

**‘Specialization in ICTs and Special Education: Psychopedagogy of Integration’
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DEMOKRITUS UNIVERSITY OF THRACE Department of Hellenic Philology
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The impact of ICT on cognitive and metacognitive skills of charismatic people

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POSTGRADUATE
THESIS

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Abstract

The present study aimed to explore the cognitive and metacognitive skills of gifted children as well as the use of ICT in the development of specific skills. The study used the systematic literature research review. Research articles and books were used to collect data. Specifically, 229 primary and secondary sources were used, which included articles published in scientific journals, books and book chapters, and dissertations. The online databases used to search for primary sources included the Google Scholar and the keywords used were: "cognitive skills", "metacognitive skills", "gifted children", "ICT and metacognitive skills" and "ICT and metacognitive skills and gifted children". According to the results of the study, gifted children progress on the same level as regular children who are older, exhibit high capacity of reasoning, creativity, curiosity, extended vocabulary and excellent memory, understand the concepts with few repetitions and are perfectionists. Some students have difficulty in communicating with their classmates because of differences in vocabulary (especially in the early years), personality, interests and motivation. The strong thinking about problem solving helps the metacognition of gifted students. Also, feedback plays a very important role so that students can use metacognitive strategies. In the long term, the difficulty that generates reflection and the analysis of what it learns greatly increases learning. Finally, ICT contributes to the development of the cognitive and metacognitive skills of gifted children as they provide opportunities for self-directed learning, mutual feedback, comparison of contradictory interpretations. Finally, technology can bridge the gap between rich and poor gifted students.

Key words: cognitive skills, metacognition, gifted children, ICT

References

1. Ablard, K. E., & Lipschultz, R. E. (1998). Self-Regulated learning in high-achieving students: Relations to advanced reasoning, achievement goals, and gender. *Journal of Educational Psychology*, 90(1), 94.
2. Adele, D. (2013). "Executive functions". *Annual Review of Psychology*. 64: 135–168.
3. Aljughaiman, A., & Tan, M. (2009). Anxiety in gifted female students in the Kingdom of Saudi Arabia. *Gifted and Talented International*, 24(1), 49-54.
4. Angeli, C., & Valanides, N. (2009). Epistemological and methodological issues for the conceptualization, development, and assessment of ICT-TPCK: Advances in technological pedagogical content knowledge (TPCK). *Computers & Education*, 52(1), 154–168.
5. Archambault, L. M., & Barnett, J. H. (2010). Revisiting technological pedagogical content knowledge: Exploring the TPACK framework. *Computers & Education*, 55(4), 1656–1662
6. Argelago' s, E., & Pifarre', M. (2012). Improving information problem solving skills in secondary education through embedded instruction. *Computers in Human Behavior*, 28(2), 515–526.
7. Artino, A. R. (2008). Promoting academic motivation and self-regulation: Practical guidelines for online instructors. *TechTrends*, 52, 37–45
8. Artz, A.F. and Armour-Thomas, E. (1992). Development of a cognitive-metacognitive framework for protocol analysis of mathematical problem solving in small groups. *Cognition and Instruction*, 9, 137-175.
9. Ausubel, D. P. (1978) 'In Defense of Advance Organizers: A Reply to the Critics'. *Review of Educational Research*. Vol. 48 (2): 251-257.
10. Azevedo, R., & Cromley, J. G. (2004). Does training on self-regulated learning facilitate students' learning with hypermedia? *Journal of Educational Psychology*, 96, 523–535
11. Azevedo, R., Johnson, A., & Burkett, C. (2015). Does Training of Cognitive and Metacognitive Regulatory Processes Enhance Learning and Deployment of Processes with Hypermedia?. In *CogSci*.
12. Baddeley, A. (1996). Exploring the central executive. *The Quarterly Journal of Experimental Psychology Section A*, 49(1), 5-28.

13. Bakar, A. Y. A. & Ishak, N. M. (2014). Developing sampling frame for case study: challenges and conditions. *World Journal of Education*, 4(3), 29.
14. Banich, M. T. (2009). Executive function: The search for an integrated account. *Current directions in psychological science*, 18(2), 89-94.
15. Barkley, R. A. (2001). The executive functions and self-regulation: An evolutionary neuropsychological perspective. *Neuropsychology review*, 11(1), 1-29.
16. Baum, S. (1989). Gifted but learning disabled: A puzzling paradox. *Preventing School Failure*, 34, 11-14.
17. Baum, S. M., Renzulli, J. S., & Hébert, T. P. (1995). Reversing underachievement: Creative productivity as a systematic intervention. *Gifted Child Quarterly*, 39(4), 224-235.
18. Baumeister, R. F., & Vohs, K. D. (2007). Self- Regulation, ego depletion, and motivation. *Social and personality psychology compass*, 1(1), 115-128.
19. Beilock, S. L., & Willingham, D. T. (2014). Math Anxiety: Can Teachers Help Students Reduce It? Ask the Cognitive Scientist. *American educator*, 38(2), 28.
20. Belland, B. R., Glazewski, K. D., & Richardson, J. C. (2011). Problem-based learning and argumentation: Testing a scaffolding framework to support middle school students' creation of evidence-based arguments. *Instructional Science*, 39(5), 667-694.
21. Blomberg, O. (2011) 'Concepts of Cognition for Cognitive Engineering'. *International Journal of Aviation Psychology*. Vol. 21 (1): 85-104.
22. Brody, L. E., & Mills, C. J. (1997). Gifted children with learning disabilities: A review of the issues. *Journal of Learning Disabilities*, 30, 282-297
23. Bryce, D., Whitebread, D., & Szűcs, D. (2015). The relationships among executive functions, metacognitive skills and educational achievement in 5 and 7 year-old children. *Metacognition and Learning*, 10(2), 181-198.
24. Bulu, S. T., & Pedersen, S. (2012). Supporting problem-solving performance in a hypermedia learning environment: The role of students' prior knowledge and metacognitive skills. *Computers in Human Behavior*, 28(4), 1162-1169.
25. Caballe', S., Daradoumis, T., Xhafa, F., & Juan, A. (2011). Providing effective feedback, monitoring and evaluation to on-line collaborative learning discussions. *Computers in Human Behavior*, 27(4), 1372-1381.

26. Cardelle-Elawar, M. & Corno, L. (1985). A factorial experiment in teachers' written feedback on student homework: Changing teacher behavior a little rather than a lot. *Journal of Educational Psychology*, 77, 162-173.
27. Cassady, J. C., & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary educational psychology*, 27(2), 270-295.
28. Chesimet, M. C., Githua, B. N., & Ng'eno, J. K. (2016). Effects of Experiential Learning Approach on Students' Mathematical Creativity among Secondary School Students of Kericho East Sub-County, Kenya. *Journal of Education and Practice*, 7(23), 51-57.
29. Coleman, M. R., Harradine, C., & King, E. W. (2005). Meeting the needs of students who are twice exceptional. *Teaching Exceptional Children*. 38 (1): 5–6.
30. Cortez, C., Nussbaum, M., Woywood, G., & Aravena, R. (2009). Learning to collaborate by collaborating: a face-to-face collaborative activity for measuring and learning basics about teamwork1. *Journal of Computer Assisted learning*, 25(2), 126–142.
31. Cross, J. R., & Cross, T. L. (2015). Clinical and mental health issues in counseling the gifted individual. *Journal of Counseling & Development*, 93(2), 163-172.
32. Cross, J. R., O'Reilly, C., Kim, M., Mammadov, S., & Cross, T. L. (2015). Social coping and self-concept among young gifted students in Ireland and the United States: a cross-cultural study. *High Ability Studies*, 26(1), 39-61.
33. Dabbagh, N. & Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A nautical formula for connectic formal and informal learning. *Internet and Higher Education*, 15 (3-8).
34. Dawes, L. (2004). Research report: Talk and learning in classroom science. *International Journal of Science Education*, 26(6), 677–695.
35. Decety, J. & Grèzes, J (2006). "The power of simulation: imagining one's own and other's behavior". *Brain Res.* 1079 (1): 4–14.
36. Decety, J. & Lamm, C (2007). "The role of the right temporoparietal junction in social interaction: how low-level computational processes contribute to meta-cognition". *Neuroscientist*. 13 (6): 580–93.
37. Desoete, A. & Roeyers, H. (2002). Off-line metacognition – A domain-specific retardation in young children with learning disabilities. *Learning Disability Quarterly*. 25, 123-139.

38. Desoete, A., Roeyers, H. & Buysse, A. (2001). Metacognition and mathematical problem solving in grade 3. *Journal of Learning Disabilities*, 34, 435-449.
39. DiPietro, M., Ferdig, R. E., Black, E. W., & Preston, M. (2008). Best practices in teaching K–12 online: Lessons learned from Michigan Virtual School teachers. *Journal of Interactive Online Learning*, 7, 10–35.
40. Drigas, A., & Karyotaki, M. (2014). Learning Tools and Applications for Cognitive Improvement. *International Journal of Engineering Pedagogy (iJEP)*, 4(3), 71-77.
41. Drigas, A., Karyotaki, M., & Skianis, C. (2017). Success: A 9 Layered-based Model of Giftedness. *International Journal of Recent Contributions from Engineering, Science & IT (iJES)*, 5(4), 4-18.
42. Drigas, A. S., & Pappas, M. A. (2017). The Consciousness-Intelligence-Knowledge Pyramid: An 8x8 Layer Model. *International Journal of Recent Contributions from Engineering, Science & IT (iJES)*, 5(3), 14-25.
43. Dykman, C. A., & Davis, C. K. (2008). Online education forum Part Two: Teaching online versus teaching conventionally. *Journal of Information Systems Education*, 19, 156–163.
44. El-Hindi, A.E. (1996). Enhancing metacognitive awareness of college learners. *Reading Horizons*, 37, 214-230
45. Emerick, L. J. (1992). Academic underachievement among the gifted: Students' perceptions of factors that reverse the pattern. *Gifted Child Quarterly*, 36(3), 140-146.
46. Esposito, M., Pascotto, A., Gallai, B., Parisi, L., Roccella, M., Marotta, R., ... & Carotenuto, M. (2012). Can headache impair intellectual abilities in children? An observational study. *Neuropsychiatric disease and treatment*, 8, 509.
47. Feldman, D. (1984). A Follow-up of Subjects Scoring above 180 IQ in Terman's Genetic Studies of Genius. *Exceptional Children*. 50 (6): 518–523.
48. Fetzer, E. A. (2000). The gifted/learning-disabled child: A guide for teachers and parents. *Gifted Child Today*, 23(4), 44–50.
49. Flavell, J.H. (1979). Metacognitive and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist*, 34, 906-911.
50. Flavell, J.H. (1999). Cognitive development: Children's knowledge about the mind. *Annual Review of Psychology*, 50: 21-45.

51. Fong, R. W., & Yuen, M. (2014). Perfectionism and Chinese gifted learners. *Roeper Review*, 36(2), 81-91.
52. Friedman, NP; Miyake, A; Robinson, JL; Hewitt, JK (2011). "Developmental trajectories in toddlers' self restraint predict individual differences in executive functions 14 years later: A behavioral genetic analysis". *Developmental Psychology*. 47 (5): 1410–1430
53. Fung, J. J., Yuen, M., & Yuen, A. H. (2014). Self-regulation in learning Mathematics online: Implications for supporting mathematically gifted students with or without learning difficulties. *Gifted and Talented International*, 29(1-2), 113-123.
54. Garrett, A. J., Mazzocco, M. M. & Baker, L. (2006). Development of the metacognitive skills of prediction and evaluation in children with or without math disability. *Learning Disabilities Research & Practice*, 21(2), 77–88.
55. Ge, X., & Land, S. M. (2003). Scaffolding students' problem-solving processes in an ill-structured task using question prompts and peer interactions. *Educational Technology Research and Development*, 51(1), 21–38.
56. Ge, X., & Land, S. M. (2004). A conceptual framework for scaffolding III-structured problem-solving processes using question prompts and peer interactions. *Educational Technology Research and Development*, 52(2), 5–22.
57. Goetz, T., Preckel, F., Zeidner, M., & Schleyer, E. (2008). Big fish in big ponds: A multilevel analysis of test anxiety and achievement in special gifted classes. *Anxiety, Stress, & Coping*, 21(2), 185-198.
58. Goos, M., Galbraith, P., Renshaw, P. (2000). A money problem: A source of insight into problem solving action. *International Journal for Mathematics Teaching and Learning*. 80.
59. Gourgey, A.F. (1998). Metacognition in basic skills instruction. *Instructional Science*, 26, 81-96.
60. Greenspon, T. S. (2014). Is there an antidote to perfectionism?. *Psychology in the Schools*, 51(9), 986-998.
61. Gu, X., Chen, S., Zhu, W., & Lin, L. (2015). An intervention framework designed to develop the collaborative problem-solving skills of primary school students. *Educational Technology Research and Development*, 63(1), 143-159.
62. Hacker, D.J. & Dunlosky, J. (2003). Not all metacognition is created equal. *New Directions For Teaching And Learning*, 95, 73-79.

63. Hannah, C. L., & Shore, B. M. (1995). Metacognition and high intellectual ability: insights from the study of learning-disabled gifted students. *Gifted Child Quarterly*, 39(2), 95-1.
64. Hatzipanagos, S. & Warburton, S. (2009). Feedback as a dialogue: exploring the links between formative assessment and social software in distance learning: *Learning, Media and Technology*, 34 (1), 45-59
65. Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: A meta-analytic assessment of the strategies that promote achievement. *Developmental psychology*, 45(3), 740.
66. Hogan, K. (1999). Thinking aloud together: A test of an intervention to foster students' collaborative scientific reasoning. *Journal of Research in Science Teaching*, 36(10), 1085–1109.
67. Huizinga, M., Dolan, C. V., & van der Molen, M. W. (2006). Age-related change in executive function: Developmental trends and a latent variable analysis. *Neuropsychologia*, 44(11), 2017–2036
68. Jager, B., Jansen, M., & Reezigt, G. (2005). The development of metacognition in primary school learning environments. *School Effectiveness and School improvement*, 16, 179-196.
69. Jonassen, D. H. (1997). Instructional design models for well-structured and III-structured problem-solving learning outcomes. *Educational Technology Research and Development*, 45(1), 65–94
70. Karakostas, A., & Demetriadis, S. (2011). Enhancing collaborative learning through dynamic forms of support: the impact of an adaptive domain-specific support strategy. *Journal of Computer Assisted learning*, 27(3), 243–258.
71. Flavell, J.H. (1979). Metacognitive and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist*, 34, 906-911.
72. Flavell, J.H. (1999). Cognitive development: Children's knowledge about the mind. *Annual Review of Psychology*, 50: 21-45.
73. Hacker, D.J. & Dunlosky, J. (2003). Not all metacognition is created equal. *New Directions For Teaching And Learning*, 95, 73-79.
74. Karyotaki, M., & Drigas, A. (2016). Latest Trends in Problem Solving Assessment. *International Journal of Recent Contributions from Engineering, Science & IT (iJES)*, 4(2), 4-10.

75. Kershner, R., Warwick, P., Mercer, M., & Staarman, J. K. (2012). Primary children's management of themselves and others in collaborative group work: 'Sometimes it takes patience ...'. *Education 3-13: International Journal of Primary, Elementary and Early Years Education*, 42(2), 201-216
76. Kim, M. C., & Hannafin, M. J. (2011). Scaffolding problem solving in technology-enhanced learning environments (TELEs): Bridging research and theory with practice. *Computers & Education*, 56(2), 403-417.
77. Kitsantas, A., Bland, L., & Chirinos, D. S. (2017). Gifted students' perceptions of gifted programs: An inquiry into their academic and social-emotional functioning. *Journal for the Education of the Gifted*, 40(3), 266-288.
78. Koehler, M. J., Mishra, P., & Yahya, K. (2007). Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy and technology. *Computers & Education*, 49(3), 740-762.
79. Koh, J. H. L., Chai, C. S., Benjamin, W., & Hong, H. Y. (2015). Technological pedagogical content knowledge (TPACK) and design thinking: A framework to support ICT lesson design for 21st century learning. *The Asia-Pacific Education Researcher*, 24(3), 535-543.
80. Kramarski, B., Mevarech, Z.R. & Liberman, A. (2001). The effects of multilevel- versus unilevel metacognitive training on mathematical reasoning. *Journal for Educational Research* 94(5), 292-300.
81. Krochak, L. A.; Ryan, T. G. (2007). The challenge of identifying gifted/learning disabled students. *International Journal of Special Education*. 22 (3): 44-53.
82. Lai, E. R. (2011) 'Critical Thinking: A Literature Review'. *Pearson's Research Reports*, Vol. 6: 40-41.
83. Lee, H., Lin, K. Y. & Grabowski, B.L. (2010). Improving self-regulation, learning strategy use, and achievement with metacognitive feedback. *Education. Technology Research and Development*, 58, 629-648.
84. Lee, L. (2011). Blogging; promoting learner autonomy and intercultural competence through study abroad. *Language Learning & Technology*, 15 (3), 87-109.
85. Lee, Y., & Nelson, D. W. (2005). Design of a cognitive tool to enhance problem-solving performance. *Education Media International*, 42(1), 3-18.
86. Lester, F. K. (1994). Musings about mathematical problem solving research: 1970-1994. *Journal for Research in Mathematics Education*, 25 (6), 660-675.

87. Levy, J. J., & Plucker, J. A. (2008). A Multicultural Competence Model for Counseling Gifted and Talented Children. *Journal of School Counseling*, 6(4), n4.
88. Lucangeli, D. & Cornoldi, C. (1997). Mathematics and metacognition: What is the nature of relationship? *Mathematical Cognition*, 3, 121-139.
89. Lucangeli, D., Galderisi, D. & Cornoldi, C. (1995). Specific and general transfer effects of metamemory training. *Learning Disabilities. Research and Practice*, 10, 11–21.
90. Malmberg, J., Järvelä, S., Järvenoja, H., & Panadero, E. (2015). Promoting socially shared regulation of learning in CSCL: Progress of socially shared regulation among high-and low-performing groups. *Computers in Human Behavior*, 52, 562-572.
91. Margot, K. C., & Rinn, A. N. (2016). Perfectionism in Gifted Adolescents: A Replication and Extension. *Journal of Advanced Academics*, 27(3), 190-209.
92. Mayer, E.R. (2014). Cognitive, Metacognitive and Motivational Aspects of Problem Solving. *Instructional Science*, 26, 49-63.
93. Miller, E. K., & Cohen, J. D. (2001). An integrative theory of prefrontal cortex function. *Annual review of neuroscience*, 24(1), 167-202.
94. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.
95. Miyake, A., & Friedman, N. P. (2012). The nature and organization of individual differences in executive functions: Four general conclusions. *Current Directions in Psychological Science*, 21(1), 8–14
96. Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., & Wager, T. D. (2000). The unity and diversity of executive functions and their contributions to complex “frontal lobe” tasks: A latent variable analysis. *Cognitive psychology*, 41(1), 49-100.
97. Montague, M. (1992). The Effects of Cognitive and Metacognitive Strategy Instruction on the Mathematical Problem Solving of Middle School Students with Learning Disabilities. *Journal of Learning Disabilities*, 25, 230-248.
98. Nicol, D.J. & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: a model and seven principles of good feedback practice. *Studies in Higher Education*, 31 (2), 199-218.

99. Nielson, M. E. (2002). Gifted students with learning disabilities: Recommendations for identification and programming. *Exceptionality*, 10 (2): 93–111.
100. Otani, H. & Widner, R.L. (2005). Metacognition: New issues and approaches. *The Journal of General Psychology*, 132(4), 329-334.
101. Ozsoy, G., & Ataman, A. (2009). The Effect of Metacognitive Strategy Training on Mathematical Problem Solving Achievement. *Online Submission*, 1(2), 68-83.
102. Parker, W. D.; Mills, C. J. (1996). The Incidence of Perfectionism in Gifted Students. *Gifted Child Quarterly*, 40: 194–199
103. Pedersen, S., & Liu, M. (2003). The transfer of problem-solving skills from a problem-based learning environment: The effect of modeling an expert's cognitive processes. *Journal of Research on Technology in Education*, 35(2), 303–320.
104. Perkins, D. N. & Grotzer, T. A. (1997) 'Teaching Intelligence'. *American Psychologist*. Vol. 52 (10): 1125-1133.
105. Peterson, J. S. (2009). Myth 17: Gifted and talented individuals do not have unique social and emotional needs. *Gifted Child Quarterly*, 53(4), 280-282.
106. Pirnay-Dummer, P., Ifenthaler, D., & Spector, J. M. (2010). Highly integrated model assessment technology and tools. *Education Technology Research and Development*, 58, 3–18.
107. Priego, C. M., Muñoz, G. N., & Ciesielkiewicz, M. (2015). Blogs as a tool for the development of self-regulated learning skills: a project. *American Journal of Educational Research*, 3(1), 38-42.
108. Pugalee, D.K. (2001). Writing, mathematics, and metacognition: looking for connections through students' work in mathematical problem solving. *School Science and Mathematics*, 101, 236- 245.
109. Pyryt, M. C. (2004). Pegnato revisited: Using discriminant analysis to identify gifted children. *Psychology Science*, 46(3), 342-347.
110. Raes, A., Schellens, T., De Wever, B., & Vanderhoven, E. (2012). Scaffolding information problem solving in web-based collaborative inquiry learning. *Computers & Education*, 59(1), 82–94.

111. Reis, S. M., & Renzulli, J. S. (2004). Current research on the social and emotional development of gifted and talented students: Good news and future possibilities. *Psychology in the Schools*, 41(1), 119-130.
112. Reis, S. M., & Renzulli, J. S. (2009). Myth 1: The gifted and talented constitute one single homogeneous group and giftedness is a way of being that stays in the person over time and experiences. *Gifted Child Quarterly*, 53(4), 233-235.
113. Renzulli, J. (1978). What Makes Giftedness? Reexamining a Definition. *Phi Delta Kappan*. 60 (3): 180–84, 261.
114. Rice, K. G., Leever, B. A., Christopher, J., & Porter, J. D. (2006). Perfectionism, stress, and social (dis) connection: A short-term study of hopelessness, depression, and academic adjustment among honors students. *Journal of Counseling Psychology*, 53(4), 524.
115. Robertson, J. (2011). The educational affordances of blogs for self-directed learning. *Computers & Education*, 57, 1628-1644
116. Roesdiyanto, R. (2014). The Influence of Multiple Intelligence Approach on the Physical Education Learning towards for Character Improvement. *Asian Social Science*, 10(5), 91.
117. Roesdiyanto, R. (2014). The Influence of Multiple Intelligence Approach on the Physical Education Learning towards for Character Improvement. *Asian Social Science*, 10(5), 91.
118. Rummel, N., & Spada, H. (2005). Learning to collaborate: An instructional approach to promoting problemsolving in computer-mediated settings. *The Journal of the Learning Sciences*, 14(2), 201–241
119. Salmerón, L., Baccino, T., Cañas, J.J., Madrid, R. I., & Fajardo, I. (2009). Do graphical overviews facilitate or hinder comprehension in hypertext? *Computers & Education*, 53, 1308-1319
120. Salmerón, L., Kintsch, W. & Kintsch, E. (2010). Self-regulation and link selection strategies in hypertext. *Discourse Processes*, 47, 175–211
121. Schraw, G. & Moshman, D. (1995). Metacognitive theories. *Educational Psychology Review* 7(4), 351-371
122. Schraw, G. (1997). The Effect of Generalized Metacognitive Knowledge on Test Performance and Confidence Judgements. *The Journal of Experimental Education*, 65 (2), 135-146.

123. Schraw, G. (1998). Promoting General Metacognitive Awareness. *Instructional Science*, 26, 113-125.
124. Schuchardt, K., Gebhardt, M., & Mäehler, C. (2010). Working memory functions in children with different degrees of intellectual disability. *Journal of intellectual disability research*, 54(4), 346-353.
125. Shapley, P. (2000). On-line education to develop complex reasoning skills in organic chemistry. *Journal of Asynchronous Learning Networks*, 4(2), 43-52.
126. Shimomura, F. (2016). How should we teach diverse students? Cross-cultural comparison of diversity issues in K-12 schools in Japan and the US. *International Journal of Multicultural and Multireligious Understanding*, 3(1), 1-13.
127. Slavin, R. E. (1987). Ability grouping and student achievement in elementary schools: Best-evidence synthesis. *Review of Educational Research*, 57, 293–336.
128. Stegmann, K., Weinberger, A., & Fischer, F. (2007). Facilitating argumentative knowledge construction with computer-supported collaboration scripts. *International Journal of Computer-Supported Collaborative Learning*, 2(4), 421–447
129. Stoszowski, J., Collins, D., & Olsson, C. (2017). Using shared online blogs to structure and support informal coach learning. Part 2: the participants' view and implications for coach education. *Sport, Education and Society*, 22(3), 407-425.
130. Summerville, J., & Reid-Griffin, A. (2008). Technology integration and instructional design. *TechTrends*, 52(5), 45–51.
131. Sungur, S. (2007). Contribution of motivational beliefs and metacognition to students' performance under consequential and nonconsequential test conditions. *Educational Research and Evaluation*. 13(2), 127-142.
132. Swanson, H.L. (1990). Influence of metacognitive knowledge and aptitude on problem solving. *Journal of Educational Psycholog*, 82, 306-314.
133. Tamnes, C. K., Østby, Y., Walhovd, K. B., Westlye, L. T., Due- Tønnessen, P., & Fjell, A. M. (2010). Intellectual abilities and white matter

microstructure in development: a diffusion tensor imaging study. *Human brain mapping*, 31(10), 1609-1625.

134. Teong, S.K. (2002). The effect of metacognitive training on mathematical word-problem solving. *Journal of Computer Assisted Learning*, 19, 46-45.
135. van der Stel, M., & Veenman, M. V. (2014). Metacognitive skills and intellectual ability of young adolescents: A longitudinal study from a developmental perspective. *European journal of psychology of education*, 29(1), 117-137.
136. Vaughan, L., & Giovanello, K (2010). "Executive function in daily life: Age-related influences of executive processes on instrumental activities of daily living". *Psychology and Aging*. 25 (2): 343–355
137. Veenman, M.V.J., Wilhelm, P. & Beishuizen, J.J. (2004). The relation between intellectual and metacognitive skills from a developmental perspective. *Learning and Instruction*, 14, 89-109
138. Vye, N. J., Goldman, S. R., Voss, J. F., Hmelo, C. E., Williams, S. M., & Cognition, and Technology Group at v. (1998). Complex mathematical problem solving by individuals and dyads. *Cognition and Instruction*, 15(4), 435–484
139. Wang, K. T., Fu, C. C., & Rice, K. G. (2012). Perfectionism in gifted students: Moderating effects of goal orientation and contingent self-worth. *School Psychology Quarterly*, 27(2), 96.
140. Warne, R.T. (2016). Five reasons to put the g back into giftedness: An argument for applying the Cattell–Horn–Carroll theory of intelligence to gifted education research and practice. *Gifted Child Quarterly*. 60, 3–15
141. Webb, N., & Mastergeorge, A. (2003). Promoting effective helping behaviour in peer-directed groups. *International Journal of Educational Research*, 39(1), 73–97.
142. Wegerif, R. (2006). A dialogic understanding of the relationship between CSCL and teaching thinking g skills. *International Journal of Computer-Supported Collaborative Learning*, 1(1), 143.
143. Wiebe, SA; Espy, KA; Charak, D (2008). "Using confirmatory factor analysis to understand executive control in preschool children: I. Latent structure". *Developmental Psychology*. 44 (2): 573–587.

144. Williams, J. M., Greenleaf, A. T., Albert, T., & Barnes, E. F. (2014). Promoting Educational Resilience among African American Students at Risk of School Failure: The Role of School Counselors. *Journal of School Counseling*, 12(9), n9.
145. Willoughby, M. T., Blair, C. B., Wirth, R. J., Greenberg, M., & Family Life Project Investigators. (2012). The measurement of executive function at age 5: Psychometric properties and relationship to academic achievement. *Psychological Assessment*, 24(1), 226–239
146. Winne, P.H. (1997). Experimenting to bootstrap self-regulated learning. *Journal of Educational Psychology*, 89, 1-14.
147. Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, 17(2), 89–100.
148. Yan, Y., & Cheng, Z. (2007). Reflections on the deviation of cooperative learning in practice. *Basic Education Research*, 2007(5), 21–23 (in Chinese).
149. Zeidner, M., & Schleyer, E. J. (1999). The big-fish–little-pond effect for academic self-concept, test anxiety, and school grades in gifted children. *Contemporary Educational Psychology*, 24(4), 305-329.
150. Zeidner, M., & Shani-Zinovich, I. (2013). Research on personality and affective dispositions of gifted children: The Israeli scene. *Gifted and Talented International*, 28(1-2), 35-50.
151. Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of educational psychology*, 81(3), 329.
152. Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into practice*, 41(2), 64-70.
153. Zimmerman, B. J., & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. *Journal of educational psychology*, 80(3), 284.
154. Zimmerman, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of educational Psychology*, 82(1), 51.
155. Zion, M., Adler, I., & Mevarech, Z. (2015). The effect of individual and social metacognitive support on students' metacognitive performances in an online discussion. *Journal of Educational Computing Research*, 52(1), 50-87.

156. Anderson, R. C. (2004) 'Role of the Reader's Schema in Comprehension, Learning, and Memory' in Ruddell, R. B. & Unrau, N. J. (Eds.) *Theoretical models and processes of reading*. Newark, DE: International Reading Association
157. Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs: Prentice Hall.
158. Becta (2003). *What the research says about ICT supporting special educational needs (SEN) and inclusion*. Coventry: Becta
159. Blatchford, P., Kutnick, P., & Baines, E. (2007). Pupil grouping for learning in classrooms: Results from the UK SPRinG Study. Paper presented at symposium 'International Perspectives on Effective Groupwork: Theory, Evidence and Implications', American Educational Research Annual Meeting, Chicago, April 2007.
160. Brown, A.L. (1980). Metacognitive development and reading. In R.J. Sprio, B. Bruce, & W. Brewer (Eds.), *Theoretical issues in reading comprehension*. Hillsdale, NJ: Lawrence Erlbaum Associates.
161. Callahan, C. M., Hertberg-Davis, H. L. (2012). Heterogeneity among the Gifted. In Callahan, Carolyn M.; Hertberg-Davis, Holly L. (eds). *Fundamentals of Gifted Education: Considering Multiple Perspectives*. Routledge. p. 330.
162. Cavanaugh, C. (2007). Effectiveness of K–12 online learning. In M. Moore (Ed.), *Handbook of distance education* (2nd ed., pp. 157-168). Mahwah, NJ: Erlbaum
163. Closson, L. M., & Boutilier, R. R. (2017). Perfectionism, academic engagement, and procrastination among undergraduates: The moderating role of honors student status. *Learning and Individual Differences*.
164. Colangelo, N., & Davis, G. (2003). *Handbook of Gifted Education*. Boston: Pearson education, Inc.
165. Davis, G. A., Rimm, S. B., & Siegle, D. B. (2013). *Education of the Gifted and Talented: Pearson New International Edition*. Pearson Higher Ed.
166. Dawes, L., Mercer, N., & Wegerif, R. (2003). Thinking together: A programme of activities for developing speaking, listening and thinking skills for children aged 8-11. Birmingham: Imaginative Minds

167. Delisle, J. R., & Galbraith, J. K. (2002). When gifted kids don't have all the answers. Minneapolis.
168. Demetriou, A., & Efklides, A. (1990). The objective and subjective structure of problem-solving abilities: metacognitive awareness from early adolescence to middle age. In H. Mandl, E. de Corte, S. N. Bennett, & H. F. Friedrich (Eds.), *Learning and instruction in an international context. Volume 2.1. Social and cognitive aspects of learning and instruction* (pp. 161–179). Oxford: Pergamon Press.
169. Desoete, A. (2008). Multi-method assessment of metacognitive skills in elementary school children: How you test is what you get. *Metacognition and Learning*,
170. Dweck, C. S. (2013). *Self-theories: Their role in motivation, personality, and development*. psychology press.
171. Facione, P. A. (1990) *Critical thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction*. Millbrae, CA: The California Academic Press
172. Farrell, M. (2012). *The effective teacher's guide to dyslexia and other learning difficulties* (2nd ed.). Abingdon: Routledge.
173. Fischer, G. (2006) *Distributed Intelligence: Extending the Power of the Unaided, Individual Human Mind*. Proceedings of Advanced Visual Interfaces (AVI) Conference. Venice, Italy. 23-26 May. 7-14.
174. Fisher, E. S., & Kennedy, K. S. (2016). *Counseling Special Populations in Schools*. Oxford University Press.
175. Flavell, J. H. (1988). The development of children's knowledge about mind. In J. W. Astington, P. L. Harris, & R. O. Olson (Eds.), *Developing theories of mind* (pp. 21–29). Cambridge, UK: Cambridge University Press.
176. Flavell, J. H., & Wellman, H. M. (1977). Metamemory. In R. V. Kail, & J. W. Hagen (Eds.), *Perspectives on the development of memory and cognition* (pp. 3–33). Hillsdale: Erlbaum.
177. Gagné, F. (2015). From genes to talent: the DMGT. *CMTD perspective*.
178. Gardner, J. W. (2015). *Excellence: Can we be equal and excellent too?*. Pickle Partners Publishing.
179. Gay, G. (2010). *Culturally responsive teaching: Theory, research, and practice*. Teachers College Press.

180. Georgas, J., Weiss, L. G., Van de Vijver, F. J., & Saklofske, D. H. (Eds.). (2003). *Culture and children's intelligence: Cross-cultural analysis of the WISC-III*. Academic Press.
181. Gilman, L. (2012). *The Theory of Multiple Intelligences*. Indiana University.
182. Goldberg, P.D. & W.S. Bush (2003). Using metacognitive skills to improve 3rd graders' math problem solving. *Focus on Learning Problems in Mathematics*. Fall, 2003.
183. Gottfredson, L. S. (2009). Logical Fallacies Used to Dismiss the Evidence on Intelligence Testing" In Phelps, Richard F. (eds). *Correcting Fallacies about Educational and Psychological Testing*. Washington (DC): American Psychological Association.
184. Hassard, J. (2005) *Meaningful Learning Model*. In *the Art of Teaching Science*. New York, Oxford: Oxford University Press
185. Heinich, R., Molenda, M., Russell, J., & Smaldino, S. (1999). Instructional media and technologies for learning (6th ed., pp. 7–92). Columbus, OH: Prentice-Hall.
186. Huitt, W. (1997). *Metacognition*. Educational Psychology Interactive. Valdosta, GA: Valdosta State University
187. Johnsen, S.K. (2011). *Identifying Gifted Students: A Practical Guide* (2nd ed.). Waco, Texas: Prufrock Press.
188. Johnson, D. W., & Johnson, R. T. (1975). Learning together and alone: Cooperation, competition, and individualization. Englewood Cliffs: Prentice-Hall.
189. Jordan, A., Orison, C. & Stack, A. (2008) *Approaches to Learning: A Guide for Educators*. UK: Open University Press McGraw-Hill Education.
190. Kalbfleisch, M. L. (2012). Twice-Exceptional Students. In Callahan, Carolyn M.; Hertberg-Davis, Holly L. (eds). *Fundamentals of Gifted Education: Considering Multiple Perspectives*. Routledge. p. 360.
191. Livingston, J. A. (1996). *Effects of metacognitive instruction on strategy use of college students*. Unpublished manuscript, State University of New York at Buffalo.
192. Lohman, D. F. (2005) 'Reasoning Abilities' in R. J. Sternberg & J. E. Pretz *Cognition and Intelligence: Identifying the Mechanisms of the Mind*. Cambridge: University Press

193. Lough, D. M. (2017). Asynchronous Gifted Students & Human Rights Education: A Residential Life Curriculum Guide Aimed at Supporting Subcultures and Underrepresented Populations.
194. Lucangeli, D., Cornoldi, C, & Tellarini, M. (1998). Metacognition and learning disabilities in mathematics. In T.E. Scruggs & M.A. Mastropieri (Eds.), *Advances in Learning and behavioural disabilities* (pp. 219-285). Greenwich: JAI Press Inc.
195. Malenka, RC, Nestler, EJ, Hyman, SE (2009). "Chapter 6: Widely Projecting Systems: Monoamines, Acetylcholine, and Orexin". In Sydor, A; Brown, RY. *Molecular Neuropharmacology: A Foundation for Clinical Neuroscience* (2nd ed.). New York: McGraw-Hill Medical. pp. 155–157.
196. Marge, J.J. (2001). The effect of metacognitive strategy scaffolding on student achievement in solving complex math word problems (Doctoral Thesis). Riverside, CA: University of California.
197. McIntosh, D. E., Dixon, F. A., & Pierson, E. E. (2005). Use of intelligence tests in the identification of giftedness. *Contemporary intellectual assessment: Theories, tests, and*, (2nd), 504-520.
198. McLoughlin, C. & Hollingworth, R. (2001). *The weakest link: Is web-based learning capable of supporting problem-solving and metacognition?* 18th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education, 9-12 December 2001, Melbourne, Australia.
199. Nelson, T. O., & Narens, L. (1990). Metamemory: A theoretical framework and new findings. In Bower, G.H. (Ed.), *The psychology of learning and motivation Vol.26* (pp.125-141), New York: Academic Press.
200. Neumeister, K. L. S. (2017). Perfectionism in gifted students. *The psychology of perfectionism: Theory, research, applications*.
201. Nickerson, R. S., Perkins, D. N., & Smith, E. E. (2014). *The teaching of thinking*. Routledge.
202. Paul, R. & Elder, L. (2006) *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*. Upper Saddle River, NJ: Prentice Hall.
203. Piaget, J. (1973) *Main Trends in Psychology*. London: George Allen & Unwin.
204. Picciano, A.G. (2001). *Distance learning: Making connections across virtual space and time*. Upper Saddle River, NJ: Prentice-Hall.

205. Pintrich, P. R. & Schunk, D. H. (2002). *Motivation in education: Theory, research, and applications*. Upper Saddle River, NJ: Merrill-Prentice Hall
206. Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In *Handbook of self-regulation* (pp. 451-502).
207. Polya, G. (1988). *How To Solve It*. New Jersey, NJ: Princeton University Pres.
208. Powell, S. (2003). *Special teaching in higher education: Successful strategies for access and inclusion*. London: Kogan Page
209. Ramsay, D. B., & Paradiso, J. A. (2015). Grouploop: a collaborative, network-enabled audio feedback instrument. In *NIME* (pp. 251-254).
210. Rimm, S. (2002). Peer pressures and social acceptance of gifted students. *The social and emotional development of gifted children: What do we know*, 13-18.
211. Rumelhart, D. E. & Norman, D. A. (1981) 'Analogical Processes in Learning' in Anderson, J. R. (Ed.) *Cognitive Skills and Their Acquisition*. Hillsdale, NJ: Erlbaum
212. Salomon, G. (1993) *Distributed Cognitions: Psychological and Educational Considerations*. Cambridge: Cambridge University Press
213. Schoenfeld, A. (1985). *Mathematical Problem Solving*. San Diego, CA: Academic Press.
214. Schoenfeld, A. (1992). Learning to think mathematically: Problem solving, metacognition, and sense making in mathematics. In D.A. Grouws (Ed.), *Handbook of Research on Mathematics Teaching and Learning* (pp. 165–197). MacMillan, New York.
215. Schuler, P. (2002). Perfectionism in Gifted Children and Adolescents. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.). *The Social and Emotional Development of Gifted Children* (pp. 71-79). Waco, Texas: Prufrock Press, Inc.
216. Schuler, P. (2002). Perfectionism in Gifted Children and Adolescents. In M. Neihart, S. M. Reis, N. M. Robinson, & S. M. Moon (Eds.). *The Social and Emotional Development of Gifted Children* (pp. 71-79). Waco, Texas: Prufrock Press, Inc.
217. Seif, A. (2017). Developing higher order thinking skills of Arab high school students in Israel.

218. Shenfield, T. (2014). Twice Exceptional: When Your Child is Both Gifted and Learning Disabled. *Advanced Psychology*
219. Singer, F. M., Sheffield, L. J., Freiman, V., & Brandl, M. (2016). Research on and activities for mathematically gifted students. In *Research On and Activities For Mathematically Gifted Students* (pp. 1-41). Springer International Publishing.
220. Steedly, K., Dragoo, K., Arefeh, S., & Luke, S.D. (2008). *Effective mathematics instruction*. Online article on National Dissemination Center for Children with Disabilities website (Washington, DC).
221. Sternberg, R. J. & Davidson, J. E. (2005). *Conceptions of Giftedness*. Cambridge: Cambridge University Press
222. Van de Walle, J. (1989). *Elementary School Mathematics*. New York: Longman.
223. Victor, A.M. (2004). The effects of metacognitive instruction on the planning and academic achievement of first and second grade children. (Doctoral Thesis). Chicago, IL: Graduate College of the Illinois Institute of Technology.
224. Wegerif, R., & Mansour, N. (2010). A dialogic approach to technology-enhanced education for the global knowledge society. In M. S. Khine & I. M. Saleh (Eds.), *New Science of Learning* (pp. 325–339). New York: Springer.
225. Weinberger, A., Stegmann, K., Fischer, F., & Mandl, H. (2007). Scripting argumentative knowledge construction in computer-supported learning environments. In F. Fischer, I. Kollar, H. Mandl, & J. M. Haake (Eds.), *Scripting computer-supported collaborative learning* (pp. 191–212). New York: Springer.
226. Westwood, P. (2013). *Inclusive and adaptive teaching*. London: Routledge
227. Whimbley, A. & Lochhead, J. (1986). *Problem solving and comprehension*. Hillsdale, NJ: Lawrence Erlbaum Associates
228. Wilburne, J. M. (1997). The effect of teaching metacognitive strategies to preservice elementary school teachers on their mathematical problem solving achievement and attitude. (Doctoral Thesis). Philadelphia: Temple University.
229. Wilburne, J. M. (1997). The effect of teaching metacognitive strategies to preservice elementary school teachers on their mathematical problem solving achievement and attitude. (Doctoral Thesis). Philadelphia: Temple University.

230. Winn, W. & Snyder, D. (1996) 'Cognitive Perspectives in Psychology' in Jonassen, D. H. (Ed.) *Handbook of Research for Educational Communications and Technology*. New York: Macmillan
231. Yimer, A. (2004). Metacognitive and cognitive functioning of college students during mathematical problem solving. (Doctoral Thesis). Illinois State University.