds.). (2002). *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage.

Taylor, R. P. (1980). *The computer in schools as tutor, tool and tutee*. Retrieved from http://www.citejournal.org/articles/ v3i2seminal1.pdf

Terwel, J. (1999). Constructivism and its implications for curriculum theory and practice. *Curriculum Studies*, *31*(2), 195-199. Retrieved from http://dare.ubvun/ bitstream.pdf

Thao Lê., & Quynh Lê. (2007). *Using computers to promote literacy development.* Retrieved from http://eprients.utas. edu.au/pdf

Tinker, R. F. (1996). *Microcomputer-based labs: Educational research and standards*. Berlin: Springer.

Tsai, C. C. (2005). Preferences toward Internet-based learning environments: High school students' perspectives for science learning. *Educational Technology & Society*, *8*(2), 203-213. Retrieved from http://adsabs.harvard.Edu

Tsaparlis, G. (2001). Theories in science education at the threshold of the third millennium. *Research and Practice in Europe*, *2*(1), 1-4. Retrieved from http://www.uoi.gr/confsem/cerapie

Turoff, M. (1975). The policy Delphi. In H. A. Linstone & M. Turoff (Eds.), *The Delphi method: Techniques and applications*. Reading, MA: Addison-Wesley.

UNESCO. (2002). *Information and Communication Technology in Education: A Curriculum for Schools and Program of Teaching Development*. Retrieved from http://unesdoc.unesco.org/pdf

UNESCO. (2006). *ICT and Education Indicators: Suggested Core Indicators Based on Meta-analysis of Selected International School Surveys*. Retrieved from http://www.itu.int/ITU-D/ict/partn- ership/pdf

Van Damme, G. (n.d.). (2003). *ICT in Practice for Physical Education & Sports*. Retrieved from http://www.sports-media.org/Sport- tapolisnewsletter5.htm

Van den Akker, J., Keursten, P., & Plomp, T. (1992). The integration of computer use in education. *International Journal of Educational Research, 17*, 65-76. Retrieved from http://doc.utwente.nl/ pdf

Venezky, R. L., & Davis, C. (2002). *Que Vademus? The Transformation of Schooling In a Networked World. OECD/CERI*. Retrieved from www.oecd.org/dataoecd/pdf

Volman, M. (1997). *Gender-related effects of information and computer literacy education*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, 1995.

Von Glasersfeld, E. (1989). Cognition, construction of knowledge, and teaching. *Synthese*, *80*(1), 121-140.

Voogt, J., & Pelgrum, H. (2005). ICT and curriculum change. *An Interdisciplinary Journal on Humans in ICT Environments*, *1*(2), 157-175. Retrieved from http://www. humantechnology.jyu.fi/ht /pdf

Voogt, J., & Van den Akker, J. (2002). Computer-assisted instruction. In P. B. Baltes, & N. J. Smelser, *International encyclopediae for the social and behavioral sciences* (4: 2473-2477). Oxford: Elsevier.

Vygotsky, L. (1978). Mind in society: *The development of higher psychological processes*. (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, (Eds.), and Trans.). Cambridge, UK: Cambridge University Press.

Waddington, D. J. (2001). *Molecular visualization in science education.* Report from the molecular visualization in science education workshop NCSA access center Arlington, VA, January 12-14. Retrieved from http://pro 3. chem. pitt.edu/work- shop/workshop-report

Watson, D. M. (2001). Pedagogy before technology: Re-thinking th*e* relationship between ICT and teaching. *Education and Information Technology*, *6*(4), 251-266. Retrieved from http://www.springerlink.com/content

Webb, M. (2005). Affordances of ICT in science learning: Implications for an integrated pedagogy. *International Journal of Science Education*, *27*(6), 705-731.

White, B. Y., & Shimoda, T. A. (1999). Enabling students to construct theories of collaborative inquiry and reflective learning: Computer support for metacognitive development. *International Journal of Artificial Intelligence in Education*, *10*, 151-182. Retrieved from http://hal.archives-ouvertes.fr/docs/pdf

Wicklein, R. C. (1993). Identifying critical issues and problems in technology education using a modified-Delphi technique. *Journal of Technology Education*, *5*(1). Retrieved from http://borg.lib.vt.edu/ejournals/ JTE/v5nl.html

Willis, J. (1996). A flexible framework for task-based learning. In J. Willis & D. Willis (Eds.), *Challenge and change in language teaching* (p. 53). Oxford, UK: Heinemann English Language Teaching.

Wu, Z., & Glaser, R. E. (2004). Software for the synergistic integration of science with ICT education. *Journal of Information Technology Education*, *3*. Retrieved from http:jite/org/docume- nts.pdf

Zahraei, R. (1993). *Fundamental change at education and training*. Human Resource Development Department library. (NSB 1-10). Tehran: Ministry of Education.
Zimmerman, B. J., & Schunk, D. H. (1998). *Self-regulated learning and academic achievement: Theory, research, and practic*e. New York: Springer-Verlag.

Zohar, A., & Dori, Y. J. (2003). Higher order thinking skills and low achieving students: Are they mutually exclusive? *The Journal of the Learning Sciences*, *12*(2), 145-181.