

RESEARCH AREA & SOURCE	DESCRIPTION & MAIN FINDINGS / ARGUMENTS
Curriculum Development / Assessment / Learning Skills  <i>The Curriculum Journal Vol. 18, No. 2, pp. 195 - 210</i>	<p><b>Csapo, Beno (2007) Research into learning to learn through the assessment of quality and organization of learning outcomes.</b></p> <p>This article summarizes the results of a number of studies conducted over nearly a decade in Hungary. The knowledge of students in Grade 7 and Grade 11 was assessed on four levels - (1) teacher grades (2) objective knowledge tests based on the curriculum (3) assessments of the quality of knowledge ( eg level of student understanding of content, ability to apply knowledge on novel contexts – this included assessment of Science application, misconceptions, Math understanding, spatial reasoning, historical reasoning etc.) and (4.) higher order thinking skills ( considered to be essential in order to acquire 'high quality' knowledge – this included assessment of inductive and deductive reasoning, correlative reasoning, critical thinking, verbal analogies etc.). Students were also given questionnaires to collect background information including information about their motivation and self-concept.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● Teacher grades correlated highly with the results of knowledge tests in Math and Science but the correlation was quite low for history and literature.</li> <li>● Much lower and in many cases insignificant correlations were found between teacher grades and measures of understanding and ability to apply knowledge. No relationship was found between teacher grades and historical reasoning.</li> <li>● In general grading is more consistent in Math and Science but teachers seem to lack a firm basis for assigning grades in other subjects.</li> <li>● The mean result for student acquisition of knowledge was around 50% indicating that students do learn a significant proportion of what they are expected to learn. However, large variations were observed according to the level of education of parents indicating that student learning may be shaped more by factors outside the school than within it.</li> <li>● Student performance on assessments of understanding and application was low.</li> <li>● Analyses that studied the relationships between variables indicated that students appear to have two independent bodies of knowledge - one mastered within the context of school and another originating from everyday experiences. The school knowledge appears to be virtually unusable outside the school context and the everyday knowledge is more pragmatic but often leads to false generalizations. Transfer appears limited in both cases.</li> <li>● Correlational analyses revealed a major role for inductive and especially analogical reasoning in learning with understanding.</li> <li>● Comparisons of results of the two grade levels indicated that higher order thinking skills were found to develop very slowly and that</li> </ul>

	<p>some even decrease over the years. For example it appears that the longer students spend in school the less likely they are to be able to recognize and accept probabilistic relationships.</p> <ul style="list-style-type: none"> <li>● Affective variables also showed a negative tendency - the longer students were in school the more negative attitudes they had towards subject areas ( English as a foreign language was the only exception to this.)</li> <li>● In other studies by the same researchers it was found that specific training in higher order thinking skills within the context of the learning of subject matter clearly removes the obstacles that hinder 'high quality' learning.</li> </ul>
	<p><b>Black, P., McCorkick, R., James, M. and Pedder, D. (2006) Learning how to learn and assessment for learning: a theoretical inquiry.</b></p> <p>This article explores the construct 'learning how to learn' and relates it to assessment for learning based on the results of different pieces of research.</p> <p>Main Arguments:</p> <ul style="list-style-type: none"> <li>● Learning how to learn is cannot be separated from learning itself and is best viewed as a set of 'learning practices' rather a set of separate learning skills that can be taught</li> <li>● Problem solving is central to learning. Learning as problem solving can be seen as a situation where the goal is to learn and problem solving is the vehicle. Students will not necessarily learn unless they are trying to learn - investing effort in both solving a given problem and transferring their learning to unassigned problems associated with their understanding. Learning must be intentional.</li> <li>● Learning to learn involves four elements: (1) knowledge about cognition - realizing the degree to which you understand (2) self-regulating strategies - planning what to do next and evaluating the progress (3) agency - taking responsibility for the direction of learning (4) collaboration - effective group interactions encourage students to think about their understanding</li> <li>● Three particular 'learning practices' have been shown by research to be effective: (1) lessons designed to challenge students' ways of reasoning and thereby develop a set of reasoning skills (Shayer, 1999) (2) group tasks where students practice ways of collaborating in discussion to develop reasoning and problem-solving ( Mercer, 2000) (3) Assessment for Learning practices ( Black &amp; Wiliam, 1998).</li> <li>● Three of the Assessment for Learning practices that research has shown to be effective are: (1) encouraging teachers to frame their questioning so that it explores key features of learning (2) giving content-only feedback on written work, with the requirement that students respond to the comments by further work (3) the development of peer- and self- assessment.</li> <li>● Emphasis should be placed on practices that have the potential to promote learner autonomy as this would seem to be the most</li> </ul>

<p>Assessment / Learning Skills</p> <p>The Curriculum Journal Vol. 18, No. 2, pp. 155 - 173</p>	<p>secure foundation for lifelong learning.</p> <p><b>Meijer, Joost (2007) Cross-curricular skills testing in The Netherlands.</b></p> <p>This article reports on the results of two cohorts of students on a test of cross-curricular skills in The Netherlands. The students were tested at the end of the eighth Grade and then again three years later. Other testing was conducted with the same students to measure intelligence, academic achievement and social-affective factors. Curricula from the schools involved were also investigated to determine the extent to which the cross-curricular skills were emphasized. The cross-curricular skills test was based on the following set of skills : 1. Conducting observations 2. Selecting and ordering information 3. Summarizing and drawing conclusions 4. Forming opinions 5. Recognizing beliefs and values in opinions and actions of oneself and others 6. Distinguishing opinions from facts 7. Working together on assignments (cooperation) 8. Requiring quality of one's own work (process demands as well as product demands)</p> <p>Main Findings:</p> <ul style="list-style-type: none"> <li>● The correlation of performance on the cross-curricular skills test with scholastic achievement was twice as high as the correlation of performance on the cross-curricular skills test with intelligence.</li> <li>● There was also a modest correlation between performance on the cross-curricular skills test and social affective factors.</li> <li>● In general, there was an increase in performance on the cross-curricular skills test between the first cohort (1993 – 1995) and the second (1996 – 1998), which the researchers suggest could be attributed to increased attention to these skills by schools.</li> </ul>
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<p>Assessment / Learning Skills</p> <p>The Curriculum Journal Vol. 18, No. 2, pp. 135 - 153</p>	<p><b>Crick, Ruth (2007) Learning how to learn: the dynamic assessment of learning power.</b></p> <p>The researchers designed an assessment instrument to measure what they termed 'learning power'. Variables which have an impact on an individual's capacity and motivation to learn were identified from a range of studies and using factor analysis seven dimensions were identified. In this piece of research teachers were given learning profile data about their students based on the assessment instrument (ELLI – Effective Lifelong Learning Inventory) and invited to design interventions to help their students become better learners based on the data. The practices of the participating teachers were examined to identify underlying pedagogical themes.</p> <p><b>Main Findings:</b></p> <p>The seven dimensions are can each be placed on a continuum as follows: 1. Changing and learning - Learning itself it learnable----- the ability to learn is fixed 2. Critical curiosity - Desire to get to the bottom of things----accept what they are told uncritically 3. Meaning-making - Look for links to what is already known----approach to learning is fragmented 4. Dependence and fragility - Like a challenge / have perseverance-- -easily disheartened and dependent on others for learning 5. Creativity - Able to look at things in different way----rule bound 6. Relationships / interdependence - Good at balancing social and private learning---either dependent or isolated 7. Strategic awareness - Self-aware and reflective----robotic</p> <p>The key themes which emerged from the teacher's efforts as being essential to improving learner's ability to learn were:</p> <ul style="list-style-type: none"> <li>● Teacher commitment to learner-centred values and willingness to make professional judgements</li> <li>● Positive interpersonal relationships characterized by trust, affirmation ad challenge</li> <li>● Developing a meta-language of learning, particularly through the use of metaphor</li> <li>● Modeling and imitation</li> <li>● Learning dialogue ( discussions about learning)</li> <li>● Time for reflection</li> <li>● Development of learner self-awareness and ownership</li> <li>● Providing students with choice and the responsibility for making choices</li> <li>● Sequencing of learning materials - creating challenge through reorganizing the content of learning (particularly - creating situations where students are challenged to make sense of data and make meaning from it and inviting students to make connections with other aspects of the curriculum and with their wider life experiences)</li> </ul>
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<p>Curriculum Development</p> <p>Jobs For The Future (<a href="http://www.jff.org">www.jff.org</a>)</p>	<p><b>Education and Skills for the 21st Century: An Agenda for Action (2005)</b></p> <p>This is a document available through ERIC or direct from the website of Jobs for the Future. It gives statistics related to the state of education in the United States and outlines pathways to achieve better results in the future.</p> <p><b>Main Arguments:</b></p> <ul style="list-style-type: none"> <li>• The knowledge economy requires workers with higher skills than previously necessary</li> <li>• The fastest projected rate of growth in jobs is in highly paid professions (\$40,000+) requiring the highest levels of skills (20%pa as compared with 12 % in well-paid {\$25,000 - \$40,000} jobs and 15% in low paid jobs).</li> <li>• Current inequities mean that because of race, socio-economic background and a variety of other reasons many students can never reach their potential</li> <li>• The future requires that all students achieve better outcomes. All students need to graduate from high school prepared to succeed in further learning.</li> <li>• Schools need to provide students with early exposure to and experience in college and careers through partnerships with colleges and workplaces.</li> <li>• Career and technical education must become a quality option with equal parity of esteem.</li> <li>• Students need a strong foundation in Math, English, information gathering, communication, critical thinking, problem solving and interpersonal and self-directional skills.</li> </ul>

<p>Curriculum Development</p> <p>MultiMedia Schools 10,2,14 - 18</p>	<p><b>Murray, J. (2003) Contemporary Literacy: Essential Skills for the 21st Century.</b></p> <p>This article quotes the White Paper resulting from the 21st Century Literacy Summit in March 2002 as stressing the importance of competence in information literacy and the use of information and communication technologies.</p> <p><b>Main Arguments:</b></p> <ul style="list-style-type: none"> <li>• Knowledge is changing so fast that no traditional curriculum can provide students with fact-based learning adequate for the challenges they will face.</li> <li>• The Big6 Skills for information problem solving (<a href="http://www.big6.com">http://www.big6.com</a>) were endorsed as exemplary practice at the 21st Century Literacy Summit and by the National Technology Plan (released by the U.S. Department of Education in December 2000).</li> <li>• The Big6 Skills enable students to 'purposefully access information from a variety of sources, analyze and evaluate the information, and then integrate it to construct a personal knowledge base from which to make intelligent decisions.</li> <li>• Some schools have created information literacy curricula.</li> <li>• Library media specialists are best placed to implement information literacy skills in the curriculum.</li> </ul>
<p>Curriculum Development</p> <p>European Journal of Education 42.2.235 - 254</p>	<p><b>Tuomi, I. (2007) Learning in the Age of Networked Intelligence.</b></p> <p>This article gives a fresh perspective on the changes society has undergone in moving from an industrial age to an age of knowledge / information. The author outlines a theoretical perspective on innovation and follows this with ten theses about the future of education based on this perspective.</p> <p><b>Main Arguments:</b></p> <ul style="list-style-type: none"> <li>• We will soon be living in a world where knowledge is available wherever and whenever we need it.</li> <li>• The economy of the future will be increasingly distributed geographically (based on global networks rather than physical proximity of resources or human capital) and innovation will be the key source of economic value (because globalization leads to greater cost competition).</li> <li>• It is possible that education systems are optimized for yesterday's world and may be dysfunctional in tomorrow's.</li> <li>• A traditional model of innovation assumes that an original creative insight is followed by product development and dissemination. In practice, this is rarely the case. Studies on innovation show that the key to innovation is the social adoption (which could more appropriately be termed user-centric innovation, knowledge creation and learning) of new technological opportunities.</li> <li>• Innovation increasingly occurs in multidisciplinary projects where complementary bodies of knowledge are brought together.</li> <li>• The creative act that makes an innovation 'real' occurs when user communities change their social practices.</li> <li>• Education policies that follow a traditional model of innovation emphasize specialization and industrial application of knowledge by individuals. A more 'downstream' model would emphasize social learning and knowledge creation within communities of potential users.</li> <li>• The demand for 'innovativeness' has created tensions in education systems. In its socialising function, education has often made use of 'transfer' of knowledge from teacher to student. Innovation requires that knowledge that is new to society be generated.</li> <li>• Innovation in the future will require that new products and technologies need to be designed so that potential user communities can</li> </ul>

	<p>easily create the innovative adaptations necessary for their use, which will include designers including pedagogic models into their design.</p> <p>Theses about learning in the future:</p> <ol style="list-style-type: none"> <li>1. Education becomes global</li> <li>2. Blogs become more important than formal certificates             <ul style="list-style-type: none"> <li>• Individual capabilities often have their origin in the individual's ability to mobilize social resources - knowing the right expert rather than being an expert. Electronic track records will prove peoples' 'social capital'.</li> </ul> </li> <li>3. Immersive social games replace the textbook             <ul style="list-style-type: none"> <li>• Play has a critical function in cognitive development. Pedagogies aimed at transfer have emphasized disciplined learning and the textbook was the artifact that synchronized a group of learners in a mass-production learning environment. Innovation requires the development of cognitive capabilities and this will mean the dynamics of play will need to be integrated into educational practices. Play can simulate the real world and provide a platform for skill and knowledge creation. Play can create social micro worlds that can increase skill in mobilizing social resources and socially distributed knowledge.</li> </ul> </li> <li>4. Educational programmes become integrated with real social change             <ul style="list-style-type: none"> <li>• There is growing evidence of a disconnect between school learning and performance outside school. The innovation economy demands that students gain the capacity to change social and economic realities since development is not so much driven by new technology as it is constrained by the capabilities of social institutions to change. In the global economy, the speed of change will become an absolute competitive advantage. Skills and knowledge from inside and outside school must become increasingly integrated.</li> </ul> </li> </ol>
<p>Leadership</p>	<p><b>Lingard, B., Hayes, D., Mills, M., &amp; Christie, P. (2003) Leading Learning. Philadelphia: Open University Press.</b></p> <p>This book is written based on the results of the Queensland School Reform Longitudinal Study. The study mapped back from student performance to assessment tasks and pedagogy and then attempted to determine what the characteristics of school organization were that supported the kind of pedagogy and assessment practices that led to high levels of achievement in both the academic and social spheres. The pedagogy and assessment sections of the research were written up into a book that was summarized in the May PTC summaries. This volume concerns the results of the study that pertained to leadership.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● The task of the school leader is to lead by creating and sustaining the conditions which maximize both academic and social learning of students and teachers which involves creating the space within the school and the support structures necessary to allow teachers to engage in intellectual discussion about their work.</li> <li>● Official policies as well as the professional literature about the principalship tend to constitute the role of the principal as being that of manager rather than educator.</li> <li>● Definition of teacher leadership - a teacher who (a) has a clear sense of commitment to providing quality learning experiences for ALL students and (b) attempts to influence the learning of students beyond their own classroom</li> </ul>

	<ul style="list-style-type: none"> <li>● Teachers who had the highest levels of productive pedagogies (see May summary) were more likely to believe they could make a difference. Those with low levels tended to ascribe student outcomes to sources other than their own teaching ( social background, a shoddy curriculum etc)</li> <li>● A large percentage of teacher-leaders (see above definition) had a drive to learn and approached their work as an intellectual activity.</li> <li>● In schools where productive pedagogies were apparent there was             <ol style="list-style-type: none"> <li>1. a high level of substantive conversation among staff related to both student work and teachers' work. ( and indicator of professional learning community)</li> <li>2. a substantial amount of professional development focused on student learning and related to overall school goals</li> <li>3. an overall purpose that could be seen to focus on stimulating student achievement</li> <li>4. teacher responsibility for student learning</li> <li>5. a high level of dispersed leadership ( which does not equate with dispersed management)</li> <li>6. a high degree of social and emotional support for teachers</li> </ol> </li> <li>● As a result effective school leadership must attend to:             <ol style="list-style-type: none"> <li>1. a focus on curriculum, pedagogy and assessment as a central activity</li> <li>2. vision, purpose and school goals</li> <li>3. dispersal of leadership</li> <li>4. social relations within the school</li> <li>5. management structures and strategies</li> <li>6. relationships outside the school</li> </ol> </li> <li>● Case studies demonstrated that curriculum change can be used as a vehicle for reform (study schools increased enrolment and student retention rates by using curriculum changes)</li> <li>● School leadership must focus on the behaviors and strategies appropriate for individual school contexts. Successful school leaders shape what is considered appropriate discourse within their school context and solidly focus it on student learning.</li> <li>● Strength of professional community (as measured by traditional indicators) alone does not always equate with ideal outcomes. In some case study schools factors such as teacher ideologies interfered with the potential positive effects – therefore it is important to consider the interplay of all factors within a given context.</li> </ul>
<p>Assessment / Curriculum Implementation / Standardized Testing</p> <p>Education Week July 30, 2007</p>	<p><b>Cech, S. (2007) 12-State Study Finds Falloff in Testing Gains After NCLB.</b></p> <p>The study reviewed here uses the results of both state and the federal NAEP.</p> <p>Main Findings:</p> <ul style="list-style-type: none"> <li>● Initial progress in reading and math after the introduction of NCLB has virtually come to a halt in recent years.</li> <li>● Achievement gaps in reading between black and Latino students and white students have not been closed.</li> <li>● Initial progress in closing gaps in achievement in math has halted.</li> </ul>
<p>Curriculum Implementation / Curriculum Development</p>	<p><b>Schmidt, W., McKnight, C., Houang, R., Wang, H., Wiley, D., Cogan, L. &amp; Wolfe, R. (2001) Why Schools Matter: A Cross-National Comparison of Curriculum and Learning. San Francisco, CA: Jossey-Bass.</b></p> <p>This study is an analysis of data from the TIMSS (Third International Mathematics and Science Study) research. The analysis is on two</p>

levels. The data are analyzed to produce a model of curriculum which can be said to be a composite of the elements in an education system which together contribute to opportunities to learn for students. The elements of this model are : content standards ( as a measure of curriculum intent), amount of textbook space allocated to a topic ( as a measure of potential curriculum implementation), number of teachers teaching a topic within a country ( as a measure of curriculum implementation) and percentage of time in Grade 8 spent teaching a topic ( as a measure of curriculum implementation). All curricular indications were converted to quantitative measures for the purpose of the study. A further indication - namely, percentage of textbook space devoted to complex performance expectations is also used occasionally in the study though unfortunately is not included in the model. The model is then used to analyze the connections between various elements of the model itself and their cross-national variations. These cross-national variations in curriculum structure are then compared with gains in achievement during Grade 8 as represented by results on the TIMSS test in order to examine some of the costs / benefits of particular curricular structures. It is important to note two considerations of this study. Firstly, achievement was included as gains in achievement during the eighth grade rather than achievement status at a point in time so that it was possible to relate these to the eighth grade curriculum. Secondly the purpose of the study was primarily cross-national comparison so that drawing any conclusions for smaller units that national systems is fraught with difficulty.

#### **Main Findings:**

Interactions between elements of the curriculum model

- In terms of intended curriculum, the number of topics in Math included in content standards ranged from 10 in Japan to all 44 of the TIMSS topics in the USA. Among those countries planning to cover the fewest topics, several were among the top seven performing countries.
- There was considerable variation among countries in terms of textbook space devoted to complex performance expectations as well as considerable variation across topics within a country.
- Even in countries with national content standards determined by a central body, there was no country where the percentage of teachers who covered that topic in Grade 8 was close to 100%.
- For Science textbook coverage affected instructional time, but content standards did not affect textbook coverage or instructional time, though they did increase the number of teachers teaching the topic. Textbook coverage, however, did influence instructional time.
- For Math content standards influenced instructional time and teacher coverage both directly and indirectly through their influence on textbook coverage.
- For both Math and Science the amount of textbook space devoted to a topic was the biggest influence on teacher implementation, increasing both the number of teachers who taught a topic and the percentage of time they allocated to a topic. The researchers conclude that textbook coverage is a strong indicator of teacher implementation.
- Textbook space accounted for between 10 and 70 percent of the variance of instructional time in Math across countries and between 20 and 70 percent of the variance in Science.
- The role of the textbook varies widely across countries.
- Strong relationships exist between the 4 curricular indications examined when considering profiles of topics, hinting that curriculum should not be considered as a set of separate topics but as vectors of topics. Profiles of opportunities to learn across topics may be more relevant than considering single topics.

	<ul style="list-style-type: none"> <li>● Generally the amount of textbook space allocated was greater in countries where the topic was included in the content standards.</li> <li>● One relationship was constant throughout different kinds of analysis - that of textbook space to teacher implementation.</li> <li>● The relationships between curriculum indications can be seen as a measure of the degree of coherence of curriculum or curricular alignment within a country.</li> <li>● In all cases countries where the content standards were set by a single central body had a higher level of curricular coherence, though the relation between content standards and teacher implementation may have been indirect via textbook space.</li> </ul> <p>The relationship of curricular structures to achievement gains</p> <ul style="list-style-type: none"> <li>● Four out of five of the topics in Math where student gains were the highest were also in the top five topics in terms of curricular emphasis indicating that opportunities to learn as actualized by the curricular indications in this study do make a difference in terms of student learning</li> <li>● None of the top five topics in Science where student gains where highest were in the top five according to emphasis - this result is possibly related to the fact that there was far less agreement across countries as to what the top 5 topics were in Science as opposed to Math.</li> <li>● In examining pair-wise relationships between curricular indications and achievement, every indication was related positively to achievement indicating that more emphasis in any area could lead to gains.</li> <li>● When controlling for the other curricular indications, the relationship of instructional time to achievement gain for Math became only marginally significant, indicating that part of the increase in instructional time is related to inclusion in content standards or increase in allocation of textbook space.</li> <li>● In general content standards in Math affect teacher implementation both directly and indirectly through textbook space.</li> <li>● In Science increased textbook space was related negatively to achievement gain, but when some anomalous topics were removed, the relationship became insignificant.</li> <li>● In Science content standards were not related to teacher implementation.</li> <li>● In Math when other indications were controlled for, the indication which was related to gain for the largest number of countries was textbook space, though in some countries the main relationship to gain was defined by content standards.</li> <li>● In Science the variable related to gain for the largest number of countries was the percentage of textbook space devoted to complex performances. An average of 25 percent of the variation in gain can be explained by this variable.</li> <li>● When the percentage of instructional time was converted to a figure in hours it was found that the rate of increase of achievement gain by hours of instruction was not constant. The rate of gain rapidly accelerated after 9 hours of instruction per topic. Prior to that there was no relationship between instructional time and achievement gain.</li> <li>● Though this analysis really pushed the limits of the available TIMMS data, the researchers used proportion of textbook space as an indicator of instructional time devoted to more demanding expectations in Math. In this analysis the rate of achievement gain was more linear and the researchers hypothesize that this variable leads to more learning.</li> <li>● For the topic of equations and formulas, the topic given the most emphasis in Grade 8 Math over all the countries in the study, the only curricular indication linked to achievement gain was the percentage of textbook space devoted to complex performances.</li> <li>● Analyses were conducted for each topic separately using whichever measure of opportunity to learn had correlated most strongly with gain in that subject, a measure of the country's GNP and a measure of how demanding instruction was created from items on the TIMMS teacher questionnaire relating to instructional activities. The results were that GNP related to gain in around half the topic areas, BUT in no case did controlling for GNP eliminate the effects of curriculum.</li> <li>● Up to 40% of cross-national variation in achievement gain in Math can be accounted for by the measures of curricular opportunities</li> </ul>
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	<p>used in the study.</p> <ul style="list-style-type: none"> <li>● The aspects of curriculum most involved with achievement gain in individual Math topics were textbook space, textbook space devoted to more complex performance demands, no of teachers covering the topic and instructional time. Only content standards were not significantly related to variations in cross-national gains ( though they may have been related indirect via textbook space)</li> <li>● One interesting example topic was ‘proportionality’. No curricular indicator was related to gain in this topic area in any of the analyses carried out. However, two other topic areas (congruence from geometry and slope and trigonometry from algebra) were related to gain in proportionality and the curricular indication most related to this gain was textbook space devoted to complex performances.</li> <li>● In Science all curricular indications were related to gain individual topics (though textbook space was in some cases negatively related), the most prominent being measures of teacher implementation. Content standards played a more prominent role than in Math.</li> <li>● One interesting example topic was ‘Science, Technology and Society’. Amount of textbook space in this case was negatively related to achievement gain. However, study of the topic of ‘natural disasters’ was positively related to gain in ‘Science, Technology and Society’ and the curricular indication most related to this gain was textbook space devoted to complex performances.</li> <li>● The analyses showed clusters of countries with similar curricular structures.</li> <li>● Finally an analysis of learning within the US was carried out. The results were that opportunities to learn were significantly related to achievement gains. For 5 out of 20 topics, more demanding performance expectations were significantly related to gains. Using the strength of relationships on the curriculum model created increases in gains were predicted for various topics depending on increases in curricular opportunities to learn. The predicted increases were sizeable.</li> </ul> <p><b>Summary</b></p> <ul style="list-style-type: none"> <li>● Curriculum when defined as content standards, amount of textbook space allocated to a topic, number of teachers teaching a topic within a country and percentage of time spent teaching a topic does provide opportunities to learn and does result in achievement gains.</li> <li>● Differences in the way these four indications are structured a related to differences in gains.</li> <li>● Learning in one topic can have a significant influence on learning in other topics and so curriculum topics should be considered as profiles of topics.</li> <li>● The structure and sequence of curriculum should make use of the logic of profiles of topics.</li> <li>● Quality of learning opportunities in the form of more demanding performance expectations is important, not just quantity. Drill and practice alone is not adequate.</li> <li>● The textbook exerts an extremely strong influence over teacher implementation and this should not be ignored.</li> <li>● Inclusion in content standards alone does not guarantee that content will be covered.</li> <li>● The degree of central control of an education system does help achieve curricular alignment, but on its own is not enough to ensure this.</li> </ul>
<p>Curriculum Development</p> <p>Paper presented at the 2007 ACSA conference</p>	<p><b>Luke, A. (2007) Why social justice and equity still matter.</b></p> <p>This paper compares the level of equity achieved by education systems that have what the author terms ‘cool’ or ‘hot’ curriculum climates, which he defines based on the level of interpretive / inferential work needed to work with the curriculum. Cool curriculum is defined as requiring a high level of interpretive work on the part of teachers and therefore giving teachers more freedom to adapt if to the individual contexts. The major comparison was between Finland and Ontario as examples of cool curriculum climates on the one hand and the USA</p>

	<p>and UK as examples of hot curriculum climates on the other. Level of achievement equity within the systems was based on PISA results.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● High Accountability using carrots and sticks attached to standardized testing can achieve some initial gains but these plateau very quickly</li> <li>● Overall a 'hot' environment coupled with high accountability via standardized testing leads to a steepening of the regression curve for equity, meaning less equitable achievement distribution.</li> <li>● 'Cool' climate education systems achieved the best results for equity of achievement</li> <li>● High Quality / High Equity systems as rated by PISA were associated with: a strong societal ethos for equity; strong Early Childhood education; Diagnostic / formative evaluation of teachers; no high stakes testing; low definition curriculum documents ( in Finland the Yr 1 curriculum is only 8 pages); no league tables; high level of professionalism; teacher autonomy and local curriculum development; meaningful pathways to outcomes with parity of esteem.</li> <li>● The author concludes that if you have a hot curriculum climate and are in the basement it can get you to the 1st floor but it will never get you to the second.</li> </ul>
<p>Curriculum Development</p> <p>The Seattle Times June 24, 2007</p>	<p><b>Shaw, Linda (2007) Set lesson plans stir controversy</b></p> <p>This is an article which discusses a move by some school districts in the US to use set lesson plans which teachers download from the internet. The article provides a number of viewpoints including those of teachers and district superintendents about the value or folly of restricting teacher freedom in curriculum.</p> <p><b>Main Arguments ( on both sides):</b></p> <ul style="list-style-type: none"> <li>● Students need consistent academic experiences</li> <li>● Inconsistent curriculum is at the heart of education's problems</li> <li>● Only 20% of teachers feel required lessons are in the best interests of students</li> <li>● Teachers cannot differentiate within a system like this</li> <li>● All agree there need to be consistent goals and expectations but it is a question of degree</li> </ul>
<p>Curriculum Development</p> <p>ACSA Policies</p>	<p><b>Australian Curriculum Studies Association (2004) ACSA Principles for Australian Curriculum Reform</b></p> <p>As the debate about creating a national curriculum in Australia heats up, the Australian Curriculum Studies Association has produced a paper suggesting some broad principles of curriculum reform. The paper gives a definition of what curriculum work is and the things it needs to include and then goes on to give some principles of the development process and some principles for content selection. The principles for content selection are:</p> <ul style="list-style-type: none"> <li>● is of personal, social and inherent worth and is of current and enduring value;</li> <li>● is broadly constructed from a balanced, defensible and explicit selection from key areas of human inquiry and endeavour;</li> <li>● prepares people for worthwhile paid and unpaid work as individuals and as members of society;</li> <li>● provides people with the necessary socially critical knowledge, understandings and skills to exercise their political rights in a</li> </ul>

	<p>democratic society;</p> <ul style="list-style-type: none"> <li>● is inclusive in its recognition of the cultural, political and economic contribution of all groups;</li> <li>● is based on cooperation and success rather than competition and failure;</li> <li>● embodies participatory, collective and empowering approaches to teaching and learning;</li> <li>● engages people in authentic tasks; and</li> <li>● promotes responsible, just and sustainable global citizenship.</li> </ul>
<p>Assessment / Leadership Phi Delta Kappan 77:3 p. 246</p>	<p><b>Cizek, G. (1995) The big picture in assessment and who ought to have it.</b></p> <p>In the opinion of Gregory Cizek the principal has the primary responsibility for systematizing assessment so that all assessments carried out have a well-articulated purpose, and assessment information is used to improve the school's program.</p> <p><b>Main Arguments:</b></p> <p>Principals Need to:</p> <ul style="list-style-type: none"> <li>● Have an intimate knowledge of what is happening in classrooms</li> <li>● Ensure that educational aims are clearly identified</li> <li>● Ensure that strategies are identified for assessing those aims ( including ensuring that assessments are devised for aims that currently lack them AND that redundancy is reduced)</li> <li>● Ensure that the information gleaned from assessments is reported in a real and relevant way to stakeholders and is ultimately used to further the educational mission of the school</li> </ul> <p>Cizek suggests that beyond becoming assessment-literate themselves, principals could set up an advisory committee to help them with the task of creating a 'planned assessment system'.</p>
<p>Curriculum Implementation Journal of Curriculum Studies 36, 361 - 379</p>	<p><b>Agarwal, M. ( 2004) Curricular reform in schools: the importance of evaluation</b></p> <p>A new English language curriculum with a communicative approach was introduced into schools in India. Using analysis of documents, teacher questionnaires and interviews with head teachers, the study investigates the extent to which the new exam in years IX and X affects teaching and assessment practices lower down in the school in the upper primary area. The new exam did not include testing of oral skills.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● All teachers at upper primary level reported using communicative teaching methods as advocated by the new curriculum for Grade IX and X.</li> <li>● Private schools changed textbooks but state school did not have the resources to do so.</li> <li>● All teachers reported they had changed their testing in line with the new exam in the upper grades</li> </ul>

	<ul style="list-style-type: none"> <li>● Interviews with head teachers indicated there had been substantial change in testing and in teaching reading &amp; writing but that though teachers reported using oral work, it was at best only occasional. Head teachers felt that if the new exam actually included an oral section this would change.</li> <li>● Documents showed that all schools had changed their testing formats - the examples given showed that testing did not must mimic but also individual tasks.</li> <li>● Researchers conclude that changing external assessment has a radical impact on school practices, even at grades well below those where the testing takes place.</li> </ul>
Curriculum Implementation  Journal of Curriculum Studies 32, 623 - 650	<p><b>Barnes, M., Clarke, D., &amp; Stephens, M. (2000) Assessment: the engine of systemic curricular reform?</b></p> <p>Case studies carried out in two Australian states investigated the affect of final exams in Year 12 on the teaching and assessment practices of teachers of math in G 7 – 10.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● where expectations and assessments are aligned there is a strong causative influence on classroom practices and where this alignment is weak, the assessment practices exert the greater influence.</li> <li>● Victoria requires that the school- based assessments conducted in maths in G11 &amp;12 include significant components of extended problem-solving and investigative work. In NSW there is no requirement as to what the school-based assessments must be. This difference showed up in the teaching practices and the assessments used by teachers in Grades 7 – 10. In Victoria, problem-solving and the use of extended investigations was much more common, despite the fact that the actual final exam in both states is very similar.</li> </ul>
Curriculum Implementation  Educational Researcher 34, 3 - 14	<p><b>Davis, E. &amp; Krajcik, J. (2005) Designing Educative Curriculum Materials to Promote Teacher Learning.</b></p> <p>The authors discuss the need for curriculum support materials to educate teachers as well as students, saying that they should: 1. help teachers to learn how to anticipate what learners may think in response to instructional activities, 2. support teachers' learning of subject matter 3. help teachers consider how to relate the various units taught 4. make visible the developer's pedagogical judgments 5. promote teacher's pedagogical design capacity. The authors also make the following points:</p> <ul style="list-style-type: none"> <li>● Such materials alone are only one perturbation of the status quo.</li> <li>● Teacher's beliefs, knowledge and dispositions toward reflection will affect how effective materials can be.</li> <li>● Future research must find what kinds of supports teachers want, need and are willing to use.</li> </ul> <p>A set of heuristics for designing such materials in science is proposed, which include the important Pedagogical Content Knowledge necessary to teach science.</p>
Educational Change  International Journal of Science Education 28, 919 –	<p><b>Waters-Adams, S. (2006) The Relationship between Understanding of the Nature of Science and Practice: The influence of teachers' beliefs about education, teaching and learning.</b></p> <p>Case studies of 4 teachers using action research as a vehicle to expose the dialectical relationship between teacher's beliefs about</p>

944.	<p>education, understanding of the subject of science and classroom practice.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● All four teachers in the study espoused a hypothetico-deductive approach to science teaching, but this was not evident in their practice, which emphasized the transmission of received knowledge</li> <li>● The author posits the existence of a tacit understanding in addition to the teachers' espoused understanding as he says that situational factors external to the teacher do not account for the disconnect..</li> <li>● By the end of the study 3 out of 4 teachers had come to a position where their espoused beliefs were much more closely aligned with their teaching practice.</li> <li>● The teachers began to have confidence in their teaching only when it accorded with their deeply held beliefs about the purpose of education and so were much more confident at the end of the study (931).</li> <li>● The change from tacit understandings driving teaching to espoused understandings driving practice came about through teachers appraising their espoused beliefs and exploring the implications in practice (933).</li> <li>● Teacher's general beliefs remained constant - their understanding of how those beliefs might appear in practice changed.</li> </ul>
<p>Leadership</p> <p>School Leadership and Management 26 371-395</p>	<p><b>Gurr, D. Drysdale, L. &amp; Mulford, B. (2006) Models of successful principal leadership.</b></p> <p>A summary of two related series of case studies in two Australian states carried out in 14 schools. The case studies were conducted only in schools that had achieved outstanding results on state-wide tests and also positive school reviews. The data was collected using documents illustrating school achievements and interviews with people at all levels of the schools.</p> <p><b>Main Findings:</b></p> <p>The Tasmanian case studies identified the following themes: 1. context 2. principal values and beliefs 3. providing individual support and building individual capacity 4. building school capacity 5. towards a shared school vision 5. school outcomes 7. evidence-based monitoring</p> <p>The Victorian case studies identified the following themes: 1. principal's contribution to success 2. values and beliefs 3. personal characteristics 4. styles of leadership 5. understanding the context 6. leadership interventions in various areas.</p> <p>The authors combine the findings with previous research findings to create a model of school leadership focused on student outcomes.</p>
<p>Curriculum Implementation + Assessment</p> <p>The Curriculum Journal 16, 193-206</p>	<p><b>Jones, A. &amp; Moreland, J (2005) The importance of pedagogical content knowledge in assessment for learning practices: a case-study of a whole school approach.</b></p> <p>A case study of the implementation of a new technology curriculum in a New Zealand Primary School. The researchers found that teachers did not have sufficient pedagogical content knowledge to implement the new curriculum and as a result of this were providing technology 'activities' with no conceptual substance and were unable to give feedback to students beyond praise-based feedback. Interventions included reflection on case studies of classroom practice, using a specific planning framework, workshops, classroom support, teacher</p>

	<p>agreement meetings, using student portfolios.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● There was significant change in teacher practice over the three years of the study including a shift from an ‘activity’ focus to providing for specific learning outcomes. This enabled teachers to give more specific feedback which in turn enabled students to identify their own knowledge gaps.</li> <li>● As teachers understood the subject and the intended outcomes better they were able to provide more relevant and specific feedback to students.</li> <li>● The use of specific planning frameworks forced teachers to articulate intended learning outcomes, and over time this helped them develop a framework for decision making.</li> <li>● Communicating clear purposes to students communicated to students what was important in the subject and helped them know whether they were meeting intended outcomes.</li> <li>● Teachers were keen to become involved as they saw other teachers achieving results and being recognized for it.</li> <li>● The ongoing reflection / action research was crucial to the success.</li> <li>● The long time frame of three years allowed for the development of relationships and for the ongoing reflection necessary to bring about change.</li> </ul>
<p>Curriculum Evaluation</p> <p>Journal of Curriculum Studies 37, 525 - 559</p>	<p><b>Schmidt, W., Chi Wang, H. McKnight, C. (2005) Curriculum coherence: an examination of US mathematics and science content standards from an international perspective.</b></p> <p>This study looked at sets of content standards in US states and compared them with countries that were in the A+ group in the TIMMS study in an attempt to explain the relatively poor performance of US students on the tests. In particular they were looking for what they called ‘coherence’, which they define as a curriculum which evolves from particulars (eg. Simple mathematics facts and routine computational procedures) to deeper structures. In order to analyze curriculum coherence, they listed the topics taught in common in maths and science by A+ countries and those recommended by US states.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● When mapped out across Grades 1 – 8, the maths topics for A+ countries showed a three tier structure with more complex topics being introduced later and simpler topics being completed earlier.</li> <li>● When mapped out in the same way the recommendations of US states showed no discernable structure. Often complex topics were introduced as early as grade 1, which the authors contend implies an arbitrary, laundry-list approach to curriculum standards.</li> <li>● In science the A+ countries showed a similar 3 tier structure except that some foundational topics were continued right through the 8 Grades.</li> <li>● The US science topics showed a similar pattern to the US math topics.</li> <li>● In Science, US states recommended inclusion of 30 out of 41 topics at Grade 3 level compared with only 12 topics in the A+ countries.</li> <li>● The shift in topics in A+ countries from elementary maths and science topics to more formal aspects came in the middle grades, precisely the grade levels where the US fell behind the other countries in achievement.</li> <li>● Often the US standards were clustered into bands, which could potentially confound the comparison (eg. G 1 – 3). The TIMMS data</li> </ul>

	<p>on teacher coverage suggests, however that when written in this way, teachers at each Grade level tend to interpret the standards as needing to be taught at their Grade.</p> <ul style="list-style-type: none"> <li>● The authors recommend that for standards to be coherent, they must specify topics, including the depth at which the topic is to be studied as well as the sequencing of the topics, both within each grade and across the grades. They believe that if this is not done, the result will be rote-memorization of particulars without deeper understanding.</li> </ul>
<p>Curriculum Planning</p> <p>Journal of Curriculum Studies 38,4 483-198</p>	<p><b>John, P. (2006) Lesson Planning and the student-teacher: re-thinking the dominant model</b></p> <p>This is a discussion paper which scathingly criticizes linear models of lesson planning such as that of Ralph Tyler for a number of reasons:</p> <ul style="list-style-type: none"> <li>● they do not reflect the inherent complexity and dynamism of the classroom</li> <li>● they ignore the need for leaning to be negotiated</li> <li>● they can result in the ends being seen as unchanging</li> <li>● means and ends are isolated as successive steps rather than being seen as part of the same situation</li> </ul> <p>Research on experienced teacher’s actual planning is summarized, which suggests that:</p> <ul style="list-style-type: none"> <li>● rather than planning linearly teachers consider multiple elements simultaneously such as teacher, learner, context, resources, methodology.</li> <li>● most teachers consider the nature of the content and activities before they consider other curricular elements</li> <li>● planning also occurs during the interactive phases of teaching as teachers reflect on situations as they arise</li> <li>● many teachers are guided by broad intuition and tacit knowledge and do not plan in detail either verbally or in writing</li> <li>● more expert teachers engage in long-range planning whereas novices think more in the short term</li> </ul> <p>The author argues that most linear planning tools are decontextualized and that consideration of context is vital. A model is proposed where aims / objectives are in the center and are surrounded in a concept map by all of the elements which interact to create the learning context - resources, activities, classroom control, student learning etc etc.</p>
<p>Curriculum Implementation</p> <p>Curriculum Perspectives 26, 27 - 37</p>	<p><b>Chan, J. (2006). The implementation of an integrated curriculum: A case study in Hong Kong.</b></p> <p>A case study conducted in a primary school in Hong Kong. The study involved teachers at one grade level. The school’s curriculum prior to the innovation was textbook-based. It is not clear from the article, but it appears that what was implemented was just a single unit of work, not an entire program. The implementation process included support from the principal in terms of resource allocation and attendance at planning meetings. External staff development was provided to initiate the process. A curriculum leader was appointed, who was also a teacher participating in the pilot. The teaching team appears to have made most of the decisions regarding how the unit would be implemented, though it is not clear how the decisions were actually made. In the end the author claims that the implementation process did not go as planned. Findings:</p> <ul style="list-style-type: none"> <li>● The biggest issue was the necessary shift in teacher’s thinking.</li> <li>● Teacher’s beliefs about knowledge and learning were contradictory to those the integrated unit was founded on</li> <li>● Teachers lacked practical experience</li> <li>● There was a lack of gain in student performance</li> </ul>

<p>Curriculum Implementation</p> <p>Journal of Curriculum Studies Vol. 39, No. 1 pp. 97 - 121</p>	<p><b>Rogan, John (2007) An uncertain harvest: a case study of implementation of innovation.</b></p> <p>This is a case study of the implementation of an outcomes-based curriculum in South Africa. The study focuses in particular on two teachers. The study proposes the idea of a 'zone of feasible innovation' along the lines of Vygotsky's zone of proximal development. Within this theory, curriculum implementation strategies would be effective when they proceed just ahead of current practice and when they are scaffolded to help teachers move beyond their current level of practice.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● The policy directives in the implementation effort lacked detail on how ideals might be realized in practice</li> <li>● Teachers were in favor of the changes as they saw them as being beneficial for their learners but they struggled to implement them and were unhappy about the pace of change and the level of support.</li> <li>● In general many aspects of the new policy were not understood by teachers and teachers made sense of the intended curriculum in superficial ways. The teachers latched onto the idea of students working in groups and therefore saw implementation of outcomes-based education as being a change in teaching style. They failed to address the specific outcomes in any meaningful way.</li> <li>● The low level of implementation was not a product of lack of effort by teachers but rather reflected the fact that teachers had attempted to make sense of the new curriculum in terms of their past experiences and ended up using new teaching styles to achieve the same goals as before - the transmission of knowledge.</li> </ul>
<p>Brain Research / Curriculum Development</p> <p>Handbook of Research on Curriculum</p>	<p><b>Bereiter, C. &amp; Scardamalia, M. (1992) Cognition and curriculum.</b></p> <p>This is an article summarizing research into cognition as it relates to curriculum.</p> <p><b>Main Arguments / Findings:</b></p> <p>Conceptual change</p> <ul style="list-style-type: none"> <li>● A growing body of research supports the proposition that all concepts are grounded in implicit theories. If this is true, then dealing effectively with students' misconceptions is to require digging beyond the manifest errors to the underlying system of beliefs that gives rise to them. Such belief systems are almost always tacit.</li> </ul> <p>The centrality of knowledge</p> <ul style="list-style-type: none"> <li>● Background knowledge, in the form of hierarchically structured schemata, affects how new information is encoded or registered, by determining what elements are attended to as significant. It affects remembering by providing plans used to search memory. It provides a basis for inferential elaboration and gap-filling.</li> <li>● Research on expertise suggests that experts are distinguished from novices more by what they know than by their ability to reason more effectively. Chess experts do not think more deeply or cleverly than novices. Rather they can take in chessboard configurations at a glance because they have stored a huge number of patterns in memory. Humans are poor at extended chains of reasoning but good at pattern recognition. Becoming an expert involves shifting the cognitive burden from what we are poor at to what we are good at.</li> <li>● Researchers in artificial intelligence have found that they get the best results by having a relatively simple inferential system and putting</li> </ul>

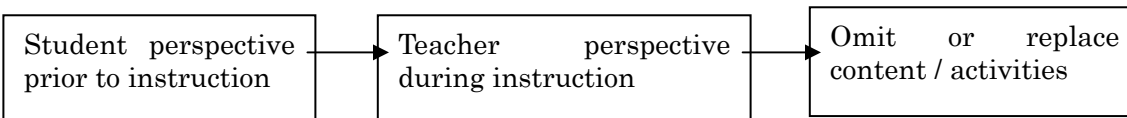
	<p>the expertise into the knowledge base.</p> <p>Metacognition</p> <ul style="list-style-type: none"> <li>● Research shows that students are often unaware of the nature and purpose of what they are learning</li> <li>● Learners are often unaware of the cognitive demands being placed on them and tend to assume that these are of a lower order than they actually are.</li> <li>● Teachers often do not recognize metacognition as an important part of competence and therefore do most of the metacognitive work (such as setting objectives, activating relevant knowledge, judging what is important, evaluating understanding and identifying difficulties) themselves, so that learners never become responsible for it.</li> <li>● The importance of metacognition during teacher-directed learning is shown by studies which have found that successful learners monitor every interchange when the teacher is calling on students, covertly responding themselves and trying to learn from the feedback teachers give other students. Less successful students think only about their own turns to perform.</li> </ul> <p>Learning as problem solving</p> <ul style="list-style-type: none"> <li>● Ng and Bereiter found that in a computer programming course about half the learners concentrated exclusively on accomplishing the programming tasks with hardly any attention to what they were supposed to be learning from the tasks (ie learning through problem solving). The other half, to varying extents, focused on the learning itself as problematic. These students showed superior learning.</li> <li>● Chi found that high achieving students, rather than merely transferring procedures from a worked example of a problem, spent time studying the example and trying to understanding why the modeled procedures worked and how they related to underlying laws.</li> </ul> <p>Learning through problem solving</p> <ul style="list-style-type: none"> <li>● Studies by Sweller indicate that textbook problems of the usual kind are a poor vehicle for learning generalizable concepts and principles. They induce students to use means-end methods in which they focus on answer-generating formulas and devote little attention to the concepts to which the formulas refer.</li> </ul> <p>Automaticity and processing load</p> <ul style="list-style-type: none"> <li>● There are three related ways that we can overcome the limitations of working memory ( considered to be able to deal with approximately 4 pieces of information at once)             <ol style="list-style-type: none"> <li>1. Using long-term memory for look-up (eg – number facts in mathematical word problems)</li> <li>2. Chunking ( combining several ideas so that they are treated as a single unit in working memory)</li> <li>3. Automaticity (eg – alphabetic decoding becomes automatic and frees working memory to concentrate on meaning)</li> </ol> </li> </ul>
<p>Curriculum Implementation / Professional Learning</p>	<p><b>Bussis, A., Chittenden, E. &amp; Amarel, M. (1976) <i>Beyond surface curriculum: An interview study of teachers' understandings.</i></b></p> <p>This study used in-depth interviews to assess the belief systems of teachers attempting to implement open education programs (defined to a great extent as seeing the child as a resource).</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● The congruence of teacher beliefs with those underlying the innovation to be implemented was found to be a crucial factor in successful implementation.</li> <li>● A distinction was made between surface curriculum (the learning tasks in the classroom) and deep curriculum ( a teacher's long-term goals for their learners). A far greater level of self-confidence and self-efficacy was found in teachers whose surface curriculum and deep curriculum were aligned. The least self-confident group of teachers were those who were attempting to implemented the ideas of open education ( even if they expressed a genuine feeling that open education was potentially beneficial), but whose underlying deep curriculum gave priority to grade level facts and skills.</li> <li>● Teachers whose surface curriculum was aligned with their deep curriculum showed a significantly greater ability to justify their choices</li> </ul>

	<p>of surface curriculum activities.</p> <ul style="list-style-type: none"> <li>• Teachers who were less likely to see the child as a resource in the classroom were also less likely to see other adults as a resource in the school.</li> <li>• Of the various sources of support offered to teachers during implementation, advisors ( who worked with teachers in their classrooms) were singled out as being helpful twice as often as the next three most frequently mentioned sources of support.</li> <li>• A set of descriptions of the roles advisors played in classroom was developed (A. Service and Administrative Agent B. Extension of teacher E. Stage Director and Demonstrator F. Diagnostician and Problem-Solver G. Provider of Alternatives H. Explainer and Theorist I. Modeling Agent J. Appreciative Critic and Discussant K. Provocative and Reflective Agent L. Leader and Challenger.</li> <li>• Approximately one-third of all perception of support responses at each site fell within two emotional support categories (category C Emotional Stabilizer and Stimulator; and category D: Respector of Individuality).</li> </ul>
<p>Curriculum Implementation / Professional Development</p> <p><i>Journal of Educational Research</i> Vol. 78, No. 6, pp. 364 - 371</p>	<p><b>Broyles, I. &amp; Tillman, M. (1985) Relationships of inservice training components and changes in teacher concerns regarding innovations.</b></p> <p>This study used the Concerns-Based Adoption Model (developed by Hall and Loucks) to investigate the effects of different types of professional development activities on a range of innovations. The Stages of Concern Questionnaire was used before and after different professional development activities (data were obtained from 23 training workshops held early on in the respective implementation processes). The model posits that teachers go through various stages of concern when faced with the need to implement an innovation. These are as follows:</p> <p><i>0 Awareness - Little concern or involvement with the project</i>  <i>1 Informational - Need for general information</i>  <i>2 Personal - Uncertainty about her / his role in the project.</i>  <i>3 Management - Attention on the processes and tasks of using the project</i>  <i>4 Consequence - Focus on the impact of the project on the learner</i>  <i>5 Collaboration – Focus on coordination and cooperation with others regarding the project</i>  <i>6 Refocusing - Exploration of alternative uses of the project or a replacement.</i></p> <p>Four different types of workshop content were identified -introductory, skills, organization and theory.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>• In general, PD activities greatly reduced the intensity of awareness, informational and personal concerns.</li> <li>• The intensity of management concerns was slightly reduced</li> <li>• If a great deal of time was spent on introductory content, personal concerns were higher after the training.</li> <li>• When higher proportions of time were spent on skills content, the intensity of consequence concerns decreased.</li> <li>• When more time was spent on organizational content, the intensity of informational concerns decreased.</li> <li>• When more time was spent on theory, personal concerns remained high and refocusing concerns increased. ( The model predicts that refocusing concerns should not be a significant issue until long after implementation so this result was a surprise considering these workshops took place prior to or early in the implementation of the programs. The researchers suggest that theory should therefore not be included in initial PD.)</li> <li>• When concrete examples and demonstrations were given, participants showed fewer refocusing concerns. (The researchers suggest that if high levels of program fidelity are desired, then demonstrating concrete examples may help achieve this.)</li> </ul>
<p><b>Instructional</b></p>	<p><b>Marzano, R. (2007) Using action research and local models of instruction to enhance teaching.</b></p>

<p><b>Supervision / Action Research</b></p> <p><i>Journal of Personnel Evaluation in Education</i> Vol. 20, pp. 117 - 128</p>	<p>This article outlines a model of instructional supervision which aims to improve teaching practices by creating a school-based 'model of instruction', and collecting data about teacher success with the model.</p> <p><b>Main Arguments:</b></p> <ul style="list-style-type: none"> <li>• Schools should define a set of instructional strategies that are effective in their particular contexts using action research.</li> <li>• Once the instructional model is defined it should be used initially as a basis for discussing effective teaching.</li> <li>• Teachers should then be given opportunities to observe master teachers (teachers who consistently produce learning in their classrooms) implementing the strategies.</li> <li>• Data should be collected (self-report and observation) on teachers' use of the instructional model and on its effects on student learning and engagement.</li> <li>• The data should be used by teachers and supervisors to set individual teacher goals that are aimed at improving student learning.</li> </ul>
<p><b>Teacher Quality / Instructional Supervision / Teaching Strategies</b></p> <p><i>Journal of Personnel Evaluation in Education</i>, Vol. 20, pp. 165 - 184</p>	<p><b>Stronge, J., Ward, T., Tucker, P., Hindman, J. (2007) What is the relationship between teacher quality and student achievement? An exploratory study.</b></p> <p>This study identified the top and bottom quartiles of teachers in terms of effectiveness in promoting student learning (while controlling for factors such as gender, previous achievement, socio-economic background etc.) and then conducted in-depth case studies of teachers within each of the two categories (most effective and least effective teachers) to see which instructional strategies were most useful in promoting student learning.</p> <p><b>Main Findings:</b></p> <p>Instruction</p> <ul style="list-style-type: none"> <li>• Effective teachers provided more complex instruction with a greater emphasis on meaning than memorization.</li> <li>• Effective teachers demonstrated a broader range of instructional strategies, using a variety of materials and media to support the curriculum.</li> </ul> <p>Assessment</p> <ul style="list-style-type: none"> <li>• Effective teachers provided more differentiated assignments</li> </ul> <p>Learning Environment</p> <ul style="list-style-type: none"> <li>• Effective teachers were more organized, with efficient routines and procedures for daily tasks.</li> <li>• Behavioral expectations for students were higher in the classrooms of effective teachers</li> </ul> <p>Personal Qualities</p> <ul style="list-style-type: none"> <li>• The effective teachers showed a higher degree of respect for and fairness toward students</li> </ul> <p>Teacher Questioning</p> <ul style="list-style-type: none"> <li>• Effective teachers asked seven times as many higher-level questions as ineffective teachers, though the number of lower-level questions did not vary between the two groups.</li> </ul> <p>Student Off-Task Behavior</p> <ul style="list-style-type: none"> <li>• Effective teachers had incidences of disruptive behavior about once every two hours whereas ineffective teachers had a disruptive event approximately every 12 minutes.</li> </ul> <p>Results can be summarized around three distinct differences: (1) Differentiation and complexity of instructional strategies; (2) questioning strategies and; (3) level of disruptive student behavior.</p>
<p><b>Curriculum</b></p>	<p><b>Gamoran Sherin, M. &amp; Drake, C. (2009) Curriculum strategy framework: investigating patterns in teachers' use of a reform-based</b></p>

<p><b>Implementation</b></p> <p><i>Journal of Curriculum Studies</i> Vol. 41. No. 4. Pp. 467 - 500</p>	<p><b>elementary mathematics curriculum</b></p> <p>These researchers conducted interviews and observations of teachers to determine the strategies they used to read, evaluate and adapt the curriculum materials provided by a mathematics program at three stages of the teaching process - before , during and after instruction. The information was plugged into a matrix which the researchers called a curriculum strategy matrix and was used to identify each teacher's curriculum interpretation strategies. The various strategies were then compared to see if there were patterns.</p> <p>The matrix:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%;">Read</td> <td style="width: 30%;">Evaluate</td> <td style="width: 10%;">Adapt</td> </tr> <tr> <td>Before instruction</td> <td></td> <td></td> <td></td> </tr> <tr> <td>During instruction</td> <td></td> <td></td> <td></td> </tr> <tr> <td>After instruction</td> <td></td> <td></td> <td></td> </tr> </table> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>❖ <b>Reading</b> - Three general approaches to reading the curriculum materials emerged:                     <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="width: 50%;">Read before instruction</th> <th style="width: 50%;">Read during instruction</th> </tr> <tr> <td>Read for <i>broad</i> overview</td> <td>→ Did not read during</td> </tr> <tr> <td>Read for <i>detailed</i> information</td> <td>→ Did not read during</td> </tr> <tr> <td>Read for <i>broad</i> overview</td> <td>→ Read for <i>detailed</i> information</td> </tr> </table> </li> <li>❖ <b>Evaluation</b> - Two general approaches to evaluation emerged.                     <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="width: 33%;">Evaluation before instruction</th> <th style="width: 33%;">Evaluation during instruction</th> <th style="width: 33%;">Evaluation after instruction</th> </tr> <tr> <td><b>From teacher perspective</b> - Do I understand the math? Am I sure what this concept means? →</td> <td><b>From student perspective</b> – Are the students getting the ideas? How are the students progressing? →</td> <td><b>From perspective of teacher, student and others</b></td> </tr> <tr> <td><b>From student perspective</b> – Will my students grasp the material? →</td> <td><b>From teacher perspective</b> – Is my explanation adequate? What am I <b>Did not evaluate after instruction</b> missing here in terms of math? How can I make sense of this? →</td> <td></td> </tr> </table> </li> <li>❖ <b>Adaptation</b> - It was found that if teachers made significant changes and adaptations to the materials, there were three possibilities - they could <i>omit</i> content or activities, they could <i>replace</i> content or activities with others or they could <i>create</i> completely new activities. The most interesting finding to emerge was that there was a pattern that connected the approaches to evaluation and the approaches to adaptation.</li> </ul> <div style="text-align: center; margin-top: 10px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px;">Teacher perspective prior to instruction</td> <td style="width: 10%; text-align: center;">→</td> <td style="width: 30%; padding: 5px;">Student perspective during instruction</td> <td style="width: 10%; text-align: center;">→</td> <td style="width: 20%; padding: 5px;">Creation of new materials / activities</td> </tr> </table> </div> <p>Teachers who had focused on their own understanding prior to instruction were able to draw on these understandings to address</p>		Read	Evaluate	Adapt	Before instruction				During instruction				After instruction				Read before instruction	Read during instruction	Read for <i>broad</i> overview	→ Did not read during	Read for <i>detailed</i> information	→ Did not read during	Read for <i>broad</i> overview	→ Read for <i>detailed</i> information	Evaluation before instruction	Evaluation during instruction	Evaluation after instruction	<b>From teacher perspective</b> - Do I understand the math? Am I sure what this concept means? →	<b>From student perspective</b> – Are the students getting the ideas? How are the students progressing? →	<b>From perspective of teacher, student and others</b>	<b>From student perspective</b> – Will my students grasp the material? →	<b>From teacher perspective</b> – Is my explanation adequate? What am I <b>Did not evaluate after instruction</b> missing here in terms of math? How can I make sense of this? →		Teacher perspective prior to instruction	→	Student perspective during instruction	→	Creation of new materials / activities
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questions and difficulties during instruction. They understood why particular parts of the lesson were included and how they connected to the whole and this allowed them to supplement the materials where necessary to achieve the objectives.



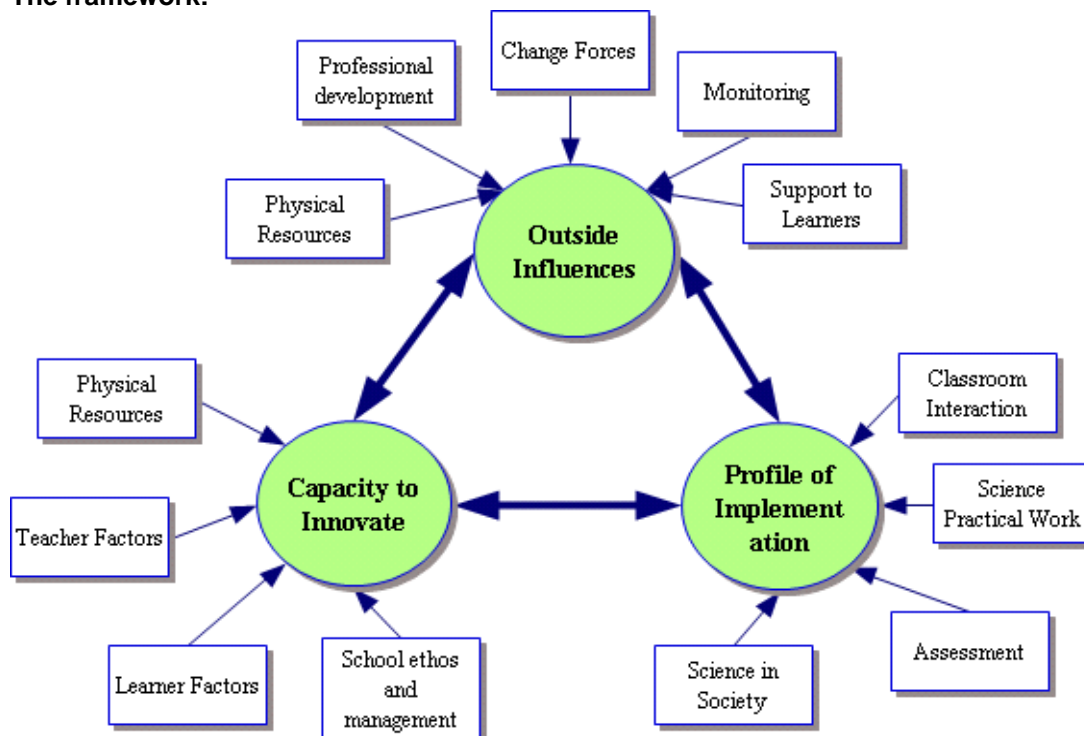
Teachers who had not used the curriculum as a resources for their own learning prior to instruction did consider their own understanding during the lesson, but as concerns arose they did not have enough time to work through their own questions and ended up sometimes just moving on to the next portion of the lesson.

**Curriculum Implementation**

*Journal of Research in Science Teaching* Vol. 42, No. 3, pp. 313 - 336

**Rogan, J. & Aldous, C. (2005) Relationships between the constructs of a theory of curriculum implementation.** The researchers developed a theoretical research-based framework for explaining the factors influencing curriculum implementation and then used this framework to research the implementation of a new curriculum in South African schools. In particular they were interested in how constructs and subconstructs within the framework related to each other.

**The framework:**



**Main Findings:**

	<ul style="list-style-type: none"> <li>• Classroom observations and teacher interviews suggest a tendency for teachers to retain old practices but attach new jargon to them.</li> <li>• A second tendency is for teachers to make sense of the intended curriculum in superficial ways, or to come to believe that they have already been doing it all along.</li> <li>• The area of 'outside influences' which requires the most attention is professional development</li> <li>• Changes in the classroom interaction subconstruct of the profile of implementation were positively related to having greater curriculum resources and to with a supporting school ethos and management.</li> <li>• The level of 'science practical work' in the profile of implementation was only influenced by one of the capacity factors - school ethos and management.</li> <li>• Professional development had a much greater influence on 'science practical work' than it did on classroom interaction.</li> <li>• 'Science in society' was not influenced by any of the subconstructs in capacity or outside influence.</li> <li>• Assessment, unlike other factors in the profile of implementation, seems to be most influenced by teacher and learner factors. The researchers interpreted this as being the result of assessment practices being less 'public' than classroom instruction practices and therefore less amenable to influences from areas like 'school ethos and management'.</li> <li>• The researchers interpreted the findings in terms of "sense-making" by teachers. Teachers attempted to make sense of the new curriculum in terms of their past experiences, which often led to them re-interpreting existing practices in terms of new goals. Where new practices were adopted, they were often used without teachers connecting them to their purposes within the new framework. For example, teachers seem to have latched onto the idea that students needed to work in groups in the new curriculum, but they did not structure group work effectively and did not attach it to the purposes it was intended for within the new curriculum framework.</li> <li>• Overall 'school ethos and management' appeared to exert the greatest influence over implementation. The researchers cite the importance of a school's ability to "form a bigger picture of what the change in curriculum actually means" , that goes beyond single divisions of subject departments.</li> <li>• The second most influential factor was the 'level and style of accountability' - in schools where the monitoring was undertaken by personnel within the school, implementation was greater.</li> <li>• The researchers hypothesize a "Zone of Feasible Innovation", just ahead of current practice. They also highlight the importance within their framework of attending to the 'capacity to innovate' as they claim that as the capacity to innovate increases, a "larger range of Profiles of Implementation will be possible"</li> </ul>
<p><b>Curriculum Implementation / Interdisciplinary Curriculum</b></p> <p><i>American Educational Research Journal Vol. 44 No.4, pp. 1002 - 1039</i></p>	<p><b>Applebee, A., Adler, M. &amp; Flihan, S. (2007) Interdisciplinary curricula in middle and high school classrooms: Case studies of approaches to curriculum and instruction.</b></p> <p>The researchers examined 11 interdisciplinary teams involving 30 teachers and 542 students in schools in New York and California. They were interested in (a) examining the curricular differences between the programs (b) examining the relationship between types of instructional practices and interdisciplinary curriculum and (c) examining what happens to traditional subject material when it becomes embedded in an interdisciplinary curriculum.</p> <p><b>Main Findings:</b> <b>Interdisciplinary curriculum</b></p> <ul style="list-style-type: none"> <li>• Based on observation, interdisciplinary curricula were placed along a continuum in order to highlight some of the differences. At one end were <i>correlated curricula</i> (eg. subjects focus on parallel geographical regions, but curricular conversations proceed independently of each within each subject), moving towards <i>shared curricula</i> ( eg. subjects focus on important shared concepts such as justice or racism, but discussions continue to be located within independent disciplines). At the far end of the continuum</li> </ul>

	<p>were <i>reconstructed curricula</i> (concepts and understandings are merged across disciplines to create conversations that go beyond disciplinary boundaries).</p> <ul style="list-style-type: none"> <li>• Moving from one end of the continuum to the other entailed making more connections across disciplines and spending more time on interdisciplinary activities. It also involved increased planning time and coordination for the participating teachers</li> <li>• Teams did not necessary stay at one point on the continuum, but moved up and down at different points during the year. Where this was done effectively, it was seen to allow flexibility in reinforcing disciplinary content and in avoiding artificial connections.</li> </ul> <p><b>Approaches to instruction</b></p> <ul style="list-style-type: none"> <li>• The closer a team was to the <i>reconstructed</i> end of the continuum, the greater the emphasis on cognitively engaging instruction in the classrooms tended to be. Two measures were used to determine this: (a) <i>envisionment-building activities</i> (eg. asking questions, developing hunches, generating, examining and elaborating on ideas) - measured using a Likert scale and (b) <i>minutes of open discussion</i> ( with stringent criteria)</li> <li>• The patterns of instruction correlated with the types of discussion which took place in teacher planning sessions. The closer a team was to the <i>reconstructed</i> end of the continuum, the more they were likely to explore new ideas as learners themselves, which seemed to lead to them involving their students in similar types of discussion.</li> </ul> <p><b>The school subjects</b></p> <ul style="list-style-type: none"> <li>• Disciplinary values and activities did not disappear, even in the most reconstructed curricula.</li> <li>• Effective interdisciplinary curriculum used disciplines as tools or lenses through which to explore interdisciplinary themes</li> <li>• On occasions interdisciplinary curricula did lead to distortions of disciplinary content, such as an overemphasis on historical fiction or an underemphasis on certain types of writing.</li> <li>• The researchers conclude that interdisciplinary curriculum is neither a problem nor a panacea.</li> </ul>
<p><b>Curriculum Implementation</b></p> <p><i>Review of Educational Research Vol. 78, No. 1, pp. 33 - 84</i></p>	<p><b>O'Donnell, C. (2008) Defining, conceptualizing, and measuring fidelity of implementation and its relationship to outcomes in K – 12 curriculum intervention research.</b></p> <p>This paper examines a number of studies that measure fidelity of implementation of curriculum innovations in order to define fidelity of implementation as a concept, examine its relevance for studying curriculum implementation as well as its relationship to learner outcomes.</p> <p><b>Main Findings / Arguments:</b></p> <ul style="list-style-type: none"> <li>• Overall fidelity was defined most often in terms of adherence to the intentions of curriculum developers.</li> <li>• There is an inherent tension in the literature between fidelity to the intentions of expert curriculum developers and the role of classroom teachers in implementing curriculum.</li> <li>• In many studies it was not measured, but the most common way of measuring fidelity was to identify a program theory and critical components of a curriculum intervention / innovation and then develop measures based on these components.</li> <li>• All studies where fidelity was measured quantitatively showed statistically significantly higher outcomes for learners when the program was implemented with greater fidelity.</li> <li>• More flexible innovations (ones that can be more easily adapted to fit a wider range of contexts) are implemented more rapidly and with a higher degree of sustainability.</li> </ul>
<p><b>Curriculum Implementation</b></p> <p><i>Curriculum</i></p>	<p><b>Shkedi, A. (1998) Can the curriculum guide both emancipate and educate teachers.</b></p> <p>Three curriculum guides were compared and described. Teachers were interviewed to find out how well they comprehended the pedagogical approach intended and the level to which they felt that autonomy was supported by each respective guide.</p>

Curriculum Articles

<p><i>Inquiry</i> Vol. 28, No. 2, pp. 209 - 229</p>	<p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>• Two of the guides were recognized by most teachers to have a clear and specific pedagogical approach. Teachers did not perceive that either of these guides allowed for teacher autonomy. This was true even when the teachers were in fact exercising autonomy in the sense that they were not implementing the curriculum in line with the pedagogical approach intended by the curriculum writers. In most cases these teachers were not aware that their interpretations were in conflict with the intentions of the curriculum.</li> <li>• One guide was perceived by teachers as not having a clear and specific pedagogical approach and this guide was perceived as allowing for teacher autonomy.</li> <li>• The researcher notes that none of the guides was perceived as combining both a clear pedagogical approach and autonomy and claims that as far as teachers are concerned, these two elements cannot be combined in one curriculum guide. The researcher hypothesizes that this is because teachers were unable to connect their personal curriculum 'stories' to the writer's intentions and suggests that a potential solution may be curriculum workshops that create opportunities to do this rather than written curriculum guides.</li> </ul>
<p>Curriculum Implementation</p> <p><i>Journal of Educational Research</i> Vol. 85, No. 4, pp. 226 - 232</p>	<p><b>Bailey, D. &amp; Palsha, S. (1992) Qualities of the Stages of Concern Questionnaire and implications for educational innovations.</b> This study administered the Stages of Concern Questionnaire (see description of stages of concern above) to 142 teachers participating in inservice workshops. Various statistical analyses were conducted on the results to verify the validity of the stages.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>• A factor analysis did not support the subscale structure of the stages. The reliability of some subscales was low. The researchers proposed and tested a shortened 5 factor version of the stages as follows: 1 Awareness 2 Personal 3 Management 4 Impact 5 Collaboration (The new scale accounted for 79.4% of the variance)</li> </ul>
<p>Curriculum Implementation</p> <p>Paper presented at the annual meeting of the American Educational Research Association (AERA) San Francisco, April 8 – 12, 1979</p>	<p><b>Loucks, S. &amp; Hall, G. (1979) Implementing innovations in schools: a concerns-based approach.</b> This study applied the CBAM model to the implementation of a new elementary Science curriculum in Colorado. The design of the implementation process itself had been based on the Concerns-Based Adoption Model.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>• Initial implementation strategies targeted primarily information and personal concerns.</li> <li>• The next set of implementation strategies focused on helping teachers plan, set up and actually teach units (management concerns).</li> <li>• When workshops were offered teachers generally selected workshops that matched their general stage of concern.</li> <li>• Initial implementation strategies saw teachers generally decrease in concerns in stages 0 – 3 and increase in concerns in the later stages. (4 – 6).</li> <li>• By fairly early in the implementation, refocusing concerns had already become significant.</li> <li>• In two schools where principal's incidental interventions were concerned (one principal - School 1 was supportive of the new curriculum and the other – School 2 was not) a difference in implementation was observed. In school one, half of the teachers were in routine use and their concerns were at the consequence stage at the end of the second year. In school 2, a significant number of users were still in mechanical use after two years of implementation.</li> <li>• In general - it seems to take more than one year to implement an innovation and the active support of the principal seems critical.</li> </ul>
<p>Professional Development / Curriculum</p>	<p><b>Penuel, W., Fishman, B., Yamaguchi, R. &amp; Gallagher, L. (2007) What makes professional development effective? Strategies that foster curriculum implementation.</b> Professional development for the implementation of the GLOBE Science Program offered by a number of different providers was</p>

<p>Implementation</p> <p><i>American Educational Research Journal Vol. 44 No. 4 pp. 921 – 958</i></p>	<p>investigated and compared with teacher self-reports on implementation measures of the program. The study included data from 454 teachers and 28 professional development providers.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● The design elements of PD that mattered most for GLOBE implementation varied according to the aspect of implementation being measured.</li> <li>● To increase data reporting (data collected by students had to be uploaded to a central website), the most effective strategy was to focus on promoting student inquiry</li> <li>● To increase the use of the GLOBE classroom protocols and the teachers' feelings of preparedness for student inquiry, the opportunity within the PD to plan who to tailor GLOBE to the local circumstances of teachers' classrooms was significant</li> <li>● To increase teachers' feelings of preparedness to lead student inquiry (GLOBE is an inquiry-based program), a focus on the content of GLOBE was significant.</li> <li>● Results in relation to duration of PD were inconclusive.</li> <li>● Perceived coherence of the PD activities with teachers' own districts' goals for student learning and with their own goals for PD was a strong predictor of use of GLOBE protocols and feelings of preparedness for student inquiry</li> <li>● Taken together, the pattern of findings were in agreement with general findings about PD (such as those in the Garet et al. study above) but that particular aspects of some programs can make some features of PD more or less important.</li> </ul>
<p><i>Curriculum Implementation / Leadership</i></p> <p><i>Curriculum Perspectives 27:1 pp 26 - 39</i></p>	<p><b>Lo, Y. (2007) The micro-politics of curriculum leadership.</b></p> <p>This paper consists of three case studies of curriculum coordinators in Hong Kong primary schools and attempts to look into how they deal with micro-politics in their schools while implementing curriculum reforms mandated by the Hong Kong government.</p> <p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>● Leadership styles which rely on personal interaction with informal contact are more effective than authoritarian leadership styles for curriculum coordinators.</li> <li>● Curriculum coordinators need to consider the micro-politics of their school situation when planning their implementation strategies.</li> </ul>
<p><i>Curriculum Development</i></p> <p><i>Journal of Curriculum Studies</i></p>	<p><b>Schwartz, M. (2006) For whom do we write curriculum?</b></p> <p>Schwartz claims that curriculum needs to be written in a way which will motivate the teachers to learn for when the teacher is learning, so too are the students. He calls his model 'rehearsal curriculum' This model organizes curriculum in a manner that will cause 'disjuncture' for the teacher and motivate them to research and explore the issue further. In the second stage, the teacher considers how to create that same 'disjuncture' for the students. He claims that this will involve both teacher and students in the process of thinking. His curriculum thus offers the teacher the opportunity to 'rehearse the learning process themselves, prior to creating it.'</p>
<p>Leadership / Curriculum Development / Curriculum Implementation / Teaching Strategies (General)</p>	<p><b>Queensland School Reform Longitudinal Study (2001)</b></p> <p>This study investigated 975 classrooms in 24 schools in Queensland, Australia. The study mapped backwards from student outcomes to pedagogy and assessment to school organizational capacity and leadership to determine what factors had a positive impact on student learning. The vision for student performance was largely based on the criteria developed by Newmann and Associates in their work on Authentic Achievement. The categories developed by Newmann were extended and refined. Two of these revisions are of particular interest. One was to include descriptions of social learning as well as academic learning. The other was to extend the idea of connection to the real world to a much broader vision of connectedness including to the world beyond school to other subject areas, to students' background knowledge etc.</p>

<p><i>Submitted to Education Queensland by the School of Education, University of Queensland</i></p>	<p><b>Main Findings:</b></p> <ul style="list-style-type: none"> <li>• A majority of teachers rate basic skills of numeracy and literacy as being their primary goal and social skills as being their second most important goal. The study found an overemphasis on the 'basics' to be counterproductive. Without a greater focus on more complex learning goals, these will never be achieved.</li> <li>• General levels of 'productive pedagogy' and hence 'productive performance' as defined by the study were low in schools.</li> <li>• Teachers tended not to see assessment as an integral part of good practice</li> <li>• Teachers tended to harbor a number of misbeliefs including that behavior management must be taken care of prior to considerations of classroom practice and that the achievement of academic and social goals required some kind of 'trade off'</li> <li>• Leadership in schools tended not to focus on learning</li> <li>• There was no strong emphasis in classrooms on intellectual quality or connectedness, though social support for learning in schools was generally rated highly.</li> <li>• Many assessment tasks set by teachers do not require the application of complex skills or higher order thinking.</li> <li>• The study developed a model of school leadership ( which they called productive leadership) with 9 dimensions based on analysis of the 24 schools. This model was able to account for 96.2% of the variance between schools. The dimensions were:             <ol style="list-style-type: none"> <li>5. A focus on pedagogy - from strong to weak</li> <li>6. A focus on structures and strategies – (to facilitate the smooth running of the school) - from high to low</li> <li>7. A focus on a culture of care (in particular emotional support for teachers and support for teacher risk-taking) – from high to low.</li> <li>8. A focus on supporting professional development and learning community – from strong to weak.</li> <li>9. Nature of change commitment - from focused and thick (where fewer changes are implemented in a more considered way) to widespread and thin.</li> <li>10. Hot / Cold knowledge as a basis for change; pedagogy - from hot knowledge of pedagogy which is grounded in practice) to cold ( disconnected from practice)</li> <li>11. Hot / Cold knowledge as a basis for change; political – from hot (knowledge of the political scene including the local community and society more broadly) to cold ( disconnected from political contexts)</li> <li>12. Commitment to dispersal of leadership – from strong to weak</li> <li>13. Relationships amongst school community (teachers, students, parents, administrators and others) – from involved to aloof.</li> </ol> </li> <li>• Schools tended to form three clusters when analysed for leadership - low leadership (on all dimensions), incoherent leadership ( having a managerial focus, without the corresponding concern for pedagogy and professional development) and coherent leadership ( with a strong focus on structures and a focus on pedagogy and commitment to change).</li> <li>• No correlation was found between the construct of productive leadership and student productive performance. The researchers speculate that since the relationship of leadership to learning is indirect, perhaps their measures were not sensitive enough to capture it.</li> <li>• A number of individual dimensions of the model were related to student performance, however. They were as follows:             <ol style="list-style-type: none"> <li>1. Highly structured leadership was correlated with low recognition of difference and low levels of citizenship as exhibited in student performance.</li> <li>2. A high culture of care was correlated with higher levels of transformative citizenship.</li> </ol> </li> <li>• The following correlations could be seen between individual dimensions of leadership and productive assessment in classrooms:             <ol style="list-style-type: none"> <li>14. Culture of care is related positively with integration of knowledge (connectedness) and an audience beyond the school.</li> <li>15. Dispersal of leadership is related to a decrease in the integration of students' background knowledge into tasks and less consideration of alternatives built into task design. The researchers find this puzzling, but something which needs to be</li> </ol> </li> </ul>
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## Curriculum Articles

	considered and further investigated. They say it is possible that an increase of dispersal of leadership focused on managerial aspects may lead to increased burdens on teachers which may then negatively impact on assessment practices.
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