**EDN 203**

**Chapter 8: Higher Order Thinking**

**What is Problem Solving: Problem Solving Defined**

<http://www.nzmaths.co.nz/ps/info/WhatIsPS.aspx>

<http://www.gse.uci.edu/person/mmartinez/documents/mmartinez_Problem_Solving.html>

<http://media.wiley.com/product_data/excerpt/79/07879643/0787964379.pdf>

Definitions of **problem solving** on the Web:

* the area of cognitive psychology that studies the processes involved in solving problems   
  [wordnet.princeton.edu/perl/webwn](http://www.google.com/url?sa=X&start=0&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=7oO6XYVdNtFOaS2SBRBplw&q=http://wordnet.princeton.edu/perl/webwn%3Fs%3Dproblem+solving&usg=AFQjCNEE3m55HgTER5jOEhJAJBIMvKSHkg)
* Problem solving forms part of thinking. Considered the most complex of all intellectual functions, problem solving has been defined as higher-order cognitive process that requires the modulation and control of more routine or fundamental skills (Goldstein & Levin, 1987). ...  
  [en.wikipedia.org/wiki/Problem\_solving](http://www.google.com/url?sa=X&start=1&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=Q4bVPgFZuBTlb2FXUP0q-A&q=http://en.wikipedia.org/wiki/Problem_solving&usg=AFQjCNHQFhaj-QZB812WkGAidqztUmz3Sw)
* A quality improvement approach that involves objectively identifying the causes of a problem and proposing potential, often creative, solutions to the problem, which will be agreeable to multiple parties or individuals.  
  [www.qaproject.org/methods/resglossary.html](http://www.google.com/url?sa=X&start=2&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=ELf6TriBC1m26o2WFnOz2w&q=http://www.qaproject.org/methods/resglossary.html&usg=AFQjCNFphLE7FYl5uCXB7koWNXKVdTttHQ)
* thought A problem-solving heuristic is an informal, intuitive, speculative procedure that leads to a solution in some cases but not in others. ...  
  [cache-docs.ebonline.com/EBchecked/topic/264469/heuristic-reasoning](http://www.google.com/url?sa=X&start=3&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=XdyfeeuCbgesTAXNi3A0DQ&q=http://cache-docs.ebonline.com/EBchecked/topic/264469/heuristic-reasoning&usg=AFQjCNEbbQkOA0AyXfm3VtRTiMM7zjT_9Q)
* used in both a traditional sense of the act of a centralized problem solver, either a human or organization or a computing system. And also in the less accepted sense of a "solution" found by a self-organizing system. ...  
  [ishi.lanl.gov/diversity/Glossary1\_div.html](http://www.google.com/url?sa=X&start=4&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=1J8bxkeHUrnB_BR1_Qwx6w&q=http://ishi.lanl.gov/diversity/Glossary1_div.html&usg=AFQjCNH7lwRYKTOSbUNchHQ1tJaoUd1_jQ)
* involves analytical thinking, reasoning and logic.  
  [www.educationcounts.govt.nz/publications/assessment/29946/29947/8](http://www.google.com/url?sa=X&start=5&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=ndRMRqEKc_3r9nXn3Hdg2A&q=http://www.educationcounts.govt.nz/publications/assessment/29946/29947/8&usg=AFQjCNHqeXAeA7GWjcqOkNs3mJToLrxTHw)
* appraises the positions requirement for use of methods, such as inference, organic systems, imagination and the scientific method to define and solve complex problems in either an organized or wholly original manner. ...  
  [www.evergreen.edu/employment/docs/Major%20Compensation%20Factors%20Definitions%20for%20Distinguishing%20Pay%20Differences%20through%20Position%20Evaluation.doc](http://www.google.com/url?sa=X&start=6&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=C6KgusdFn5QTDcDV9Aq3gg&q=http://www.evergreen.edu/employment/docs/Major%2520Compensation%2520Factors%2520Definitions%2520for%2520Distinguishing%2520Pay%2520Differences%2520through%2520Position%2520Evaluation.doc&usg=AFQjCNGODyv0bvdfBYuQaw_GFe2v-QbgFA)
* An individual’s capacity to use cognitive processes to confront and resolve real, cross-disciplinary situations where the solution is not immediately obvious, and where the literacy domains or curricular areas that might be applicable are not within a single domain of mathematics, science, or ...  
  [nces.ed.gov/programs/coe/glossary/p.asp](http://www.google.com/url?sa=X&start=7&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=KBlOC5G3fA8ZOox4aVQIrg&q=http://nces.ed.gov/programs/coe/glossary/p.asp&usg=AFQjCNF-0hki1qwi-0OFZlHOnxS3mz_31Q)
* Reflective thinking using the scientific approach  
  [www.ag.ohio-state.edu/~aged885/Glossary/GLOSSARY.htm](http://www.google.com/url?sa=X&start=8&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=4at1khqaTNHRRkMJMfliMw&q=http://www.ag.ohio-state.edu/~aged885/Glossary/GLOSSARY.htm&usg=AFQjCNH4TS6VJBhdxeTljpwbByxpB0tC5g)
* A systematic approach utilizing multiple perspectives to uncover the issues related to a particular problem, design an intervention plan, and evaluate the outcome.  
  [rrtcpbs.fmhi.usf.edu/rrtcpbsweb/glossary.htm](http://www.google.com/url?sa=X&start=9&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=9qAh06d3c7cQkD7cgV6f4w&q=http://rrtcpbs.fmhi.usf.edu/rrtcpbsweb/glossary.htm&usg=AFQjCNFZTjfAds35_504S61YNyVK-MwnyA)
* is thinking about and finding answers for a relatively clearly-defined situation for which there are one or more reasonable answers.  
  [aaahq.org/aecc/intent/glossary.htm](http://www.google.com/url?sa=X&start=10&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=0J06D_K68a2FpHTnVNvqCQ&q=http://aaahq.org/aecc/intent/glossary.htm&usg=AFQjCNFjdSZE4smit8x1RzVwaG319pQykw)
* skills for employing reasoning, judgment, and discernment in resolving problems.  
  [www.stjohn.org/NRS/TBI/](http://www.google.com/url?sa=X&start=11&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=XrE8zg0UaSK0NykGlCdTBQ&q=http://www.stjohn.org/NRS/TBI/&usg=AFQjCNGOlFBSyqUyPL4d-l7hJPcNVmIVgQ)
* A computer-assisted instruction technique in which students are required to apply known information to new settings. It demands logical thinking and the ability to follow directions carefully.  
  [www.personal.psu.edu/bxb11/CBTGuide/Append/Gloss.htm](http://www.google.com/url?sa=X&start=12&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=qSlF96qYTJADqaytgVg_RQ&q=http://www.personal.psu.edu/bxb11/CBTGuide/Append/Gloss.htm&usg=AFQjCNFePXd0C3MRlQwDgVawt439vsolDg)
* A system of bringing about a required outcome from a previous.  
  [www.flyingwithoutfear.com/atfof/glossary\_details.aspx](http://www.google.com/url?sa=X&start=13&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=LcmJNTqeEqJfJVo29cCiFg&q=http://www.flyingwithoutfear.com/atfof/glossary_details.aspx%3Findex%3Dp&usg=AFQjCNENuBrqMCGYDEaOxESgBsDNHcDtaw)
* The ability to analyze information related to a given situation and generate appropriate response options. ...  
  [www.brainrehab.org/NeuropsychTerms.html](http://www.google.com/url?sa=X&start=14&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=ffnLAPW6-cSkMD5S7pHyYA&q=http://www.brainrehab.org/NeuropsychTerms.html&usg=AFQjCNELGCpiGs6j0r8kmh2jYkj6JsdzzA)
* The measurement of problem solving should focus on the degree to which the organization deals with social problems.  
  [www.ask.com/enc](http://www.google.com/url?sa=X&start=15&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=Oh1iG8fRdXTtm0oBe4GBKw&q=http://www.ask.com/enc%3Fq%3Dsocial%26o%3D0%26l%3Ddir%26page%3D1&usg=AFQjCNHX1thNH3KGdhCH2lGDlyWcMK4qIQ)
* A process in which an individual or a team applies knowledge, skills, and understanding to achieve a desired outcome in an unfamiliar situation.  
  [highered.mcgraw-hill.com/sites/0072480823/student\_view0/glossary.html](http://www.google.com/url?sa=X&start=16&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=W-_I6Umrd5puSvXhElDIQw&q=http://highered.mcgraw-hill.com/sites/0072480823/student_view0/glossary.html&usg=AFQjCNE7EkbfF5FB4ZogHMdTVQ5gC3LYQQ)
* is an exercise and process that enables students to integrate their existing knowledge and develop their learning to formulate a solution to a presented question or issue and that should deepen students’ learning, as well as developing their conceptual and methodological skills, thereby ...  
  [www.wcpt.org/policies/position/education/appendix-c.php](http://www.google.com/url?sa=X&start=17&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=1ReM3XuAGzBwRoLIlSRAeg&q=http://www.wcpt.org/policies/position/education/appendix-c.php&usg=AFQjCNFdOUZWJSok6XkpN4KuuJEuZ20Q9A)
* http://en.wikipedia.org/wiki/Problem\_solving  
  [www.123exp-health.com/t/01084070711/](http://www.google.com/url?sa=X&start=18&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=xG8gWyv_gyqd01i5elfkzA&q=http://www.123exp-health.com/t/01084070711/&usg=AFQjCNEkOwQqLgWUia9gGEty46GNLOkPNQ)
* Problem solving is a method of learning where students evaluate the problem and discover the answer. This is also called critical thinking. Problem solving leads to permanent information retention and is the opposite of memorization where information is often forgotten after testing.  
  [homeschooling.families.com/blog/homeschool-glossary-words-homeschoolers-should-know-p-r](http://www.google.com/url?sa=X&start=19&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=nnCo_ZPEjxqF5wdGn5ExNQ&q=http://homeschooling.families.com/blog/homeschool-glossary-words-homeschoolers-should-know-p-r&usg=AFQjCNHW1T9VkKa_7mjXfdSgVY13UER0nw)
* It is also described at formulating new answers, going beyond the simple application of previously learned rules to create a solution. It is what happened when nature responces does not fit the current situation.  
  [hagar.up.ac.za/catts/learner/mafune/Glossary.html](http://www.google.com/url?sa=X&start=20&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=QTPGZOzuJ51BUqKai0e67w&q=http://hagar.up.ac.za/catts/learner/mafune/Glossary.html&usg=AFQjCNEP400WRdz2F6-9zWQX_dD42Hm59A)
* detecting, diagnosing, analysing and resolving problems.  
  [www.swslim.org.uk/documents/helpdesk/BasicKeyEmployability.doc](http://www.google.com/url?sa=X&start=21&oi=define&ei=SUGQSe6eBsKDtgeL0O2UDQ&sig2=P-Q_pylSE_JqQDNzyd3ALQ&q=http://www.swslim.org.uk/documents/helpdesk/BasicKeyEmployability.doc&usg=AFQjCNHdKq-JCTBNugIxbGBe-e4igLFR_w)